Speedway Commerce Center II Specific Plan Project

Final Environmental Impact Report

State Clearinghouse No. 2021120259

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October 2022



Kimley»Horn

SPEEDWAY COMMERCE CENTER II SPECIFIC PLAN PROJECT

FINAL ENVIRONMENTAL IMPACT REPORT

Speedway Commerce Center II Specific Plan- PROJ- 2021-00150
Development Agreement
Tentative Map – No. 20478
Revision to Approved Action- PRAA-2020-00150

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1.0
Introduction

Kimley»Horn

Section 1.0 Introduction

1.1 INTRODUCTION

The County of San Bernardino has prepared this Final Environmental Impact Report (FEIR) in compliance with the California Environmental Quality Act (CEQA) for the Speedway Commerce Center II Specific Plan Project (Project). The County is required, after completion of a DEIR (State Clearinghouse No. 2021120259), to consult with and obtain comments from public agencies having jurisdiction by law with respect to the Project and provide the general public with an opportunity to comment on the DEIR. This FEIR has been prepared to respond to comments received on the DEIR, which was circulated for public review from June 1, 2022 through July 18, 2022. The preceding Table of Contents lists all persons, organizations, and public agencies who commented on the DEIR.

The County will evaluate comments on environmental issues from persons who reviewed the DEIR and will prepare a written response, pursuant to CEQA Guidelines §15088(a). The written response must address any significant environmental issues raised. In addition, there must be a good faith and reasoned analysis in the written response. However, lead agencies need only respond to significant environmental issues associated with the Project and do not need to provide all the information requested by commenters, as long as a good faith effort at full disclosure is made in the EIR (State CEQA Guidelines §15204, §15088). Those comments are responded to in **Section 2.0, Comments on the Draft EIR and Responses to Comments**.

State CEQA Guidelines §15088 recommends that where a response to a comment makes important changes in the information contained in the DEIR text, the Lead Agency either revises the text of the DEIR or includes marginal notes showing that information. Added or modified text is shown in **Section 3.0, Errata**, by underlining (<u>example</u>), while deleted text is shown by striking (~~example~~). The additional information, corrections, and clarifications are not considered to affect the conclusions within the EIR substantively and therefore, the City has determined that recirculation of the DEIR is not required as none of the criteria for recirculation under CEQA Guidelines Section 15088.5 have been met.

CEQA Guidelines §15132 indicates that the contents of an FEIR shall consist of:

(a) The DEIR or a revision of the draft.

(b) Comments and recommendations received on the DEIR either verbatim or in summary.

(c) A list of persons, organizations, and public agencies commenting on the DEIR.

(d) The responses of the Lead Agency to significant environmental points raised in the review and consultation process.

(e) Any other information added by the Lead Agency.

Pursuant to CEQA Guidelines §15088(b), the County will provide written responses to comments to any public agency that commented on the DEIR, at least ten (10) days before the County's Board of Supervisors' consideration of certifying the EIR as adequate under CEQA. Written responses to comments will also be provided to non-public agency individuals, organizations, and entities that commented on the

DEIR. In addition, the FEIR will be made available to the general public at the County's Land Use Services Department and on the County's website a minimum of 10 days before the Planning Commission public hearing.

The FEIR, along with other relevant information and public testimony at the Planning Commission and County Board of Supervisors public hearings, will be considered by the County's Board of Supervisors. Next, the Planning Commission would recommend EIR certification and Project approval to the County Board of Supervisors.

1.2 ORGANIZATION OF EIR

This FEIR provides the requisite information required under CEQA and is organized as follows:

- **Section 1.0: Introduction.** This section provides an introduction to the FEIR, including the requirements under CEQA, the organization of the document, as well as a summary of the CEQA process activities to date.
- **Section 2.0: Comments on the Draft EIR and Responses to Comments.** This section provides a list of public agencies, organizations, and individuals commenting on the DEIR, a copy of each written comment received, and any response required under CEQA.
- **Section 3.0: Errata to the Draft EIR.** This section presents clarifications, amplifications, and insignificant modifications to the EIR, identifying revisions to the text of the document.

1.3 CEQA PROCESS HISTORY

The County has complied with relevant Public Resources Code provisions and CEQA Guidelines regarding the preparation and processing of the Project EIR. A brief summary of the Project's CEQA process is as follows:

- A Notice of Preparation (NOP) informing interested parties and agencies of the Project was distributed on December 13, 2021.
- Written and verbal comments were given at a public scoping meeting held for the Project on January 11, 2022.
- Following a Notice of Completion (NOC), the DEIR and Notice of Availability was distributed for public review and comment for a 45-day period, beginning June 1, 2022. The public review period closed on July 18, 2022.

1.4 CHANGES TO THE DRAFT EIR

As previously stated, **Section 3.0, Errata** to the Draft EIR, details the changes to the DEIR. In response to public comments, text changes have been made to DEIR sections to clarify and amplify the analysis or mitigation measures, and to make insignificant modifications to the DEIR. This information does not rise to the level of significant new information as the resulting impact analysis and alternatives considered remain essentially unchanged, and no new or more severe impacts have been identified. These changes do not warrant DEIR recirculation pursuant to California Public Resources Code §21092.1 and CEQA

Guidelines §15088.5. As discussed herein and as elaborated upon in the respective Response to Comments, none of the clarifications or changes made in the Errata reflect a new significant environmental impact, a "substantial increase" in the severity of an environmental impact for which mitigation is not proposed, or a new feasible alternative or mitigation measure that would clearly lessen significant environmental impacts but is not adopted, nor do the Errata reflect a "fundamentally flawed" or "conclusory" DEIR. In all cases, as discussed in individual responses to comments and DEIR Errata, these minor clarifications and modifications do not identify new or substantially more severe environmental impacts that the City has not committed to mitigate. Therefore, the public has not been deprived of a meaningful opportunity to comment upon a substantial adverse environmental effect of the Project or an unadopted feasible Project alternative or mitigation measure. Instead, the information added supports the existing analysis and conclusions, and responds to inquiries made from commenters. Therefore, this FEIR is not subject to recirculation prior to certification.

CEQA Guidelines §15088.5 describes when an EIR requires recirculation prior to certification, stating in part:

> *"(a) A lead agency is required to recirculate an EIR when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review under Section 15087 but before certification. As used in this section, the term "information" can include changes in the project or environmental setting as well as additional data or other information. New information added to an EIR is not "significant" unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project's proponents have declined to implement. "Significant new information" requiring recirculation include, for example, a disclosure showing that:*
>
> *(1) A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.*
>
> *(2) A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.*
>
> *(3) A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the environmental impacts of the project, but the project's proponents decline to apply it.*
>
> *(4) The draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded (Mountain Lion Coalition v. Fish and Game Com. (1989) 214 Cal.App.3d 1043).*
>
> *(b) Recirculation is not required where the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR."*

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2.0

Comments and Responses

Kimley»Horn

Section 2.0 Comments and Responses to Draft EIR

This section includes all comments received by the County on the Draft EIR, including written comments and comments submitted online via email to the County. The County circulated the Draft EIR and its associated Notice of Availability (NOA) for a 45-day review period as required by CEQA. The review period ran from June 1, 2022 through July 18, 2022.

2.1 INTRODUCTION TO COMMENTS AND RESPONSES

In accordance with State CEQA Guidelines Section 15132, **Table 2.0-1, Comments from Public Agencies, Organizations, and the General Public** below provides a list of those parties that provided written comments on the Draft EIR during the public review period. Copies of the written comments are provided in this section and have been annotated with the assigned letter along with a number for each comment. Each comment is followed by a written response which corresponds to each commenter.

Table 2.0-1: Comments from Public Agencies, Organizations, and the General Public

Reference #	Commenter	Date Sent
Regional		
R1	San Bernardino County Department of Public Works	July 20, 2022
R2	South Coast Air Quality Management District	July 15, 2022
R3	The Metropolitan Water District of Southern California	July 18, 2022
Local		
L1	City of Fontana	July 26, 2022
L2	City of Rancho Cucamonga	July 18, 2022
L3	San Gabriel Valley Water Company	July 18, 2022
Tribal Comments		
T1	Gabrieleno Band of Mission Indians - Kizh Nation	June 6, 2022
T2	Yuhaaviatam of San Manuel Nation	June 29, 2022
Organizations/Interested Parties		
O1	Adams Broadwell Joseph & Cardozo	June 9, 2022
O2	Adams Broadwell Joseph & Cardozo	June 9, 2022
O3	Adams Broadwell Joseph & Cardozo	July 18, 2022
O4	Golden State Environmental Justice Alliance **withdrawal letter*	June 30, 2022
O5	Blum Collins & Ho, LLP	June 30, 2022
O6	Center for Community Action and Environmental Justice	July 18, 2022
O7	Inland Empire Biking Alliance	July 15, 2022
O8	Mitchell M. Tsai	July 18, 2022 (August 4, 2022)
O9	Robert Redford Conservancy for Southern California Sustainability	July 18, 2022
O10	Teamsters Local Union No. 1932	July 18, 2022
O11	Center for Biological Diversity and Sierra Club	July 18, 2022

Reference #	Commenter	Date Sent
General Public		
G1	Adam Salcido	July 22, 2022
G2	Amparo Miramontes	July 9, 2022
G3	Ari Miramontes	July 9, 2022
G4	Ben (last name not provided)	July 9, 2022
G5	Carolina Verduzco	July 16, 2022
G6	Corilyn Rodrick Meyer	July 16, 2022
G7	Eddie Lopez	July 17, 2022
G8	Elizabeth Sena	July 9, 2022
G9	Erma Gardner	July 18, 2022
G10	Estela G Ballon	July 18, 2022
G11	Glennie Ferry	July 14, 2022
G12	Hannah Ivey	July 15, 2022
G13	Janet Bernabe	July 18, 2022
G14	Jasmine Cunningham	July 9, 2022
G15	Jesus M. Zuno	July 16, 2022
G16	Jo Ann Bollen	July 17, 2022
G17	Kelly Chase	July 15, 2022
G18	Lizette Mendoza	July 18, 2022
G19	Louis Mendoza	July 18, 2022
G20	Luis Garcia	July 15, 2022
G21	Margaret Vollmer	July 16, 2022
G22	Maria Enciso	July 16, 2022
G23	Maria Mendoza	July 18, 2022
G24	Maria Navarro	July 16, 2022
G25	Martha Aragon	July 18, 2022
G26	Martin Navarro	July 16, 2022
G27	Maxine Bowden	July 17, 2022
G28	Melissa May	July 18, 2022
G29	Miramontes Family	July 18, 2022
G30	Nancy Raya	July 14, 2022
G31	Nayri Tapia	July 18, 2022
G32	Nayri Tapia	July 18, 2022
G33	Relda Calhoun	July 19, 2022
G34	Rosa Loredo	July 16, 2022
G35	Sandy Lundergan-Price	July 15, 2022
G36	Sara Teran	July 18, 2022
G37	Stephen May	July 18, 2022
G38	Sandy Singh	July 14, 2022

Reference #	Commenter	Date Sent
Comments Received After Draft EIR Circulation and During Planning Commission Hearing		
A1	Shaun Martinez, Teamsters Local 1932	September 7, 2022
A2	Miramontes Family	September 7, 2022
A3	Alisha C. Pember and Kelilah D. Federman, Adams Broadwell Joseph & Cardozo	September 7, 2022
A4	Hallie Kutak, Center for Biological Diversity	September 8, 2022

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MASTER RESPONSES

Master Response 1

Project Scope and Description

The Speedway Commerce Center II Specific Plan Project (SCCIISP or Project) proposes conceptual land uses that include, but are not limited to, up to approximately 6.6 million square feet (SF) of high-cube logistics and e-commerce uses and 261,360 SF of ancillary commercial uses, as well as ancillary open space to support Project development and pedestrian travel, as discussed in detail starting on page 3-16 in *Section 3.0, Project Description*, of the Draft EIR. The Project does not directly propose the development of buildings or seek the approval of individual plot plans.

The Project entitlements listed on pages 3-34 and 3-35 of the Draft EIR include the approval of the SCCIISP, a Tentative Parcel Map, and Development Agreement. A revision to an Approved Action would also be required to amend the existing Planned Development permit for the Auto Club Speedway (ACS) to remove from its coverage approximately 433 acres of the ACS site that would be governed by the SCCIISP. Draft EIR *Section 3.0, Project Description*, *Table 3-5: Agency Approvals for the Proposed Project*, identifies subsequent approvals the Project would require to move forward with development

As explained starting on Draft EIR page 3-2, the Project does not propose the demolition of the existing ACS. The redevelopment of the existing ACS is a separate action under the "Next Gen in California Project," which was proposed by California Speedway, LLC and approved by the County in June 2021. The Next Gen in California Project replaces the existing 2-mile oval with a new 0.67-mile track to facilitate more competitive "short track" racing favored by race fans and broadcast partners, and will provide a more intimate venue with upgraded amenities and an enhanced fan experience. The Next Gen in California Project would continue to host NASCAR races and other events similar to and/or identical to the events that were previously hosted at the ACS and provide similar but upgraded amenities and support facilities. The Next Gen in California Project has received all necessary approvals and CEQA clearance for its construction and operation and is not part of the SCCIISP Project. See *Section 3.0, Project Description* of the Draft EIR for additional background on the history of the Project site and adjacent land uses.

The Project Description, found in Draft EIR *Section 3.0*, is accurate and stable and provides adequate detail to evaluate Project impacts. Under CEQA, the EIR must contain a general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals, if any, and supporting public service facilities. (CEQA Guidelines, Section 15124(c)). CEQA also states that the project description should not supply extensive detail beyond that needed for evaluation and review of the proposed project's potentially significant environmental impacts. (CEQA Guidelines, Section 15124). A conceptual description of project components is sufficient so long as the description contains enough detail to enable decision-makers and the public to understand the environmental impacts of the proposed project. This level of detail is provided in *Section 3.0* of the Draft EIR.

Master Response 2

CalEnviroScreen and Air Quality

The Project's construction and operational Health Risk Assessment (HRA) discusses the California Communities Environmental Health Screening Tool (CalEnviroScreen) rankings (refer to Draft EIR *Appendix C*). According to CalEnviroScreen, the Project site and the nearest residences to the northeast are located within Census Tract 6071002204, which is within the 93rd percentile overall for the CalEnviroScreen Score, which considers pollution burden (average of exposure and environmental effects) and populations characteristics (average of sensitive populations and socioeconomic factors).

CalEnviroScreen has been developed by the Office of Environmental Health Hazard Assessment (OEHHA) and California Environmental Protection Agency (CalEPA). While CalEnviroScreen can assist CalEPA in prioritizing resources and helping promote greater compliance with environmental laws, it is important to note some of its limitations. The tool's output provides a relative ranking of communities based on a selected group of available datasets, through the use of a summary score. The CalEnviroScreen score is not an expression of health risk and does not provide quantitative information on increases in cumulative impacts for specific sites or projects. Further, as a comparative screening tool, the results do not provide a basis for determining when differences between scores are significant in relation to public health or the environment. Accordingly, CalEnviroScreen is not intended to be used as a health or ecological risk assessment for a specific area or site. Refer to Draft EIR *Section 4.3, Air Quality* for a full evaluation of the Project's CEQA air quality effects.

It should be noted that health risks are determined by examining the types and levels of air toxics generated and the associated impacts to air quality. As described in Draft EIR *Section 4.3*, impacts related to cancer risk would be less than significant with implementation of MM AQ-1 and MM AQ-9. Additionally, non-carcinogenic hazards are calculated to be less than significant. It should be noted that the EIR assesses the Project's incremental contribution to health risk impacts, consistent with the SCAQMD guidance and methodology. The SCAQMD has not established separate cumulative thresholds and does not require combining impacts from cumulative projects. The SCAQMD considers projects that do not exceed the project-specific thresholds to generally not be cumulatively significant. Therefore, impacts related to air quality-related health risk from the Project would be less than significant. Refer to *Appendix C* of the Draft EIR for additional information.

While cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time, an EIR or MND can determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable, and thus is not significant (see Section 15130 of the State CEQA Guidelines). With implementation of MM AQ-1, the Project's contribution to health risk impacts would be less than cumulatively considerable. The Project would not exceed the SCAQMD's 10 in one million incremental threshold as shown in Draft EIR *Table 4.3-21: Carcinogenic Risk Assessment*, and therefore would not exacerbate existing conditions.

Furthermore, it should be noted that the Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates

that the regional increases shown in Draft EIR *Tables 4.3-13* through *4.3-17* would not necessarily cause an exceedance of the ambient air quality standards. Although the regional thresholds were developed to determine a level at which a project could affect the ambient air quality standards, these thresholds are the same for projects of all sizes and locations. The health risk LST analyses more accurately evaluate emissions based on the location and scale of the project. For example, LSTs for larger sites are higher than smaller sites to account for additional dispersion that occurs over a larger area. Additional dispersion also lowers the concentration of a pollutant.

Air Quality and GHG Impacts

The Project's exceedance of regional air quality emissions thresholds or greenhouse gas (GHG) thresholds does not necessarily indicate that a project is not in compliance with applicable standards. The exceedance of the regional thresholds is a direct function of the Project's size. As noted above, although emissions would exceed regional level thresholds, the Draft EIR determined that the Project's LSTs would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53).

Although GHG emissions would exceed the numerical threshold identified in the Draft EIR, the Project is subject to the County's GHG Reduction Plan. Draft EIR *Table 4.8-4: San Bernardino County GHG Reduction Measures Screening Table,* demonstrates that the Project would comply with the County's GHG Reduction Measures and would be consistent with the GHG Reduction Plan. MM GHG-1 requires the Project to apply reduction measures identified in the County's GHG Screening Tables so that each building would achieve a minimum of 100 points.

The County's 2021 GHG Emissions Reduction Plan Update states that any project that adopts at least 100 points of GHG performance standards listed in the proposed 2021 Screening Tables, would be consistent with the County's GHG Emissions Reduction Plan to reduce emissions to 40 percent below 2007 levels. Meeting this reduction would be consistent with the State's long-term goal to achieve statewide carbon neutrality (zero net emissions) by 2045, and therefore, would result in a less than significant impact related to GHG emissions. Nonetheless, the Draft EIR conservatively concludes that impacts would remain significant and unavoidable due to the size of the Project and its corresponding GHG emissions

Air Quality Regulations

The Project would be required to comply with all applicable SCAQMD and CARB rules and regulations. For example, CARB's Advanced Clean Truck Regulation requires truck manufacturers to transition from diesel trucks and vans to electric zero-emission trucks beginning in 2024. By 2045, every new truck sold in California is required to be zero-emission. The Advanced Clean Truck Regulation accelerates the transition of zero-emission medium-and heavy-duty vehicles from Class 2b to Class 8.

CARB's Mobile Source Strategy facilitates the adoption of zero emissions buses and trucks. Additionally, CARB's Sustainable Freight Action Plan utilizes near-zero emissions technology and facilitates the deployment of zero emissions trucks.

Furthermore, the SCAQMD Warehouse Indirect Source Rule (ISR) (Rule 2305) requires the warehouse operator to, among other things, acquire zero emissions or near zero emissions trucks, requires zero

emissions/near zero emissions truck visits, requires zero emissions yard trucks, and install on-site zero emissions charging/fueling infrastructure, or pay to SCAQMD a mitigation fee to incentivize the purchase of zero emissions/near zero emissions trucks and charging/fueling infrastructure in communities nearby.

Air Quality and Greenhouse Gas Mitigation

The Draft EIR identifies numerous air quality and GHG mitigation measures to minimize emissions to the greatest extent feasible. Furthermore, Draft EIR *Section 4.8, Greenhouse Gas Emission*, *Table 4.8-4*, demonstrates that the Project would comply with the County's GHG Reduction Measures and would be consistent with the GHG Reduction Plan. Nonetheless, the Draft EIR conservatively concludes that impacts would remain significant and unavoidable due to the size of the Project and its corresponding GHG emissions.

Exceedance of the regional emissions thresholds indicates when emissions reduction mitigation measures would be required. The Draft EIR identifies numerous design features which are part of the initial Project design and have the added benefit of reducing emissions (refer to Draft EIR pages 4.3-21 through 4.3-23). The Draft EIR identifies numerous mitigation measures to minimize emissions to the maximum extent feasible (refer to Draft EIR pages 4.3-38 through 4.3-42 and pages 4.8-31 through 4.8-33).

The Draft EIR Air Quality Section (*Section 4.3*) includes numerous construction and operational mitigation measures. Construction mitigation measures include use of the cleanest equipment available (meeting CARB Tier 4 Final emissions standards) and dust control (MM AQ-1) and low VOC paints (MM AQ-2). Additionally, operational mitigation includes a TDM Program to reduce vehicle trips/miles (MM AQ-3), constructing EV infrastructure (MM AQ-4), conduit for Transport Refrigeration plugins (MM AQ-5), idle limits (MM AQ-6), energy efficient vendor trucks (MM AQ-7), EV charging stations and carpool parking (MM AQ-8), electric/zero emission cargo handling equipment (MM AQ-9), and compliance with SCAQMD Rule 2305 which is also addressed in the Draft EIR and included in mitigation (MM AQ-10) which is a program to incentivize the purchase of cleaner trucks and charging/fueling infrastructure for the project and in the nearby community. Therefore, the Draft EIR GHG mitigation measures comply with State CEQA Guidelines Section 15041 and go above and beyond to meet the essential nexus and rough proportionality standards.

In addition, the Draft EIR GHG Section (*Section 4.8*) includes additional GHG mitigation measures, such as requiring compliance with the County's GHG reduction measures (MM GHG-1), the Draft EIR also requires the project to implement solar energy generation (MM GHG-2), requires energy efficient buildings that exceed the building code standards (MM GHG-3), requires the solid waste diversion (MM GHG-4), and requires the use of 100 percent electrically powered landscape equipment (MM GHG-5).

As explained in the preceding section, state regulations requiring the implementation of near zero or zero emission trucks are expected to substantially reduce the Project's GHG emissions over time, although such reductions are not factored into the Draft EIR's quantification of GHG emissions.

As noted above and in Draft EIR pages 4.8-25 through 4.8-31, the Project would achieve more than 100 points from the County's GHG Reduction Plan Screening tables and would not conflict with the County's GHG Reduction Plan. However, due to the size of the Project, the magnitude of the Project's emissions are conservatively considered significant. Additionally, 86 percent of the total emissions are

from mobile sources. Mitigation measures would be required to reduce emissions to the maximum extent feasible; however, emissions of motor vehicles are controlled by State and Federal standards and the Project has no control over these standards. CARB is addressing emissions from heavy duty vehicles through various regulatory programs including lower emission standards, restrictions on idling, the use of post-combustion filter and catalyst equipment, and retrofits for diesel truck fleets. Additionally, the SCAQMD is addressing mobile source emissions through the implementation of the Warehouse Indirect Source Rule (Rule 2305), which would also reduce the Project's emissions.

Traffic Impacts

Feasible mitigations have been proposed where applicable to reduce the project's environmental impacts. The project will pay Development Impact Fees and Fair-Share towards improvements recommended to alleviate congestion. Transportation Demand Management strategies were used for analysis and are listed below:

- Transit Rerouting
- Transit Stops
- Implement Neighborhood Shuttle
- Mandatory Travel Behavior Change Program
- Promotions & Marketing
- Emergency Ride Home (ERH) Program
- School Carpool Program
- Bike Share
- Implement/Improve On-street Bicycle Facility
- Traffic Calming Improvements
- Pedestrian Network Improvements
- Transportation Management Association (TMA)

Master Response 3

Project Alternatives

Neither a General Plan Amendment nor a Zone Change is required to allow or authorize the uses permitted in the Specific Plan area. Although the Project site currently contains a commercial land use designation, the underlying special development zoning allows for combination of residential, commercial, industrial, agricultural, open space and recreation uses, and similar and compatible uses. A text and map amendment to the Development Code and General Plan will be made to identify the Specific Plan designation on the official map. Additionally, the Project complies with the large majority of County policies established for these land use types. The Project's consistency with County policies is outlined in Draft EIR *Table 4.11-4: Consistency with the Countywide Policy Plan*.

Development of land within the County is dependent on the will of the property owner, who in turn is subject to land use and zoning standards established by the County. As required by CEQA, a reasonable range of alternatives to the Project was also considered for their ability to reduce environmental impacts and meet Project objectives. A Commercial Alternative (Alternative 3) was considered which would involve the development of a commercial and light office warehouse/industrial development that would allow general retail and the uses described in Table 82-17 of Chapter 82.06 of the County's Zoning Code. These uses include:

- General retail - 10,000 sf or less, with or without residential unit
- General retail - More than 10,000 sf, with or without residential unit
- Library, museum, art gallery
- Night Club
- Restaurant, café, coffee shop
- Medical, Profession Service and other office uses
- Commercial entertainment-indoor

After an analysis of the alternative, it was concluded that a commercial alternative would cover a greater square footage than the Project, as commercial and retail traditionally include more lot coverage and are spread out to accommodate commercial storefronts with parking for shoppers and visitors. Additionally, the increased Project size associated with the commercial alternative would likely create greater air quality, GHG, energy and transportation impact due to the increased building footprint and corresponding vehicle trips and emissions. These impacts are of greatest concern to the community and would be exacerbated through the implementation of this alternative. The Commercial Project Alternative would not meet Project objectives including: (1) Maximize the efficient movement of goods through the region; (2) Develop and operate a large format high-cube logistics and e-commerce center that maximizes the use of one of the few remaining large industrial sites; and would partially meet; (4) Develop a high-cube logistics and e-commerce center that is close to Interstate I-10; (7) Develop and operate an attractive large format high-cube logistics and e-commerce center in Southwestern San Bernardino County; (8) Develop a location for siting clean industry; (10) Develop and operate a large format logistics center that limit truck traffic disruption to residential areas; (11) Develop and operate a large format high-cube logistics and e-commerce center that positively contribute to the economy; and (12) Develop and operate employee-intensive facilities as this Alternative would have a smaller footprint and revenue-generating capacity. Therefore, this Alternative was found to be unfavorable relative to the Project.

A Reduced Footprint Alternative (Alternative 2) was also considered which focused on redesigning the Project to reduce the building area by 25 percent. The up to approximately 6.6 million square feet of high-cube logistics/e-commerce use that would be constructed under the Project would be reduced by 1,650,000 square feet to 4,950,000 square feet. The 261,360 square feet of ancillary commercial use would be reduced by 65,340 square feet to 196,020 square feet. Parking fields/drop lots would remain at 98 acres, providing parking for the Auto Club Speedway/future Next Gen in California Project. Open space associated with the water basin and existing storm channel would remain the same at 9.4 acres. Public

right-of-way requirements would also remain the same at 33.7 acres. In some cases, impacts were proportionally less due the 25 percent decrease in building area. However, significant and unavoidable air quality and GHG emissions impacts would remain. This Alternative would meet the Project Objectives to a lesser degree than the Project because the Reduced Footprint Alternative would not allow for the same level of development of the larger high-cube logistics and e commerce facilities and would still require the same level of infrastructure costs; therefore, the Alternative would not fully meet all the Project Objectives, and it was found to be unfavorable relative to the Project. Any smaller facility than Alternative 2 would not fulfill the Project Objectives nor meet demand and would require more smaller facilities resulting in greater impacts from more truck trips.

Lastly, a No Project/No Build Alternative (Alternative 1) was considered consistent with CEQA Guidelines Section 15126.6(e), which assumed that the existing land uses and condition of the Project site at the time the NOP was published (December 13, 2021) would continue to exist without the Project and no development would occur. The No Project/No Build Alternative would avoid all potential significant impacts and significant and unavoidable impacts that would occur from Project construction and operation. The No Project/No Build Alternative would not meet any of the Project Objectives with the exception of partially meeting objective (6) Facilitate the continued operation of the existing Speedway uses at the Next Gen motorsports facility. The No Project/No Build Alternative fails to meet all other Project Objectives such as maximizing the efficient movement of goods throughout the region through developing and operating a large format high-cube logistics and e-commerce center, as the site would remain in its current condition and would not undergo any development.

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San Bernardino County Department of Public Works (R1)

Main Office - 825 East Third Street, San Bernardino, CA 92415-0835 | Phone: 909.387.7910 Fax: 909.387.7911
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SAN BERNARDINO COUNTY

Department of Public Works
- Flood Control
- Operations
- Solid Waste Management
- Special Districts
- Surveyor
- Transportation

Brendon Biggs, M.S., P.E.
Director
Noel Castillo, P.E.
Assistant Director
Trevor Leja
Assistant Director

July 20, 2022

Transmitted Via Email
File: 10(ENV)-4.01

Land Use Services Department
Planning Division
Attn: Steven Valdez, Senior Planner
385 North Arrowhead Avenue, First Floor
San Bernardino, CA 92415-0187
Steven.Valdez@lus.sbcounty.gov

RE: CEQA – NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE SPEEDWAY COMMERCE CENTER II PROJ-2021-000150

Dear Mr. Valdez:

Thank you for allowing the San Bernardino County Department of Public Works the opportunity to comment on the above-referenced project. **We received this request on June 2, 2022** and pursuant to our review, we have the following comments for your consideration and inclusion into public record:

Flood Control Planning & Water Resources Division (Michael Fam, Chief, 909-387-8120):

1. We are aware there may be storm drains in and around the site that may be affected by the proposed Project. When planning for or altering existing or future storm drains, be advised that the Project is subject to the City of Fontana MPD, dated June 1992. It is to be used as a guideline for drainage in the area and is available in the City of Fontana offices. Any revision to the drainage should be reviewed and approved by the jurisdictional agency. Should construction of new, or alterations to existing storm drains be necessary as part of the Proposed Project, their impacts and any required mitigation should be discussed within the EIR before the document is adopted by the Lead Agency. 1

Permits/Operations Support Division (Fong Tse, Chief, 909-387-7995):

1. The proposed Project is located adjacent to a San Bernardino County Flood Control District (SBCFCD) right-of way and facilities (1-803-4A) Banana Basin, (1-809-GA/B) West Fontana Channel, (1-811-4A) Hickory Basin and (1-801-IG) San Sevaine Channel. Any encroachments including, but not limited to access for grading, fence removal and installation, side drain connections, utilities, and new street dedications on the District's right-of-way or facilities will require a permit from the SBCFCD prior to start of construction. The necessity for permits, and any impacts associated with them, should be addressed in the EIR prior to adoption and certification. If you have any questions regarding this process, please contact the FCD Permit Section at (909) 387-1863 2

BOARD OF SUPERVISORS
Col. Paul Cook (Ret.) First District | Janice Rutherford Second District | Dawn Rowe Vice Chair, Third District | Curt Hagman Chairman, Fourth District | Joe Baca, Jr. Fifth District
Leonard X. Hernandez Chief Executive Officer

We respectfully request to be included on the circulation list for all project notices, public reviews, or public hearings. In closing, I would like to thank you again for allowing the San Bernardino County Department of Public Works the opportunity to comment on the above-referenced project. Should you have any questions or need additional clarification, please contact the individuals who provided the specific comment, as listed above.

3

Sincerely,

Anthony Pham P.E,
Chief,
Environmental Management

Response to Comment Letter R1 – San Bernardino County of Department of Public Works

R1-1 The commenter provides general introductory and background information. Further the commenter notes that the Project is subject to the City of Fontana MPD. New sewer and storm drainage facilities are proposed in Streets "A," "B," "C," and "D" with additional storm drainage placed along the western boundary of the Project site. Future development would comply with relevant regulations, including the Fontana Master Drainage Plan. Impacts related to the Project, alterations of facilities, and new utility infrastructure, including storm drain facilities are further discussed in Draft EIR *Section 4.19, Utilities and Service Systems*.

R1-2 Commenter notes the location of the Project in relation to San Bernardino County Flood Control District (SBCFCD) facilities and permit requirements. Project development will seek approvals from applicable agencies and regulatory bodies, including the SBCFCD. All impacts associated with improvements to the SBCFCD facilities were evaluated and are further discussed in Draft EIR *Section 4.19, Utilities and Service Systems*.

R1-3 The comment requests to be included on the circulation list for all Project notices, public reviews, or public hearings, and is noted for the record. The San Bernardino County Department of Public Works has been added to the Project's circulation list and will be notified of any Project notices including upcoming meetings or hearings.

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South Coast Air Quality Management (R2)

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA E-MAIL: July 15, 2022
Steven.Valdez@lus.sbcounty.gov
Steven Valdez, Senior Planner
909-387-3067
County of San Bernardino
Land Use Services Department - Planning Division
385 North Arrowhead Avenue, First Floor
San Bernardino, California 92415-0187

Draft Environmental Impact Report (DEIR) for the Proposed Speedway Commerce Center II Specific Plan Project (Proposed Project) (SCH No.: 2021120259)

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to comment on the above-mentioned document. The County of San Bernardino is the California Environmental Quality Act (CEQA) Lead Agency for the Proposed Project. The following comments on the Draft EIR include recommended revisions to the Localized Significance Thresholds (LST) Analysis and Health Risk Assessment (HRA), existing air quality project design features, and mitigation measures.

Based on the Draft EIR, the Proposed Project consists of construction and operation of 433 acres that encompasses development of six different planning areas. The aforementioned consists largely of up to approximately 6,600,000 square feet of high-cube logistics and e-commerce, 261,360 square feet of ancillary commercial uses, and approximately 98 acres of parking fields.[1] The Proposed Project is located on the northwest corner of Entry Road and Cherry Avenue in the unincorporated portion of southwestern San Bernardino County within the City of Fontana sphere of influence.[2] Construction of the Proposed Project will occur over four phases, starting in the year 2023 with an anticipated completion year of 2027.[3] Each construction phase is estimated to last about 12 months.[4]

The Proposed Project will include 23 project design features (PDFs) for air quality.[5] These include features such as requiring tenant/facility operators ensure heavy-duty vehicles accessing the Proposed Project site are equipped with model year 2010 or newer engines and be zero-emission beginning in 2030, if such trucks are widely available and economical feasible, among other requirements.[6] The Proposed Project will also include 10 mitigation measures (MMs) for air quality.[7] These include mitigation measures such as requiring that all off-road diesel-powered construction equipment greater than 50 horsepower meets California Air Resource Board Tier 4

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[1] Draft EIR. Section 3.6 Proposed Project. Page 3-16 through 3-26.
[2] *Ibid.* Section 1.2 Project Overview. Page 1-3.
[3] *Ibid.* Section 2.0 Introduction. Page 2-1.
[4] *Ibid.* Section 4.9.5 Impacts and Mitigation Measures. Page 4.9-14
[5] *Ibid.* Section 4.3.4 Impact Thresholds and Significance Criteria. Page 4.3-21 through 4.3-23.
[6] *Ibid.*
[7] *Ibid.* Section 4.3.5 Impacts and Mitigation Measures. Page 4.3-38 through 4.3-42.

Final emission standards or incorporate CARB Level 3 Verified Diesel Emission Control Strategy (VDECS), and requiring that all construction on-road haul trucks be model year 2010 or newer if diesel-fueled, among other requirements.[8] Once operational, the Proposed Project is anticipated to generate a maximum of 43,549 trips per day, 9,865 of which would be made by trucks.[9,10]

The potential tenants and end users of the Proposed Project Site are unknown at the time of the release of the draft EIR.[11] Mitigation measure AQ-4, however, states that prior to the issuance of a building permit, the Planning Department shall confirm that the Proposed Project is designed so that the buildings' electrical room supports additional panels that may be needed to supply power to trailers with transport refrigeration units (TRUs) during the loading/unloading of refrigerated goods, if required by future tenants who utilize cold storage.[12] Based on the Draft EIR, the nearest existing sensitive receptor is within 410 feet of the Proposed Project site (single family residence), and the nearest school, Redwood Elementary School, is about 1,370 feet from the Proposed Project site.[13]

1

Based on a review of the Draft EIR, South Coast AQMD staff has three main comments. A summary of these comments is provided as follows with additional details provided in the attachment.

1. Recommended Revisions to the LST Analysis and HRA: The estimated on-site emissions from the Proposed Project were compared to the South Coast AQMD's LST to determine the significance for localized Air Quality Impacts for both project construction and operation. The on-site Diesel Particulate Matter (DPM) emissions from the mobile source exhaust were also estimated and used to perform the HRA. However, staff found the on-site emissions from the haul trucks and yard trucks[14] in project construction and container/trailer trucks and TRUs in project operation were not included, under-estimated, or improperly calculated in the analyses. It is recommended to revise the LST analysis and HRA to include those emissions correctly.

2

2. Recommended Revisions to Existing Mitigation Measure (MM) AQ-1: In the Draft EIR, construction of the Proposed Project is found to have significant and unavoidable regional air quality impacts for NOx and CO emissions, even after implementation of the stated mitigation measures.[15] Haul truck exhaust is the primary source of NOx emissions during construction of the Proposed Project.[16] The Lead Agency included MM AQ-1, which requires that construction on-road haul trucks shall be model year 2010 or newer if

3

[8] *Ibid.* Section 4.3.5 Impacts and Mitigation Measures. Page 4.3-38.
[9] *Ibid.* Section 4.3.4 Impact Thresholds and Significance Criteria. Page 4.3-19.
[10] *Ibid.* Section 4.13.5 Impacts and Mitigation Measures. Page 4.13-22.
[11] *Ibid.* Section 4.3.4 Impact Thresholds and Significance Criteria. Page 4.3-20.
[12] *Ibid.* Section 4.3.5 Impacts and Mitigation Measures. Page 4.3-41
[13] Appendix C-AQ_HRA. Section 2.3 Sensitive Receptors. Page 10.
[14] *Ibid.* For example Section 5.1, Table 20. Page 49. Emissions from Haul Trucks and Yard Trucks are not included in this table.
[15] Draft EIR. Section 4.3.5 Impacts and Mitigation Measures. Page 4.3-26 through Page 4.3-29.
[16] Appendix C-AQ_HRA. Section 5 Potential Impacts and Mitigation. Page 32.

diesel-fueled.[17] About 129,418 maximum haul truck trips are expected during construction for Phase 1A,[18] about 86,803 maximum haul truck trips for construction phase 1B,[19] about 104,578 maximum haul truck trips for construction Phase 2,[20] and about 1,879 maximum haul truck trips for the Commercial construction phase.[21] This would result in a maximum of 367 lbs of NOx emissions per day in Phase 1A and 255 lbs, 263 lbs, and 10 lbs of maximum NOx emissions per day in the remaining phases, respectively.[22] Given the close proximity of sensitive receptors, the Lead Agency should commit to not only 2010 or new diesel haul trucks, but also commit to near-zero and zero-emission haul trucks during construction. 3

3. Recommended Revisions to Existing Air Quality Project Design Features (PDFs) or Mitigation Measures: Once operational the Proposed Project is anticipated to generate a maximum of 43,549 trips per day, 9,865 of which would be made by trucks.[23,24] In the Draft EIR, the Lead Agency incorporated two PDFs (PDF AQ-9, PDF AQ-10) which would require implementation of cleaner operational vehicles, including zero-emission light duty, medium-duty, and heavy-duty trucks. These PDFs, however, will only be implemented by the Lead Agency when such trucks are "widely available and economically feasible".[25] South Coast AQMD staff recommends that the Lead Agency provide additional information on how "widely available and economically feasible" will be defined and determined in the Final EIR. 4

Pursuant to California Public Resources Code Section 21092.5(a) and CEQA Guidelines Section 15088(b), South Coast AQMD staff requests that the Lead Agency provide South Coast AQMD staff with written responses to all comments contained herein prior to the certification of the Final EIR. In addition, issues raised in the comments should be addressed in detail giving reasons why specific comments and suggestions are not accepted. There should be good faith, reasoned analysis in response. Conclusory statements unsupported by factual information will not suffice (CEQA Guidelines Section 15088(c)). Conclusory statements do not facilitate the purpose and goal of CEQA on public disclosure and are not meaningful, informative, or useful to decision makers and to the public who are interested in the Proposed Project. Further, if the Lead Agency makes the finding that the recommended revisions to the existing PDFs or mitigation measures are not feasible, the Lead Agency should describe the specific reasons supported by substantial evidence for rejecting them in the Final EIR (CEQA Guidelines Section 15091).

South Coast AQMD staff is available to work with the Lead Agency to address any air quality questions that may arise from this comment letter. Please contact Evelyn Aguilar, Air Quality Specialist, at eaguilar@aqmd.gov, should you have any questions or wish to discuss the comments. 5

[17] Draft DEIR. Section 4.3.5 Impacts and Mitigation Measures. Page 4.3-38.
[18] Appendix C-AQ_HRA. Air Quality Modeling Data. Page 200.
[19] *Ibid.* Page 836.
[20] *Ibid.* Page 1,474.
[21] *Ibid.* Page 1,908.
[22] *Ibid.* Page 201 through 1912.
[23] Draft EIR. Section 4.3.4 Impact Thresholds and Significance Criteria. Page 4.3-19.
[24] *Ibid.* Section 4.13.5 Impacts and Mitigation Measures. Page 4.13-22.
[25] Appendix C-AQ_HRA. Section 4.3 Project Design Features. Page 25.

Steven Valdez, Senior Planner July 15, 2022

Sincerely,

Sam Wang

Sam Wang
Program Supervisor, CEQA IGR
Planning, Rule Development & Implementation

5

SW:EA
SBC220602-01
Control Number

4

Steven Valdez, Senior Planner July 15, 2022

ATTACHMENT

South Coast AQMD Staff's Summary of Air Quality Analysis and Health Risk Assessment in the Draft EIR

In the Air Quality Analysis Section of the Draft EIR, the Lead Agency quantified the Proposed Project's maximum daily construction emissions. The Lead Agency considered four different construction phases: Phase 1a, Phase 1b, Phase 2, and Commercial. The Lead Agency compared the Proposed Project's construction emissions to South Coast AQMD's recommended regional air quality CEQA significance thresholds. Based on the analysis, the Lead Agency found that emissions from Phase 1a would result in significant regional air quality impacts from NOx and CO emissions, even with implementation of MM AQ-1, which requires off-road construction equipment greater than 50 brake horsepower meet CARB Tier Final Emissions Standards. [26] The Lead Agency also found that emissions from Phase 1b and Phase 2 would result in significant regional air quality impacts from NOx, even with implementation of MM AQ-1.[27] Finally, the Lead Agency found that emissions from the Commercial construction phase would be less than significant.[28]

The Lead Agency also considered five different operational phases: Phase 1a, Phase 1b, Phase 2, Commercial, and Project Buildout (Overlapping Construction and Operations). Based on the analysis, the Lead Agency found that emissions from Phase 1a would result in significant regional air quality impacts from VOC, NOx, PM10 and PM2.5 emissions even with implementation of MMs,[29] Phase 1b would result in significant regional air quality impacts from VOC, NOx, and PM10 emissions even with implementation of MMs,[30] and Phase 2b would result in significant regional air quality impacts from VOC and NOx emissions even with implementation of MMs.[31] The Lead Agency found that emissions from the Commercial operation phase would be less than significant.[32] Project Buildout would also result in significant air quality impacts from VOC, NOx, CO, PM10 and PM2.5 emissions even with implementation of MMs.[33] MMs AQ-2 through MM AQ-9 require the following: contractual specifications to use zero emission/electric-powered outdoor cargo handling equipment during operations (e.g. forklifts and yard trucks), contractual language that requires all TRUs entering the Project site be plug-in capable, postage of idling restriction signage, prepare and submit a transportation demand management program, utilize low VOC architectural coatings with no more than 10g/L of VOC, among other requirements.[34]

In the Draft EIR, the Lead Agency also quantified the Proposed Project's localized construction and operational emissions and compared them to the applicable South Coast AQMD's localized significance thresholds. The Lead Agency quantified this for construction phases 1a, 1b, 2, and Commercial, and operational phases 1a, 1b, 2, Commercial, and Project Buildout. Based on the

[26] Draft EIR. Section 4.3.5 Impacts and Mitigation Measures. Page 4.3-27.
[27] *Ibid*. Page 4.3-28 through 4.3-29.
[28] *Ibid*. Page 4.3-29.
[29] *Ibid*. Page 4.3-30.
[30] *Ibid*. Page 4.3-32.
[31] *Ibid*. Page 4.3-34 through 4.3-35.
[32] *Ibid*. Page 4.3-34.
[33] *Ibid*. Page 4.3-35.
[34] *Ibid*. Page 4.3-38 through 4.3-42.

5

analysis, the Lead Agency found that the Proposed Project's localized construction and operational air quality impacts would be less than significant.[35]

Additionally, the Lead Agency calculated cancer risks from the Proposed Project's construction and operational activities and found that they would result in a maximum cancer risk of 88.53 in one million, which would exceed South Coast AQMD's CEQA significance threshold of 10 in one million for cancer risk. With Implementation of MM AQ-1 through MM AQ-9, the maximum cancer risk would be reduced to 8.18 in one million, which would be below the significance threshold.[36]Finally, the Lead Agency discussed South Coast AQMD Rules 2305, 2202, 1166, 1403, and 1466 in the Draft EIR.[37,38,39]

South Coast AQMD staff's detailed comments on the Draft EIR are provided as follows.

1. **Recommended Revisions to the LST and HRA:**
In Appendix C - Air Quality Assessment of the DEIR, the estimated on-site emissions from the Proposed Project were compared to the South Coast AQMD's LST to determine the significance for localized Air Quality Impacts for both project construction and operation. The on-site DPM emissions from the mobile source exhaust were also estimated and used to perform the HRA. However, staff found the on-site emissions (including idling, exhaust, cold-starts, fugitive, and etc.) from the haul trucks and yard trucks[40] in project construction and container/trailer trucks and TRUs in project operation[41] were not included, under-estimated, or improperly calculated in the analyses. The idling and running emissions from those on-road and off-road heavy-heavy-duty diesel engine trucks in the area of over 400 acres could be substantial and have the potential to change the findings of not significant in localized air quality impact and cancer risk impact to significant. It is recommended to revise the LST analysis and HRA to include those emissions correctly.

2. **Recommended Revisions to Existing Mitigation Measure (MM) AQ-1**
In the Draft EIR, the Lead Agency found that the Proposed Project would result in significant and unavoidable regional air quality impacts from NOx and CO emissions during construction. Haul truck exhaust is the primary source of NOx emissions during construction of the Proposed Project.[42] About 129,418 maximum haul truck trips are expected during construction for Phase 1A,[43] about 86,803 haul truck trips for construction phase 1B,[44] about 104,578 haul truck trips for construction Phase 2,[45] and about 1,879 haul truck trips for the Commercial construction

[35] Draft EIR. Section 4.3.5 Impacts and Mitigation Measures. Page 4.3-43 through 4.3-46.
[36] *Ibid*. 4.3-52 through 4.3-53.
[37] *Ibid.* Section 4.3.4 Impact Thresholds and Significance Criteria. Page 4.3-23.
[38] *Ibid.* Section 4.3.6 Cumulative Impacts. Page 4.3-55.
[39] *Ibid.* Section 4.9.3 Regulatory Setting. Page 4.9-12.
[40] Appendix C-AQ_HRA. For example Section 5.1, Table 20. Page 49. Emissions from Haul Trucks and Yard Trucks are not included in this table.
[41] *Ibid.* For example in Section 5, the assumptions in CalEEMod which use 3% total emissions for the on-site emissions, are not conservative – needs more robust scientific evidence to support this assumption.
[42] Appendix C-AQ_HRA. Section 5 Potential Impacts and Mitigation. Page 37.
[43] Appendix C-AQ_HRA. Air Quality Modeling Data. Page 200.
[44] *Ibid.* Page 836.
[45] *Ibid.* Page 1,474.

phase.[46] This would result in a maximum of 367 lbs of NOx emissions per day in Phase 1A and 255 lbs, 263 lbs, and 10 lbs of maximum NOx emissions per day in the remaining phases, respectively.[47] CEQA requires that the Lead Agency consider mitigation measures to minimize significant adverse impacts (CEQA Guidelines Section 15126.4) and that all feasible mitigation measures that go beyond what is required by law be utilized to minimize or eliminate any significant adverse impacts. The Lead Agency included MM AQ-1, which, among other requirements, requires that construction on-road haul trucks shall be model year 2010 or newer if diesel-fueled.[48] Given the close proximity of sensitive receptors, South Coast AQMD staff recommends that the Lead Agency consider including the following construction air quality mitigation measures in the Final EIR to further reduce the Proposed Project's significant and unavoidable air quality impacts during construction.

Technology is transforming the goods transport and movement sector at a rapid pace. ZE or NZE construction equipment and trucks are already commercially available and in-use. Therefore, the Lead Agency should use good-faith efforts to identify the available types of ZE or NZE construction equipment and trucks in the Final EIR and require their uses by the construction start date for Phase 1a in 2023.[49]

Clean construction equipment and trucks will become increasingly more feasible and commercially available as technology advances. If using ZE or NZE technologies is not feasible today, it could become feasible in a reasonable period of time during the Proposed Project's construction schedule which was conservatively analyzed to begin in 2023 and end in 2027 (CEQA Guidelines Section 15364).[50] Therefore, it is recommended that the Lead Agency include considerations of potential cleaner technologies that will become feasible and available during the construction period of the Proposed Project and develop a process with performance standards to require and/or accelerate the deployment of the lowest emission technologies and the utilization of ZE or NZE construction equipment and trucks (CEQA Guidelines Section 15126.4(a)). The Lead Agency can and should develop the following performance standards or any other comparable standards in the Final EIR.

- Develop a minimum amount of ZE or NZE construction equipment and trucks that the Proposed Project must use each year during construction to ensure adequate progress. Include this requirement in the Proposed Project's Construction Management Plan.

- Establish a contractor(s) selection policy that prefers contractor(s) who can supply and use ZE or NZE construction equipment and heavy-duty trucks during construction. Include this policy in the Request for Proposal, procurement documents, and purchase order(s) for selecting contractor(s).

- Establish a policy to select and use vendors that use ZE or NZE heavy-duty trucks. Include this policy in the vendor contracts.

[46] *Ibid.* Page 1,908.
[47] *Ibid.* Page 201 through 1912.
[48] Draft EIR. Section 4.3.5 Impacts and Mitigation Measures. Page 4.3-38.
[49] Draft EIR. Section 4.3.4 Impact Thresholds and Significance Criteria. Page 4.3-16.
[50] *Ibid.* Section 2.0 Introduction. Page 2-1.

- Establish a purchasing policy to purchase and receive materials from vendors that use ZE or NZE heavy-duty trucks to deliver materials. Include this policy in the procurement documents and purchase orders with vendors.

3. **Recommended Revisions to Existing Air Quality Project Design Features (PDFs)**
Once operational the Proposed Project is anticipated to generate a maximum of 43,549 trips per day, 9,865 of which would be made by trucks.[51,52] In the Draft EIR, the Lead Agency incorporated 23 PDFs related to air quality. Two PDFs (PDF AQ-9, PDF AQ-10) would require implementation of cleaner operational vehicles, including zero-emission light-duty, medium-duty, and heavy-duty trucks. These PDFs, however, will only be implemented by the Lead Agency when such trucks are "widely available and economically feasible".[53] South Coast AQMD staff recommends that the Lead Agency provide additional information on how "widely available and economically feasible" will be defined and determined in the Final EIR. The recommended information would establish a clear set of standards and criteria for assessing the technological, commercial, and economic availability and feasibility of using cleaner operational vehicles, provide public transparency in the Lead Agency's decision-making regarding cleaner operational vehicles, demonstrate a commitment by the Lead Agency to using cleaner operational vehicles, ensure implementation when they are available, strengthen the Proposed Project's air quality commitments, and facilitate the purpose and goal of CEQA on public disclosure.

[51] *Ibid.* Section 4.3.4 Impact Thresholds and Significance Criteria. Page 4.3-19.
[52] *Ibid.* Section 4.13.5 Impacts and Mitigation Measures. Page 4.13-22.
[53] Appendix C-AQ_HRA. Section 4.3 Project Design Features. Page 26.

Responses to Comment Letter R2 – South Coast Air Quality Management District

R2-1 Comment noted. The commenter provides general introductory and background information as well as a summary of the Project, existing nearby sensitive receptors, and air quality analysis. The County appreciates and values these comments during the EIR participation process. Responses to specific comments are provided below; no further response is required.

R2-2 **(This response also responds to Attachment Comment 1)** The comment states that the on-site truck emissions are not included in LST construction emissions analysis. The Project's construction and operational emissions were quantified with the California Emissions Estimator Model (CalEEMod). CalEEMod was developed for the California Air Pollution Officers Association (CAPCOA) in collaboration with the California Air Districts (including the SCAQMD). Default data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California Air Districts to account for local requirements and conditions. However, the types and amount of construction equipment as well as number and trip length of construction hauling truck and deliveries have been modified (i.e., default values have been increased) to accurately represent the project.

Construction

The CalEEMod outputs in the Draft EIR (see *Appendix C*) delineate on- and off-site emissions. On-site emissions occur from fugitive dust and off-road construction equipment exhaust. CalEEMod includes off-site exhaust emissions from hauling trips, vendor trips, and worker trips for each stage of the construction during different phases of the project. Draft EIR *Table 4.3-19: Localized Significance of Construction Emissions* summarizes the total on-site emissions provided in CalEEMod. It should be noted that CalEEMod does not indicate a proportion of the off-site hauling, vendor, and worker exhaust emissions that should be expected to occur on-site. The SCAQMD also does not provide a recommendation or methodology for determining the proportion of off-site emissions that would occur on-site. As such, the LST analysis in the Draft EIR uses the emissions in the CalEEMod outputs labeled as "on-site" to evaluate the on-site LST emissions. SCAQMD does not provide standards, guidance, or methodology describing that off-site emissions should also be considered to occur on-site or how much of the off-site emissions should be assumed to occur on-site. On-site emissions from off-site Project construction sources such as hauling and vendor trucks and worker trips are anticipated to be nominal.

Nonetheless, in order to fully respond to the comment, a proportion of the off-site emissions have been estimated to occur on-site, combined with on-site emissions, and compared to the LST thresholds, as reflected in the table below. Total off-site hauling trips modeled in CalEEMod would have a weighted trip length of 37 to 42 miles (depending on phase), and vendor and worker trips would have a trip length of 6.9 and 14.7 miles, respectively. The Project would be constructed in three distinct phases (1a, 1b, and 2) and a conservative one-way on-site trip assumption is approximately 0.5 miles across the longest side Phase 1a (i.e., the phase with the largest area). Therefore, a one-mile off-site trip length expected to occur on-site is a conservative assumption. It should be noted that the mobile source emissions calculations in CalEEMod include running, idling, break wear/tire wear, and startup exhaust, among others. The proportion one mile out of

the total off-site mileage would be 2.7 percent in Phase 1a, 2.6 percent in Phase 1b, 2.4 percent in Phase 2 and would include idle, exhaust, cold start, and fugitive emissions. The table below shows the construction on-site emissions provided in the Draft EIR *Table 4.3-19* and includes an additional proportion of the off-site emissions as on-site. The added on-site emissions associated with Hauling Trips, Vendor Trips, and Worker Trips are shown as underlined text to indicate what has been added for this response. The table below shows that even when adding up the overlap emissions, the LST thresholds would still not be exceeded for all the stages and phases and therefore would not change the Draft EIR's findings of not significant in localized air quality impact and cancer risk impact.

Localized Significance of Construction Emissions				
Construction Activity	**Emissions (Maximum Pounds Per Day)**			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
Phase 1a				
Demolition	4.32	23.08	15.46	2.49
Hauling Trips	0.60	0.18	0.09	0.03
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.04	0.01	0.00
Total	**4.92**	**23.29**	**15.56**	**2.52**
Road Construction/Utilities	3.28	36.76	7.38	3.84
Hauling Trips	0.00	0.00	0.00	0.00
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.08	0.02	0.01
Total	**3.28**	**36.84**	**7.40**	**3.85**
Excavation/Mass Grading	136.60	135.29	14.82	6.93
Hauling Trips	8.07	1.76	1.41	0.45
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.01	0.16	0.05	0.01
Total	**144.68**	**137.21**	**16.27**	**7.39**
Concrete Pour/Building Construction	49.70	527.16	1.64	1.61
Hauling Trips	0.83	0.24	0.13	0.04
Vendor Trips	7.84	3.21	1.35	0.43
Worker Trips	0.63	9.56	2.71	0.73
Total	**59.00**	**540.18**	**5.83**	**2.81**
Paving/Landscaping/Site Finishes	13.84	73.72	0.50	0.47
Hauling Trips	0.42	0.12	0.06	0.02
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.01	0.16	0.05	0.01
Total	**14.27**	**74.00**	**0.61**	**0.50**
Architectural Coating	3.91	5.43	0.21	0.21
Hauling Trips	0.00	0.00	0.00	0.00
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.13	1.91	0.54	0.15
Total	**4.04**	**7.34**	**0.75**	**0.36**
Combined Demolition, Road Construction/ Utilities, and Excavation/Mass Grading	**152.89**	**192.17**	**39.24**	**13.76**
SCAQMD Localized Screening Threshold	*405*	*5,240*	*75*	*22*

Localized Significance of Construction Emissions				
Construction Activity	**Emissions (Maximum Pounds Per Day)**			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
(adjusted for 5 acres at 125 meters)				
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**
Phase 1b				
Demolition	4.15	23.07	9.28	1.54
Hauling Trips	0.34	0.10	0.05	0.02
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.04	0.01	0.00
Total	**4.50**	**23.21**	**9.34**	**1.56**
Road Construction/Utilities	3.63	33.30	7.39	3.85
Hauling Trips	0.00	0.00	0.00	0.00
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.07	0.02	0.01
Total	**3.63**	**33.37**	**7.41**	**3.86**
Excavation/Mass Grading	127.19	132.57	14.38	6.61
Hauling Trips	5.58	1.22	0.97	0.31
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.01	0.15	0.05	0.01
Total	**132.78**	**133.94**	**15.39**	**6.93**
Concrete Pour/Building Construction	34.30	319.91	1.13	1.11
Hauling Trips	0.50	0.15	0.08	0.02
Vendor Trips	5.48	2.19	0.94	0.30
Worker Trips	0.39	6.16	1.88	0.51
Total	**40.67**	**328.40**	**4.02**	**1.94**
Paving/Landscaping/Site Finishes	13.70	61.19	0.49	0.49
Hauling Trips	0.23	0.07	0.03	0.01
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.01	0.15	0.05	0.01
Total	**13.94**	**61.41**	**0.57**	**0.51**
Architectural Coating	3.66	5.43	0.18	0.18
Hauling Trips	0.00	0.00	0.00	0.00
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.08	1.23	0.38	0.10
Total	**3.74**	**6.66**	**0.56**	**0.28**
Combined Demolition, Road Construction/ Utilities, and Excavation/Mass Grading	**140.91**	**190.52**	**32.15**	**12.35**
SCAQMD Localized Screening Threshold (adjusted for 5 acres at 125 meters)	*405*	*5,240*	*75*	*22*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**
Phase 2				
Demolition	4.00	19.42	10.16	1.66
Hauling Trips	0.34	0.10	0.05	0.02
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.03	0.01	0.00
Total	**4.35**	**19.55**	**10.22**	**1.68**
Road Construction/Utilities	3.28	31.16	7.38	3.84

Localized Significance of Construction Emissions				
Construction Activity	**Emissions (Maximum Pounds Per Day)**			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
Hauling Trips	0.00	0.00	0.00	0.00
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.07	0.02	0.01
Total	**3.28**	**31.23**	**7.40**	**3.85**
Excavation/Mass Grading	106.00	109.15	13.54	5.83
Hauling Trips	5.40	1.19	0.95	0.30
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.01	0.14	0.05	0.01
Total	**111.41**	**110.48**	**14.53**	**6.14**
Concrete Pour/Building Construction	32.91	318.69	1.08	1.08
Hauling Trips	0.39	0.11	0.06	0.02
Vendor Trips	3.33	1.32	0.57	0.18
Worker Trips	0.21	3.48	1.14	0.31
Total	**36.83**	**323.60**	**2.86**	**1.59**
Paving/Landscaping/Site Finishes	12.37	60.10	0.44	0.42
Hauling Trips	0.16	0.05	0.03	0.01
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.01	0.14	0.05	0.01
Total	**12.54**	**60.29**	**0.51**	**0.44**
Architectural Coating	3.44	5.43	0.15	0.15
Hauling Trips	0.00	0.00	0.00	0.00
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.04	0.70	0.23	0.06
Total	**3.48**	**6.13**	**0.38**	**0.21**
Combined Demolition, Road Construction/ Utilities, and Excavation/Mass Grading	**119.04**	**161.26**	**32.16**	**11.67**
SCAQMD Localized Screening Threshold (adjusted for 5 acres at 125 meters)	*405*	*5,240*	*75*	*22*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**
Commercial Phase				
Demolition	2.00	19.42	7.23	1.15
Hauling Trips	0.51	0.15	0.08	0.03
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.03	0.01	0.00
Total	**2.51**	**19.60**	**7.32**	**1.18**
Grading	3.30	26.33	3.51	1.46
Hauling Trips	0.00	0.00	0.00	0.00
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.04	0.01	0.00
Total	**3.30**	**26.37**	**3.52**	**1.46**
Building Construction	2.57	16.08	0.08	0.08
Hauling Trips	0.00	0.00	0.00	0.00
Vendor Trips	0.46	0.18	0.08	0.02
Worker Trips	0.02	0.40	0.14	0.04
Total	**3.05**	**16.66**	**0.30**	**0.14**

Localized Significance of Construction Emissions				
Construction Activity	**Emissions (Maximum Pounds Per Day)**			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
Paving	1.22	14.58	0.04	0.04
Hauling Trips	0.00	0.00	0.00	0.00
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.03	0.01	0.00
Total	**1.22**	**14.61**	**0.05**	**0.04**
Architectural Coating	1.15	1.81	0.05	0.05
Hauling Trips	0.00	0.00	0.00	0.00
Vendor Trips	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.08	0.03	0.01
Total	**1.15**	**1.89**	**0.08**	**0.06**
Combined Building Construction, Paving, and Architectural Coatings	**5.43**	**33.16**	**0.43**	**0.24**
SCAQMD Localized Screening Threshold (adjusted for 5 acres at 125 meters)	*405*	*5,240*	*75*	*22*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**
NO_X = Nitrogen Oxides; CO = Carbon Monoxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less				
Source: CalEEMod version 2020.4.0. Refer to Draft EIR *Appendix C* (Appendix A of the Air Quality Assessment) for model outputs.				

Operations

Regarding the operational LST analysis, TRU emissions were included in the analysis (refer to Draft EIR *Table 4.3-20: Localized Significance of Operational Emissions*). Pursuant to MM AQ-10, yard trucks are required to be electric and would not contribute to on-site emissions. Additionally, three percent total emissions for off-site mobile source emissions were assumed to also occur on-site (see Localized Operational Significance Analysis discussion on Draft EIR page 4.3-45). This is a reasonable approach because the site is 1.5 miles across, which is a worst-case assumption for a one-way truck trip. It should be noted that trucks would not be traversing the entire project site. Instead, a truck would travel directly to the building that it needs to access. Therefore, the Draft EIR's methodology of assuming three percent of the off-site emissions would also occur on-site (i.e., one mile out of the total 33.2-mile truck trip length modeled equals three percent) is a conservative representation of vehicles traveling, idling, and maneuvering onsite.

Therefore, the LST construction and operational analysis does not need to be revised and the EIR does not need to be recirculated.

Health Risk Assessment (HRA)

The construction HRA models on-site and off-site construction. Refer to Section 4.2: Methodology of the HRA in Draft EIR *Appendix C* which identifies that on-road truck trips were included in the assessment. It should be noted that operational on-and off-site emissions from truck movements and Transport Refrigeration Units (TRU), as well as truck idling emissions were calculated using CARB EMFAC2021 and OFFROAD2021 emissions rates. The off-site emissions modeling includes truck and TRU emissions occurring on the surrounding roads that trucks would use to access the

project site. An idling time of 15 minutes per truck was used per SCAQMD recommendations. Although the Project is required to comply with CARB's idling limit of 5 minutes, the SCAQMD recommends the on-site idling emissions should be estimated for 15 minutes of truck idling, which would take into account on-site idling that occurs while the trucks are waiting to pull up to the truck bays, idling at the bays, idling at check-in and check-out, etc.

Additionally, the HRA was prepared in accordance with the SCAQMD Guidance: *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis* (August 2003) and SCAQMD Modeling Guidance for AERMOD (https://www.aqmd.gov/home/air-quality/meteorological-data/modeling-guidance). The HRA also quantifies emissions from yard trucks and on-site equipment and identifies Mitigation Measure AQ-9, which requires zero emissions cargo handling equipment (e.g., forklifts, yard trucks, hostlers, etc.) to reduce on-site emissions.

Furthermore, as described on Draft EIR pages 4.3-19 and 4.3-20, the air quality and HRA emissions analyses assumed a conservative maximum number of trips that could be associated with the project. For instance, if the Project were to develop with 6.6 million square feet of high-cube logistics uses only, the number of trips associated with the Project would be less than if the Project were to develop with the assumed 2,641,000 million square feet of high-cube logistics and 2,773,050 million square feet of e-commerce uses due to the higher intensity of trips generated with e-commerce uses. Potential tenants and end users are unknown at this time; therefore, the exact square footage allocation between high-cube logistics and e-commerce uses cannot be determined at this time. Therefore, future development of high-cube logistics and e-commerce uses within the Project site would occur in a combination that would not exceed the maximum number of vehicle trips analyzed within the Draft EIR, which represents a conservative, worst-case scenario.

R2-3 **(This response also responds to Attachment Comment 2)** The comment asks for the commitment to use zero-emission or near-zero emissions trucks and construction equipment during construction years of the Project. The Project Applicant, in consultation with their construction contractor, identified the list of equipment necessary for construction of the Project, including which equipment may be alternatively fueled. The construction contractor reviewed the existing equipment in their fleet that would be used for the Project and contacted their subcontractors to determine the available equipment and trucks that would be used. Alternative fuel and electric construction equipment (including excavators, wheel loaders, and soil compactors) that are commercially available are compact, medium-duty, and have limited capacity and capabilities when viewed in the context of a major construction project like the proposed Project. The vast majority of earth moving activities at the Project site would require heavy-duty capabilities beyond those of the zero emissions equipment recommended by the SCAQMD. A review of commercially available alternative fueled construction equipment was conducted by the construction contractor. The construction contractor has indicated that currently there are no zero emissions or near zero emissions equipment available in the marketplace for the earthwork operations necessary to construct the Project because the available zero emissions and near zero

emissions equipment is typically too small for the type of work that would be performed. The types of heavy-duty on-road trucks for the activities required for the Project construction (e.g., soil import/export, transport of steel and pre-cast concrete structure elements and materials) are typically larger trucks (Class 8 trucks with a displacement greater than 10 liters) than those currently available with zero emission or near-zero emission technology. Furthermore, in response to the commenter's concern, the contractor has reached out to the major trades (earthwork, concrete, mechanical, electrical fire protection) and no subcontractor has construction trucks and/or heavy-duty trucks that are zero emissions or near zero emissions (all are diesel powered). However, the on-site smaller construction equipment such as scissor lifts, grade-alls, and forklifts are propane powered.

Zero emissions and near zero emissions trucks are available but with limited applicability to construction-related activities for the reasons mentioned above. There are limitations related to the availability/suitability of electric construction equipment. The types of electric construction equipment that are available are compact electric equipment with limited capacity and capabilities, and are not suitable to support a major construction project such as the Project.

PDF AQ-1 requires that if feasible, the Project shall provide electrical hookups to the power grid, rather than use diesel-fueled generators, for the use of electric construction tools, such as saws, drills, and compressors. However, it would not be feasible to require the Project Applicant to use more electric construction equipment than stated in the Draft EIR or zero emissions or near zero emissions heavy-duty trucks because such equipment suitable for project construction are not now nor are they expected to be commercially available to meet the construction needs of the Project within the Project schedule.

For the reasons discussed above, it would be infeasible to require additional electric equipment or zero emissions and near zero emissions heavy-duty haul trucks during construction of the proposed Project because such equipment would not be commercially available in sizes capable of the work needed for Project construction. Therefore, all feasible Project Design Features and mitigation measures have been identified in the Draft EIR.

The Comment identifies the close proximity of sensitive receptors as a basis to require additional construction air quality mitigation measures. However, as discussed on Draft EIR page 4.3-44 (Table 4.3-19) and pages 4.3-51 through 4.3-53, localized air quality impacts and health risk impacts would be less than significant with mitigation incorporated. Also refer to Response R2-2 regarding localized impacts.

R2-4 **(This response also responds to Attachment Comment 3)** To promote the use of alternative fuels and clean fleets and facilitate future installation of electric vehicle supply equipment, PDF AQ-9 requires that all heavy-duty trucks shall be zero emissions beginning in 2030 if such trucks are widely available and economically feasible and PDF AQ-10 requires the use of zero emissions light- and medium-duty trucks as part of business operations, if such trucks are widely available and economically feasible. The commenter requests additional information on how "widely available and economically feasible" will be defined and determined in the Final EIR.

These PDFs include the phrase "widely available and economically feasible" because the availability of zero emissions vehicles in future years is speculative. Widely available means that zero emissions trucks (including heavy duty trucks) can be readily purchased and put into operation (i.e., commercially available). Economically feasible refers to the condition where the cost to buy, own, and operate zero emissions trucks would be similar to the cost for non-zero emissions trucks.

The existing regulatory environment already requires various mobile source emissions reduction measures and transition to zero emissions and near zero emissions vehicles (as noted above, CARB already regulates truck emissions with the Advanced Clean Truck Regulation, the Mobile Source Strategy [including the low-NO_X engine emissions standard], the Sustainable Freight Action Plan, and the Emissions Reduction Plan for Ports and Goods Movement, among others). However, even with adoption of CARB's Advanced Clean Truck Rule, CARB acknowledges that it will take time for zero emissions and near zero emissions vehicles to become commercially available and to penetrate the market. For example, CARB's EMission FACtor (EMFAC) 2021 model provides detailed vehicle registration information and estimates the official emissions inventories of on-road mobile sources, vehicle population, and vehicle miles traveled (VMT) in California. The EMFAC2021 data for South Coast portion of San Bernardino County shows that in 2024 (the Project's Phase 1a opening year), approximately 85 percent of heavy trucks would still be powered by diesel and 91 percent of the VMT would occur from diesel trucks. Electric vehicles would make up approximately 0.29 percent of the heavy-duty fleet and 0.25 percent of the heavy truck VMT. The EMFAC data shows that penetration of zero emissions and near zero emissions vehicles into commercial fleets will be slow. For example, for 2030, the model predicts that 81 percent of heavy trucks would be diesel-powered and that 88 percent of the heavy truck VMT would be from diesel trucks. Therefore, as CARB data anticipates that the vast majority of trucks to be diesel-powered in the Project opening year and in 2030, it would not be feasible to develop numeric targets, to establish preferential occupancy policies, or require purchasing policies applicable to future, unknown tenants.

Additionally, as discussed on Draft EIR page 4.3-36, the Project would be required to comply with SCAQMD Rule 2305 (Warehouse Indirect Source Rule), which requires the Project operator to directly reduce NO_X and particulate matter emissions or to otherwise facilitate emission and exposure reductions of these pollutants in nearby communities. Alternatively, warehouse operators can choose to pay a mitigation fee. Funds from the mitigation fee will be used to incentivize the purchase of cleaner trucks and charging/fueling infrastructure in communities nearby. Warehouse owners and operators are required to earn WAIRE Points each year. WAIRE points are a menu-based system earned by emission reduction measures. Warehouse operators are required to submit an annual WAIRE Report which includes truck trip data and emission reduction measures. WAIRE points can be earned by completing actions from a menu that can include acquiring and using natural gas, Near-Zero Emissions and/or Zero-Emissions on-road trucks, zero-emission cargo handling equipment, solar panels or zero-emission charging and fueling infrastructure, or other options. As noted in the Draft EIR, a preliminary WAIRE calculation

indicates that the project would more than fulfill its Warehouse Points Compliance Obligation (WPCO).

Nonetheless, PDF AQ-9 and PDF AQ-10 have been included to promote the use of alternative fuels and clean fleets and facilitate future installation of electric vehicle supply equipment. Furthermore, the Development Agreement requires the Master Developer to implement an Electric Truck and Car Grant Program. The Electric Truck and Car Grant Program requires the Master Developer to provide funding for the purchase of Class 8 heavy duty electric trucks, Class 4 through Class 7 medium duty trucks, light-duty (Class 1, 2, and 3) delivery vehicles, and local community and passenger vehicle grants. These grants provided by the Project Master Developer would also facilitate the adoption of zero emissions vehicles in the area and provide a clear set of standards for implementing these grants.

R2-5 The commenter's request for continued communications and noticing is noted for the record. Please refer to Responses R2-3 through R2-4 regarding recommended revisions to the existing PDFs.

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The Metropolitan Water District of Southern California (R3)

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

July 18, 2022 **Via Electronic Mail**

Steven Valdez, Senior Planner
County of San Bernardino
Land Use Services Department - Planning Division
385 North Arrowhead Avenue, First Floor
San Bernardino, California 92415-0187

Dear Mr. Valdez:

Notice of Availability of a
Draft Environmental Impact Report for the Speedway Commerce Center II Project

The Metropolitan Water District of Southern California (Metropolitan) reviewed the Notice of Availability of a Draft Environmental Impact Report (DEIR) for the Speedway Commerce Center II Project. The County of San Bernardino (County) is acting as the Lead Agency under the California Environmental Quality Act (CEQA). The Project proposes to develop six planning areas with high cube warehouse and e-commerce uses, with accessory commercial uses, vehicle parking/drop lot areas, associated open space and internal public roadways. This letter contains Metropolitan's response to the DEIR as a potentially affected public agency.

Metropolitan is a public agency and regional water wholesaler. It is comprised of 26 member public agencies, serving approximately 19 million people in portions of six counties in Southern California, including Orange County. Metropolitan's mission is to provide its 5,200 square mile service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

Our review of the DEIR notice indicates that Metropolitan owns and operates the Upper Feeder Pipeline and appurtenant facilities within the Project's proximity. The aforementioned pipelines and appurtenant facilities deliver untreated water from the Colorado River Aqueduct to F. E. Weymouth Water Treatment Plant in La Verne.

1

Metropolitan provides the following comments on the Draft Environmental Impact Report:

1. Page 4.5-16: "Archival information also determined that the Metropolitan Water District of Southern California's Upper Feeder Aqueduct was constructed through the

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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
Steven Valdez, Senior Planner
July 18, 2022

Project area in the 1930s. Project implementation is not anticipated to impact the buried historic-era water pipeline and construction activities will not alter, demolish, or relocate the existing feature." The pipeline is not an aqueduct. The official name is the Upper Feeder. 2

2. Metropolitan requests that all references to the Upper Feeder as a historical resource be removed from the DEIR.
    a. A historical resource as defined in the CEQA and the Public Resources Code can be an archaeological resource or built environment resource and is:
        i. A resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources ((Pub. Res. Code § 5024.1, Title 14 CCR, Section 4850 et seq.);
        ii. A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements section 5024.1(g) of the Public Resources Code; or
        iii. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. 3
    b. The Upper Feeder is not a resource listed in or determined eligible for listing in the California Register of Historical Resources, nor is it listed in a local register. Metropolitan, as a CEQA Lead Agency and owner of the Upper Feeder pipeline, has not determined the Upper Feeder to be historically significant. While the Upper Feeder may be considered a built environment resource, there does not appear to be any substantial evidence in light of the record as a whole to consider it as a resource eligible for listing in the California Register of Historical Resources.

Metropolitan must be allowed to maintain its rights-of-way and requires unobstructed access to its facilities in order to maintain and repair its system. In order to avoid potential conflicts with Metropolitan's facilities and rights-of-way, we require that any design plans for any activity in the area of Metropolitan's pipelines or facilities be submitted for our review and written approval. Metropolitan will not permit procedures that could subject the pipeline to excessive vehicle, impact or vibratory loads. Any future design plans associated with this project should be submitted to Metropolitan's Substructures Team. Approval of the project should be contingent on Metropolitan's approval of design plans for portions of the proposed project that could impact its facilities. 4

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July 18, 2022

Detailed prints of drawings of Metropolitan's pipelines and rights-of-way may be obtained by calling Metropolitan's Substructures Information Line at (213) 217-7663 or via email at EngineeringSubstructures@mwdh2o.com. To assist the applicant in preparing plans that are compatible with Metropolitan's facilities and easements, attached are the "Guidelines for

Improvements and Construction Projects Proposed in the Area of Metropolitan's Facilities and Rights-of-Way". Please note that all submitted designs or plans must clearly identify Metropolitan's facilities and rights-of-way. 4

Additionally, Metropolitan encourages projects within its service area to include water conservation measures. Water conservation, reclaimed water use, and groundwater recharge programs are integral components to regional water supply planning. Metropolitan supports mitigation measures such as using water efficient fixtures, drought-tolerant landscaping, and reclaimed water to offset any increase in water use associated with the proposed project.
We appreciate the opportunity to provide input to your planning process and we look forward to receiving future documentation and plans for this project. For further assistance, please contact Ms. Jolene Ditmar at (213) 217-6184 or jditmar@mwdh2o.com. 5

Very truly yours,

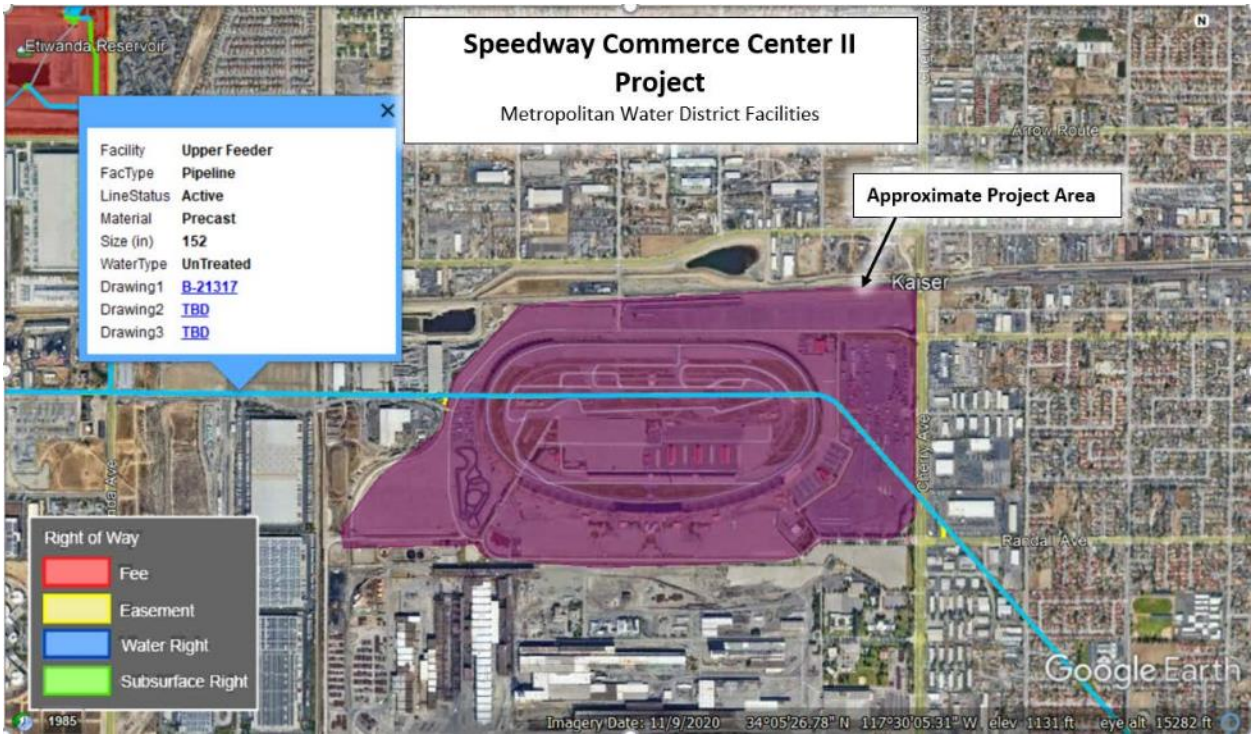
Digitally signed by Sean Carlson
DN: cn=Sean Carlson, o, ou, email=scarlson@mwdh2o.com, c=US
Date: 2022.07.18 12:00:13 -07'00'

Sean Carlson

Team Manager, Environmental Planning Section
JD:rdl
Sharepoint\San Bernardino County\Speedway Commerce Center II

Enclosures:
(1) Map
(2) Planning Guidelines for Improvements and Construction Projects Proposed in the Area of Metropolitan's Facilities and Rights-of-Way

700 N. Alameda Street, Los Angeles, California 90012 • Mailing Address: Box 54153, Los Angeles, California 90054-0153 • Telephone (213) 217-6000


Speedway Commerce Center II Project
Metropolitan Water District Facilities
Etiwanda Reservoir
Facility Upper Feeder
FacType Pipeline
LineStatus Active
Material Precast
Size (in) 152
WaterType UnTreated
Drawing1 B-21317
Drawing2 TBD
Drawing3 TBD
Approximate Project Area
Kaiser
Arrow Route
Cherry Ave
Randall Ave
Right of Way
Fee
Easement
Water Right
Subsurface Right
Google Earth
Imagery Date: 11/9/2020 34°05'26.78" N 117°30'05.31" W elev 1131 ft eye alt 15282 ft

Guidelines for Improvements and Construction Projects Proposed in the Area of Metropolitan's Facilities and Rights-of-Way

July 2018

Prepared By:
The Metropolitan Water District of Southern California
Substructures Team, Engineering Services
700 North Alameda Street
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Additional Copies: To obtain a copy of this document, please contact the Engineering Services Group, Substructures Team.

Disclaimer

Metropolitan assumes no responsibility for the accuracy of the substructure information herein provided. The user assumes responsibility for verifying substructure locations before excavating and assumes all liability for damage to Metropolitan's facilities as a result of such excavation. Additionally, the user is cautioned to conduct surveys and other field investigations as deemed prudent, to assure that project plans are correct. The appropriate representative from Metropolitan must be contacted at least two working days, before any work activity in proximity to Metropolitan's facilities.

It generally takes 30 days to review project plans and provide written responses. Metropolitan reserves the right to modify requirements based on case-specific issues and regulatory developments.

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1.0 GENERAL INFORMATION

Note: Underground Service Alert at 811 must be notified at least two working days before excavating in proximity to Metropolitan's facilities.

1.1 Introduction

These guidelines provide minimum design and construction requirements for any utilities, facilities, developments, and improvements, or any other projects or activities, proposed in or near Metropolitan Water District of Southern California (Metropolitan) facilities and rights-of-way. Additional conditions and stipulations may also be required depending on project and site specific conditions. Any adverse impacts to Metropolitan's conveyance system, as determined by Metropolitan, will need to be mitigated to its satisfaction.

All improvements and activities must be designed so as to allow for removal or relocation at builder or developer expense, as set forth in the paramount rights provisions of Section 20.0. Metropolitan shall not be responsible for repair or replacement of improvements, landscaping or vegetation in the event Metropolitan exercises its paramount rights powers.

1.2 Submittal and Review of Project Plans/Utilities and Maps

Metropolitan requires project plans/utilities be submitted for all proposed activities that may impact Metropolitan's facilities or rights-of-way. Project plans shall include copies of all pertinent utilities, sewer line, storm drain, street improvement, grading, site development, landscaping, irrigation and other plans, all tract and parcel maps, and all necessary state and federal environmental documentation. Metropolitan will review the project plans and provide written approval, as it pertains to Metropolitan's facilities and rights-of-way. Written approval from Metropolitan must be obtained, prior to the start of any activity or construction in the area of Metropolitan's facilities or rights-of-way. Once complete project plans and supporting documents are submitted to Metropolitan, it generally takes 30 days to review and to prepare a detailed written response. Complex engineering plans that have the potential for significant impacts on Metropolitan's facilities or rights-of-way may require a longer review time.

Project plans, maps, or any other information should be submitted to Metropolitan's Substructures Team at the following mailing address:

Attn: Substructures Team
The Metropolitan Water District of Southern California
700 North Alameda St.
Los Angeles, CA 90012

General Mailing Address: P.O. Box 54153
Los Angeles, CA 90054-0153

Email: EngineeringSubstructures@mwdh2o.com

For additional information, or to request prints of detailed drawings for Metropolitan's facilities and rights-of-way, please contact Metropolitan's Substructures Team at 213-217-7663 or EngineeringSubstructures@mwdh2o.com.

1.3 Identification of Metropolitan's Facilities and Rights-of-Way

Metropolitan's facilities and rights-of-way must be fully shown and identified as Metropolitan's, with official recording data, on the following:

A. All applicable plans

B. All applicable tract and parcel maps

Metropolitan's rights-of-ways and existing survey monuments must be tied dimensionally to the tract or parcel boundaries. Metropolitan's Records of Survey must be referenced on the tract and parcel maps with the appropriate Book and Page.

2.0 General Requirements

2.1 Vehicular Access

Metropolitan must have vehicular access along its rights-of-way at all times for routine inspection, patrolling, operations, and maintenance of its facilities and construction activities. All proposed improvements and activities must be designed so as to accommodate such vehicular access.

2.2 Fences

Fences installed across Metropolitan's rights-of-way must include a 16-foot-wide gate to accommodate vehicular access by Metropolitan. Additionally, gates may be required at other specified locations to prevent unauthorized entry into Metropolitan's rights-of-way.

All gates must accommodate a Metropolitan lock or Knox-Box with override switch to allow Metropolitan unrestricted access. There should be a minimum 20-foot setback for gates from the street at the driveway approach. The setback is necessary to allow Metropolitan vehicles to safely pull off the road prior to opening the gate.

2.3 Driveways and Ramps

Construction of 16-foot-wide commercial-type driveway approaches is required on both sides of all streets that cross Metropolitan's rights-of-way. Access ramps, if necessary, must be a minimum of 16 feet wide.

There should be a minimum 20-foot setback for gates from the street at the driveway approach. Grades of ramps and access roads must not exceed 10 percent; if the slope of an access ramp or road must exceed 10 percent due to topography, then the ramp or road must be paved.

2.4 Walks, Bike Paths, and Trails

All walkways, bike paths, and trails along Metropolitan's rights-of-way must be a minimum 12-foot wide and have a 50-foot or greater radius on all horizontal curves if also used as Metropolitan's access roads. Metropolitan's access routes, including all walks and drainage facilities crossing the access routes, must be constructed to American Association of State Highway and Transportation Officials (AASHTO) H-20 loading standards (see Figure 1). Additional requirements will be placed on equestrian trails to protect the water quality of Metropolitan's pipelines and facilities.

2.5 Clear Zones

A 20-foot-wide clear zone is required to be maintained around Metropolitan's manholes and other above-ground facilities to accommodate vehicular access and maintenance. The clear zone should slope away from Metropolitan's facilities on a grade not to exceed 2 percent.

2.6 Slopes

Cut or fill slopes proposed within Metropolitan's rights-of-way must not exceed 10 percent. The proposed grade must not worsen the existing condition. This restriction is required to facilitate Metropolitan use of construction and maintenance equipment and allow uninhibited access to above-ground and below-ground facilities.

2.7 Structures

Construction of structures of any type is not allowed within the limits of Metropolitan's rights-of-way to avoid interference with the operation and maintenance of Metropolitan's facilities and possible construction of future facilities.

Footings and roof eaves of any proposed buildings adjacent to Metropolitan's rights-of-way must meet the following criteria:

A. Footings and roof eaves must not encroach onto Metropolitan's rights-of-way.

B. Footings must not impose any additional loading on Metropolitan's facilities.

C. Roof eaves must not overhang onto Metropolitan's rights-of-way.

Detailed plans of footings and roof eaves adjacent to Metropolitan's rights-of-way must be submitted for Metropolitan's review and written approval, as pertains to Metropolitan's facilities.

2.8 Protection of Metropolitan Facilities

Metropolitan facilities within its rights-of-way, including pipelines, structures, manholes, survey monuments, etc., must be protected from damage by the project proponent or property owner, at no expense to Metropolitan. The exact location, description and method of protection must be shown on the project plans.

2.9 Potholing of Metropolitan Pipelines

Metropolitan's pipelines must be potholed in advance, if the vertical clearance between a proposed utility and Metropolitan's pipeline is indicated to be 4 feet or less. A Metropolitan representative must be present during the potholing operation and will assist in locating the pipeline. Notice is required, a minimum of three working days, prior to any potholing activity.

2.10 Jacked Casings or Tunnels

A. General Requirements

Utility crossings installed by jacking, or in a jacked casing or tunnel under/over a Metropolitan pipeline, must have at least 3 feet of vertical clearance between the outside diameter of the pipelines and the jacked pipe, casing, or tunnel. The actual

cover over Metropolitan's pipeline shall be determined by potholing, under Metropolitan's supervision.

Utilities installed in a jacked casing or tunnel must have the annular space between the utility and the jacked casing or tunnel filled with grout. Provisions must be made for grouting any voids around the exterior of the jacked pipe, casing, or tunnel.

B. Jacking or Tunneling Procedures

Detailed jacking, tunneling, or directional boring procedures must be submitted to Metropolitan for review and approval. The procedures must cover all aspects of operation, including, but not limited to, dewatering, ground control, alignment control, and grouting pressure. The submittal must also include procedures to be used to control sloughing, running, or wet ground, if encountered. A minimum 10-foot clearance must be maintained between the face of the tunneling or receiving pits and outside edges of Metropolitan's facility.

C. Shoring

Detailed drawings of shoring for jacking or receiving pits must be submitted to Metropolitan for review and written-approval. (See Section 10 for shoring requirements).

D. Temporary Support

Temporary support of Metropolitan's pipelines may be required when a utility crosses under a Metropolitan pipeline and is installed by means of an open trench. Plans for temporary support must be reviewed and approved in writing by Metropolitan. (See Section 11, Supports of Metropolitan Facilities).

3.0 Landscaping

3.1 Plans

All landscape plans must show the location and limits of Metropolitan's right-of-way and the location and size of Metropolitan's pipeline and related facilities therein. All landscaping and vegetation shall be subject to removal without notice, as may be required by Metropolitan for ongoing maintenance, access, repair, and construction activities. Metropolitan will not be financially responsible for the removal of any landscaping and vegetation.

3.2 Drought-Tolerant Native and California Friendly Plants

Metropolitan recommends use of drought-tolerant native and California Friendly® plants (excluding sensitive plants) on proposed projects. For more information regarding California Friendly® plants refer to www.bewaterwise.com.

3.3 Trees

Trees are generally prohibited within Metropolitan's rights-of-way as they restrict Metropolitan's ability to operate, maintain and/or install new pipeline(s) located within these rights-of-way. Metropolitan will not be financially responsible for the removal and replacement of any existing trees should they interfere with access and any current or future Metropolitan project located within the right-of-way.

3.4 Other Vegetation

Shrubs, bushes, vines, and groundcover are generally allowed within Metropolitan's rights-of-way. Larger shrubs are not allowed on Metropolitan fee properties; however, they may be allowed within its easements if planted no closer than 15 feet from the outside edges of existing or future Metropolitan facilities. Only groundcover is allowed to be planted directly over Metropolitan pipeline, turf blocks or similar is recommended to accommodate our utility vehicle access. Metropolitan will not be financially responsible for the removal and replacement of the vegetation should it interfere with access and any current or future Metropolitan project.

3.5 Irrigation

Irrigation systems are acceptable within Metropolitan's rights-of-way, provided valves and controllers are located near the edges of the right-of-way and do not interfere with Metropolitan vehicular access. A shutoff valve should also be located along the edge of the right-of-way that will allow the shutdown of the system within the right-of-way should Metropolitan need to do any excavation. No pooling or saturation of water above Metropolitan's pipeline and right-of-way is allowed. Additional restrictions apply to non-potable water such as Recycled Water and are covered on Table 3 of Page 20.

3.6 Metropolitan Vehicular Access

Landscape plans must show Metropolitan vehicular access to Metropolitan's facilities and rights-of-way and must be maintained by the property owner or manager or homeowners association at all times. Walkways, bike paths, and trails within Metropolitan's rights-of-way may be used as Metropolitan access routes. (See Section 2.4, Walks, Bike Paths, and Trails).

4.0 General Utilities

Note: For non-potable piping like sewer, hazardous fluid, storm drain, disinfected tertiary recycled water and recycled water irrigation see Table 1 through Table 3.

4.1 Utility Structures

Permanent utility structures (e.g., manholes, power poles, pull boxes, electrical vaults, etc.) are not allowed within Metropolitan's rights-of-way. Metropolitan requests that all permanent utility structures within public streets be placed as far from its pipelines and facilities as practical, but not closer than 5 feet from the outside edges of Metropolitan facilities.

Note: Non-potable utility pipelines are an exception to the 5-foot minimum clearance. Non-potable utility pipelines should have 10 feet of separation.

4.2 Utility Crossings

Metropolitan requests a minimum of 1 foot of vertical clearance between Metropolitan's pipeline and any utility crossing the pipeline. Utility lines crossing Metropolitan's pipelines must be as perpendicular to the pipeline as possible. Cross-section drawings, showing proposed locations and elevations of utility lines and locations of Metropolitan's pipelines and limits of rights-of-way, must be submitted with utility plans, for all

crossings. Metropolitan's pipeline must be potholed under Metropolitan's supervision at the crossings (See Section 2.9).

4.3 Longitudinal Utilities

Installation of longitudinal utilities is generally not allowed along Metropolitan's rights-of-way. Within public streets, Metropolitan requests that all utilities parallel to Metropolitan's pipelines and appurtenant structures (facilities) be located as far from the facilities as possible, with a minimum clearance of 5 feet from the outside edges of the pipeline.

Note: Non-potable utility pipelines are an exception to the 5-foot minimum clearance. Non-potable utility pipelines should have 10 feet of separation (for more information See Table 1 on Page 18).

4.4 Underground Electrical Lines

Underground electrical conduits (110 volts or greater) which cross a Metropolitan's pipeline must have a minimum of 1 foot of vertical clearance between Metropolitan's pipeline and the electrical lines. Longitudinal electrical lines, including pull boxes and vaults, in public streets should have a minimum separation of 5 feet from the edge of a Metropolitan pipeline or structures.

4.5 Fiber Optic Lines

Fiber optic lines installed by directional boring require a minimum of 3 feet of vertical clearance when boring is over Metropolitan's pipelines and a minimum of 5 feet of vertical clearance when boring is under Metropolitan's pipelines. Longitudinal fiber optic lines, including pull boxes, in public streets should have a minimum separation of 5 feet from the edge of a Metropolitan pipelines or structures. Potholing must be performed, under Metropolitan's supervision, to verify the vertical clearances are maintained.

4.6 Overhead Electrical and Telephone Lines

Overhead electrical and telephone lines, where they cross Metropolitan's rights-of-way, must have a minimum 35 feet of clearance, as measured from the ground to the lowest point of the overhead line. Overhead electrical lines poles must be located at least 30 feet laterally from the edges of Metropolitan's facilities or outside Metropolitan's right-of-way, whichever is greater.

Longitudinal overhead electrical and or telephone lines in public streets should have a minimum separation of 10 feet from the edge of a Metropolitan pipelines or structures where possible.

4.7 Sewage Disposal Systems

Sewage disposal systems, including leach lines and septic tanks, must be a minimum of 100 feet from the outside limits of Metropolitan's rights-of-way or the edge of its facilities, whichever is greater. If soil conditions are poor, or other adverse site-specific conditions exist, a minimum distance of 150 feet is required. They must also comply with local and state health code requirements as they relate to sewage disposal systems in proximity to major drinking water supply pipelines.

4.8 Underground Tanks

Underground tanks containing hazardous materials must be a minimum of 100 feet from the outside limits of Metropolitan's rights-of-way or edge of its facilities, whichever is greater. In addition, groundwater flow should be considered with the placement of underground tanks down-gradient of Metropolitan's facilities.

5.0 Specific Utilities: Non-Potable Utility Pipelines

In addition to Metropolitan's general requirements, installation of non-potable utility pipelines (e.g., storm drains, sewers, and hazardous fluids pipelines) in Metropolitan's rights-of-way and public street rights-of-way must also conform to the State Water Resources Control Board's Division of Drinking Water (DDW) regulation (Waterworks Standards) and guidance for separation of water mains and non-potable pipelines and to applicable local county health code requirements. Written approval is required from DDW for the implementation of alternatives to the Waterworks Standards and, effective December 14, 2017, requests for alternatives to the Waterworks Standards must include information consistent with: DDW's Waterworks Standards Main Separation Alternative Request Checklist.

In addition to the following general guidelines, further review of the proposed project must be evaluated by Metropolitan and requirements may vary based on site specific conditions.

A. Sanitary Sewer and Hazardous Fluids (General Guideline See Table 1 on Page 18)

B. Storm Drain and Recycled Water (General Guideline See Table 2 on Page 19)

C. Irrigation with Recycled Water (General Guideline See Table 3 on Page 20)

D. Metropolitan generally does not allow Irrigation with recycled water to be applied directly above its treated water pipelines

E. Metropolitan requests copies of project correspondence with regulating agencies (e.g., Regional Water Quality Control Board, DDW); regarding the application of recycled water for all projects located on Metropolitan's rights-of-way

6.0 Cathodic Protection/Electrolysis Test Stations

6.1 Metropolitan Cathodic Protection

Metropolitan's existing cathodic protection facilities in the vicinity of any proposed work must be identified prior to any grading or excavation. The exact location, description, and type of protection must be shown on all project plans. Please contact Metropolitan for the location of its cathodic protection stations.

6.2 Review of Cathodic Protection Systems

Metropolitan must review any proposed installation of impressed-current cathodic protection systems on pipelines crossing or paralleling Metropolitan's pipelines to determine any potential conflicts with Metropolitan's existing cathodic protection system.

7.0 Drainage

7.1 Drainage Changes Affecting Metropolitan Rights-of-Way

Changes to existing drainage that could affect Metropolitan's rights-of-way require Metropolitan's approval. The project proponent must provide acceptable solutions to ensure Metropolitan's rights-of-way are not negatively affected by changes in the drainage conditions. Plans showing the changes, with a copy of a supporting hydrology report and hydraulic calculations, must be submitted to Metropolitan for review and approval. Long term maintenance of any proposed drainage facilities must be the responsibility of the project proponent, City, County, homeowner's association, etc., with a clear understanding of where this responsibility lies. If drainage must be discharged across Metropolitan's rights-of-way, it must be carried across by closed conduit or lined open channel and must be shown on the plans.

7.2 Metropolitan's Blowoff and Pumpwell Structures

Any changes to the existing local watercourse systems will need to be designed to accommodate Metropolitan's blowoff and pumpwell structures, which periodically convey discharged water from Metropolitan's blowoff and pumping well structures during pipeline dewatering. The project proponents' plans should include details of how these discharges are accommodated within the proposed development and must be submitted to Metropolitan for review and approval. Any blowoff discharge lines impacted must be modified accordingly at the expense of the project proponent.

8.0 Grading and Settlement

8.1 Changes in Cover over Metropolitan Pipelines

The existing cover over Metropolitan's pipelines must be maintained unless Metropolitan determines that proposed changes in grade and cover do not pose a hazard to the integrity of the pipeline or an impediment to its maintenance capability. Load and settlement or rebound due to change in cover over a Metropolitan pipeline or ground in the area of Metropolitan's rights-of-way will be factors considered by Metropolitan during project review.

In general, the minimum cover over a Metropolitan pipeline is 4 feet and the maximum cover varies per different pipeline. Any changes to the existing grade may require that Metropolitan's pipeline be potholed under Metropolitan's supervision to verify the existing cover.

8.2 Settlement

Any changes to the existing topography in the area of Metropolitan's pipeline or right-of-way that result in significant settlement or lateral displacement of Metropolitan's pipelines are not acceptable. Metropolitan may require submittal of a soils report showing the predicted settlement of the pipeline at 10-foot intervals for review. The data must be carried past the point of zero change in each direction and the actual size and varying depth of the fill must be considered when determining the settlement. Possible settlement due to soil collapse, rebound and lateral displacement must also be included.

In general, the typical maximum allowed deflection for Metropolitan's pipelines must not exceed a deflection of 1/4-inch for every 100 feet of pipe length. Metropolitan may require additional information per its Geotechnical Guidelines. Please contact Metropolitan's Substructures Team for a copy of the Geotechnical Guidelines.

9.0 Construction Equipment

9.1 Review of Proposed Equipment

Use of equipment across or adjacent to Metropolitan's facilities is subject to prior review and written approval by Metropolitan. Excavation, backfill, and other work in the vicinity of Metropolitan's facilities must be performed only by methods and with equipment approved by Metropolitan. A list of all equipment to be used must be submitted to Metropolitan a minimum of 30 days before the start of work.

A. For equipment operating within paved public roadways, equipment that imposes loads not greater than that of an AASHTO H-20 vehicle (see Figure 1 on Page 21) may operate across or adjacent to Metropolitan's pipelines provided the equipment operates in non-vibratory mode and the road remains continuously paved.

B. For equipment operating within unpaved public roadways, when the total cover over Metropolitan's pipeline is 10 feet or greater, equipment imposing loads no greater than those imposed by an AASHTO H-20 vehicle may operate over or adjacent to the pipeline provided the equipment is operated in non-vibratory mode. For crossings, vehicle path shall be maintained in a smooth condition, with no breaks in grade for 3 vehicle lengths on each side of the pipeline.

9.2 Equipment Restrictions

In general, no equipment may be used closer than 20 feet from all Metropolitan above-ground structures. The area around the structures should be flagged to prevent equipment encroaching into this zone.

9.3 Vibratory Compaction Equipment

Vibratory compaction equipment may not be used in vibratory mode within 20 feet of the edge of Metropolitan's pipelines.

9.4 Equipment Descriptions

The following information/specifications for each piece of equipment should be included on the list:

A. A description of the equipment, including the type, manufacturer, model year, and model number. For example, wheel tractor-scraper, 1990 Caterpillar 627E.

B. The empty and loaded total weight and the corresponding weight distribution. If equipment will be used empty only, it should be clearly stated.

C. The wheel base (for each axle), tread width (for each axle), and tire footprint (width and length) or the track ground contact (width and length), and track gauge (center to center of track).

10.0 Excavations Close to Metropolitan Facilities

10.1 Shoring Design Submittal

Excavation that impacts Metropolitan's facilities requires that the contractor submit an engineered shoring design to Metropolitan for review and acceptance a minimum of 30 days before the scheduled start of excavation. Excavation may not begin until the shoring design is accepted in writing by Metropolitan.

Shoring design submittals must include all required trenches, pits, and tunnel or jacking operations and related calculations. Before starting the shoring design, the design engineer should consult with Metropolitan regarding Metropolitan's requirements, particularly as to any special procedures that may be required.

10.2 Shoring Design Requirements

Shoring design submittals must be stamped and signed by a California registered civil or structural engineer. The following requirements apply:

A. The submitted shoring must provide appropriate support for soil adjacent to and under Metropolitan's facilities.

B. Shoring submittals must include detailed procedures for the installation and removal of the shoring.

C. Design calculations must follow the Title 8, Chapter 4, Article 6 of the California Code of Regulations (CCR) guidelines. Accepted methods of analysis must be used.

D. Loads must be in accordance with the CCR guidelines or a soils report by a geotechnical consultant.

E. All members must be secured to prevent sliding, falling, or kickouts.

Metropolitan's pipelines must be located by potholing under Metropolitan's supervision before the beginning construction. Use of driven piles within 20 feet of the centerline of Metropolitan's pipeline is not allowed. Piles installed in drilled holes must have a minimum 2-foot clearance between Metropolitan's pipeline and the edge of the drilled hole, and a minimum of 1-foot clearance between any part of the shoring and Metropolitan's pipeline.

11.0 Support of Metropolitan Facilities

11.1 Support Design Submittal

If temporary support of a Metropolitan facility is required, the contractor shall submit a support design plan to Metropolitan for review and approval a minimum of 30 days before the scheduled start of work. Work may not begin until the support design is approved in writing by Metropolitan. Before starting design, the design engineer should consult with Metropolitan regarding Metropolitan's requirements.

11.2 Support Design Requirements

Support design submittals must be prepared, stamped, and signed by a California registered civil or structural engineer. The following requirements apply:

A. Support drawings must include detailed procedures for the installation and removal of the support system.

B. Design calculations must follow accepted practices, and accepted methods of analysis must be used.

C. Support designs must show uniform support of Metropolitan's facilities with minimal deflection.

D. The total weight of the facility must be transferred to the support system before supporting soil is fully excavated.

E. All members must be secured to prevent sliding, falling, or kickouts.

12.0 Backfill

12.1 Metropolitan Pipeline Not Supported

In areas where a portion of Metropolitan pipeline is not supported during construction, the backfill under and to an elevation of 6 inches above the top of the pipeline must be one-sack minimum cement sand slurry. To prevent adhesion of the slurry to Metropolitan's pipeline, a minimum 6-mil-thick layer of polyethylene sheeting or similar approved sheeting must be placed between the concrete support and the pipeline.

12.2 Metropolitan Pipeline Partially Exposed

In areas where a Metropolitan pipeline is partially exposed during construction, the backfill must be a minimum of 6 inches above the top of the pipeline with sand compacted to minimum 90 percent compaction.

12.3 Metropolitan Cut and Cover Conduit on Colorado River Aqueduct (CRA)

In areas where a Metropolitan cut and cover conduit is exposed, the following guidelines apply:

A. No vehicle or equipment shall operate over or cross the conduit when the cover is less than 3 feet.

B. Track-type dozer with a gross vehicle weight of 12,000 lbs or less may be used over the conduit when the cover is a minimum of 3 feet.

C. Wheeled vehicles with a gross vehicle weight of 8,000 lbs or less may operate over the conduit when the cover is a minimum of 4 feet.

D. Tracked dozer or wheeled vehicle should be used to push material over the conduit from the side.

E. Tracked dozer or wheeled vehicle should gradually increase cover on one side of the conduit and then cross the conduit and increase cover on the other side of the conduit. The cover should be increased on one side of the conduit until a maximum of 2 feet of fill has been placed. The cover over the conduit is not allowed to be more than 2 feet higher on one side of the conduit than on the other side.

F. The cover should be gradually increased over the conduit until the grade elevations have been restored.

13.0 Piles

13.1 Impacts on Metropolitan Pipelines

Pile support for structures could impose lateral, vertical and seismic loads on Metropolitan's pipelines. Since the installation of piles could also cause settlement of Metropolitan pipelines, a settlement and/or lateral deformation study may be required for pile installations within 50 feet of Metropolitan's pipelines. Metropolitan may require additional information per its Geo-technical Guidelines for pile installation. Please contact Metropolitan's Substructures Team for a copy of the Geotechnical Guidelines.

13.2 Permanent Cast-in-place Piles

Permanent cast-in-place piles must be constructed so that down drag forces of the pile do not act on Metropolitan's pipeline. The pile must be designed so that down drag forces are not developed from the ground surface to springline of Metropolitan's pipeline.

Permanent cast-in-place piles shall not be placed closer than 5 feet from the edge of Metropolitan's pipeline. Metropolitan may require additional information per its Geo-technical Guidelines for pile installation. Please contact Metropolitan's Substructures Team for a copy of the Geotechnical Guidelines.

14.0 Protective Slabs for Road Crossings Over Metropolitan Pipelines

Protective slabs must be permanent cast-in-place concrete protective slabs configured in accordance with Drawing SK-1 (See Figure 2 on Page 22).

The moments and shear for the protective slab may be derived from the American Association of State Highway and Transportation Officials (AASHTO). The following requirements apply:

A. The concrete must be designed to meet the requirements of AASHTO

B. Load and impact factors must be in accordance with AASHTO. Accepted methods of analysis must be used.

C. The protective slab design must be stamped and signed by a California registered civil or structural engineer and submitted to Metropolitan with supporting calculations for review and approval.

Existing protective slabs that need to be lengthened can be lengthened without modification, provided the cover and other loading have not been increased.

15.0 Blasting

At least 90 days prior to the start of any drilling for rock excavation blasting, or any blasting in the vicinity of Metropolitan's facilities, a site-specific blasting plan must be submitted to Metropolitan for review and approval. The plan must consist of, but not be limited to, hole diameters, timing sequences, explosive weights, peak particle velocities (PPV) at Metropolitan pipelines/structures, and their distances to blast locations. The PPV must be estimated based on a site-specific power law equation. The power law equation provides the peak particle velocity versus the scaled distance and must be calibrated based on measured values at the site.

16.0 Metropolitan Plan Review Costs, Construction Costs and Billing

16.1 Plan Review Costs

Metropolitan plan reviews requiring 8 labor hours or less are generally performed at no cost to the project proponent. Metropolitan plan reviews requiring more than 8 labor hours must be paid by the project proponent, unless the project proponent has superior rights at the project area. The plan review will include a written response detailing Metropolitan's comments, requirements, and/or approval.

A deposit of funds in the amount of the estimated cost and a signed letter agreement will be required from the project proponent before Metropolitan begins or continues a detailed engineering plan review that exceeds 8 labor hours.

16.2 Cost of Modification of Facilities Performed by Metropolitan

Cost of modification work conducted by Metropolitan will be borne by the project proponent, when Metropolitan has paramount/prior rights at the subject location.

Metropolitan will transmit a cost estimate for the modification work to be performed (when it has paramount/prior rights) and will require that a deposit, in the amount of the estimate, be received before the work will be performed.

16.3 Final Billing

Final billing will be based on the actual costs incurred, including engineering plan review, inspection, materials, construction, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the total cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice for the additional amount will be forwarded for payment.

17.0 Street Vacations and Reservation of Easements for Metropolitan

A reservation of an easement is required when all or a portion of a public street where Metropolitan facilities are located is to be vacated. The easement must be equal to the street width being vacated or a minimum 40 feet. The reservation must identify Metropolitan as a "public entity" and not a "public utility," prior to recordation of the vacation or tract map. The reservation of an easement must be submitted to Metropolitan for review prior to final approval.

18.0 Metropolitan Land Use Guidelines

If you are interested in obtaining permission to use Metropolitan land (temporary or long term), a Land Use Form must be completed and submitted to Metropolitan for review and consideration. A nonrefundable processing fee is required to cover Metropolitan's costs for reviewing your request. Land Use Request Forms can be found at:

http://mwdh2o.com/PDF_Doing_Your_Business/4.7.1_Land_Use_Request_form_revised.pdf

The request should be emailed to RealEstateServices@mwdh2o.com,or contact the Real Property Development and Management (RPDM) Group at (213) 217-7750.

After the initial application form has been submitted, Metropolitan may require the following in order to process your request:

A. A map indicating the location(s) where access is needed, and the location & size (height, width and depth) of any invasive subsurface activity (boreholes, trenches, etc.).

B. The California Environmental Quality Act (CEQA) document(s) or studies that have been prepared for the project (e.g., initial study, notice of exemption, Environmental Impact Report (EIR), Mitigated Negative Declaration (MND), etc.).

C. A copy of an ACORD insurance certification naming Metropolitan as an additional insured, or a current copy of a statement of self-insurance.

D. Confirmation of the legal name of the person(s) or entity(ies) that are to be named as the permittee(s) in the entry permit.

E. Confirmation of the purpose of the land use.

F. The name of the person(s) with the authority to sign the documents and any specific signature title block requirements for that person or any other persons required to sign the document (i.e., legal counsel, Board Secretary/Clerk, etc.).

G. A description of any vehicles that will have access to the property. The exact make or model information is not necessary; however, the general vehicle type, expected maximum dimensions (height, length, width), and a specific maximum weight must be provided.

Land use applications and proposed use of the property must be compatible with Metropolitan's present and/or future use of the property. Any preliminary review of your request by Metropolitan shall not be construed as a promise to grant any property rights for the use of Metropolitan's property.

19.0 Compliance with Environmental Laws and Regulations

As a public agency, Metropolitan is required to comply with all applicable environmental laws and regulations related to the activities it carries out or approves. Consequently, project plans, maps, and other information must be reviewed to determine Metropolitan's obligations pursuant to state and federal environmental laws and regulations, including, but not limited to:

A. California Environmental Quality Act (CEQA) (Public Resources Code 21000-21177) and the State CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 1500-15387)

B. Federal Endangered Species Act (ESA) of 1973, 16 U.S.C. §§ 1531, et seq.

C. California Fish and Game Code Sections 2050-2069 (California ESA)

D. California Fish and Game Code Section 1602

E. California Fish and Game Code Sections 3511, 4700, 5050 and 5515 (California fully protected species)

F. Federal Migratory Bird Treaty Act (MBTA), 16 U.S.C. §§ 703-712

G. Federal Clean Water Act (including but not limited to Sections 404 and 401) 33 U.S.C. §§ 1342, 1344)

H. Porter Cologne Water Quality Control Act of 1969, California Water Code §§ 13000-14076.

I. Title 22, California Code of Regulations, Chapter 16 (California Waterworks Standards), Section 64572 (Water Main Separation)

Metropolitan may require the project applicant to pay for any environmental review, compliance and/or mitigation costs incurred to satisfy such legal obligations.

20.0 Paramount Rights / Metropolitan's Rights within Existing Rights-of-Way

Facilities constructed within Metropolitan's rights-of-way shall be subject to the paramount right of Metropolitan to use its rights-of-way for the purpose for which they were acquired. If at any time Metropolitan or its assigns should, in the exercise of their rights, find it necessary to remove or relocate any facilities from its rights-of-way, such removal and replacement or relocation shall be at the expense of the owner of the facility.

21.0 Disclaimer and Information Accuracy

Metropolitan assumes no responsibility for the accuracy of the substructure information herein provided. The user assumes responsibility for verifying substructure locations before excavating and assumes all liability for damage to Metropolitan's facilities as a result of such excavation. Additionally, the user is cautioned to conduct surveys and other field investigations as you may deem prudent, to assure that your project plans are correct. The relevant representative from Metropolitan must be called at least two working days, before any work activity in proximity to Metropolitan's facilities.

It generally takes 30 days to review project plans and provide written responses. Metropolitan reserves the right to modify requirements based on case-specific issues and regulatory developments.

Table 1: General Guidelines for Pipeline Separation between Metropolitan's Pipeline[1] and Sanitary Sewer[2] or Hazardous Fluid Pipeline[3]

Pipeline Crossings	Metropolitan requires that sanitary sewer and hazardous fluid pipelines that cross Metropolitan's pipelines have special pipe construction (no joints) **and** secondary containment[4]. This is required for the full width of Metropolitan's rights-of-way or within 10 feet tangent to the outer edges of Metropolitan's pipeline within public streets. Additionally, sanitary sewer and hazardous fluid pipelines crossing Metropolitan's pipelines must be perpendicular and maintain a minimum 1-foot vertical clearance between the top and the bottom of Metropolitan's pipeline and the pipe casing. These requirements apply to all sanitary sewer crossings regardless if the sanitary sewer main is located below or above Metropolitan's pipeline.
Parallel Pipeline	Metropolitan generally does not permit the installation of longitudinal pipelines along its rights-of-way. Within public streets, Metropolitan requires that all parallel sanitary sewer, hazardous fluid pipelines and/or non-potable utilities be located a minimum of 10 feet from the outside edges of Metropolitan's pipelines. When 10-foot horizontal separation criteria cannot be met, longitudinal pipelines require special pipe construction (no joints) **and** secondary containment[4].
Sewer Manhole	Sanitary sewer manholes are not allowed within Metropolitan's rights-of-way. Within public streets, Metropolitan requests manholes parallel to its pipeline be located a minimum of 10 feet from the outside edges of its pipelines. When 10 foot horizontal separation criteria cannot be met, the structure must have secondary containment[5].

Notes:

[1] *Separation distances are measured from the outer edges of each pipe.*

[2] *Sanitary sewer requirements apply to all recycled water treated to less than disinfected tertiary recycled water (disinfected secondary recycled water or less).* Recycled water definitions are included in Title 22, California Code of Regulations, Chapter 3 (Water Recycling Criteria), Section 60301.

[3] *Hazardous fluids include e.g., oil, fuels, chemicals, industrial wastes, wastewater sludge, etc.*

[4] *Secondary Containment for Pipeline - Secondary containment consists of a continuous pipeline sleeve (no joints). Examples acceptable to Metropolitan include welded steel pipe with grout in annular space and cathodic protection (unless coated with non-conductive material) and High Density Polyethylene (HDPE) pipe with fusion-welded joints.*

[5] *Secondary Containment for Structures – Secondary containment consists of external HDPE liner or other approved method.*

Table 2: General Guidelines for Pipeline Separation between Metropolitan's Pipeline[1] and Storm Drain and/or Disinfected Tertiary Recycled Water[2]

Pipeline Crossings	Metropolitan requires crossing pipelines to be special pipe construction (no joints) or have secondary containment[3] within 10-feet tangent to the outer edges of Metropolitan's pipeline. Additionally, pipelines crossing Metropolitan's pipelines must be perpendicular and maintain a minimum 1-foot vertical clearance.
Parallel Pipeline	Metropolitan generally does not permit the installation of longitudinal pipelines along its rights-of-way. Within public streets, Metropolitan requests that all parallel pipelines be located a minimum of 10 feet from the outside edges of Metropolitan's pipelines. When 10-foot horizontal separation criteria cannot be met, special pipe construction (no joints) or secondary containment[3] are required.
Storm Drain Manhole	Permanent utility structures (e.g., manhole. catch basin, inlets) are not allowed within Metropolitan's rights-of-way. Within public streets, Metropolitan requests all structures parallel to its pipeline be located a minimum of 10 feet from the outside edges of its pipelines. When 10 foot horizontal separation criteria cannot be met, the structure must have secondary containment[4].

Notes:

[1] *Separation distances are measured from the outer edges of each pipe.*

[2] *Disinfected tertiary recycled water as defined* in Title 22, California Code of Regulations, Chapter 3 (*Water Recycling Criteria*), Section 60301.

[3] *Secondary Containment for Pipeline - Secondary containment consists of a continuous pipeline sleeve (no joints). Examples acceptable to Metropolitan include welded steel pipe with grout in annular space and cathodic protection (unless coated with non-conductive material) and High Density Polyethylene (HDPE) pipe with fusion-welded joints.*

[4] *Secondary Containment for Structures – Secondary containment consists of external HDPE liner or other approved method.*

Table 3: General Guidelines for Pipeline Separation[1] between Metropolitan's Pipeline and Recycled Water[2,4] Irrigations

Pressurized recycled irrigation mainlines	• Crossings - must be perpendicular and maintain a minimum 1-foot vertical clearance. Crossing pressurized recycled irrigation mainlines must be special pipe construction (no joints) or have secondary containment[3] within 10-feet tangent to the outer edges of Metropolitan's pipeline. • Longitudinal - must maintain a minimum 10-foot horizontal separation and route along the perimeter of Metropolitan's rights-of-way where possible.
Intermittently Energized Recycled Water Irrigation System Components	• Crossings - must be perpendicular and maintain a minimum 1-foot vertical clearance. Crossing irrigation laterals within 5-feet tangent to the outer edges of Metropolitan's pipeline must be special pipe construction (no joints) or have secondary containment[3]. • Longitudinal – must maintain a minimum 5-foot horizontal separation between all intermittently energized recycled water irrigation system components (e.g. irrigation lateral lines, control valves, rotors) and the outer edges of Metropolitan's pipeline. Longitudinal irrigation laterals within 5-feet tangent to the outer edges of Metropolitan's pipeline must be special pipe construction (no joints) or have secondary containment[3].
Irrigation Structures	Irrigation structures such as meters, pumps, control valves, etc. must be located outside of Metropolitan's rights-of-way.
Irrigation spray rotors near Metropolitan's aboveground facilities	Irrigation spray rotors must be located a minimum of 20-foot from any Metropolitan above ground structures with the spray direction away from these structures. These rotors should be routinely maintained and adjusted as necessary to ensure no over-spray into 20-foot clear zones.
Irrigations near open canals and aqueducts	Irrigation with recycled water near open canals and aqueducts will require a setback distance to be determined based on site-specific conditions. Runoff of recycled water must be contained within an approved use area and not impact Metropolitan facilities. Appropriate setbacks must also be in place to prevent overspray of recycled water impacting Metropolitan's facilities.

Notes:

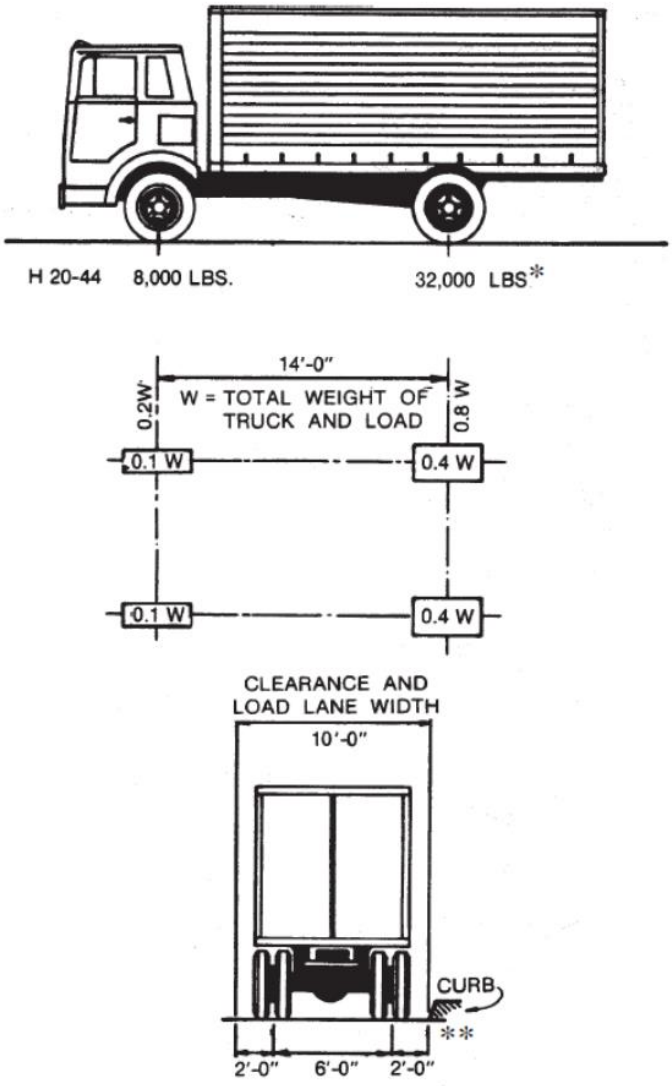
[1] *Separation distances are measured from the outer edges of each pipe.*

[2] *Requirements for recycled water irrigation apply to all levels of treatment of recycled water for non-potable uses.* Recycled water definitions are included in Title 22, California Code of Regulations, Chapter 3 (*Water Recycling Criteria*), Section 60301.

[3] *Secondary Containment for Pipeline - Secondary containment consists of a continuous pipeline sleeve (no joints). Examples acceptable to Metropolitan include welded steel pipe with grout in annular space and cathodic protection (unless coated with non-conductive material) and High Density Polyethylene (HDPE) pipe with fusion-welded joints.*

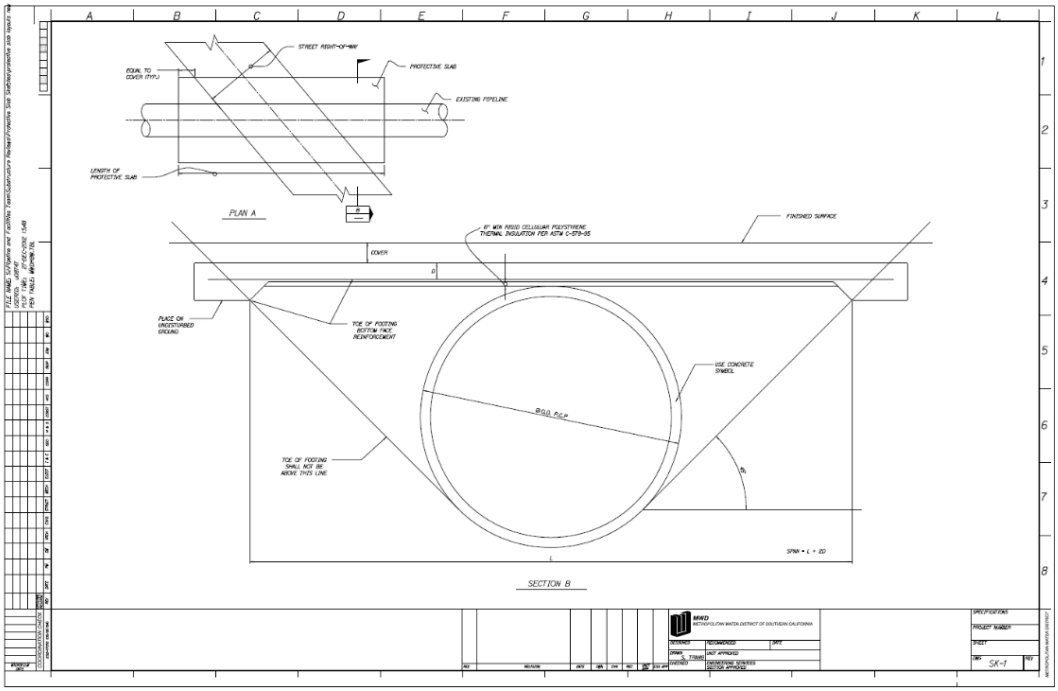
[4] *Irrigation with recycled water shall not be applied directly above Metropolitan's treated water pipelines.*

Figure 1: AASHTO H-20 Loading



Note: The H loadings consist of a two-axle truck or the corresponding lane loadings as illustrated above. The H loadings are designated "H" followed by a number indicating the gross weight in tons of the standard truck.

Figure 2: Drawing SK-1



Responses to Comment Letter R3 – The Metropolitan Water District of Southern California

R3-1 The commenter provides general introductory information, description of Metropolitan Water District, and notes that Metropolitan owns and operates the Upper Feeder Pipeline within the Project's vicinity. The County appreciates and values these comments during the EIR participation process. The Comment is noted, and the remaining comments are responded to below**.**

R3-2 Commenter advises that the Upper Feeder is not an aqueduct. *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft *EIR Sections 3.0, Project Description* and *4.5, Cultural Resources*. These edits revise and clarify the proper name of the Upper Feeder by removing 'Aqueduct' from the name. As noted in *Section 4.5*, the Project would not impact the Upper Feeder Pipeline. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

R3-3 Commenter requests that all references to the Upper Feeder as an historical resource be removed from the Draft EIR. *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Sections 3.0 Project, Description* and *4.5, Cultural Resources*. These edits revise and clarify the language that the Upper Feeder Pipeline is not a historical resource as defined under CEQA and to remove instances of the Upper Feeder from discussions of historical resources. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

R3-4 Commenter advises on necessary coordination efforts between Project and the Metropolitan Water District of Southern California. The Project would seek all necessary approvals from applicable agencies, including the Metropolitan Water District of Southern California if any aspect of the Project would affect any of Metropolitan's facilities.

R3-5 Commenter encourages the use of water conservation measures. The Project would include the use of recycled water for irrigation and other non-potable water uses. As discussed in the SCCIISP and in the Draft EIR *Section 3.0, Project Description*, energy and water-efficient appliances, fixtures, lighting, and windows shall meet or exceed state energy performance standards. Energy Star qualified (or equivalent) models of mechanical equipment are strongly encouraged. Plants included within the Specific Plan's preliminary plant list were selected for the unique aesthetic qualities which complement the architectural design themes throughout the Specific Plan area as well as their drought-tolerant nature. Future noticing and updates regarding the Project will be made available as requested.

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City of Fontana (L1)

FONTANA
CALIFORNIA

City Council

Acquanetta Warren
Mayor

Peter A. Garcia
Mayor Pro Tem

John B. Roberts
Council Member

Jesus "Jesse" Sandoval
Council Member

Phillip W. Cothran
Council Member

PLANNING DEPARTMENT

July 26, 2022

Steven Valdez
County of San Bernardino
385 N Arrowhead Ave, First Floor
San Bernardino CA 92415

RE: Notice of a Draft Environmental Impact Report (Draft EIR) for the proposed Speedway Commerce Center II Specific Plan Project

Dear Mr. Steven Valdez:

Thank you for the Notice of Preparation for the Draft EIR. for the proposed project that includes the Speedway Commerce Center II Specific Plan. 1

The City of Fontana has the following comments:

1. The SB 743 VMT Analysis completed in February 2022 references the California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (August 2010). It is recommended that the more recent standard which was released in December 2021 be referenced in the analysis presented. 2
2. The City of Fontana requests the opportunity to discuss the findings of the Traffic Study dated January 2022 with the County of San Bernardino. 3
3. Please utilize the attached draft Truck Route Exhibit for the evaluation of traffic impact. The attached exhibit will be presented to the City Council in Sept/Oct 2022. 4
4. The staff noticed that the submitted traffic study does not include the area south of Jurupa. Would you please explain the reasoning behind? 5

If you have any questions, please feel free to contact me at (909) 350-6566 or rleung@fontana.org

Sincerely,

Rina Leung
Senior Planner

CITY OF FONTANA 8353 SIERRA AVENUE, FONTANA, CALIFORNIA 92335
www.Fontana.org

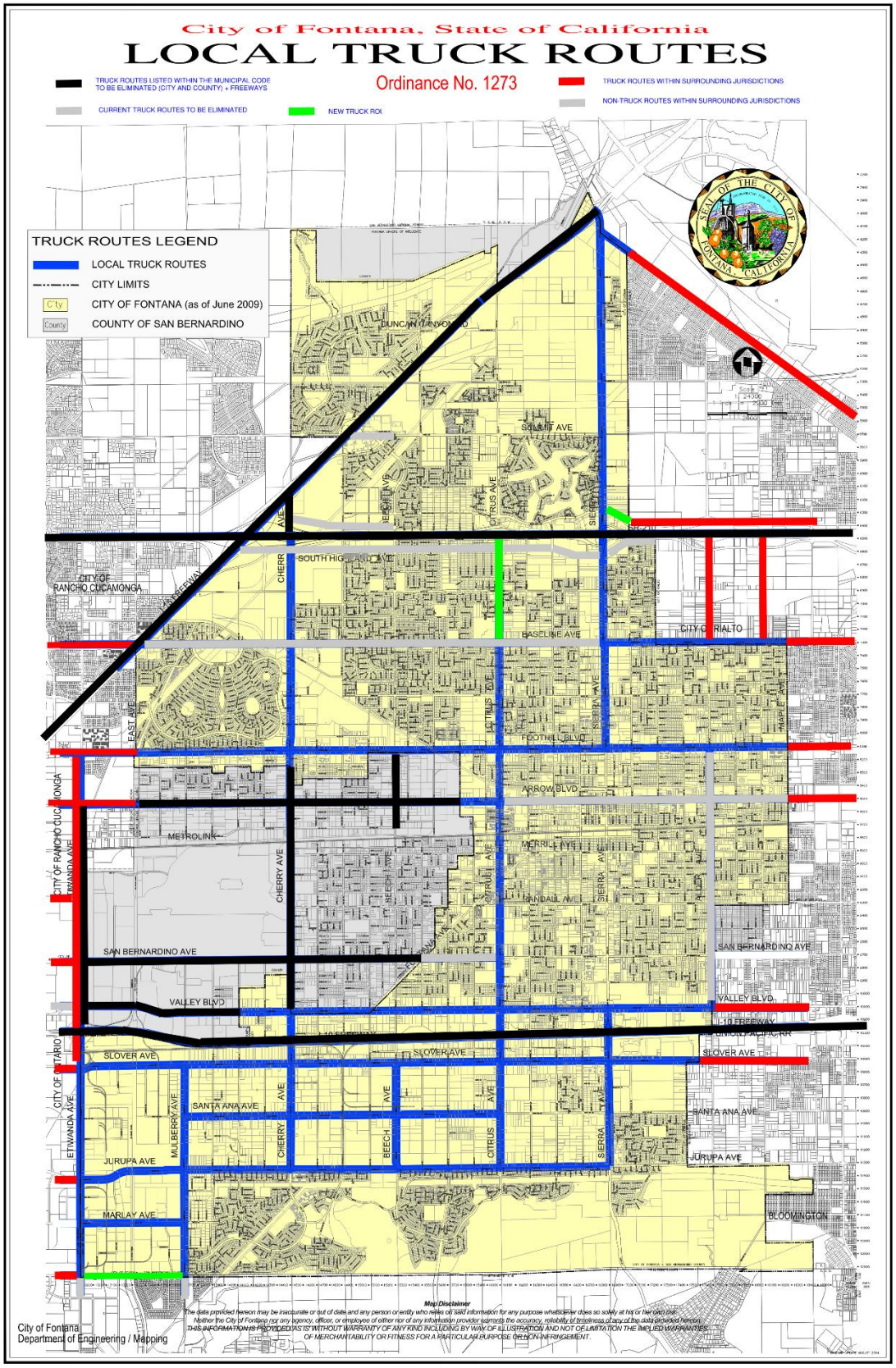
From: Gia Kim <gkim@fontana.org>
Sent: Wednesday, July 27, 2022 9:17 AM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Cc: Burnett, Candyce <Candyce.Burnett@kimley-horn.com>; Rina Leung <rleung@fontana.org>; Nicole Campbell <ncampbell@fontana.org>
Subject: RE: NOP for the Speedway Commerce Center II SP Project

Hello Steven,

In addition to the City of Fontana comments, I would like to inform you and the applicant that the project area is within the City and County's Western Sphere Agreement. I attached the MOU between the two entities for your information for additional conditions of the project.

Gia Kim
Engineering Manager • Engineering
City of Fontana • 8353 Sierra Ave • Fontana, CA 92335
gkim@fontana.org • Office: 909-350-6655

6


City of Fontana, State of California
LOCAL TRUCK ROUTES
Ordinance No. 1273
TRUCK ROUTES LISTED WITHIN THE MUNICIPAL CODE TO BE ELIMINATED (CITY AND COUNTY) + FREEWAYS
CURRENT TRUCK ROUTES TO BE ELIMINATED
NEW TRUCK ROI
TRUCK ROUTES WITHIN SURROUNDING JURISDICTIONS
NON-TRUCK ROUTES WITHIN SURROUNDING JURISDICTIONS
TRUCK ROUTES LEGEND
LOCAL TRUCK ROUTES
CITY LIMITS
City
CITY OF FONTANA (as of June 2009)
County
COUNTY OF SAN BERNARDINO
SEAL OF THE CITY OF FONTANA CALIFORNIA
DUNCAN CANYON RD
SUMMIT AVE
CITRUS AVE
SIERRA AVE
SOUTH HIGHLAND AVE
CITY OF RANCHO CUCAMONGA
CHERRY AVE
EAST AVE
BASELINE AVE
CITY OF RIALTO
MAPLE AVE
FOOTHILL BLVD
ARROW BLVD
METROLINK
MERRILL AVE
MAIN AVE
SAN BERNARDINO AVE
VALLEY BLVD
I-10 FREEWAY
UNION PACIFIC RR
SLOVER AVE
CITY OF ONTARIO
ETIWANDA AVE
SANTA ANA AVE
MULBERRY AVE
BEECH AVE
JURUPA AVE
MARLAY AVE
BLOOMINGTON
Map Disclaimer
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OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT.
City of Fontana
Department of Engineering / Mapping

FIRST AMENDED AND RESTATED

MEMORANDUM OF UNDERSTANDING

BETWEEN

CITY OF FONTANA
AND
COUNTY OF SAN BERNARDINO

AMENDED AS OF OCTOBER 9 , 2012

WESTERN SPHERE OF INFLUENCE

16498.00000\7568621.3

CITY OF FONTANA / COUNTY OF SAN BERNARDINO

FIRST AMENDED AND RESTATED MEMORANDUM OF UNDERSTANDING (Western Sphere of Influence)

This First Amended and Restated Memorandum of Understanding (Western Sphere of Influence) ("Agreement") is entered into between (1) the City of Fontana, a California general law city and municipal corporation ("City") and, (2) the County of San Bernardino, a political subdivision of the State of California ("County"). This Agreement is reference dated as of October 9, 2012, and supersedes that certain Memorandum of Understanding (Western Sphere of Influence) dated August 26, 2008 (the "2008 MOU"). This Agreement will not become effective until the occurrence of the "Effective Date" defined below. If the Effective Date does not occur on or before December 31, 2012, then this Agreement may not thereafter become effective and any prior approvals and/or signatures of the Parties shall be deemed, automatically and without need of further act or instrument by either Party, rescinded and void ab initio. The City and the County are sometimes referred to in this Agreement, individually, as a "Party" and, collectively, as the "Parties".

This Agreement will become effective on the date ("Effective Date") on which it has been approved by both the City Council on behalf of the City and the Board of Supervisors on behalf of the County and fully executed counterpart originals have been exchanged between the Parties. The term ("Term") of this Agreement shall commence on the Effective Date and shall automatically end upon the City's annexation of the entire Western Sphere (as defined in Recital A, below), or either Party's election to terminate this Agreement, which election may be made at any time and for any reason (or for no reason), notice of which shall be given as provided by Section 6.

RECITALS

A. Immediately adjacent to the westerly border of the City is an unincorporated area of land located within the County and designated by the San Bernardino County Local Agency Formation Commission ("LAFCO") as the City's Western Sphere of Influence ("Western Sphere"). The Western Sphere is approximately 8.5 square miles in size. A map depicting the boundaries of the Western Sphere is attached as Exhibit "A".

B. The City provides sanitary sewer services within portions of the Western Sphere. The City owns and maintains the pipes and other transmission infrastructure needed to provide such service, whereas the Inland Empire Utilities Agency ("IEUA") provides wastewater treatment services within portions of the Western Sphere through a series of agreements with the City. The City's current annexation policy is to require any landowner or developer within the Western Sphere who desires to connect to the City's sanitary sewer system to either sign an irrevocable agreement to annex to the City or to complete a pre-annexation agreement. By this Agreement, the City and County have agreed on certain practices and procedures that they intend will facilitate economic development within the Western Sphere.

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C. The City and the County acknowledge that the Western Sphere, or some portion of it, may be annexed into the City at some future date. The County further acknowledges that the City's intent in entering into this Agreement includes ensuring that development within the Western Sphere which occurs prior to such annexation be accomplished in a manner that as closely as possible reflects the City's practices and requirements as established in the City's Development Code as it exists from time to time throughout the Term of this Agreement.

D. The Parties recognize that development within the Western Sphere will be enhanced and facilitated by the investment of public funds into the public infrastructure needed to support such development. The chief sources of public funds for such public infrastructure are those fees and charges imposed and collected from developers within the Western Sphere as a condition to the obtaining of building permits and other entitlements for such development. County has a limited program for the collection of such fees. The City, in connection with the pre-annexation agreements described in Recital "B" above, requires developers within the Western Sphere to pay to the City certain of those development impact fees that would otherwise be assessed against such development if it were located within the City's jurisdictional boundaries. As to the Western Sphere, these development impact fees will consist solely of sewer connection and expansion fees, a storm drainage facilities fee, a fire facilities fee, and a park development fee (for residential properties only) (collectively, the "Western Sphere Development Impact Fees" or "Western Sphere DIF"). The Western Sphere DIF shall be charged at the same rates which City charges for similar development projects within the City's incorporated boundaries, as such rates may be amended from time to time. To facilitate the economic development and revitalization of the Western Sphere, the City and the County have agreed that the Western Sphere DIF and the corresponding impact fees collected by the County from projects being developed within the Western Sphere shall be invested into public infrastructure projects located within the Western Sphere as more particularly described in this Agreement.

AGREEMENT

Section 1. Incorporation of Recitals. The Parties each acknowledge the accuracy of the factual matters set forth in the Recitals and further acknowledge that such facts form the material basis for their entry into this Agreement.

Section 2. County's Obligation to Consult re Development Entitlements and Development Code and Development Standard Changes. The City has reviewed the County's current Development Code and other regulations concerning development within the Western Sphere (collectively, the "County Standards"). Although not identical to City standards, the City is nonetheless satisfied that development which takes place in accordance with the County Standards will be of sufficient quality and character so as to be compatible with the development in the adjoining portion of the City. Accordingly, and in order to foster the continued development of the Western Sphere consistent with the above objective, the County agrees as follows:

2.1. The County shall submit to the City full and complete copies of any and all development or other entitlement permits or applications for development entitlements occurring within the Western Sphere. Such information shall be provided to the City

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no less than thirty (30) days prior to the administrative or County Planning Commission hearing at which the development application or other entitlement is to be considered. The City shall promptly review the application and, within twenty (20) days following its receipt from the County, the City will provide written comments to the County for its consideration. The County agrees to reasonably consider the City's comments and, to the extent not in conflict with the County Standards, to incorporate such City-recommended changes as either modifications to or conditions of approval of such entitlement.

2.2. The County shall provide to the City no less than thirty (30) days prior notice of any proposed changes to any of the County Standards, including General Plan amendments and Zoning and Development Code amendments. The County shall review and reasonably respond to any suggested changes and County staff shall incorporate such City-recommended changes for consideration by the County Planning Commission or Board of Supervisors, as applicable.

2.3. The requirements of the foregoing Sections 2.1 and 2.2 shall not operate to modify, waive or abridge any County obligation arising under the California Environmental Quality Act (Public Resources Code Sections 21000, et seq.) ("CEQA") to provide the City with environmental notice and opportunity to comment as prescribed by CEQA.

2.4. The County shall review and consider a proposed change to the County Standards to make the County Standards consistent with the City's Automatic Fire Sprinkler Systems standards as set forth in City Code Sections 11-26 thru 11-31.

Section 3. City Provision of Sewer Service. To the extent the City/IEUA has available wastewater (sewer) treatment capacity, the City agrees to provide sewer service to and authorize a sewer connection by any landowner requesting such connection and service within the Western Sphere provided that: (1) such landowner complies with the City's annexation policy, as it may be amended from time to time (a current copy of which is attached as Exhibit "B"); (2) the landowner meets all other City requirements and pays the applicable sewer service fees which are imposed by the City pursuant to the City's Municipal Code and other policies and regulations, as they may be amended from time-to-time, in connection with such sewer service; and (3) the landowner pays to the City the Western Sphere DIF which would be applicable to the development if it were to occur in the City at the time a sewer connection permit is issued. Provided, however, that the City shall not require the payment of any development impact fee which is imposed by the County to fund the same infrastructure as being funded by the City impact fee, City agrees that this Agreement will accomplish, in major part, what annexation would provide for the Western Sphere. Therefore, notwithstanding the requirement for a landowner to comply with the City's annexation policy or LAFCO's requirements, or both, the City agrees it will not file a formal application with the Local Agency Formation Commission seeking to annex any part of the Western Sphere as long as this Agreement is in effect, unless the annexation application is otherwise agreed upon by the City and the County.

Section 4. Use of Development Impact Fees Within Western Sphere. Each year as part of their preparation and approval of their respective Capital Improvement Plans described by Government Code Section 66002, the City and the County shall each use reasonable good faith efforts to include capital improvement/public infrastructure projects within

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the Western Sphere which will be funded by the Western Sphere DIF (as to the City) and those development impact fees received by the County from development occurring within the Western Sphere. Without limiting the legislative discretion granted to either the City Council or the Board of Supervisors, the Parties agree that, to the extent possible, the following projects shall be given priority in the allocation of Western Sphere DIF and those development impact fees received by the County from development occurring within the Western Sphere:

4.1 Sewer Facilities
4.2 Storm Drainage Facilities
4.3 Park Development: a central park
4.4 Fire Facilities

The above list is intended by the Parties to be precatory only and shall not be a binding commitment to fund. The County's Second District Supervisor and City's Mayor are authorized to meet and attempt to resolve any disputes regarding the priority of projects to be funded and/or add new projects, subject to the consent and ratification of the City Council and Board of Supervisors. Actual funding of such projects shall require separate agreements for each specific project, as approved by both the City Council and Board of Supervisors.

Section 5. Sales Tax Allocations. Sharing of Sales Tax under the 2008 MOU is hereby terminated. In lieu of the ongoing Sales Tax allocation by the County under the 2008 MOU, the County's remaining obligation under Section 5 shall be fulfilled in its entirety by the following actions:

5.1 Five Million Five Hundred Sixty Seven Thousand Eight Hundred and Sixty Seven Dollars and 39/100 ($5,567,867.39) currently set aside in the County Fire CIP accounts to fund construction of Fire Station 80 shall be paid by the County to the Fontana Fire Protection District within ten (10) days following the Effective Date of this Agreement, for use in the acquisition of land and construction of a fire station to serve the Western Sphere area, tentatively located near the intersection of Foothill Boulevard and Banana Avenue; and

5.2 County shall, within ten (10) days following the Effective Date of this Agreement, pay to the City Four Million Five Hundred Thousand Dollars ($4,500,000.00) to fund the improvement of a flood control/water quality control basin by the City.

Section 6. Notices. All notices permitted or required under this Agreement shall be given to the respective Parties at the following addresses, or at such other address as the respective parties may provide in writing for this purpose.

City	County
City of Fontana 8353 Sierra Avenue Fontana, CA 92335	County of San Bernardino 385 North Arrowhead Avenue San Bernardino, CA 92415
Attention: City Manager	Attention: County Administrative Officer

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Section 7. Integration/Modifications. This Agreement contains the entire understanding of the Parties with respect to the matters set forth in this Agreement and supersedes any and all prior writings and oral discussions concerning the same. This Agreement may not be amended except by a writing duly signed and duly approved by the City and County. This Agreement is not intended to and shall not accrue to the benefit of any person or entity other than the City and the County.

Section 8. Governing Law. This Agreement shall be governed by the procedural and substantive laws of the State of California.

Section 9. Invalidity; Severability. If any portion of this Agreement is declared invalid, illegal, or otherwise unenforceable by a court of competent jurisdiction, the remaining provisions shall continue in full force and effect.

Section 10. Counterpart Originals. This Agreement may be executed by the Parties in counterparts, all of which together shall constitute a single Agreement.

Section 11. Attorney's Fees. If any legal action is instituted to enforce or declare any Party's rights hereunder, each Party, including the prevailing Party, shall bear its own costs and attorneys' fees.

Section 12. Authority to Enter into Agreement. City and County both warrant that the individuals who have signed this Agreement have the legal power, right and authority to make this Agreement and bind both respective Parties to this Agreement.

[Signatures on following pages]

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SIGNATURE PAGE
TO
FIRST AMENDED AND RESTATED
MEMORANDUM OF UNDERSTANDING
(Western Sphere of Influence)

COUNTY:

COUNTY OF SAN BERNARDINO

By: _____
Josie Gonzales, Chair
Board of Supervisors

Dated: OCT 23 2012

SIGNED AND CERTIFIED THAT A COPY OF THIS DOCUMENT HAS BEEN DELIVERED TO THE CHAIRMAN OF THE BOARD

LAURA H. WELCH
Clerk of the Board of Supervisors

By: _____
Deputy

Dated: OCT 23 2012

APPROVED AS TO LEGAL FORM:

JEAN-RENE BASLE
County Counsel

By: _____

Dated: 10-22-12

CITY:

CITY OF FONTANA, a California general law city and municipal corporation

By: _____
Kenneth R. Hunt
City Manager

Dated: 10/11/12

ATTEST:

By: _____
City Clerk

Dated: 10/11/12

APPROVED AS TO LEGAL FORM:

BEST BEST & KRIEGER LLP

By: _____
Jeff Ballinger, City Attorney

Dated: 10/16/2012

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EXHIBIT A
TO
FIRST AMENDED AND RESTATED
MEMORANDUM OF UNDERSTANDING

WESTERN SPHERE AREA MAP
(See following page)

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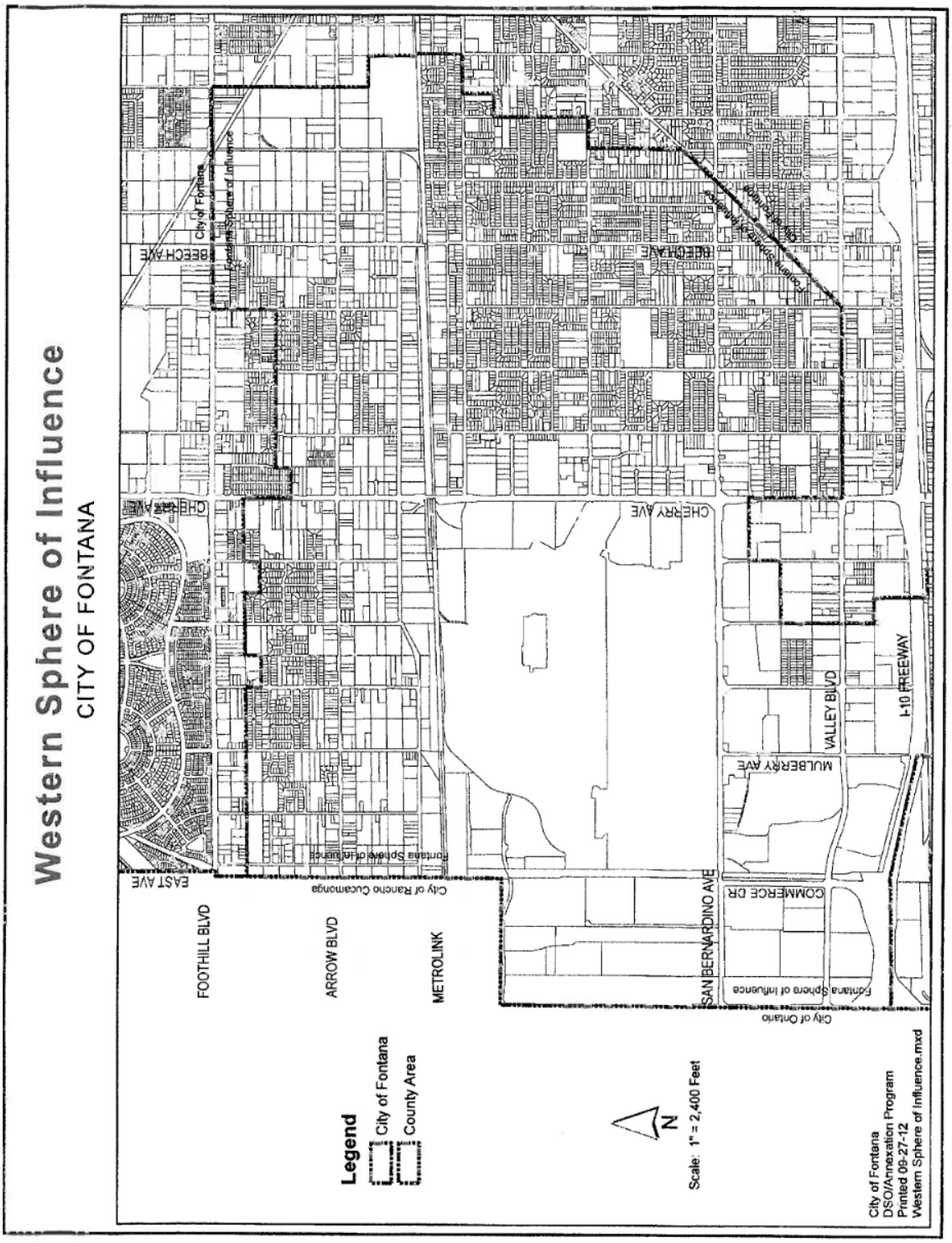
Western Sphere of Influence
CITY OF FONTANA
BEECH AVE
City of Fontana
Fontana Sphere of Influence
CHERRY AVE
DECOTA AVE
MULBERRY AVE
VALLEY BLVD
I-10 FREEWAY
COMMERCE DR
SAN BERNARDINO AVE
EAST AVE
FOOTHILL BLVD
ARROW BLVD
METROLINK
City of Rancho Cucamonga
Fontana Sphere of Influence
City of Ontario
Legend
City of Fontana
County Area
N
Scale: 1" = 2,400 Feet
City of Fontana
DSO/Annexation Program
Printed 09-27-12
Western Sphere of Influence.mxd

Responses to Comment Letter L1 – City of Fontana

L1-1 The commenter provides general introductory information, project description, and a greeting. The commenter requests a more recent version of the CAPCOA be referenced in the Draft EIR's VMT analysis. At the time of preparation of the VMT analysis, the 2021 CAPCOA document was released as a draft. Therefore, the adopted 2010 CAPCOA document was referenced. Review of the December 2021 CAPCOA document showed that there will not be any significant changes to the VMT analysis findings and conclusions in the EIR. The project VMT impacts are less than significant. The CAPCOA reference is only for the purposes of showing potential VMT reductions from the project design features. The total potential reduction in VMT based on 2021 CAPCOA document for the TDM measures in the EIR is up to 15 percent, which is higher than the potential reduction identified in the EIR. As such, the analysis presented is conservative.

L1-2 The commenter requests further opportunity to consult with the County**.** This comment is noted and acknowledged for the record.

L1-3 The commenter requested the utilization of an attached draft Truck Route exhibit for the evaluation of traffic impacts. The truck distribution assumptions in the Traffic Study were based on truck route adopted at the time of the study. The City of Fontana General Plan update is not yet adopted (the timeline for adoption is not known at this time) and the analysis was based on the adopted General Plan at the time the analysis was conducted. It is up to the City of Fontana to evaluate the effects of removing a major roadway which is currently a truck route which would affect not only Project traffic but all truck traffic.

L1-4 Based on the San Bernardino County VMT/Traffic guidelines and the approved Traffic Scoping Agreement, the study area includes all study intersections where the Project would contribute more than 50 peak hour trips. Areas south of Jurupa Avenue consist of primarily industrial uses with small amounts of residential housing.

L1-5 The commenter's request to be provided subsequent public noticing and hearing information is noted for the record and the commenter will be added to the list and sent notices of upcoming hearings or notices related to the Project.

L1-6 The comment refers to a Memorandum of Understanding (MOU) between the City and San Bernadino County and a copy of the MOU is attached. However, the Project is subject to a November 24, 2015, Agreement for the Provision of Sewer and Recycled Water Service, to which the City of Fontana, Inland Empire Utilities Agency (IEUA), The California Speedway Corporation, and others are party. As a result, the Master Developer will not enter into a pre-annexation agreement with the City of Fontana, and will not be subject to the provisions of the MOU. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

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City of Rancho Cucamonga (L2)

From: McPherson, Sean <Sean.McPherson@cityofrc.us>
Sent: Monday, July 18, 2022 5:59 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Cc: Smith, Michael <Michael.Smith@cityofrc.us>
Subject: FW: Speedway Commerce Center II - Notice of Preparation of DEIR

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Hi Steven,

Please see comments below provided on January 13, 2022. Beyond this list of comments, please also see attached for the updated list of cumulative projects proposed within the City of Rancho Cucamonga which will need to be incorporated within any cumulative analysis related to environmental impacts.

Please let me know of any questions.

Thanks,

Sean McPherson, AICP
Senior Planner
Planning Department
City of Rancho Cucamonga
10500 Civic Center Drive
Rancho Cucamonga, CA 91730
909-774-4307

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CITYWIDE CURRENT PROJECTS LIST
Major Projects currently in Entitlements, Building Plan Check, or Under Construction
For the purposes of this list, major projects are defined as new residential contruction of 5 or more units, and new commercial/industrial buildings of any size.
Last Updated: 7/2022

RESIDENTIAL					
Parent File	Planner	Common Name (If Applicable)	Location	Description	Status
DRC2012-00672	Mike Smith	Sycamore Heights	North side of Foothill Boulevard, between Red Hill Country Club Drive and the Pacific Electric Trail Right-of-Way	175 Attached Condominium Units	Approved. Grading permits in review
DRC2016-00877	Tabe Van Der Zwaag	Weaver Lane	East side of Camellian St., North of Hillside Rd. APN: 1061-261-01	26 Single-Family Residences	Under Construction
DRC2019-00839	Vincent Acuna	East Avenue Villa	6737 East Ave.	12 Single-Family residences	Entitlements
DRC2019-00558	Vincent Acuna	N/A	North of the 210 Fwy, east of East Ave at the Easterly extension of Wilshire Dr. and Copley Dr. APN: 0226-102-30	10 Single-Family Residences	Under Construction
DRC2019-00502	Sean McPherson	SUBTPM18961 6-Lot Subdivision	Brittany Lane and Sapphire	6 Single-Family Residences	Building Plan Check
DRC2017-00925	Dat Tran	Van Daele	The Resort*	296 Multi-Family Development	Under Construction
DRC2018-00784	Tabe Van Der Zwaag	New Home	The Resort*	135 Multi-Family Development	Under Construction
DRC2018-00851	Vincent Acuna	Tempo at the Resort	The Resort*	80 Single-Family Condominiums	Under Construction
DRC2019-00674	Vincent Acuna	Homecoming at the Resort	The Resort*	867 Apartments	Under Construction
SUBT720353	Vincent Acuna	Hellman 6-Home Subdivision	6929 Hellman Ave.	6 Single-Family Residences	Building Plan Check
DRC2021-00018	Tabe Van Der Zwaag	Bayan Avenue 9	South side of Banyan and west of Etiwanda	9 Single-Family Residence	Approved - Pending Plan Check
DRC2020-00139	Tabe Van Der Zwaag	Manning Homes 17	East Side of East Avenue and South of Banyan	17 Single -Family Residences	Building Plan Check
COMMERCIAL					
Parent File	Planner	Common Name (If Applicable)	Location	Description	Status
DRC2019-00371	Sean McPherson	8281 Utica Office	8281 Utica	12,800 square foot office building	Building Plan Check
DRC2019-00381	Tabe Van Der Zwaag	Red Hill Gas Station	NEC Red Hill and Foothill	Expand Exising Gas Station	Under Construction
DRC2019-00985	Vincent Acuna	Keri's Sushi Restaurant	10006 Foothill Blvd.	Demolish existing Keri's sushi Restaurant and construct a new 3,111 square-foot replacement	Building Plan Check
DRC2020-00199	Mena Abdul-Ahad	St. Justina Church	6386 Sapphire St.	New 18,506 square foot social hall building	Building Plan Check
DRC2020-00318	Tabe Van Der Zwaag	Starbucks	Foothill and Vineyard SWC	Replacing three existing commerical building with three new commerical buildings, one to include a drive-thru lane.	Under Construction
DRC2020-00360	David Eoff	Packing House	Base Line / Roberds	Rehab of existing alta loma packing house into a new food hall with indoor and outdoor dining	Entitlements
DRC2020-00432	David Eoff	Station 178	Town Center Drive / Terra Vista Parkway	Construction of a new 2 story fire station for RCFPD	Under Construction
DRC2021-00187	Mike Smith	Ling Yen Mountain Temple	Northern terminus of Wardman Bullock Road	Construction of 8 buildings toalling 93,000 square feet	Entitlements
INDUSTRIAL					
Parent File	Planner	Common Name (If Applicable)	Location	Description	Status
DRC2018-00946	Mena Abdul-Ahad	Hickory and Arrow Industrial	SWC of Hickory and Arrow	33,067 square-foot warehouse	Inspection Phase
DRC2021-00320	Vincent Acuna	Arrow and Rochester Industrial	NEC of Arrow and Rochester	49,745 square-foot warehouse	Building Plan Check
DRC2018-00529	Dat Tran	Scheu	9866 7th St	124K and 74K Buildings	Completed
DRC2019-00766	Vincent Acuna	Milliken and Jersey Industrial	NWC of Jersey Blvd. and Milliken Ave.	143,014 square-foot industrial warehouse	Building Plan Check
DRC2018-00430	Dat Tran	Bolnado's 20K Building	8th and Vineyard	25,399 square foot industrial building.	On Hold
DRC2019-00590	Tabe Van Der Zwaag	104,269 Industrial Building	East Side of Pecan South of Arrow	104,269 SF Industrial Building	Building Plan Check
DRC2019-00742	David Eoff	Panattoni 9th and Vineyard	SWC 9th Street and Vineyard Avenue	1,037,467 square-foot industriel warehouse (3 buildings)	Entitlements

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DRC2018-00912	Dat Tran	Phelan	9th and Vineyard	3 Industrial Buildings, 235,534 s.f.	Completed
DRC2020-00026	Mena Abdul-Ahad	23,380 sf. Commercial warehouse	9150 Hyssop Drive	23,380 square foot commercial warehouse building	Inspection Phase
DRC2020-00177	Sean McPherson	HILLWOOD - Two industrial warehouse buildings	N/o Napa St e/o Etiwanda	Two buildings totaling 651,000 square feet; project involves GPA, ZMA, Prezone, Annexation	plan check
DRC2020-00222	Tabe Van Der Zwaag	Frito-Lays Parking Lot	8th and Hellman SWC	Parking lot for 150 trailers for Frito-Lays	Entitlements
DRC2020-00202	Sean McPherson	BRIDGE DEVELOPMENT - Two industrial warehouse buildings	12434 4th Street	Two buildings totaling 2.2M square feet; project involves GPA, ZMA.	Consutrction and plan check
DRC2021-00166	Tabe Van Der Zwaag	Bennell Hydraulics	8821 Etiwanda	22,000 square foot industial building	Building Plan Check
DRC2021-00484	Mike Smith	Ares / Black Creek	8996 Etiwanda	two new warehouse buildings - 1m sf, 132k sf along the west side of Etiwanda north of Napa Street	Entitlements
DRC2021-00485	Mike Smith	ARes / Black Creek	12343 Arrow Rte	8 new warehouse buildings through a master plan process on the former CMC site. buildings range in size from 55k sf to 700k sf	Entitlements
DRC2019-00651	David Eelf	Air Liquide	12550 Arrow Route	New industrial building 16,000 sf, with 3,000 sf office space for air liquide prodiuction/manufacturing	Under Construction
DRC2022-00101	Sean McPherson	Newcastle	12459 Arrow Route	One new spec industrial approximately 340,000 square feet in size.	Entitlements
DRC2022-00209	Vincent Acuna	Patriot Partners Hermosa/4th	NEC Hermosa and 4th	Two new spec industrial approxiamtely 91K	Entitlements
DRC2022-00156	Mena Abdul-Ahad	Patriot Partners Whittram	13045 Whittram	New spec industrial ~86,000 square feet of industrial with 3,000 feet of office	Entitlements
MIXED USE**					
Parent File	**Planner**	**Common Name (If Applicable)**	**Location**	**Description**	**Status**
DRC2014-01134	Tabe Van Der Zwaag	La Mirage	NWC of Foothill and East	193 Unit Mixed Use Development with 3,246 square feet of Commercial	Under Construction
DRC2016-00450	Mena Abdul-Ahad	Day Creek Villages	SWC of Daycreek Blvd. and Baseline Rd.	392 residential units, 71 room hotel, and 21,627 square feet of commercial space	All Finaled.

1

From: Smith, Michael <Michael.Smith@cityofrc.us>
Sent: Thursday, January 13, 2022 11:21 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Speedway Commerce Center II - Notice of Preparation of DEIR

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Hello, Steven

The City of Rancho Cucamonga has received the Notice of Preparation (NOP) dated December 13, 2021 of the Draft Environmental Impact Report (DEIR) for *Speedway Commerce Center II* with a comment period that closes on January 13, 2022. 2

We have reviewed the NOP and have the following, broad topics for discussion in the DEIR. Please consider the following impacts on the City of Rancho Cucamonga (the "City") and, in general, the surrounding area in the vicinity of the project site: 3

1. Aesthetic impacts due to glare generated by new lighting;
2. Air quality impacts during construction of the project - in particular impacts on the residential neighborhoods in the City located to the northwest of the project site; 4
3. Air quality impacts caused by the operations of the tenant(s) of the project - in particular impacts on the residential neighborhoods in the City located to the northwest of the project site; 5
4. Noise generated by additional traffic on, for example, segments of Arrow Route and Foothill Boulevard in the City, where there is residential development, between the project site and Interstate 15; 6
5. Truck parking and trailer storage during conditions when parking/storage demand exceeds the availability/capacity of parking/storage on the project site; 7
6. Traffic circulation impacts on the City's street network - in particular on Foothill Boulevard, Arrow Route, Napa Street, 4th Street, and Etiwanda Avenue; 8
7. Additional street connections to ensure efficient/effective circulation, redundancy, and access. As this is a critical topic, consider the following: 9

    - The westerly north-south "VIP Access Road" between Street "D" and San Bernardino Avenue should continue north to Napa Street to provide additional routing opportunities and more direct access for properties in the vicinity of the San Sevaine Channel between Napa Street and San Bernardino Road;
    - Street "D" should extend west to Etiwanda Avenue. This east-west connection would balance the amount of traffic and traffic movements between Cherry Avenue and Etiwanda Avenue;
    - A potential connection at 6th Street to provide an additional east-west connector between Ontario and Fontana between 4th Street/San Bernardino Avenue and Arrow Route south of the Metrolink Tracks. This will improve circulation around the properties that are bounded by the BNSF/Metrolink railroad tracks and 4th Street/San Bernardino Road. This is a connection that is not accomplished by the Napa Street connection since it terminates at Etiwanda Avenue.

8. Traffic and vehicle miles traveled (VMT) generated by the project due to trucks (shipping and final delivery) and passenger vehicles (employee commutes); 10
9. Operational impacts of the project on utilities and utility-related services in the general area due to the obsolescence of infrastructure that needs to be upgraded/reconstructed; 11
10. Public safety, e.g. police and fire, access to the project site during emergencies. 12

NOTE: the City has recently approved, or is reviewing, applications for several industrial development projects in the vicinity of the subject project site. Please contact us regarding these projects so that they are included in any evaluation of the construction/operational impact of the subject project.

The City would like to participate in the preparation and review of the DEIR. Please send all notices related to the subject project and applicable procedural steps to me via the address and email address listed below. Also, please notify me of any future projects at the Auto Center Speedway. Our awareness of these projects will assist us in informing and serving the Community.

Thank you.

Mike Smith
Principal Planner
Planning Department
City of Rancho Cucamonga
10500 Civic Center Drive
(909) 774-4317 (direct)
(909) 477-2750 x4317
michael.smith@cityofrc.us

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Responses to Comment Letter L2 – Rancho Cucamonga

L2-1 The commenter includes the letter sent in response to the Notice of Preparation (NOP) and requests those prior comments be addressed and also provides an updated cumulative project list dated July 18, 2022. The City of Rancho Cucamonga provided the initial cumulative project list (dated August 30, 2021) on September 14, 2021, which was considered to evaluate cumulative impacts per Sections 15130 and 15355 of the State CEQA Guidelines. The NOP for the Project was released on December 13, 2021. The data available at the time of the preparation of the NOP was the most current at that time, and the date of the NOP is a reasonable cutoff date for the cumulative impacts analysis. Furthermore, State CEQA Guidelines, Section 15125(a)(1) states that generally, the lead agency should describe physical environmental conditions as they exist at the time the NOP is published, including relative to the proper baseline for cumulative impacts analysis. Therefore, no further revision to the cumulative projects analyzed in the Draft EIR is required.

L2-2 The commenter notes receipt of the Notice of Preparation prepared for the Project. No further response is required.

L2-3 The commenter provides a summary of topics to consider. The commenter requests consideration of impacts to the City of Rancho Cucamonga including impacts to glare associated with the Project's lighting. Draft EIR Impact 4.1-4 assesses if the Project would create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area. Impacts were found to be less than significant. As discussed in Draft EIR *Section 4.1, Aesthetics*, no structures or features that create adverse glare effects are permitted. Thus, all exterior lighting would be shielded/hooded to prevent light trespass onto nearby properties, as defined above. The high-cube logistics, e-commerce, and ancillary commercial buildings proposed for the Project would use a variety of non-reflective building materials, and although some new reflective improvements (i.e., windows and building front treatments) would be introduced to the Project site, the proposed buildings would not be a source of substantial glare in the area. Also, the Project would serve as a benefit to the surrounding area as the proposed structures would dampen (block or absorb) the light/glare effects associated with the bright lighting that would be put in place for the proposed NextGen motorsports facility races and events. Project buildings would surround the short track on three of its four sides.

L2-4 The commenter identifies air quality impacts during construction of the Project as a topic of discussion. Air Quality impacts are discussed in *Section 4.3, Air Quality* of the Draft EIR. No significant and unavoidable impacts were identified in relation to sensitive receptors.

L2-5 The commenter identifies air quality impacts during operations of the Project as a topic of discussion. Air Quality impacts are discussed in *Section 4.3, Air Quality* of the Draft EIR. No significant and unavoidable impacts were identified in relation to sensitive receptors.

L2-6 The commenter identifies noise generated by additional traffic as a topic of discussion. Noise impacts are discussed in *Section 4.13, Noise* of the Draft EIR. Implementation of the Project would create new sources of noise in the Project vicinity, one of which is off-site traffic noise.

Implementation of the Project would generate increased traffic volumes along nearby roadway segments. The amount of traffic generated by the Project would result in a substantial increase in traffic noise in exceedance of the County's noise standards under Opening Year 2024 Plus Phase 1, Opening Year 2027 Plus Phases 1 & 2, and Opening Year 2040 Plus Phases 1 & 2 conditions, and there is no feasible mitigation to reduce these impacts. It should be noted, however, that as electric trucks and passenger vehicles become more commercially available in accordance with California's Advanced Clean Truck (ACT) and zero emission vehicle rules, the truck fleets and passenger vehicles accessing the Project site would generate lower traffic noise levels compared to a business-as-usual scenario. Nonetheless, off-site traffic noise impacts from the Project would be significant and unavoidable.

L2-7 The commenter identifies truck parking and trailer storage as a topic of discussion. Transportation impacts are discussed in *Section 4.17, Transportation* of the Draft EIR and the Specific Plan. The Specific Plan provides parking standards for the Project parking lots and Parking Fields/Drop lots, which are consistent with the Development Code requirements. Parking proposed for the Project exceeds minimum standards presented by the County development code.

L2-8 The commenter identifies traffic circulation impacts as a topic of discussion. Transportation impacts are discussed in *Section 4.17, Transportation* of the Draft EIR. No significant unavoidable impacts were found in relation to traffic impacts. A traffic study was conducted for the Project (Draft EIR *Appendix L*). Seventy-two study locations were evaluated under seven analysis scenarios. Study locations were inclusive of intersections along Foothill Boulevard, Arrow Route, Napa Street, 4th Street, and Etiwanda Avenue. See the traffic study in *Appendix L* for analysis results for each of the intersections under the varying scenarios, recommended improvements, and findings and conclusions. A roadway segment analysis was not conducted.

L2-9 The commenter identifies additional street connections as a topic of discussion. Transportation impacts are discussed in *Section 4.17, Transportation* of the Draft EIR. The Specific Plan provides a new circulation network that connects to the existing road network. A new Street "A" will be constructed as a public collector that will be an east/west roadway that intersects Cherry Avenue and continues off-site to the west to Napa Street. Napa Street extends west to Etiwanda Avenue and further provides access to 6th Street. The Project includes a new Streets "B" and "C" which run internally in a north/south direction within the Specific Plan area. VIP Access Road provides access to the Specific Plan area from San Bernardino Avenue from the southwest corner of the Specific Plan area and connects to Street "D." Therefore the additional suggested connections of the continuation of VIP Access Road north to Napa Street, the extension of 6th Street, and the extension of "D" Street was considered and rejected.

L2-10 The commenter identifies traffic and VMT generated by the Project as a topic of discussion. VMT impacts are discussed in *Section 4.17, Transportation* of the Draft EIR. VMT impacts were evaluated under Draft EIR Impact 4.17-2 and found to be less than significant. See Draft EIR pages 4.17-17 through 4.17-20.

L2-11 The commenter identifies operational impacts of the Project on utilities and utility-related services as a topic of discussion. Utility impacts are discussed in *Section 4.19, Utilities and Service*

Systems of the Draft EIR. Impacts identified in relation to infrastructure improvements were found to be less than significant and no mitigation was necessary.

L2-12 The commenter identifies public safety access to the Project site as a topic of discussion. Public safety resources are discussed in *Section 4.15, Public Services* of the Draft EIR. Impacts identified in relation to public safety/services were found to be less than significant and no mitigation was necessary. Draft EIR Impact 4.17-4 considers whether the Project would result in inadequate emergency access. Impacts were found to be less than significant with mitigation incorporated. MM TRANS-1 requires the Master Developer to form a Transportation Management Association by the date of issuance of the first building permit issued for the development. MM TRANS-2 requires the preparation, submittal, and approval of a comprehensive traffic management plan to be developed by the Transportation Management Association.

L2-13 The commenter requests receipt of all notifications regarding the Project. The City's request for additional correspondence is noted for the record and will be notified of any Project updates or hearings.

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San Gabriel Valley Water Company (L3)

SAN GABRIEL VALLEY WATER COMPANY

July 18, 2022

Mr. Steven Valdez
Senior Planner
Land Use Services Department
Planning Division
County of San Bernardino
385 North Arrowhead Avenue, 1st Floor
San Bernardino, CA 92415-0187

Subject: Speedway Commerce Center II Specific Plan
Draft Environmental Impact Report
Project No.: PROJ-2021-000150

Dear Mr. Valdez:

Fontana Water Company ("Fontana Water"), a division of San Gabriel Valley Water Company ("San Gabriel"), is a public utility company regulated by and subject to the jurisdiction of the California Public Utilities Commission. Fontana Water provides public utility potable water and recycled water service to a population of nearly 240,000 in the City of Fontana, City of Rialto, City of Ontario, City of Rancho Cucamonga, and unincorporated areas of San Bernardino County within its service area. Fontana Water's comments about San Bernardino County ("County") Speedway Commerce Center II Specific Plan Project ("Project") Draft Environmental Impact Report dated June 2022 ("DEIR") are provided below and in the Exhibit attached to this letter. 1

Fontana Water completed a Water Supply Assessment ("WSA") to ensure that sufficient water supply resources are available to supply water service to the Speedway Project. The DEIR affirms the findings of the WSA that sufficient water supply resources exist to meet the demands for potable water for the Project. However, the DEIR presents some statements that are incorrect. The DEIR states that Fontana Water's existing potable water production, storage, and distribution infrastructure are sufficient to produce, store, and distribute water service to the Project and have the capacity to meet its demands for potable water, and that additional potable water infrastructure would not be required to construct the Project. To evaluate the capacity of Fontana Water's existing water production, storage, and distribution infrastructure to meet the potable water demands for the Project, Fontana Water prepared a hydraulic assessment of its water system. The hydraulic assessment indicates that additional water production, storage, and distribution infrastructure will need to be 2

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15966 ARROW ROUTE • FONTANA, CALIFORNIA 92335 • (909) 201-7375 • Fax (909) 201-7377

constructed to meet the potable water demands the Project. While the DEIR does state that water distribution mains are to be constructed in the new streets for the Project, the DEIR also needs to state that additional potable water infrastructure will be required to provide water service to the Project. Accordingly, Fontana Water prepared specific comments regarding the DEIR and provides them herewith in Exhibit "A".

Please send a response to this letter and the comments about the Project.

Very truly yours,

Matt Y. Yucelen

Matt Y. Yucelen, P.E.
Vice President – Engineering

MY:ko
Enclosures

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EXHIBIT "A"

**San Gabriel Valley Water Company's Fontana Water Company division ("FWC")
Comments on the Speedway Commerce Center II Specific Plant Project
Draft Environmental Impact Report – June 2022 ("DEIR")**

Comment No. 1 – Page 1-4 – Objective 5

DEIR: Provide a system of infrastructure that includes public and private transportation, sewer, water, drainage, solid waste disposal, and other essential facilities to serve the needs of the Project.

FWC: Objective 5 of the EIR, requires that a system of water infrastructure needs to be provided to serve the needs of the Project. Many statements are made throughout the report that claim that existing water infrastructure is sufficient to provide necessary water supply and service the Project. Some of the statements seem to confuse the fact that sufficient water supply resources are available with the availability of sufficient water production, storage, and distribution infrastructure. However, new water infrastructure of a sufficient capacity is required to provide sufficient water service to the Project to meet all of its demands, including, but not limited to, demands for fire flow, domestic, and irrigation purposes. Therefore, these statements need to be removed and replaced with statements that explain the need for the additional water infrastructure (e.g. new water supply well, storage reservoir, booster station, and transmission and distribution mains), and that such statements support Objective 5 of the EIR. At a minimum, the report needs to state that new infrastructure needs to be installed to provide water service to the Project, instead of stating in several locations of the report, that existing infrastructure is sufficient and that no additional water infrastructure is needed. 3

Comment No. 2 – Page 3-31 – Water Supply – First Paragraph

DEIR: The Project site is served by Fontana Water Company (FWC) and Inland Empire Utilities Agency (IEUA).

FWC: This section is specific to Water Supply and states that FWC and IEUA serve the project site. This statement is not correct since FWC will provide domestic water and recycled water to this development. Correct the statement to specify that FWC will provide domestic and recycled water service to the development. 4

Comment No. 3 – Page 3-31 – Water Supply – First Paragraph

DEIR: To meet water supply demand, the portions of the County that are operated by the Fontana Water Company receive water supply from Lytle Creek surface flow and from wells in the Lytle Basin, Chino Basin, and another groundwater basin known as No Man's Land.

FWC: This paragraph omits Rialto-Colton Basin as a water supply source and instead includes No Man's Land. Correct the statement to list the water supply sources as the Chino Basin, Lytle Basin and Rialto-Colton Basin. 5

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Comment No. 4 – Page 3-31 – Recycled Water – First Paragraph

DEIR: Recycled water supply is delivered at a lower cost than potable water and is not interrupted during drought restriction periods, making it ideal for irrigation sources.

FWC: As of June 10th, 2022 the use of potable water for irrigating Non-Functional Turf ("NFT") as defined in the SWRCB May 23, 2022 Emergency Order is prohibited making recycled water even more ideal for irrigations sources. Refer to Appendix C of the WSA for the Recycled Water Agreement between FWC and IEUA. 6

Comment No. 5 – Page 3-31 – Water Supply – Second Paragraph

DEIR: There is an existing 18-inch waterline that runs through the Project site, connecting existing water facilities in Napa Street to Cherry Avenue. A portion of this existing waterline would need to be removed with the development of the Project site.

FWC: The outside diameter of the existing pipe is 17 3/8" The inside pipe diameter is 16-inches. 7

Comment No. 6 – Page 3-31 – Water Supply – Second Paragraph

DEIR: The proposed new water facilities would connect to existing FWC waterlines located in Cherry Avenue and Napa Street to provide water for the Project site.

FWC: This sentence states that the Project will be provided with water simply by connecting to existing mains in Cherry Avenue, and omits the need for the new backbone main in Cherry Avenue and new water production, storage, and distribution infrastructure. Although there are existing mains in the vicinity of the project, both potable and recycled water, FWC's water system requires capacity improvements in order to meet the potable and recycled water demands for the Project. FWC also has a 16-inch waterline and rights of way that exist within the Project area that are required to be abandoned and relocated, which need to be described here. 8

Comment No. 7 – Page 3-32 – Site Utilities/Infrastructure – First Paragraph

DEIR: To meet water supply demand, the portions of the County that are operated by the FWC receive water supply from Lytle Creek surface flow and from wells in the Lytle Basin, Chino Basin, and another groundwater basin known as No Man's Land.

FWC: All references to No Man's Land should be omitted or revised to clarify it is a basin managed as part of the Rialto-Colton Basin. 9

Comment No. 8 – Page 3-32 – Site Utilities/Infrastructure – Second Paragraph

DEIR: The Project site would tie into existing utility lines within the existing roadways and right-of-ways adjacent to the site.

FWC: The statement that the Project will tie into existing utility lines is not entirely correct. The Project requires the construction of a new water utility transmission main in Cherry Avenue, in addition to the frontage and backbone water distribution mains and services,= to be installed in the Project streets. The frontage and backbone distribution mains tie into existing mains. However, those existing mains need to be supported by the construction of a new transmission main in Cherry Avenue. 10

Comment No. 9 – Page 4.3-26 – Construction Emissions

FWC: Emissions and GHG estimates resulting from the construction of the Project might need to be revisited if emissions and GHG related to the construction of the off-site water infrastructure required for the project needs to be considered in the report, since there appears to be no consideration of the requirements for any new offsite water infrastructure in the draft report. 11

Comment No. 10 – Page 4.8-21 – Short-Term Construction Greenhouse Gas Emissions

FWC: Emissions and GHG estimates resulting from the construction of the Project might need to be revisited if emissions and GHG related to the construction of the off-site water infrastructure required for the project needs to be considered in the report, since there appears to be no consideration of the requirements for any new offsite water infrastructure in the draft report. 12

Comment No. 11 – Page 4.10-16 – Constructions and Operations – Last Paragraph

DEIR: FWC receives groundwater from multiple groundwater sources including the Chino Basin, the Lytle Basin, the Rialto-Colton Basin, and the No Man's Land Basin.

FWC: All references to No Man's Land should be omitted or revised to clarify it is a basin managed as part of the Rialto-Colton Basin. 13

Comment No. 12 – Page 4.10-16 – Construction and Operations – Second Paragraph

DEIR: The recycled waterline was installed by IEUA with service being provided by Fontana Water Company (FWC). As an option to using potable water for irrigation uses, new recycled water facilities may be installed in the backbone streets (Streets "A", "B", "C", and "D"), shown in SCCIISP Figure 3-17: Conceptual Recycled Water Plan to provide irrigation water for the Project area.

FWC: To save precious potable water supplies and comply with the 2022 SWRCB Emergency Regulation, FWC strongly encourages customers to utilize recycled water for outdoor irrigation. There are no irrigation limitations for the use of recycled water. 14

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Comment No. 13 – Page 4.19-2 – Table 4.19-1 Potable Water Demand by Land Use and 4.19-2 Water Demand Projections by Land Use

FWC: Tables 4.19-1 and 4.19-2 that show historic and projected water demand by land use and type from the 2020 UWMP are missing units for all of the water demand quantities, which are in acre-feet per year (AFY). 15

Comment No. 14 – Page 4.19-3 – Table 4.19-3 Normal Year Water Supplies

FWC: Normal Year Water Supplies from 2020 through 2045, the 2025 Total Supply appears to be misstated as "40,446". According to Table 6-1 of the 2020 UWMP the total supply for 2025 is 45,593 AFY. The table 14.19-3 is also missing units for supply quantities of AFY. 16

Comment No. 15 – Page 4.19-4 – Imported Water – Last Sentence

DEIR: Although FWC has no established allocation with SBVMWD, FWC anticipates the importation of approximately 3,200 AFY of imported water from SBVMWD by 2025. 17

FWC: First portion needs to be updated. As of January 5, 2022, FWC has an agreement with SBVMWD for the purchase of up to 3,650 acre-feet of imported water at an in district applicable rate. Additional water may be purchased from SBVMWD, if available, at a higher rate.

Comment No. 16 – Page 4.19-4 – Waste Water and Recycled Water – First Paragraph

DEIR: FWC received recycled water resources from IEUA which operates four Regional Water Recycling Plant (RPs) 18

FWC: The paragraph states that FWC received recycled water resources from IEUA. This needs to be clarified in this section and any other Wastewater and Recycled Water Section in the EIR document that FWC is the service provider for the direct use of recycled water for irrigation use and applicable commercial/industrial process use.

Comment No. 17 – Page 4.19-7 – State Regulatory Framework

FWC: List California Public Utilities Commission General Order 103 and the California Water Code sections, including Sections 64554 (maximum day demand and peak hour demand calculations) and 64572 (utility separations), among others. 19

Comment No. 18 – Page 4.19-9 – Additional Drought Actions and Regulations:

FWC: Insert a section titled **Additional Drought Actions and Regulations** following the section on **Assembly Bill 1668 and Senate Bill 606.** The text below should be incorporated as part of the section.

California is once again in a period of extended severe drought. In response, Governor Newsom proclaimed a State of Emergency asking all Californians to reduce their water use by up to 20%. The Governor's action was in response to unprecedented drought conditions that have brought below average snow and rainfall, resulting in record low water levels in the state's water reservoirs and historically low snowpack levels recorded in the Sierra Nevada mountain range.

In response to the governor's call to action, on April 26, 2022 the Board of Directors of the Metropolitan Water District of Southern California ("MWD"), Southern California's water wholesaler, declared a Water Shortage Emergency Condition for areas that depend on the State Water Project. MWD's Board voted unanimously to adopt a framework for an Emergency Water Conservation Program which requires local water suppliers, like FWC, to adopt one of two approaches to reduce water use; either (1) limit outdoor watering once per week, or (2) comply with monthly water allocation limits.

In addition to MWD's declaration and in response to the governor's call to action, on May 24, 2022 the State Water Resources Control Board ("SWRCB") adopted an Emergency Regulation to remain in effect for one year unless it is determined that drought conditions no longer persist or unless the regulation is renewed by the SWRCB. This regulation calls on each local water supplier to implement a Shortage Level 2 (ten to twenty percent) from its Water Supply Contingency Plan by June 10, 2022. The Regulation also bans use of potable water to irrigate turf on commercial, industrial, or institutional properties that is not regularly used for human recreational purposes or for civic or community events.

20

Comment No. 19 – Page 4.19-10 – Local, Goal IU-1

DEIR: Water Supply. Water supply and infrastructure are sufficient for the needs of residents and businesses and resilient to drought.

FWC: This statement is not correct, that existing water infrastructure is sufficient. The Project requires new water infrastructure to be constructed. The proposed new water infrastructure that is required to be constructed for the Project will be designed to have a sufficient capacity to meet the demands of residents and businesses and improve drought resiliency.

21

Comment No. 20 – Page 4.19-12 – Section 4.19.5 Impacts and Mitigation Measures – Construction and Operations – Second Paragraph

DEIR: Localized utility infrastructure and facilities would be extended and upgraded as needed during construction of the Project to serve the anticipated demands and to accommodate operation of the high cube logistics, e-commerce, and ancillary commercial facilities.

22

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FWC: The statement is correct that the Project would construct new utilities and infrastructure, yet this statement contradicts the other passages that state that existing infrastructure is sufficient. Please rectify other statements to mention the need to construct new infrastructure to serve the development. 22

Comment No. 21 – Page 4.19-13 – Water – First Paragraph

DEIR: The WSA created for the Project concluded that the Project would generate a potable water demand of 596 AFY and a recycled water demand of 570 AFY, which would be accommodated by FWC based on its existing water supply projections without the construction of new or expanded facilities. 23

FWC: The Project states that water is to be supplied without the need to construct new or expanded facilities. The Project does require construction of new and expanded facilities, including new water production, storage, and distribution infrastructure facilities.

Comment No. 22 – Page 4.19-15 – Construction and Operations – Second Paragraph

DEIR: Water use on the Project site may involve the use of existing recycled water infrastructure, further reducing potable water demand. 24

FWC: To save precious potable water supplies and comply with the 2022 SWRCB Emergency Regulation, FWC strongly encourages customers to utilize recycled water for outdoor irrigation. There are no irrigation limitations for the use of recycled water.

Comment No. 23 – Page 4.19-16 – Under the heading Mitigation Measures, regarding Impact 4.19-2 – Last Sentence

DEIR: Since these water demands have been incorporated and accounted for, and do not directly necessitate the further development of water infrastructure, a less than significant impact would occur. 25

FWC: The statement that water demands for the Project do not necessitate the further development of water infrastructure needs to be corrected to indicate that new water production, storage, and distribution infrastructure facilities are required to be constructed to meet the Project's water demand.

Comment No. 24 – Page 4.19-19 – References

FWC: In the references section, the Water Supply Assessment prepared by Stetson Engineers and the Hydraulic Assessment prepared by Civiltec Engineers need to be included. 26

Comment No. 25 – Page 4.20-3 – Regulatory Setting

FWC: General Order 103 shall be referenced because it requires that water infrastructure facilities for new or expanded portions of the water system be designed to meet the fire flow demand for the Project. The new water infrastructure to be designed for the Project will mitigate the deficiency in FWC's water system to deliver water to meet the fire suppression demand and will comply with General Order 103. 27

Comment No. 26 – Page 6-14 – Project Alternative 2 Comparison to the Project

DEIR: An evaluation of the potential environmental impacts of the Reduced Footprint Alternative, as compared to those of the Project, is provided below.

FWC: The reduced footprint alternative would also require new water production, storage, and distribution infrastructure facilities.

28

Comment No. 27 – Page 6-29 – Utilities and Service Systems

DEIR: Both this Alternative and the Project would result in an increased demand for utilities. This Alternative's demands for services including natural gas, electricity, water, wastewater treatment, and solid waste disposal are anticipated to be greater than that of the Project. Existing utilities would be extended and upgraded as needed during construction of the Project and this Alternative to serve the anticipated demands and to accommodate operation of each. While the Project and this Alternative would increase the overall demand for services, adequate capacity to serve this Alternative and the Project is anticipated. Project impacts to utilities and service systems would be less than significant in compliance with existing laws, ordinances, regulations, and standards. No additional unmitigated impacts to utilities and service systems including, electricity, natural gas, sewer, water, and telecommunications infrastructure, are anticipated to occur. It is anticipated that the Alternative would tie into existing utility lines within close proximity to the Project site.

FWC: This alternative would result in the need for new water production, storage, and distribution infrastructure facilities.

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Responses to Comment Letter L3 – San Gabriel Valley Water Company

L3-1 Comment noted. The commenter provides a general introduction of the San Gabriel Valley Water Company and background information as well as a summary of the Project. The County appreciates and values these comments during the EIR participation process. Responses to specific comments are provided below; no further response is required.

L3-2 The commenter discussed the WSA completed by FWC and adds that the Draft EIR needs to state that additional potable water infrastructure will be required to provide water service to the Project. Revisions to the EIR and responses based on the updated WSA are discussed in greater detail below.

L3-3 The commenter emphasizes that although the Draft EIR accurately indicates that there are available water supplies, the Draft EIR inaccurately indicates that there is available water infrastructure to supply the Project. The commenter correctly states that Objective 5 of the Draft EIR applies to necessary utility improvements required for redevelopment of a site, including water lines, drainage improvements, and site-specific utility infrastructure. The EIR concludes multiple times that additional infrastructure is required for Project implementation. For example, Draft EIR *Section 4.19, Utilities and Service Systems*, pages 4.19-12 to 4.19-13 state "Localized utility infrastructure and facilities would be extended and upgraded as needed during construction of the Project to serve the anticipated demands and to accommodate operation of the high-cube logistics, e-commerce, and ancillary commercial facilities. All required improvements to existing water/wastewater, electrical, natural gas, or telecommunications utilities are anticipated to occur within the Project boundary and the adjacent existing public right-of-way (ROW)."

Draft EIR text from page 3-31, subsection Water supply, has been revised in Final EIR *Section 3.0, Errata* to state that The need for a new backbone main in Cherry Avenue was also identified as was new water production, storage, and distribution infrastructure. Although there are existing mains in the vicinity of the Project, both potable and recycled water, FWC's water system requires capacity improvements in order to meet the potable and recycled water demands for the Project. FWC also has a 16-inch waterline and rights of way that exist within the Project area that are required to be abandoned and relocated. These improvements would generally occur within the existing improved rights-of-way on Cherry Avenue which is generally improved or built out. Therefore, minimal impacts to biological resources, cultural resources, and air quality or GHG would occur. All relevant mitigation measures identified in this EIR would apply to the construction of any off-site water/wastewater improvements by the Project.

Draft EIR text from page 4.19-13 regarding Water has been revised in Final EIR *Section 3.0, Errata* to state that potable and recycled water (if available) would be conveyed throughout the Project site via new water lines beneath Streets "A," "B," "C," and "D." And that the new infrastructure would include fire flow, domestic, and irrigation. The impact area for new on-site infrastructure falls within the footprint of the proposed Project, for which impacts are assessed in Draft EIR *Sections 4.1* through *4.20*. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

Page 4.19-15 of the Draft EIR states that "the Project would construct new public roads, utilities, and infrastructure that would serve both the Project and the Next Gen Project, as well as relocate the existing water service connection to the ACS to a new location for the Next Gen Project." Additionally, the same page of the Draft EIR states that "the use of existing recycled waterlines along Napa Street and the installation of additional recycled water facilities within proposed Streets "A," "B," "C," and "D" would occur."

Lastly, the commenter broadly states that "Many statements are made throughout the report that claim that existing water infrastructure is sufficient to provide necessary water supply and service the Project" without identifying specific locations. Where the commenter alludes to these instances in the following comments, appropriate edits shall be made in Final EIR *Section 3.0, Errata*. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-4 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 3.0, Project Description* to clarify that the existing domestic and recycled water provider shall be FWC, rather than IEUA and FWC. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-5 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 3.0, Project Description* to state "Rialto-Colton Basin" as a water supply source in lieu of "No Man's Land." The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-6 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 3.0, Project Description* to clarify the required use of recycled water per the SWRCB May 23, 2022 Emergency Order, which states that the use of potable water for irrigating Non-Functional Turf ("NFT") is prohibited making recycled water even more ideal for irrigations sources. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-7 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 3.0, Project Description* to provide correct pipe diameter, (changing the diameter from 18 inches to 16 inches), for the existing waterline that runs through the Project site, connecting existing water facilities in Napa Street to Cherry Avenue. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-8 The Draft EIR document was written based on the baseline information available at the time of NOP release. The language referenced within this comment has been included within *Section 3.0, Errata* of this Final EIR to provide an updated description of expected connections to existing infrastructure as follows: The need for a new backbone main in Cherry Avenue was also identified as was new water production, storage, and distribution infrastructure. Although there are existing mains in the vicinity of the Project, both potable and recycled water, FWC's water system requires

capacity improvements in order to meet the potable and recycled water demands for the Project. FWC also has a 16-inch waterline and rights-of-way that exist within the Project area that are required to be abandoned and relocated.

L3-9 See Response L3-5.

L3-10 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 3.0, Project Description* to omit the referenced statement that "The Project site would tie into existing utility lines within the existing roadways and rights-of-way adjacent to the site" and to clarify that a new transmission main will be constructed within Cherry Avenue that will support exiting mains. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-11 The commenter states that emissions and GHG estimates resulting from the construction of the Project might need to be revisited. See Response L3-8. As described in Response L3-8, emissions associated with off-site improvements were considered in the Air Quality analysis and therefore no further response is necessary.

L3-12 The commenter states that emissions and GHG estimates resulting from the construction of the Project might need to be revisited. See Response L3-8.

L3-13 See Response L3-5.

L3-14 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.10, Hydrology and Water Quality* to clarify the required use of recycled water as follows: In accordance with the SWRCB Emergency Order published in May 2022, the use of potable water for landscaped areas will be prohibited. Therefore, new recycled water facilities would be installed in the backbone streets (Streets "A," "B," "C," and "D"), shown in SCCIISP Figure 3-17: Conceptual Recycled Water Plan to provide irrigation water for the Project area. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-15 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.19, Utilities and Service Systems*, *Tables 4.19-1: Potable Water Demand by Land Use* and *4.19-2: Water Demand Projections by Land Use* to include the appropriate demand unit, which is acre-fee per year (AFY). The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-16 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.19,* Utilities *and Service Systems*, *Table 4.19-3: Normal Year Water Supplies* to include correct total water supply for year 2025 from 40,446 AFY to 45,593 AFY, and include the appropriate demand unit, which is AFY. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-17 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.19, Utilities and Service* Systems to include updated partnership with SBVMWD as follows: Due to FWC's recent agreement with SBVMWD, FWC anticipates the importation of

approximately 3,650 AFY of imported water from SBVMWD by 2025. Additional water may be purchased from SBVMWD, if available, at a higher rate. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-18 Page 6-15 of the FWC UWMP notes that IEUA is the recycled water provider for the FWC service area as well as stating that RP-4 provides recycled water to the area. However, the language referenced within this comment will be revised within *Section 3.0* of this Final EIR to clarify FWC as the source of recycled water. As it pertains specifically to this comment a statement was added to *Section 4.19*, to clarify that FWC is the service provider for the direct use of recycled water for irrigation and any applicable industrial/commercial uses. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-19 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.19, Utilities and Service Systems* to include additional regulatory framework from the CPUC General Order 103 and California Water Code Sections 64554: New and Existing Source Capacity and 64572: Water Main Separation. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-20 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.19, Utilities and Service Systems* to include suggested State regulatory subsection for Additional Drought Actions and Regulations. As requested, provided text has been incorporated into the Errata. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-21 Commenter is referring to text associated with Goal IU-1 from the Countywide Plan's Policy Plan which states: Water supply and infrastructure are sufficient for the needs of residents and businesses and are resilient to drought.[1] Text in the Draft EIR is presented accurately, as derived from the Policy Plan. No change made.

L3-22 See Response L3-3.

L3-23 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.19, Utilities and Service Systems* to state that the Project would require construction of new and expanded facilities, including new water production, storage, and distribution infrastructure facilities. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-24 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.19, Utilities and Service Systems* to clarify the required use of recycled water. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

[1] https://countywideplan.com/policy-plan/infrastructure-utilities/

L3-25 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.19, Utilities and Service Systems* to clarify this statement by omitting text that the Project would not necessitate development of water infrastructure. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-26 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.19, Utilities and Service Systems* to update the references to include the Water Supply Assessment prepared by Stetson Engineers and the Hydraulic Assessment prepared by Civiltec Engineers. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-27 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.20, Wildfire* to include additional regulatory framework from General Order 103. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-28 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 6.0, Alternatives*, Reduced Footprint Alternative to update Utilities and Service Systems discussion to note this alternative would also require new water production, storage, and distribution infrastructure facilities. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

L3-29 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 6.0, Alternatives*, Commercial Project Alternative to update Utilities and Service Systems discussion to note this alternative would also require new water production, storage, and distribution infrastructure facilities. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

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Gabrieleno Band of Mission Indians – Kizh Nation (T1)

GABRIELENO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The San Gabriel Band of Mission Indians recognized by the State of California as the aboriginal tribe of the Los Angeles basin

June 6,2022

Project Name: Speedway Commerce Center II Specific Plan

Thank you for your letter regarding the project above. This is to concur that we agree with the Specific Plan. However, our Tribal government would like to request consultation for all future projects within this location. 1

Andrew Salas, Chairman
Gabrieleno Band of Mission Indians – Kizh Nation

Andrew Salas, Chairman | Nadine Salas, Vice-Chairman | Dr. Christina Swindall Martinez, secretary
Albert Perez, treasurer I | Martha Gonzalez Lemos, treasurer II | Richard Gradias, Chairman of the council of Elders

PO Box 393 Covina, CA 91723 www.gabrielenoindians@yahoo.com gabrielenoindians@yahoo.com

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Responses to Comment Letter T1 – Gabrieleno Band of Mission Indians – Kizh Nation

T1-1 Comment noted. The commenter provides general support of the project. The County appreciates and values these comments during the EIR participation process. No further response is required. The comment is noted and forwarded the decision makers for their consideration.

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Yuhaaviatam of San Manuel Nation (T2)

From: Ryan Nordness <Ryan.Nordness@sanmanuel-nsn.gov>
Sent: Wednesday, June 29, 2022 3:54 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: CEQA response for Speedway Commerce Center II Specific Plan,

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Thank you for contacting the Yuhaaviatam of San Manuel Nation (formerly known as the San Manuel Band of Mission Indians) regarding the above referenced project. YSMN appreciates the opportunity to review the project documentation, which was received by our Cultural Resources Management Department on June 1st 2022, pursuant to CEQA (as amended, 2015) and CA PRC 21080.3.1. The proposed project area exists within Serrano ancestral territory and, therefore, is of interest to the Tribe. However, due to the nature and location of the proposed project, and given the CRM Department's present state of knowledge, YSMN does not have any concerns with the project's implementation, as planned, at this time. As a result, YSMN requests that the following language be made a part of the project/permit/plan conditions: 1

CUL MMs

1. In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. Additionally, the Yuhaaviatam of San Manuel Nation Cultural Resources Department (YSMN) shall be contacted, as detailed within TCR-1, regarding any pre-contact and/or historic-era finds and be provided information after the archaeologist makes his/her initial assessment of the nature of the find, so as to provide Tribal input with regards to significance and treatment.

2. If significant pre-contact and/or historic-era cultural resources, as defined by CEQA (as amended, 2015), are discovered and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan, the drafts of which shall be provided to YSMN for review and comment, as detailed within TCR-1. The archaeologist shall monitor the remainder of the project and implement the Plan accordingly.

3. If human remains or funerary objects are encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and that code enforced for the duration of the project.

2

TCR MMs

1. The Yuhaaviatam of San Manuel Nation Cultural Resources Department (YSMN) shall be contacted, as detailed in CR-1, of any pre-contact and/or historic-era cultural resources discovered during project implementation, and be provided information regarding the nature of the find, so as to provide Tribal input with regards to significance and treatment. Should the find be deemed significant, as defined by CEQA (as amended, 2015), a cultural resources Monitoring and Treatment Plan shall be created by the archaeologist, in coordination with YSMN, and all subsequent finds shall be subject to this Plan. This Plan shall allow for a monitor to be present that represents YSMN for the remainder of the project, should YSMN elect to place a monitor on-site. 3

2. Any and all archaeological/cultural documents created as a part of the project (isolate records, site records, survey reports, testing reports, etc.) shall be supplied to the applicant and Lead Agency for dissemination to YSMN. The Lead Agency and/or applicant shall, in good faith, consult with YSMN throughout the life of the project.

Note: Yuhaaviatam of San Manuel Nation realizes that there may be additional tribes claiming cultural affiliation to the area; however, Yuhaaviatam of San Manuel Nation can only speak for itself. The Tribe has no objection if the agency, developer, and/or archaeologist wishes to consult with other tribes in addition to YSMN and if the Lead Agency wishes to revise the conditions to recognize additional tribes.

3

Please provide the final copy of the project/permit/plan conditions so that YSMN may review the included language. This communication concludes YSMN's input on this project, at this time, and no additional consultation pursuant to CEQA is required unless there is an unanticipated discovery of cultural resources during project implementation. If you should have any further questions with regard to this matter, please do not hesitate to contact me at your convenience, as I will be your Point of Contact (POC) for YSMN with respect to this project.

Respectfully,
Ryan Nordness

4

Ryan Nordness
Cultural Resource Analyst
Ryan.Nordness@sanmanuel-nsn.gov
O:(909) 864-8933 Ext 50-2022
M:(909) 838-4053
26569 Community Center Dr Highland, California 92346

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Response to Comment Letter T2 – Yuhaaviatam of San Manuel Nation

T2-1 Comment noted. The commenter provides general introductory of Yuhaaviatom of San Manuel Nation and background information as well as a summary of the Project. The County appreciates and values these comments during the EIR participation process. No further response is required.

Assembly Bill 52 coordination was conducted with the Yuhaaviatom of San Manuel Nation (formerly known as the San Manuel Band of Mission Indians) on February 22, 2022. Response from the Tribe was received February 25, 2022. The Tribe did not have concerns with the Project's implementation and requested that provided mitigation measures be made part of the Project/permit/plan conditions. These same measures were included in the Tribe's response to the NOA for the Draft EIR, and have been incorporated, with requested minor edits, into the Project in Final EIR *Section 3.0, Errata*.

T2-2 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.5, Cultural Resources*. These edits revise and clarify the mitigation measures (MM) and to add the 60-foot buffer as requested. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

T2-3 *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, including revisions to Draft EIR *Section 4.18, Tribal Cultural Resources*. These edits revise and clarify MM CR-1. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

T2-4 The commenter's request for continued communications regarding entitlement documents and permits associated with the Project is noted and any Project notices will be provided. As is the commenter's conclusion of the formal consultation process, barring any unanticipated discoveries.

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Adams Broadwell Joseph & Cardozo (O1)

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MARC D. JOSEPH
DANIEL L. CARDOZO

Not admitted in California. Licensed in Colorado.

June 9, 2022

Via Email and U.S. Mail
David Doublet, Director
Land Use Services Department
County of San Bernardino
385 N. Arrowhead Ave., 1st Floor
San Bernardino, CA 92415-0187
Email: David.Doublet@lus.sbcounty.gov

Lynna Monell, Clerk of the Board
County of San Bernardino
385 N. Arrowhead Ave., 2nd Floor
San Bernardino, CA 92415-0130
Email: COB@sbcounty.gov

Via Email Only
Steven Valdez, Senior Planner
Email: Steven.Valdez@lus.sbcounty.gov

Re: Request for Mailed Notice of Actions and Hearings – Speedway Commerce Center II Specific Plan (Project No. PROJ-2021-000150; SCH No. 2021120259)

Dear Mr. Doublet, Ms. Monell, and Mr. Valdez:

We are writing on behalf of Californians Allied for a Responsible Economy ("CARE CA") to request mailed notice of the availability of any environmental review document, prepared pursuant to the California Environmental Quality Act, related to the Speedway Commerce Center II Specific Plan (Project No. PROJ-2021-000150; SCH No. 2021120259) ("Project"), proposed by Kimley-Horn & Associates, Inc, as well as a copy of the environmental review document when it is made available for public review. 1

The Project consists of the development of six separate planning areas with up to 6.6 million square feet (sf) of high-cube logistics and e-commerce uses with 261,360 sf of ancillary commercial uses, and approximately 98 acres of parking fields/drop lot areas as well as ancillary open space to support the Project. The Project site would also be developed with greenbelts, public roads, other support amenity features, and water detention areas. The Project would surround the future Next Gen motorsports facility ("Next Gen in California Project"), which was 2

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approved by the County of San Bernardino in June 2021 and is proposed to be developed on approximately 90 acres of the existing the Auto Club Speedway (ACS) site. The Project site is located in an unincorporated portion of Southwestern San Bernardino County within the City of Fontana Sphere of Influence (SOI). The Project site consists of ten parcels (Assessor Parcel Numbers [APNs] 0231-011-09, 0231-011-10, 0231-011-11, 0231-011-12, 0231-111-06, 0231-111-10, 0231-111-17, 0231-111-18, 0231-111-19, and 0231-111-20). 2

We also request mailed notice of any and all hearings and/or actions related to the Project. These requests are made pursuant to Public Resources Code Sections 21092.2, 21080.4, 21083.9, 21092, 21108, 21152, 21167(f), and Government Code Section 65092, which require local agencies to mail such notices to any person who has filed a written request for them with the clerk of the agency's governing body.

Please send the above requested items by email and U.S. Mail to our South San Francisco Office as follows:

U.S. Mail
Sheila Sannadan
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037

Email
ssannadan@adamsbroadwell.com 3

Please call me at (650) 589-1660 if you have any questions. Thank you for your assistance with this matter.

Sincerely,

Sheila M. Sannadan
Legal Assistant

SMS:acp

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Response to Comment Letter O1 – Adams Broadwell Joseph & Cardozo

O1-1 Comment noted. The commenter provides general introductory information and requests project information when available. This commenter's request for project information is noted for the record. The County will coordinate to ensure that publicly available information is provided.

O1-2 The comment provides a general description of the Project. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O1-3 The comment requests that all notices of public hearing be sent and provides a contact name and address. When appropriate, plans will be provided to the commenter for review and noticing will be provided in instances of future updates to the Project or environmental documentation. The commenters provided contacts are noted for the record.

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Adams Broadwell Joseph & Cardozo (O2)

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Of Counsel
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Not admitted in California. Licensed in Colorado.

June 9, 2022

Via Email and U.S. Mail
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Email: David.Doublet@lus.sbcounty.gov

Lynna Monell, Clerk of the Board
County of San Bernardino
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San Bernardino, CA 92415-0130
Email: COB@sbcounty.gov

Via Email Only
Steven Valdez, Senior Planner
Email: Steven.Valdez@lus.sbcounty.gov

VIA Public Records Act Portal
https://sanbernardinocounty.nextrequest.com/requests/new

Re: Request for Immediate Access to Public Records - Speedway Commerce Center II Specific Plan (Project No. PROJ-2021-000150; SCH No. 2021120259)

Dear Mr. Doublet, Ms. Monell, and Mr. Valdez:

We are writing on behalf of Californians Allied for a Responsible Economy ("CARE CA") to request ***immediate access*** to any and all public records referring or related to the Speedway Commerce Center II Specific Plan (Project No. PROJ-2021-000150; SCH No. 2021120259) ("Project"), proposed by Kimley-Horn & Associates, Inc. This request includes, but is not limited to, any and all materials, applications, correspondence, resolutions, memos, notes, analyses, electronic mail messages, files, maps, charts, and/or any other documents related to the Project. This request *does not include* the Draft Environmental Impact Report ("DEIR") or documents referenced or relied upon in the DEIR, which we have requested in a separate letter pursuant to the California Environmental Quality Act. 1

The Project consists of the development of six separate planning areas with up to 6.6 million square feet (sf) of high-cube logistics and e-commerce uses with 2

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261,360 sf of ancillary commercial uses, and approximately 98 acres of parking fields/drop lot areas as well as ancillary open space to support the Project. The Project site would also be developed with greenbelts, public roads, other support amenity features, and water detention areas. The Project would surround the future Next Gen motorsports facility ("Next Gen in California Project"), which was approved by the County of San Bernardino in June 2021 and is proposed to be developed on approximately 90 acres of the existing the Auto Club Speedway (ACS) site. The Project site is located in an unincorporated portion of Southwestern San Bernardino County within the City of Fontana Sphere of Influence (SOI). The Project site consists of ten parcels (Assessor Parcel Numbers [APNs] 0231-011-09, 0231-011-10, 0231-011-11, 0231-011-12, 0231-111-06, 0231-111-10, 0231-111-17, 0231-111-18, 0231-111-19, and 0231-111-20). 2

This request is made pursuant to the California Public Records Act, Government Code §§ 6250, *et seq*. This request is also made pursuant to Article I, section 3(b) of the California Constitution, which provides a constitutional right of access to information concerning the conduct of government. Article I, section 3(b) provides that any statutory right to information shall be broadly construed to provide the greatest access to government information and further requires that any statute that limits the right of access to information shall be narrowly construed.

We request ***immediate access*** to review the above documents pursuant to section 6253(a) of the Public Records Act, which requires public records to be "open to inspection at all times during the office hours of the state or local agency" and provides that "every person has a right to inspect any public record." Gov. Code § 6253(a). Therefore, the 10-day response period applicable to a "request for a copy of records" under Section 6253(c) does not apply to this request. 3

I will be contacting you to arrange for the review/duplication/transmission of the requested records soon. In the interim, if you have any questions or concerns regarding this request, my contact information is:

U.S. Mail
Sheila Sannadan
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037

Email
ssannadan@adamsbroadwell.com

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Thank you for your assistance with this matter.

Sincerely,

Sheila M. Sannadan
Legal Assistant

SMS:acp

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Response to Comment Letter O2 – Adams Broadwell Joseph & Cardozo

O2-1 Comment noted. The commenter is requesting access to all public records related to the Project, excluding the Draft EIR and supporting documents related to the Draft EIR requested in a prior letter. The County will continue to coordinate with the commenter to ensure that publicly available information is provided.

O2-2 The comment provides a general description of the Project. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O2-3 The commenter is requesting access to all public records related to the Project. Please see Response to Comment O2-1.

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Adams Broadwell Joseph & Cardozo (O3)

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TARA C. RENGIFO
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Of Counsel
MARC D. JOSEPH
DANIEL L. CARDOZO

July 18, 2022

Via Email and Overnight Mail

Steven Valdez
Senior Planner
County of San Bernardino
Land Use Services Department- Planning Division
385 North Arrowhead Avenue, First Floor
San Bernardino, CA 92415-0187
Email: steven.valdez@lus.sbcounty.gov

Re: Comments on the Draft Environmental Impact Report - Speedway Commerce Center II Specific Plan Project (PROJ-2021-00150, SCH No. 2021120259)

Dear Mr. Valdez:

We are writing on behalf of Californians Allied for a Responsible Economy ("CARECA"), to provide comments on the Draft Environmental Impact Report ("DEIR") prepared by the County of San Bernardino ("County") for the Speedway Commerce Center II Specific Plan Project ("Project") proposed by Candyce Burnett of Kimley Horn & Associates, Inc. ("Applicant"). 1

The Project proposes to develop 6,600,000 square feet of a mix of high cube and e-commerce warehousing, approximately 261,369 square feet of accessory commercial uses, and approximately 98 acres of vehicle parking/drop lot areas and associated open space and internal public roadways. The approximately 433-acre Project site is within the 522-acre site currently developed with the Auto Club Speedway ("ACS"), formerly known as the California Speedway. The Project site is located at 9300 Cherry Avenue, Fontana California 92335 between Arrow Boulevard and San Bernardino Avenue in the unincorporated portion of San Bernardino County within the City of Fontana Sphere of Influence. The Project site comprises ten Assessor Parcel Numbers (APNs) 0231-011-09, 0231-011-10, 0231-011-11, 0231-011-12, 0231-111-06, 0231-111-10, and 0231-111-17, 0231-111-18, 0231-111-19, and 0231-111-20. 2

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The Project requires a new Specific Plan (PROJ-2021-00150), Tentative Parcel Map (TPM-20478), a Development Agreement, and a Revision to an Approved Action (PRAA-2020-00150) to amend the existing Planning Development Permit for the existing ACS to remove from its coverage 433 acres of the ACS site that will be governed by the new Specific Plan.[1] The Project site is currently zoned Special Development Commercial (SD-Com).[2] San Bernardino County Municipal Code Section 82.01.020 defines Special Development land use zoning districts as areas which allow for a combination of residential, commercial, industrial, agricultural, open space and recreation uses, and similar and compatible uses.[3] Project construction would occur over four phases: Phase 1a would commence in 2023 with a 12-month duration; Phase 1b would commence in 2024 with a 12-month duration; Phase 2 would commence in 2025 with a 12-month duration; and construction of the Commercial Parcel would commence in 2026 with an 11-month duration.[4]

2

We have conducted our review of the DEIR with the assistance of our technical consultants, air quality and hazardous resources expert James J. Clark, Ph.D., traffic and transportation expert Daniel T. Smith, Jr., M.S, and acoustics expert Derek Watry, M.S.[5] The County must separately respond to these technical comments.

Based upon our review of the DEIR and supporting documentation, we conclude that the DEIR fails to comply with the requirements of CEQA. As explained more fully below, the DEIR fails to provide an accurate Project description and environmental baseline upon which to measure the whole Project's reasonably foreseeable impacts. The consequences of these defects are far-reaching and require the revision of the DEIR. The DEIR does not accurately disclose potentially significant air quality, GHG, soil contamination, noise, and transportation impacts. As a result of its shortcomings, the DEIR lacks substantial evidence to support its conclusions and fails to properly mitigate the Project's significant environmental impacts. Further, the Project does not comport with the San Bernardino Countywide Plan ("Countywide Plan") which serves as the County's General Plan or the Countywide Plan's Draft Environmental Impact Report. The County cannot approve the Project until the errors and omissions in the DEIR are remedied, and a revised DEIR is recirculated for public review and comment which

3

[1] DEIR, p. 3-34.
[2] *Id.* at 3-12.
[3] San Bernardino County Development Code § 82.01.020 subd. (c)(4)(D).
[4] DEIR, p. 4.9-14.
[5] Dr. Clark's, Mr. Smith's, and Mr. Watry's technical comments and curricula vitae are attached hereto as **Exhibits A, B, and C**, respectively.

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fully discloses and mitigates the Project's potentially significant environmental and public health impacts. 3

I. STATEMENT OF INTEREST

CARECA is an unincorporated association of individuals and labor organizations that may be adversely affected by the potential public and worker health and safety hazards, and the environmental impacts of the Project. The coalition includes San Bernardino County residents Derek Brill, Nicholas Corrigan, Justin Dempsey, Anthony Diaz, the District Council of Ironworkers, Southern California Pipe Trades DC 16, along with their members, their families, and other individuals who live and work in San Bernardino County.

CARECA advocates for protecting the environment and the health of their communities' workforces. CARECA seeks to ensure a sustainable construction industry over the long-term by supporting projects that offer genuine economic and employment benefits, and which minimize adverse environmental and other impacts on local communities. CARECA members live, work, recreate, and raise their families in San Bernardino County and surrounding communities. Accordingly, they would be directly affected by the Project's environmental and health and safety impacts. Individual members may also work on the Project itself. They will be first in line to be exposed to any health and safety hazards that exist onsite. 4

In addition, CARECA has an interest in enforcing environmental laws that encourage sustainable development and ensure a safe working environment for its members. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for business and industry to expand in the region, and by making the area less desirable for new businesses and new residents. Indeed, continued environmental degradation can, and has, caused construction moratoriums and other restrictions on growth that, in turn, reduce future employment opportunities.

II. LEGAL BACKGROUND

CEQA has two basic purposes, neither of which the DEIR satisfies. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project.[6] CEQA requires that an agency analyze potentially significant environmental impacts in an EIR.[7] The EIR should 5

[6] CEQA Guidelines, § 15002, subd. (a)(1).
[7] *See* Pub. Resources Code, § 21000; CEQA Guidelines, § 15002.

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not rely on scientifically outdated information to assess the significance of impacts, and should result from "extensive research and information gathering," including consultation with state and federal agencies, local officials, and the interested public.[8] To be adequate, the EIR should evidence the lead agency's good faith effort at full disclosure.[9] The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return."[10] "Thus, the EIR protects not only the environment but also informed self-government."[11]

Second, CEQA directs public agencies to avoid or reduce environmental damage when possible by requiring alternatives or mitigation measures.[12] The EIR serves to provide public agencies and the public in general with information about the effect that a proposed project is likely to have on the environment and to "identify ways that environmental damage can be avoided or significantly reduced."[13] If a project has a significant effect on the environment, the agency may approve the project only upon a finding that it has "eliminated or substantially lessened all significant effects on the environment where feasible," and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns" specified in CEQA section 21081.[14]

5

As these comments will demonstrate, the DEIR fails to comply with the requirements of CEQA and may not be used as the basis for approving the Project. It fails in significant aspects to perform its function as an informational document that is meant "to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment" and "to list ways in which the significant effects of such a project might be minimized."[15]

The use of inaccurate and flawed information on which the DEIR bases its conclusions results in underestimated Project impacts. This, in turn, leads to a failure to comply with CEQA's requirement that an agency mitigate "all significant environmental impacts to the greatest extent feasible, and that any remaining

[8] *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Comm.* ("*Berkeley Jets*") (2001) 91 Cal.App.4th 1344, 1367.; *Schaeffer Land Trust v. San Jose City Council* (1989) 215 Cal.App.3d 612, 620.

[9] CEQA Guidelines, § 15151; *see also Laurel Heights Improvement Assn. v. Regents of University of California* ("*Laurel Heights I*") (1988) 47 Cal.3d 376, 406.

[10] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.

[11] *Citizens of Goleta Valley v. Bd. of Supervisors* (1990) 52 Cal.3d 553, 564 (citations omitted).

[12] CEQA Guidelines, § 15002, subd. (a)(2)-(3); *Berkeley Jets, supra,* 91 Cal.App.4th at 1354.

[13] CEQA Guidelines, § 15002, subd. (a)(2).

[14] *Id.*, subd. (b)(2)(A)-(B).

[15] *Laurel Heights I, supra,* 47 Cal.3d at p. 391.

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significant environmental impacts are acceptable due to overriding considerations."[16] Mitigation of impacts to the fullest extent feasible requires an agency to accurately quantify the severity of Project impacts, and because the DEIR's inadequate analyses underestimate the severity of the Project's impacts, the County has failed to comply with CEQA and cannot approve the Project based upon the DEIR's analyses and conclusions. Furthermore, the County's proposed findings that the Project's impacts are significant and unavoidable are unsupported because the Project does not consider mitigation measures which may adequately minimize Project impacts to the greatest extent feasible.

5

III. THE PROJECT DESCRIPTION IS INADEQUATE

The DEIR does not meet CEQA's requirements because it fails to include an accurate and complete Project description, rendering the entire analysis inadequate. California courts have repeatedly held that "an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR."[17] CEQA requires that a project be described with enough particularity that its impacts can be assessed.[18] Without a complete project description, the environmental analysis under CEQA is impermissibly limited, thus minimizing the project's impacts and undermining meaningful public review.[19] Accordingly, a lead agency may not hide behind its failure to obtain a complete and accurate project description.[20]

6

CEQA Guidelines section 15378 defines "project" to mean "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment."[21] "The term "project" refers to the activity which is being approved and which may be subject to several discretionary approvals by governmental agencies. The term project does not mean each separate governmental approval."[22] Courts have explained that a complete description of a project must "address not only the immediate environmental consequences of going forward with the project,

[16] CEQA Guidelines, §§ 15090, 15091.
[17] *Stopthemillenniumhollywood.com v. City of Los Angeles* (2019) 39 Cal.App.5th 1, 17; *Communities for a Better Environment v. City of Richmond* ("*CBE v. Richmond*") (2010) 184 Cal.App.4th 70, 85–89; *County of Inyo v. City of Los Angeles* (3d Dist. 1977) 71 Cal.App.3d 185, 193.
[18] 14 CCR § 15124; *see, Laurel Heights I, supra,* 47 Cal.3d 376, 192-193.
[19] *Id.*
[20] *Sundstrom v. County of Mendocino* ("*Sundstrom*") (1988) 202 Cal.App.3d 296, 311.
[21] CEQA Guidelines § 15378.
[22] *Id.*, § 15378(c).

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but also all "*reasonably foreseeable* consequence[s] of the initial project."[23] "If a[n]…EIR…does not adequately apprise all interested parties of the true scope of the project for intelligent weighing of the environmental consequences of the project, informed decisionmaking cannot occur under CEQA and the final EIR is inadequate as a matter of law."[24]

6

A. The DEIR Fails to Identify Reasonably Foreseeable Uses of the Project Site

CEQA is concerned with a project's environmental impacts, regardless of who ultimately uses or operates a project.[25] However, courts have held that where the tenant or type of business is foreseeable and there is evidence that an impact unique to that tenant or type of business will result, an EIR must disclose that information.[26] An EIR must include an analysis of the environmental effects of a proposed future use or action at a project site if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects.[27]

7

Here, the Project is being developed for unknown future tenants, but for reasonably foreseeable future uses. The DEIR refers to "future development of high-cube logistics and e-commerce uses within the Project site."[28] These uses, as pointed out by CARB, can result in highly significant environmental impacts: "Freight facilities, such as warehouse and distribution facilities, can result in high daily volumes of heavy-duty diesel truck traffic and operation of on-site equipment (e.g., forklifts and yard tractors) that emit toxic diesel emissions, and contribute to regional air pollution and global climate change."[29] The impacts generated by the particular operations of different users within this broad category can also result in significant impacts. The adverse impacts generated by cold storage warehouses, for example, are far more severe than those from a high-cube warehouse without cold storage.[30] Warehouses with cold storage capabilities and the ability to accommodate refrigerated trucks, or Transport Refrigeration Units ("TRUs"),

[23] *Laurel Heights I,* 47 Cal. 3d 376, 398 (emphasis added); *see also Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal. 4th 412, 449-50.
[24] *Riverwatch v. Olivenhain Municipal Water Dist.* (2009) 170 Cal. App. 4th 1186, 1201.
[25] *Maintain Our Desert Env't v. Town of Apple Valley* (2004) 124 CA4th 430.
[26] *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 CA4th 1184, 1213.
[27] *Laurel Heights I,* 47 Cal. 3d 376, 396.
[28] DEIR, p. 4.3-20.
[29] CARB Comments re: Rubidoux Commerce Park Notice of Preparation of DEIR, December 17, 2020, p. 1; CARB NOP Comments regarding the Mariposa Industrial Park DEIR.
[30] *Id.*

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require more truck trips per square foot and have higher energy demands due to the low temperatures required by the trucks, whose refrigeration units are most often powered by diesel internal combustion engines.[31]

Though the DEIR does not name the Project's specific end user tenants, the Project is being constructed to support warehouse, distribution, and cold storage uses. The DEIR's omission of information about the reasonably foreseeable operations at the Project site that could have significant impacts is similar to the EIR's omission of critical operational analysis in *Bakersfield Citizens for Local Control v. City of Bakersfield*. In *Bakersfield,* the court found that an EIR's simple statement that "no stores have been identified" for the subject shopping center "without disclosing the type of retailers envisioned for the proposed project is not only misleading and inaccurate, but it hints at mendacity."[32] Since the Project is being designed to be capable of supporting warehouse, distribution, and cold storage uses at the Project site, the DEIR must be revised to include that information and to analyze the impacts of the most intensive reasonably foreseeable uses of the Project site. The DEIR must also include all known information about the types of future users at the Project site. 7

Additionally, the DEIR notes that cold storage may be required. Cold storage warehouses require a constant energy supply to power their temperature-controlled facilities, for which they often rely on emergency backup generators.[33] Backup generators commonly rely on fuels such as natural gas or diesel,[34] and thus can significantly impact air quality, GHG emissions, and public health through toxic diesel particulate ("DPM") emissions.[35] In its NOP Comments, CARB noted that 8

[31] *See, e.g.*, CARB Transport Refrigeration Unit Regulations, http://ww2.arb.ca.gov/sites/default/files/truckstop/trus/trus.html; CARB Technology Assessment for Transport Refrigerators, August 2015, https://ww2.arb.ca.gov/sites/default/files/2020-06/TRU%20Tech%20Assessment%20Report%20ada.pdf; CARB Comments on Mariposa Industrial Park DEIR, October 8, 2021.
[32] *Bakersfield Citizens for Local Control v. City of Bakersfield* ("*Bakersfield*") (2004) 124 Cal.App.4th 1184, 1213.
[33] Kusing Power Generator, http://ksdieselgenerator.com/2019/backup-generator-for-cold-storage-room.html, last visited November 25, 2021 ("Backup power supply is necessary for cold storage room to remain functional to avoid deterioration of high value-added goods such as vegetables and food stored in the room after long period of power failure").
[34] SCAQMD, Fact Sheet on Emergency Backup Generators, http://www.aqmd.gov/home/permits/emergency-generators ("Most of the existing emergency backup generators use diesel as fuel").
[35] California Air Resources Board, Emission Impact: Additional Generator Usage Associated with Power Outage (January 30, 2020), available at https://ww2.arb.ca.gov/resources/documents/emissions-impact-generator-usage-during-psps (showing that generators commonly rely on gasoline or diesel, and that use of generators during power outages results in excess emissions).

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the DEIR should account for "all potential health risks from Project-related diesel PM emission sources such as backup generators, TRUs, and heavy-duty truck traffic."[36] The DEIR lacks this discussion.

Since cold storage is a reasonably foreseeable use of the Project site, it is also reasonably foreseeable that the Project would require on-site backup generators.[37] The DEIR must disclose whether the Project will use generators and for how many hours a year, and analyze the impacts of their use on the environment and public health. The DEIR's failure to provide an accurate picture of the number of reasonably foreseeable hours required for backup generation further invalidates it as an informational document. As a result of these omissions, the DEIR's operational air quality, health risk, and truck trip analyses are not supported by substantial evidence and must be revised. 8

B. The DEIR Fails to Describe the Project's Lifespan

The DEIR does not disclose the expected lifespan of the Project. Such information is necessary to evaluate the impacts of the Project's operations on the environment. Per South Coast Air Quality Management District ("SCAQMD") recommendations, the DEIR assumes a 30-year Project life when conducting the GHG emissions analysis, but fails to provide elsewhere a Project-specific lifespan.[38] The courts have held that an EIR fails as an informational document when the project description is obscure as to the true scope of the project.[39] Here, the DEIR's failure to put forth a clear project description that is reflective of the Project's potential uses and lifespan violates CEQA.[40] 9

IV. THE DEIR FAILS TO ADEQUATELY ESTABLISH THE EXISTING BASELINE

CEQA requires that a lead agency include a description of the physical environmental conditions in the vicinity of the Project as they exist at the time environmental review commences.[41] As numerous courts have held, the impacts of 10

[36] CARB NOP Comments, p. 3.
[37] Clark Comments, p. 13.
[38] DEIR, pg. 4.8-22.
[39] *CBE v. Richmond*, 184 Cal.App.4th at 85–89.
[40] *Stopthemillenniumhollywood.com v. City of Los Angeles* (2019) 39 Cal.App.5th 1, 17; *Communities for a Better Environment v. City of Richmond* ("*CBE v. Richmond*") (2010) 184 Cal.App.4th 70, 85–89; *County of Inyo v. City of Los Angeles* (3d Dist. 1977) 71 Cal.App.3d 185, 193 (providing that an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR).
[41] CEQA Guidelines, § 15125, subd. (a).

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a project must be measured against the "real conditions on the ground."[42] The description of the environmental setting constitutes the baseline physical conditions by which a lead agency may assess the significance of a project's impacts.[43] Use of the proper baseline is critical to a meaningful assessment of a project's environmental impacts.[44] An agency's failure to adequately describe the existing setting contravenes the fundamental purpose of the environmental review process, which is to determine whether there is a potentially substantial, adverse change compared to the existing setting.

Baseline information on which a lead agency relies must be supported by substantial evidence.[45] The CEQA Guidelines define "substantial evidence" as "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion."[46] "Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts ... [U]nsubstantiated opinion or narrative [and] evidence which is clearly inaccurate or erroneous ... is not substantial evidence."[47]

10

A. The DEIR's Baseline Vehicle Speed Surrounding the Project Site Are Underestimated and Unsupported

The California Supreme Court, in *Communities for a Better Environment v. South Coast Air Quality Management District* ("*CBE v. SCAQMD*"),[48] recognized that "the baseline 'normally' consists of 'the physical environmental conditions in the vicinity of the project, as they exist at the time ... environmental analysis is commenced....'"[49] An approach using hypothetical conditions as the baseline, results in "illusory" comparisons that "can only mislead the public as to the reality of the

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[42] *Save Our Peninsula Com. v. Monterey Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 121-22; *City of Carmel-by-the Sea v. Bd. of Supervisors* (1986) 183 Cal.App.3d 229, 246.
[43] CEQA Guidelines, § 15125, subd. (a).
[44] *Communities for a Better Environment v. South Coast Air Quality Management District* (2010) 48 Ca.4th 310, 320.
[45] *CBE v. SCAQMD, supra,* 48 Ca.4th at 321 (stating "an agency enjoys the discretion to decide […] exactly how the existing physical conditions without the project can most realistically be measured, subject to review, as with all CEQA factual determinations, for support by substantial evidence"); *see Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435.
[46] CEQA Guidelines §15384.
[47] Pub. Resources Code § 21082.2(c).
[48] (2010) 48 Cal. 4th 310, 321.
[49] *CBE v. SCAQMD, supra,* 48 Ca.4th 310, 327–328, citing Guidelines, § 15125, subd. (a)

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impacts and subvert full consideration of the actual environmental impacts," a result which contravenes CEQA's intent.[50]

Here, the DEIR provides an inadequate baseline associated with traffic speeds surrounding the Project area. This results in underestimated air quality modeling because higher speeds results in lower localized emissions. An adequate baseline shows a lower traffic speed resulting in a significantly higher air quality impact which results in a potentially significant impact under CEQA. The DEIR relies on a baseline vehicle speed of 15 miles per hour[51], but a slower speed on unpaved roads will be utilized as mitigation for construction, and would result in higher localized air emissions. 11

V. THE DEIR FAILS TO ADEQUATELY DISCLOSE AND MITIGATE POTENTIALLY SIGNIFICANT AIR QUALITY IMPACTS

An EIR must fully disclose all potentially significant impacts of a project, and implement all feasible mitigation to reduce those impacts to less than significant levels. The lead agency's significance determination with regard to each impact must be supported by accurate scientific and factual data.[52] An agency cannot conclude that an impact is less than significant unless it produces rigorous analysis and concrete substantial evidence justifying the finding.[53] 12

Moreover, the failure to provide information required by CEQA is a failure to proceed in the manner required by CEQA.[54] Challenges to an agency's failure to proceed in the manner required by CEQA, such as the failure to address a subject required to be covered in an EIR or to disclose information about a project's environmental effects or alternatives, are subject to a less deferential standard than challenges to an agency's factual conclusions.[55] In reviewing challenges to an agency's approval of an EIR based on a lack of substantial evidence, the court will "determine de novo whether the agency has employed the correct procedures, scrupulously enforcing all legislatively mandated CEQA requirements."[56] Even when the substantial evidence standard is applicable to agency decisions to certify

[50] *Environmental Planning Information Council v. County of El Dorado* (1982) 76 Cal.App.4th 931, 955.
[51] DEIR, Appendix C.
[52] 14 CCR § 15064(b).
[53] *Kings Cty. Farm Bur. v. Hanford* (1990) 221 Cal.App.3d 692, 732.
[54] *Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236.
[55] *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435.
[56] *Id.*; *Madera Oversight Coal., Inc. v. County of Madera* (2011) 199 Cal. App. 4th 48, 102.

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an EIR and approve a project, reviewing courts will not 'uncritically rely on every study or analysis presented by a project proponent in support of its position. A clearly inadequate or unsupported study is entitled to no judicial deference.'"[57] 12

The California Air Resources Board ("CARB") stated that the Project will expose nearby communities to elevated levels of air pollution.[58] Numerous residences are within 1,550 feet of the Project.[59] Additionally, Live Oak Elementary School, Beech Avenue Elementary School, Redwood Elementary School and Almond Elementary School are located within one mile of the Project.[60] "Due to the Project's proximity to residences and schools already burdened by multiple sources of air pollution, CARB is concerned with the potential cumulative health impacts associated with the construction and operation of the Project."[61] CARB recommended that the DEIR quantify and discuss the Project's air quality impacts associated with Project construction and operation but these concerns were not adequately addressed in the DEIR. 13

A. The DEIR Fails to Adequately Analyze the Project's Construction and Operation Air Quality Impacts

Diesel particulate matter emissions associated with the use of the Emergency Backup Generator during project operation are significant and unmitigated. The DEIR incorrectly assumes the use of the Emergency Backup Generator for only 50 hours per year.[62] According to commenters' air quality consultant, it is more likely that the Backup Generator would need to be used more than 150 hours per year, due to increasing Public Safety Power Shutoff ("PSPS") events and extreme heat events.[63] 14

During a PSPS event, the use of stationary generators is permitted as an emergency use.[64] For every PSPS or extreme heat event, significant diesel particulate matter ("DPM") will be released. DPM has been identified as a toxic air

[57] *Berkeley Jets*, 91 Cal.App.4th at 1355.
[58] Letter from Robert Krieger, Branch Chief, Risk Reduction Branch, California Air Resources Board to Steven Valdez, Senior Planner, Land Use Services Department, County of San Bernardino (January 12, 2022). Available at: https://files.ceqanet.opr.ca.gov/274702-1/attachment/ejNwdev0pHj_Mrup87nLvH2nH3YsCXqllWg501Y6h5Lco-QidNkIDoNZGPwu9cEHQznEM19WEnG4yuCC0 ("CARB NOP Comments").
[59] CARB NOP Comments.
[60] *Id.*
[61] *Id.*
[62] Clark Comments, p. 13.
[63] *Id.*
[64] 17 CCR 93115.4(a)(30)(A)(2).

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contaminant, composed of carbon particles and numerous organic compounds, including forty known cancer-causing organic substances.[65] Dr. Clark notes that the California Air Resources Board found that the 1,810 additional stationary generators during a PSPS in October 2019 generated 126 tons of NOx, 8.3 tons or particulate matter, and 8.3 tons of DPM.[66] Dr. Clark therefore determined that the air quality and DPM emission impacts associated with the use of the Backup Generator are significant, but the DEIR fails to adequately analyze or mitigate such impacts.[67] The failure to analyze is a failure to proceed in a manner required by law. The DEIR must be revised and recirculated to adequately analyze impacts associated with DPM emissions from the Backup Generator. 14

Additionally, the County failed to follow SCAQMD guidance by utilizing a less conservative average daily trip vehicle trip rate. This results in an incorrectly reduced operational emissions analysis. Dr. Clark asserts that the value used to justify the number of vehicle trips per day utilized by the County is not supportable and the higher rate of 1.68 daily vehicle trips per 1,000 GSF recommended by SCAQMD is more appropriate for this project.[68] The analysis used by the County in the DEIR is not supported by substantial evidence. Dr. Clark finds that the value used by the County is not supported by evidence in the record and the higher rate of 1.68 daily vehicle trips per 1,000 GSF recommended by SCAQMD is the correct value. The DEIR must be revised and recirculated to reflect an accurate daily vehicle trip rate and operational emissions analysis in order to satisfy CEQA. 15

B. The DEIR Fails to Adequately Mitigate the Project's Construction and Operation Air Quality Impacts

An EIR must describe feasible measures which could minimize significant adverse impacts and which "must be fully enforceable through permit conditions, agreements, or other legally binding instruments."[69] CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors."[70] When weighing the costs of a project's adverse environmental effects against its social, economic, legal, or technological benefits, an agency must make detailed findings regarding each project impact and available mitigation measures, including those proposed by project proponents, agencies, and the public that could 16

[65] Clark Comments, p. 14.
[66] *Id.*
[67] Clark Comments, p. 14.
[68] *Id.* at 12.
[69] CEQA Guidelines, § 15126.4(a)(1), (2).
[70] Pub. Resources Code § 21060.1; CEQA Guidelines § 15364.

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reasonably be expected to reduce adverse impacts.[71] Here, the mitigation measures proposed by CARB and Dr. James Clark below are feasible mitigation which may reduce the Project's significant impacts. 16

The DEIR incorrectly assumes that operational Nitrogen Oxides ("NOx") emissions cannot feasibly be mitigated. But, Dr. Clark offers additional, feasible mitigation which may effectively reduce operational NOx emissions to less than significant levels.[72] Some mitigation measures were also recommended by the California Air Resources Board to further reduce the Project's air emissions, but were not included in the DEIR as binding mitigation, only as project design features ("PDFs"), rendering them unenforceable. 17

CARB recommended that the Project "Include contractual language in tenant lease agreements that requires tenants to use the cleanest technologies available, and to provide the necessary infrastructure to support zero-emission vehicles and equipment that will be operating on site."[73] The DEIR disregarded this measure for the beginning stages of Project operation, and only requires zero-emission heavy duty trucks "beginning in 2030, if such trucks are widely available and economically feasible."[74] Th measure included in the DEIR is not adequate to reduce the Project's air quality and energy impacts to less than significant levels, and is inadequate as a project design feature because it should have been included in the DEIR as binding mitigation.

The DEIR contains several other PDFs which are intended to reduce the Project's air quality impacts. These measures are therefore mitigation, not design features, and must be included in the EIR's mitigation plan as binding mitigation. PDF AQ-9 attempts to address the Project's significant emissions from mobile sources, particularly heavy-duty trucks, by requiring all heavy-duty trucks entering or operated on the Project site to be zero-emission beginning in 2030.[75] PDF AQ-10 also provides that the light- and medium-duty trucks used as part of business operations shall be zero-emission.[76] PDF AQ-15 provides that the Applicant will include contractual language in tenant lease agreements that requires the tenant be in, and monitor compliance with, all current air quality regulations for on-road trucks including CARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation, 18

[71] CEQA Guidelines, §§ 15093(a), 15126.4(a)(1)(A).
[72] CEQA Guidelines, §§ 15093(a), 15126.4(a)(1)(A).
[73] CARB NOP Comments, p. 6.
[74] DEIR, p. 4.3-22.
[75] *Id.*
[76] *Id.*

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Periodic Smoke Inspection Program (PSIP), SCAQMD Rule 2305 (Warehouse Indirect Source Rule) and the Statewide Truck and Bus Regulation.[77]

Including mitigation as project design features is a violation of CEQA because the DEIR's air quality analysis assumes implementation of these mitigation measures in its underlying emissions calculations, thus failing to disclose the severity of the Project's air quality impacts prior to mitigation, as required by CEQA.

The court in *Lotus v. Department of Transportation* held that "[b]y compressing the analysis of impacts and mitigation measures into a single issue, the EIR disregards the requirements of CEQA.[78] The court in *Lotus* held the EIR in that case was inadequate, because "[t]he DEIR also contains other measures that should be listed as mitigation but which will only be done at the discretion of the contractor. These need to be measurable and enforceable and listed as mitigations."[79]

CEQA defines mitigation as including any measures designed to avoid, minimize, rectify, reduce, or compensate for a significant impact.[80] The actions required under PDF AQ-9, PDF AQ-10, and PDF AQ-15 are included in the DEIR to reduce the Project's air pollution emissions, as recommended by CARB. But, these measures are not currently binding or enforceable. PDF AQ-9, PDF AQ-10, and PDF AQ-15 must be included in the DEIR as a mitigation measure because they are intended to reduce the Project's significant air quality impacts. PDF AQ-9, PDF AQ-10, and PDF AQ-15 are not designed to simply modify a physical element of the Project, as is inherent in any project "design feature," but instead are included for the purpose of reducing the Project's significant air quality impacts. This makes PDF AQ-9, AQ-10, and PDF AQ-15 mitigation measures within the meaning of CEQA. The DEIR must be revised and recirculated to include these measures as binding mitigation.

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Additionally, CARB recommended installing vegetative walls or other effective barriers that separate loading docks and people living and working nearby.[81] A vegetative wall would provide an aesthetic, air pollution, and noise benefit to the surrounding community, but was excluded from the DEIR. CEQA directs public agencies to avoid or reduce environmental damage when possible by

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[77] *Id.*
[78] (2014) 223 Cal.App.4th 645, 656.
[79] *Id.*
[80] 14 C.C.R. § 15370.
[81] CARB NOP Comments, Attachment A, p. 3.

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requiring alternatives or mitigation measures.[82] Here, CARB and commenters recommend feasible mitigation in the form of vegetative walls to reduce Project impacts. Vegetative walls should be included in a revised DEIR as a binding mitigation measure. CARB also recommended restricting idling to two minutes.[83] But, the DEIR provides that "On-site idling shall be limited to three minutes in any one hour."[84] The DEIR also disregards CARB's recommendation that "all emergency generators [] be powered by a non-diesel fuel."[85] These measures are feasible mitigation, and must be included in a revised EIR.

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CARB also recommended construction mitigation measures, that were largely disregarded by the County in preparation of the DEIR. CARB recommended that the construction contracts for the Project, include language that requires all heavy-duty trucks entering the construction site during the grading and building phases be model year 2014 or later.[86] But, the DEIR only provides that "Construction on-road haul trucks shall be model year 2010 or newer if diesel-fueled."[87] Dr. Clark concludes that changing the requirement to model year 2014 or later for all heavy-duty vehicles entering or operated on the project site would substantially reduce Project emissions are below SCAQMD thresholds.[88] Dr. Clark finds that changing the minimum allowable model year from 2010 to 2014 or 2018 would result in:

- 31% reduction in running NOx emissions (NOx RUNEX) from trucks operating on site if the vehicles were restricted to model year 2014 or later.
- A 44% reduction in running NOx emissions (NOx RUNEX) from trucks operating on site if the vehicles were restricted to model year 2018 or later.
- A 27.5% reduction in DPM emissions from trucks measured as PM2.5 operating on site (PM2.5 RUNEX) if the vehicles were restricted to model year 2014 or later.
- A 46.8% reduction in DPM emissions from trucks measured as PM2.5 operating on site (PM2.5 RUNEX) if the vehicles were restricted to model year 2018 or later.
- A 9.5% reduction in ROGs from trucks operating on site (ROG RUNEX) if the vehicles were restricted to model year 2014 or later.

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[82] CEQA Guidelines, § 15002, subd. (a)(2)-(3); *Berkeley Jets, supra,* 91 Cal.App.4th at 1354.
[83] CARB NOP Comments, Attachment A, p. 3.
[84] DEIR, p. 1-11.
[85] CARB NOP Comments, Attachment A, p. 3.
[86] CARB NOP Comments, Attachment A, p. 1.
[87] DEIR, p. 1-11.
[88] Clark Comments, p. 11.

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- A 14.8% reduction in ROGs from trucks operating on site (ROG RUNEX) if the vehicles were restricted to model year 2018 or later.

The imposition of all feasible air quality mitigation for the Project is mandatory given that the DEIR concludes that the Project will result in significant air quality impacts due to exceedances of SCAQMD significance thresholds.[89] Yet, the DEIR fails to evaluate whether additional mitigation beyond a 2010 model year cut-off is feasible despite the substantial emission reductions from such a change and the feasibility of enforcing a revised cut-off date to 2014 or 2018 through the tenant agreement.[90] Accordingly, the County lacks substantial evidence to support the DEIR's conclusion that construction emissions are significant and unavoidable, and substantial evidence from CARB and Dr. Clark demonstrates that the DEIR has not proposed all feasible mitigation measures to minimize the Project's significant impacts on air quality and thus the DEIR is deficient. The DEIR must be revised and recirculated to include all feasible mitigation to reduce construction air emissions, including model year 2014 or 2018 or newer construction on-road diesel haul trucks. 20

VI. THE DEIR FAILS TO ADEQUATELY DISCLOSE AND MITIGATE POTENTIALLY SIGNIFICANT HEALTH RISK IMPACTS

A. The DEIR Fails to Analyze and Mitigate Significant Impacts Associated with Air Pollutant Dispersion

The DEIR fails to adequately analyze impacts associated with building downwash effect. Building downwash occurs as the wind flows over and around buildings and impacts the dispersion of pollution from nearby stacks.[91] A plume caught in the path of this flow is drawn into the wake, temporarily trapping it in a recirculating cavity.[92] This downwash effect leads to higher ground-level concentration of chemicals emitted from sources.[93] The downwash effect increases as the relative difference between the release height and top of the building increases. Dr. Clark concludes that, for the closest receptors to the site, the residences to the Project, this difference will create an additional air quality impact that is not accounted for in the County's analysis.[94] The NextGen Raceway will 21

[89] Covington v. Great Basin Unified Air Pollution Control Dist. (2019) 43 Cal.App.5th 867, 879-883.
[90] *See* 14 C.C.R. § 15126.4(a)(2).
[91] Clark Comments, p. 6.
[92] *Id.*
[93] *Id.*
[94] *Id.*

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include grandstands with over 35,000 people that will be subject to significantly higher DPM emissions than was estimated in the DEIR. Additionally, the DEIR fails to analyze downwash impact for nearby receptors as well as farther away receptors. Dr. Clark finds receptors farther away will still be subject to the downwash effect given the assumed emission height release incorporated into the model.[95]

21

The DEIR's failure to analyze the downwash effect of DPM pollution underestimates the exposure point concentrations for receptors near the Project.[96] The County must prepare a revised EIR which adequately analyzes the impacts associated with downwash effect and adequately mitigates such potentially significant impacts.

B. The DEIR Fails to Analyze and Mitigate Impacts Associated with a Severe Urban Heat Island Effect

CEQA requires EIRs to analyze any significant environmental effects the project might cause or risk exacerbating by bringing development and people into the area affected.[97] Both CEQA and the CEQA Guidelines require an analysis of a project's effects on the environment and human health. CEQA also provides that the EIR should evaluate any potentially significant direct, indirect, or cumulative environmental impacts of locating development in areas susceptible to hazardous conditions, including both short-term and long-term conditions.[98] The DEIR fails to even mention the Project's risk of exacerbating the urban heat island effect, in violation of CEQA.

22

The California Environmental Protection Agency ("Cal EPA") concluded that large, urbanized areas can experience higher temperatures, greater pollution and more negative health impacts than rural communities due to the urban heat island effect.[99] The concentration of heat in urban areas creates health risks both because of heat exposure and because of the enhanced formulation of air pollutants,

[95] Clark Comments, p. 6.
[96] *Id.*
[97] 14 CCR 15126.2(a); *Cal. Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist.* (2015) 62 Cal.4th 369, 388.
[98] 14 CCR 15126.2(a).
[99] California Environmental Protection Agency, Understanding the Urban Heat Island Index, available at: https://calepa.ca.gov/climate/urban-heat-island-index-for-california/understanding-the-urban-heat-island-index/.

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particularly ozone.[100] Major increases in deaths, hospitalizations, and emergency room visits have been documented to occur during heat waves.[101] Increased hospital visits and emergency room visits have been documented in California from increased heat, including visits due to respiratory disease, emphysema, heart disease, heart attacks, stroke, diabetes, renal failure, intestinal infections, heat stroke, dehydration, hypertension, and asthma.[102] For every increase of temperature by 10 degrees Fahrenheit, there is a nearly 9 percent increase in preterm births.[103]

22

Cal EPA found that San Bernardino, in particular, suffers from a surprisingly intense urban heat island.[104] Additionally, at night time, as the heat is gradually released from the pavement, the urban heat island effect is even more pronounced.[105] Cal EPA found that nighttime temperatures can be as much as 22° F higher in urban areas than in rural areas, as the heat is gradually released from buildings and pavement.[106] Impacts associated with the urban heat island effect are only expected to worsen as time goes on, as statewide average temperatures increase due to climate change, see figure below.

[100] California Environmental Protection Agency, Understanding the Urban Heat Island Index, available at: https://calepa.ca.gov/climate/urban-heat-island-index-for-california/understanding-the-urban-heat-island-index/.
[101] *Id.*
[102] *Id.*
[103] *Id.*
[104] *Id.*
[105] *Id.*
[106] CalEPA, California Department of Public Health, Heat Adaptation Workgroup, a subcommittee of the Public Health Workgroup, California Climate Action Team (CAT), Preparing California for Extreme Heat: Guidance and Recommendations (October 2013). Available at: https://www.cdph.ca.gov/Programs/OHE/CDPH%20Document%20Library/CCHEP-General/CDPH-EPA-2013-Preparing-CA-for-Extreme-Heat_ADA.pdf.

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Table 2. Summary of Temperature Projections for California

Model	Findings
Hayhoe, et al.2004	Increase of 3°-5° F in state-wide average temperature by 2030s and up to 9° F for summer average by 2050s under high emission scenario
Drechsler, et al.2006	Summer daily maximum temperatures would increase by 2.2°–7.6° F by 2035–2065
Cayan, et al.2009	Increase in state-wide annual average temperature between 2.8°-10.8° F by end of century
Mastrandea, et al.2009	Extreme temperatures currently estimated to occur once every 100 years would occur annually under high emission scenario
Ostro, et al.2011	Statewide changes in annual average temperature of 1.9° F in 2025 and 4.6° F in 2050 would translate to 2,100 to 4,300 excess deaths in 2025 and 6,700 to 11,300 excess deaths in 2050.

[107]

22

According to data provided by CalEPA, the increase in temperature due to the heat island effect at the Project site would be 11 degrees Fahrenheit.[108] This is calculated through dividing the daily Urban Heat Island Index at the Project site of 156.46 by 24 hours, and multiply the result by 1.8 degrees equals 11.73 degrees Fahrenheit. [109] 11.73 degrees Fahrenheit is the increase in temperature at the Project site due to the urban heat island effect. The data show that the Project exacerbates the existing heat island effect, resulting in a higher temperature and more adverse health outcomes to the community. The Project risks exacerbating the heat island effect in the area and bringing people to the affected area, without providing any mitigation. This is a potentially significant impact of the Project that must be disclosed, analyzed and mitigated in a revised EIR.

C. The DEIR Fails to Analyze and Mitigate Impacts Arising from Disturbance of Contaminated Soil

23

In *Cal. Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist.*,[110] the California Supreme Court held that the disturbance of contaminated soil is a potentially significant impact which requires disclosure and analysis of health and safety impacts in an EIR.[111] The Court explained that "when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an

[107] *Id.*
[108] CalEPA, Urban Heat Island Interactive Maps, https://calepa.ca.gov/urban-heat-island-interactive-maps-2/.
[109] CalEPA, Understanding the Urban Heat Island Index, https://calepa.ca.gov/climate/urban-heat-island-index-for-california/understanding-the-urban-heat-island-index/.
[110] (2015) 62 Cal.4th 369.
[111] *Id.* at 388-90; 14 CCR § 15126.2(a).

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agency must analyze the potential impact of such hazards on future residents or users."[112]

Dr. Clark's comments provide substantial evidence that carcinogenic compounds including polycyclic aromatic hydrocarbons, arsenic, cadmium, and benzene may be found on the Project site.[113] The DEIR failed to include a Phase I or Phase II Environmental Site Assessment, and failed to analyze the full extent of the soil contamination onsite. Soil contaminants will be disturbed during excavation and construction, which will present a public health risk to construction workers working on the Project, and the public nearby.[114] This risk is a significant impact under CEQA.[115] The County must analyze and mitigate the health and safety risks arising from disturbing contaminants in the soil on the Project site. The County must also calculate the potential health risks associated with the exposure of nearby residents to mechanically disturbed soil and provide adequate mitigation for such exposure. The DEIR must be revised and recirculated to adequately address soil contamination associated with the Project site, and provide adequate mitigation to reduce the health risk associated with exposure.

23

VII. THE DEIR FAILS TO DISCLOSE AND MITIGATE POTENTIALLY SIGNIFICANT HAZARDS IMPACTS

A. The DEIR Fails to Analyze Remaining Contamination from the Kaiser Steel Mill

The Project Site is located on the original Kaiser Steel Mill, located on approximately 1,200 acres in Fontana.[116] The facility was an integrated steel production plant that the Kaiser Steel Corporation owned and operated from approximately 1942 to 1983.[117] The DEIR states that the Applicant's consultant "did not include *any environmental assessment* for the presence or absence of hazardous/toxic materials, including methane or other landfill related gases."[118]

24

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[112] *Id.* at 377.
[113] Clark Comments, p. 11.
[114] *Id.*
[115] *Cal. Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist.* (2015) 388-90; 14 CCR § 15126.2(a).
[116] DEIR, p. 4.9-15.
[117] DEIR, Appendix I, p. 2.
[118] DEIR, Preliminary Report of Geotechnical Study Proposed Speedway Commerce Center II, Fontana California, Kleinfelder, (December 3, 2021) p. 37 of 39. Available here: https://files.ceqanet.opr.ca.gov/274702-2/attachment/nHSqNSPF4b8Tsy6Mkes6CLFHRMMLf5QRRCZ5_w4oN4JRMy03RASwR2h1vr6sGLJkejxWAw1zaxzgmfD90.

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The hazardous contamination the Project site is significant and was found by the California Department of Toxic Substances to be "above acceptable health risk-based levels."[119] Studies of the steel mill found that it emitted large quantities of carcinogenic compounds that will persist in the environment and that the emission controls on the plant were deficient.[120]

Dr. Clark concludes that the Project's construction phase will disturb large quantities of soils in areas that were identified in the DEIR as former process areas that contained measurable concentrations of COPCs from the Kaiser Steel Mill.[121] Mechanically disturbing the soils will release impacted soils that will migrate offsite to the residences nearby.[122] This may result in a significant and unmitigated impact. The County must assess the concentrations of contaminants that will be released offsite and calculate the potential health risks from those exposures.[123] The County must revise the hazardous materials section and health risk analysis of the DEIR and present the results in a revised EIR.

24

B. The DEIR Fails to Discuss the Presence and Potential Releasees of Listed Toxic Chemicals During Project Construction

The Project site contains a number of toxic chemicals listed on the most recent Proposition 65 list, including:

- acenaphthene,
- anthracene,
- antimony,
- arsenic,
- benz(e)snthracene,
- benzene,
- benzo(b)fluoranthene,
- beazo(k)fluoranthene,
- benzo(a)pyrene,
- beryllium,
- cadmium,
- chrysene,
- chromium(includinghexavalent),
- cyanide,

25

[119] DEIR, Appendix I, pdf p. 37.
[120] Clark Comments, p. 10-11.
[121] Clark Comments, p. 11.
[122] *Id.*
[123] *Id.*

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- fluoranthene,
- fluorene,
- indeno(1,2,3.cd)pyrene,
- lead,
- mercury,
- molybdenum,
- nickel,
- styrene,
- toluene.[124]

The presence or release of chemicals in drinking water, or through dermal contact or inhalation, that exceed the reproductive toxicity and/or carcinogenic warning levels set forth in Proposition 65 is a potentially significant impact that must be disclosed in the EIR.

The DEIR also fails to analyze the Project's conformance with Proposition 65 and fails to mention the legislation altogether. Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, requires businesses to provide a clear and reasonable warning before knowingly and intentionally exposing *anyone* to chemicals that are known to the state to cause cancer or birth defects or other reproductive harm.[125] Additionally, Proposition 65 establishes regulation on the prohibition of discharges or release onto land which may pass into a drinking water source. Given the Project site is known to contain chemicals known to the state to cause cancer or reproductive toxicity, a warning must be posted during construction and operation of the Project and the County and Applicant must ensure there is no runoff of the toxic chemicals into any water source.[126]

25

The DEIR must be revised and recirculated to discuss the severity of potential impacts and human exposure to toxic chemicals at the Project site that are listed on the most recent Proposition 65 list. The County must also ensure that the developer fully complies with Proposition 65 requirements to warn workers and future site users of the site's contamination. The County must ensure that the Applicant fully complies with requirements under Proposition 65's discharge regulations as well. Absent this information in a revised and recirculated EIR, the hazards impacts associated with toxic chemicals onsite remain significant and unmitigated.

[124] California Office of Environmental Health Hazard Assessment, The Proposition 65 List, February 25, 2022 Proposition 65 List. Available here: https://oehha.ca.gov/proposition-65/proposition-65-list.
[125] Health and Safety Code § 25249.14.
[126] Health and Safety Code § 25249.14.

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VIII. THE DEIR FAILS TO ADEQUATELY ANALYZE AND MITIGATE THE POTENTIALLY SIGNIFICANT TRANSPORTATION IMPACTS OF THE PROJECT

A. Mitigation Measure TRANS-2 is Inadequate

MM TRANS-2 proposes to provide a comprehensive traffic management plan to manage traffic to and from the Next Gen motorsports facility and SCCIISP Project *only* during race weekends and as required for ancillary events. This is inadequate mitigation for failure to provide for impacts that occur outside of race weekends and ancillary events. Additionally, the preparation of a traffic management plan outside the scope of the CEQA process constitutes impermissibly deferred mitigation. CEQA Guidelines § 15126.4(a)(1)(B) provides that formulation of mitigation measures shall not be deferred until some future time.[127] "Impermissible deferral of mitigation measures occur when an EIR puts off analysis or orders a report without either setting standards or demonstrating how the impact can be mitigated in the manner described in the EIR."[128] "By deferring environmental assessment to a future date, the conditions run counter to that policy of CEQA which requires environmental review at the earliest feasible stage in the planning process."[129] The DEIR must be revised and recirculated to include adequate analysis and mitigation of the Project's traffic and transportation impacts.

26

The CEQA Guidelines provide that "[t]he specific details of a mitigation measure, however, may be developed after project approval when it is impractical or infeasible to include those details during the project's environmental review…"[130] The DEIR does not state why specifying the traffic management plan was impractical or infeasible at the time the DEIR was drafted. In *Preserve Wild Santee v. City of Santee,* the city impermissibly deferred mitigation where the EIR did not state why specifying performance standards for mitigation measures "was impractical or infeasible at the time the EIR was certified."[131] The court determined that although the City must ultimately approve the mitigation

[127] 14 CCR 15126.4(a)(1)(B).
[128] *City of Long Beach v. Los Angeles Unified School Dist.* (2009) 176 Cal.App.4th 889, 915-916.
[129] *Sundstrom* (1998) 202 Cal.App.3d 296, 305.
[130] 14 CCR § 15126.4(a)(1)(B).
[131] *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281.

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standards, this does not cure these informational defects in the EIR.[132] Further, the court in *Endangered Habitats League, Inc. v. County of Orange*, held that mitigation that does no more than require a report to be prepared and followed, or allow approval by a county department without setting any standards is inadequate.[133] Here, the fact that the traffic management plan will be approved later by the County does not cure the informational defects in this DEIR.[134]

26

B. The VMT Threshold of Significance is Unsupported

CEQA requires that "[a] threshold of significance cannot be applied in a way that would foreclose the consideration of other substantial evidence tending to show the environmental effect to which the threshold relates might be significant."[135] Additionally, "notwithstanding compliance with a pertinent threshold of significance, the agency must still consider any fair argument that a certain environmental effect may be significant."[136]

The VMT threshold chosen by the County is four percent below the existing average VMT per employee in non-urbanized portions of the County instead of the fifteen percent below the existing average VMT as recommended by OPR. "Based on OPR's extensive review of the applicable research, and in light of an assessment by the California Air Resources Board quantifying the need for VMT reduction in order to meet the State's long-term climate goals, **OPR recommends that a per resident or per employee VMT that is fifteen percent below that of existing development…"**[137] OPR states that "Fifteen percent reductions in VMT are achievable at the project level in a variety of place types."[138] "Moreover, a fifteen percent reduction is consistent with SB 743's direction to OPR to select a threshold that will help the State achieve its climate goals."[139]

27

[132] *Id.*
[133] *Endangered Habitats League, Inc. v. County of Orange,* (2005) 131 Cal.App.4th 777, 794.
[134] *See Cal. Clean Energy Comm. v. City of Woodland* (2014) 225 Cal.App.4th 173, 194.
[135] *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1109; 14 CCR §15064.
[136] *Id.*
[137] Governor's Office of Planning and Research, Technical Advisory on Evaluating Transportation Impacts in CEQA, (December 2018) https://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf (emphasis in original).
[138] *Id.*
[139] *Id.*

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A fifteen percent reduction in VMT for this Project is both feasible and in line with the purpose of SB 743, whereas the threshold used in the DEIR is not supported by substantial evidence.[140] The four percent threshold is not supported by substantial evidence in the record, because the DEIR fails to show that the Project is in a low-VMT area. The failure to utilize an adequate threshold causes the County to fail to analyze potentially significant impacts associated with the urbanized VMT from the project.

27

IX. THE DEIR FAILS TO ADEQUATELY DISCLOSE THE POTENTIALLY SIGNIFICANT OPERATIONAL NOISE IMPACTS OF THE PROJECT

A. Operation of the Project Will Result in Significant and Unmitigated Noise Impacts to Residents Along Randall Avenue

The Project would result in approximately 43,549 daily trips at full buildout, including approximately 9,865 daily truck trips.[141] Project generated traffic would result in an increase of 3.8 dBA CNEL along Randall Avenue (from Cherry Avenue to Citrus Avenue) which would exceed 3.0 dBA.[142] Additionally, traffic noise levels along Randall Avenue (from Cherry Avenue to Citrus Avenue) would be 64.4 dBA CNEL such that they would exceed the County's applicable noise standard of 60 dBA CNEL for residential uses.[143] The DEIR concludes, absent substantial evidence, that this impact is unavoidable.[144]

28

Commenters' noise and acoustical consultant, Derek Watry, determined that the DEIR is incorrect to conclude that the impacts on residences from Cherry Avenue to Citrus Avenue cannot feasibly be mitigated.[145] The DEIR Noise Appendix states that the "Project applicant…does not have jurisdiction over the local roadways and/or existing residences to directly mitigate traffic noise impacts at the impacted receivers."[146] The DEIR further asserts that "Individual residences may deny approval of sound walls or upgraded windows."[147] Thus, the DEIR is

[140] Smith Comments, p. 2.
[141] DEIR, p. 4.13-22.
[142] DEIR, p. 4.13-2; DEIR, Appendix K, p. 33.
[143] DEIR, p. 4.13-31; DEIR, Appendix K, p. 33.
[144] DEIR, p. 4.13-31.
[145] Watry Comments, p. 3.
[146] DEIR, Appendix K, p. 33.
[147] *Id.* at 34.

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recognizing that mitigation exists to reduce noise impacts to sensitive receptors at residences adjacent to the Project, but disregards them as infeasible mitigation. 28

An EIR must describe feasible measures which could minimize significant adverse impacts and which "must be fully enforceable through permit conditions, agreements, or other legally binding instruments."[148] CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors."[149] When weighing the costs of a project's adverse environmental effects against its social, economic, legal, or technological benefits, an agency must make detailed findings regarding each project impact and available mitigation measures, including those proposed by project proponents, agencies, and the public that could reasonably be expected to reduce adverse impacts.[150] A project that will result in significant effects that will not be avoided or substantially lessened requires the agency to "state in writing the specific reasons to support its action" based on and supported by substantial evidence in the record.[151]

The courts have held that mere conclusory statements that the project's alternatives or other mitigation measures were infeasible did not "fulfill CEQA's mandate that the agency's thinking process be disclosed. 'The conclusionary, almost boilerplate language of the findings is insufficient evidence that such balancing [environmental consequences versus benefit] occurred.'"[152] "CEQA does not authorize an agency to proceed with a project that will have significant, unmitigated effects on the environment, based simply on a weighing of those effects against the project's benefits, unless the measures necessary to mitigate those effects are truly infeasible."[153] 29

The DEIR provides "mere conclusory statements" that the measures to reduce noise pollution to residents are infeasible. The installation of acoustical insulation of homes along Randall Avenue is a feasible mitigation measure that may reduce the significant noise impact of Project operation.[154] The County of San Bernardino can require the implementation of a Noise Insulation Program to reduce

[148] CEQA Guidelines, § 15126.4(a)(1), (2).
[149] Pub. Resources Code § 21060.1; CEQA Guidelines § 15364.
[150] CEQA Guidelines, §§ 15093(a), 15126.4(a)(1)(A).
[151] CEQA Guidelines, § 15093(b).
[152] *Atherton v. Board of Supervisors* (1983) 146 Cal.App.3d 346, 352, citing *Village Laguna of Laguna Beach, Inc. v. Board of Supervisors* (1982) 134 Cal.App.3d 1022, 1035.
[153] *Santa Clarita Organization for Planning the Environment v. City of Santa Clarita* (2011) 197 Cal.App.4th 1042, 1053, citing *City of Marina v. Board of Trustees of California State University* (2006) 39 Cal.4th 341, 368–369.
[154] Watry Comments, p. 3.

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the significant noise impact on residences to less than significant levels. In San Francisco, the San Francisco International Airport offer acoustical improvements to qualifying homes where the daily aircraft noise exceeded allowable noise thresholds.[155] Such improvements include: window and door replacement, caulking, weather-stripping, and installation of central fresh air ventilation.[156] Here, sensitive receptors along Randall Avenue, and those shown in the figure below, will be exposed to damaging noise levels, absent mitigation measures including a Noise Insulation Program. The DEIR must be revised and recirculated to include a Noise Insulation Program as part of the Project's binding mitigation.

29

Table 4.13-3: Sensitive Receptors[1]

Receptor Description	Distance and Direction from the Project (Measured from the Nearest Property Lines)
Single-family Residences	410 feet to the east
Single-family Residences	540 feet to the north
Single-family Residences	675 feet to the east
Paduma Monastery	1,100 to the north
Single-family Residences	1,300 feet to the east
Redwood Elementary School	1,370 feet to the northeast
Single-family Residences	1,800 feet to the north
Living Waters Ministry Church of God in Christ	2,000 feet to the north
Single-family Residences	2,100 feet to the north

Notes:
1. Distances measured from the nearest Project site boundary to the property boundary of the identified sensitive receptor.
Source: Google Earth, 2021.

157

B. The Project Will Result in Cumulatively Significant Noise Impacts

30

The DEIR recognizes that the Project will result in cumulatively significant impacts resulting from traffic noise on Randall Avenue (from Cherry Avenue to Sierra Avenue), Fourth Street/San Bernardino Avenue (from Etiwanda Avenue to Cherry Avenue) and on Cherry Avenue (from Foothill Boulevard to Valley Boulevard.)[158] But, the DEIR determined that these impacts are unavoidable.[159] The implementation of a Noise Insulation Program may also reduce the significant cumulative traffic noise impacts associated with Project operation. But, the DEIR fails to adequately mitigate such impacts. An EIR must fully disclose all potentially

[155] SFO, Noise Insulation Program, available at: https://noise.flysfo.com/2021/09/15/noise-insultation-program/.
[156] SFO, Noise Insulation Program, FAQs – Available Noise Insulation Treatments, available at: https://noise.flysfo.com/2021/09/15/faqs-available-noise-insulation-treatments/.
[157] DEIR, p. 4.13-7
[158] DEIR, Appendix K, p. 46-47.
[159] DEIR, Appendix K, 48-50.

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significant impacts of a project, and implement all feasible mitigation to reduce those impacts to less than significant levels. Here, the County fails to require feasible mitigation to reduce impacts to less than significant.

CEQA grants the lead agency the authority to require feasible changes in "any or all activities involved in the project in order to substantially lessen or avoid significant effects on the environment."[160] The County must act to reduce the Project's significant noise impacts to less than significant levels.

30

X. CONCLUSION

For the foregoing reasons, the County must fulfill its responsibilities under CEQA by preparing a legally adequate EIR to address the significant omissions and deficiencies described in this comment letter and the attached expert comments. The DEIR must be revised and recirculated to adequately inform the decision-makers and public of the Project's significant environmental impacts and feasible mitigation measures.

31

Thank you for your attention to these comments.

Sincerely,

Kelilah Federman

Kelilah D. Federman

Attachments
KDF:acp

[160] 14 CCR § 15041.

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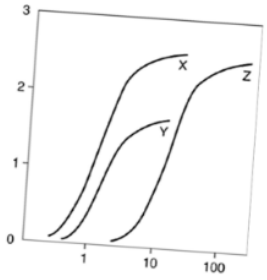
EXHIBIT A



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July 14, 2022

Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Attn: Ms. Kelilah Federman

Subject: Comments On Draft Environmental Impact Report (DEIR) For Speedway Commerce Center II Specific Plan (SCCIISP Project), State Clearinghouse Number 2021120259

Dear Ms. Federman:

At the request of Adams Broadwell Joseph & Cardozo (ABJC), Clark and Associates (Clark) has reviewed materials related to the June 2022 County of San Bernardino's (the County's) DEIR of the above referenced project.

Clark's review of the materials in no way constitutes a validation of the conclusions or materials contained within the plan. If we do not comment on a specific item this does not constitute acceptance of the item.

Project Description:

According to the County the proposed project consists of the development of up to 6.6 million square feet of high-cube logistics and e-commerce development (i.e., warehouses) on approximately 433 acres of the existing Auto Club Speedway (ACS) site. The ACS consists of approximately 522 acres. In addition to the high-cube logistics and e-commerce structures, the project would also include 261,360 square feet (sf) of ancillary commercial development. The Project site is approximately 433 acres and is located north of the San Bernardino Freeway (I-10) and San Bernardino Avenue and is bounded by Cherry Avenue to the east, an active freight and passenger rail line to the north,

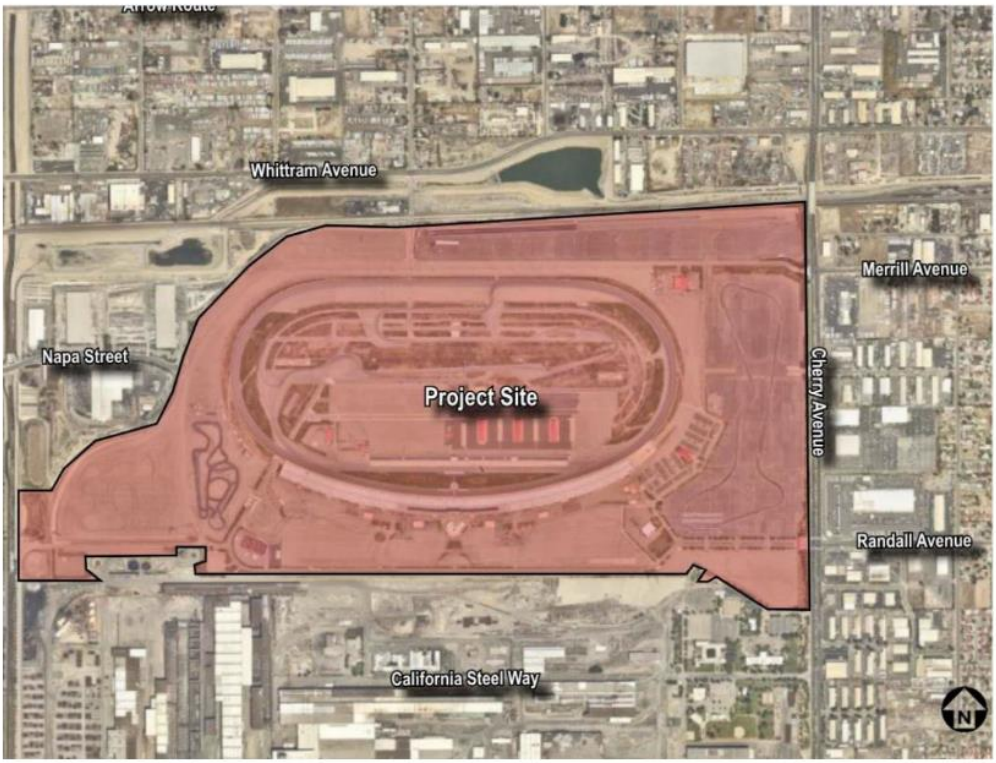


Figure 1: Project Site Location

the West Valley Materials Recycling Facility to the west, and California Steel Industries to the south.

According to the DEIR's project background[1], "The Project site would encompass approximately 433 acres of the approximately 522-acre existing ACS site. The existing ACS is a two-mile oval superspeedway racetrack, owned and operated by California Speedway, LLC. The County originally approved the California Speedway through the approval of the Development Plan Report for the California Speedway and Speedway Business Park (Speedway PD) and adopted the Final Project EIR in 1995 (1995 FEIR; SCH# 1994082080). The existing ACS has been hosting NASCAR races and other motorsports and entertainment events since 1997. The Project would be constructed

[1] Kimley Horn. 2022. Speedway Commerce Center II Specific Plan Project Draft Environmental Impact Report. State Clearinghouse Number 2021120259. Prepared for Land Use Services Department, San Bernardino County. Prepared by Kimley-Horn and Associates, Inc. June, 2022. Pg 3-2.

on 433 acres of the existing site. The remaining approximately 90 acres are not a part of this Project, and plan to be developed as the "Next Gen in California Project" (Next Gen motorsports facility) which was separately approved by the County in June 2021. The Next Gen motorsports facility will continue to host the same type of events hosted by the ACS, on a smaller racetrack surface for more competitive racing and a more intimate experience for race fans."

Exhibit 3: Conceptual Site Plan

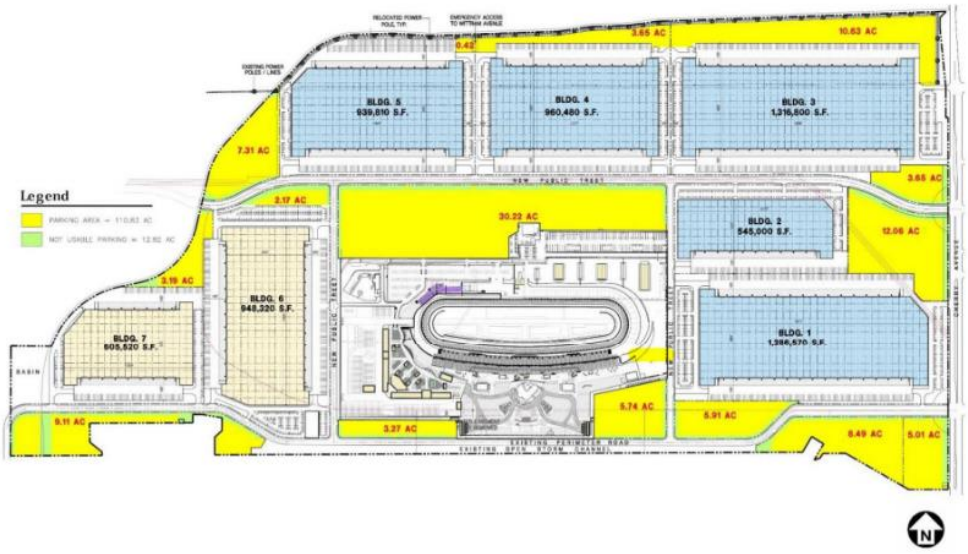
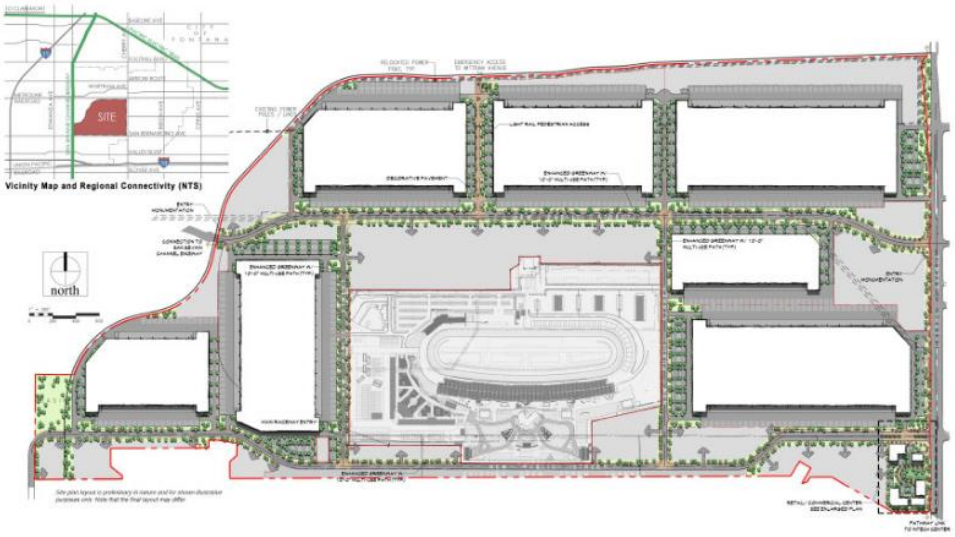


Figure 2: Conceptual Site Plan

The Next Gen in California Project involves the replacement of the existing two-mile track of the California Speedway with a 0.67-mile short track and reduce seating capacity to a maximum capacity of 50,000 persons with approximately 35,000 grandstands seats. According to the DEIR, the Next Gen in California Project has received all necessary approvals and CEQA clearance for its construction and operation, and it is not considered as part of the SCCIISP Project. However, the SCCIISP Project will be designed and developed to be compatible with the Next Gen in California Project, including accommodating ongoing Next Gen in California Project events on designated days and allowing parking for permitted uses.



Source: HPA Architecture, Inc., 2021

Figure 3: Conceptual Site Plan

Unavoidable Significant Impacts

According to the County's DEIR of the Project, the potentially significant and unavoidable impacts from the project include:

- Consistency With Air Quality Management Plan: The proposed project would result in exceedances of regional emissions thresholds and, therefore, be inconsistent with the South Coast Air Quality Management District (SCAQMD) regional air quality planning assumptions. Mitigation is proposed requiring the implementation of feasible emissions reduction measures; however, these measures would not reconcile this inconsistency. Therefore, the significance after mitigation is significant and unavoidable.
- Project-Related Construction and Operational Emissions. Despite implementation of mitigation measures, the Project's criteria pollutant emissions would remain above

SCAQMD thresholds resulting in a significant and unavoidable impact (Impact 4.3-2). However, localized impacts would be less than significant (Impact 4.3-3).

- Cumulative Criteria Pollutant Emissions Impacts: The proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is nonattainment under an applicable federal or State ambient air quality standard. Mitigation is proposed requiring the implementation of air emissions reduction measures, but it would not fully reduce this impact to a level of less than significant. Therefore, the significance after mitigation is significant and unavoidable.
- Greenhouse Gas (GHG) Emissions: The Project's emissions would be considered significant unavoidable even with the implementation of Project Design Features (PDFs), Standard Conditions, and Mitigation Measures.

The conclusion from the County that the significant impacts are unavoidable is not supported by the facts of the Project. There are substantial impacts that are not addressed in the County's analysis that must be addressed in a revised environmental draft impact report (R-DEIR).

Specific Comments:

1. The Air Dispersion Model Used For The Health Risk Assessment For Operational Phases Of The Project Has A Structural Flaw That Result In Inaccurate Estimates Of The Project Emissions Within The Community

The modeling approach has a significant flaw - the model does not account for the impact on emissions from building downwash. If the building downwash were included in the model, then the Proponent would be reasonably expected to call that out in the text summary of the model. The AERMOD model calculates the ground-level concentration of diesel particulate matter (DPM) emission associated with the project. The height of release for emissions from idling trucks is generally assumed to be 2.55 meters to 3.4 meters (8.4 feet to 11.2 feet) well below the heights of the prosed buildings. The release height for DPM from trucks traveling along the streets is generally assumed to be at the ground surface (0 meters or 0 feet). In addition, the NextGen Raceway will include grandstands for 35,000 people that will be significantly higher than the sources of DPM onsite.

Building downwash occurs as the wind flows over and around buildings and impacts the

dispersion of pollution from nearby stacks. A plume caught in the path of this flow is drawn into the wake, temporarily trapping it in a recirculating cavity. This downwash effect leads to higher ground-level concentration of chemicals emitted from sources. The downwash effect increases as the relative difference between the release height and top of the building increases.[2]

For the closest receptors to the site, the residences to the Project, this difference will create an additional air quality impact that is not accounted for in the County's analysis. In addition to incorporating the building downwash impacts of the Project buildings, the AERMOD model should also incorporate the building downwash for receptors near the Project. Receptors farther away will still be subject to the downwash effect given the assumed emission height release incorporated into the model. Guidance from authoritative bodies in California regarding the preparation of health risk assessments of mobile sources of diesel emissions[3] requires the inclusion of building heights and dimensions for building downwash calculations. Omission of the building downwash effect underestimates the exposure point concentrations for receptors near the building(s). The County should address the impact of this issue in a R-DEIR.

2. Mitigation Measure AQ-1 Assumes That The Fleet of Heavy Duty Trucks Entering the Site During The Construction Phase of The Project Will Be From Year 2010 Or Later. If the MM Can Require A Specific Age of Vehicles Entering The Project Site, It Should Be Changed To Make A Real Impact On Emissions From The Heavy Duty Truck Traffic.

The County's MM requires heavy-duty vehicles entering the Project site during the construction phase of the Project will be model year 2010 or later. The County offers no logic as to why model year 2010 is the baseline value for heavy-duty vehicles on-site. If the County can limit the age of the heavy duty vehicles entering and exiting the site then choosing new model vehicles will limit the impacts of the Project on the surrounding community.

[2] The so-called good engineering practice height (GEP) of the source. The GEP is defined in Section 123 of the Clean Air Act as "the height necessary to ensure that emissions from a stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies or wakes which may be created by the source itself, nearby structures or nearby terrain obstacles."

[3] SCAQMD. 2003. Health Risk Assessment Guidance For Analyzing Cancer Risks From Mobile Source Diesel Emissions. August, 2003. Page 2.

Using the California Air Resources Board's (CARB) EMission FACtor (EMFAC) model, it is possible to estimates the emissions from onroad mobile sources in California, including but not limited to heavy duty trucks. The model calculates emissions factors and emissions inventories for:

- Carbon monoxide (CO)
- Nitrogen oxides (NO_x)
- Hydrocarbons (HC): HC can be expressed as TOG (total organic gases), ROG (reactive organic gases), THC (total hydrocarbon), or CH_4 (methane). The TOG class includes all organic gases emitted into the atmosphere. The ROG class is same as EPA's VOC (volatile organic compounds) definition and does not contain compounds exempt from regulation.
- Particulate matter (PM): PM estimates are provided for total suspended particulates for particulate matters 10 microns or less in diameter (PM_{10}), and particulate matters 2.5 microns or less in diameter ($PM_{2.5}$).
- Sulfur oxides (SO_x): Emissions of oxides of sulfur are a function of the sulfur content of fuel. The model calculates these emissions by multiplying the fuel consumption by the weight fraction of sulfur in a gallon of fuel.
- Greenhouse Gases (GHG): GHG emissions are consisted of complete combustion CO2, Nitrous Oxide (N_2O) and Methane (CH_4). These are the greenhouse gases that are now included in the EMFAC2017 but not in EMFAC2014 or prior versions

In my analysis the emissions for NO_x, $PM_{2.5}$ as exhaust, and ROGs for vehicles with model years 2010 through 2022 are presented in the table below.

Table 1: EMFAC Emission Estimates For Heavy Duty Vehicles For Model Years 2010 Through 2022

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	NOx RUNEX	NOx IDLEX	NOx STREX	PM2.5 RUNEX	PM2.5 IDLEX	ROG RUNEX	ROG IDLEX
San Bernardino	2022	HHDT	2010	Aggregate	Diesel	8.416170639	66.63462309	0.303995324	0.061143063	0.015346498	0.389515889	3.711221415
San Bernardino	2022	HHDT	2011	Aggregate	Diesel	5.108084686	49.94368209	1.74914169	0.050351752	0.015193042	0.140670794	3.718894563
San Bernardino	2022	HHDT	2012	Aggregate	Diesel	3.888175928	35.75497962	2.807614527	0.028043419	0.012319964	0.023658391	3.025740095
San Bernardino	2022	HHDT	2013	Aggregate	Diesel	3.720064369	47.94325388	2.364825726	0.027326372	0.016519633	0.023244212	4.057164263
San Bernardino	2022	HHDT	2014	Aggregate	Diesel	2.501894439	51.37072174	2.577134663	0.020471148	0.017700623	0.019249143	4.347211329
San Bernardino	2022	HHDT	2015	Aggregate	Diesel	2.132749332	55.56413921	2.63263191	0.018341075	0.019145534	0.017675502	4.702076343
San Bernardino	2022	HHDT	2016	Aggregate	Diesel	2.046121765	75.3500383	2.459825115	0.018600961	0.025963089	0.017207775	6.376444189
San Bernardino	2022	HHDT	2017	Aggregate	Diesel	1.907108583	65.60669357	2.431979452	0.016899225	0.02260586	0.016417079	5.551920469
San Bernardino	2022	HHDT	2018	Aggregate	Diesel	1.791508608	69.09782834	2.549827758	0.014935616	0.023808788	0.015741602	5.847355302
San Bernardino	2022	HHDT	2019	Aggregate	Diesel	1.653470388	70.54006992	2.561556547	0.013213531	0.024305736	0.014944854	5.969403986
San Bernardino	2022	HHDT	2020	Aggregate	Diesel	1.511480591	72.58206083	2.567147195	0.011417445	0.025009337	0.014125251	6.142206035
San Bernardino	2022	HHDT	2021	Aggregate	Diesel	1.363787794	74.45298552	2.562063473	0.009588605	0.025653995	0.013272115	6.300531726
San Bernardino	2022	HHDT	2022	Aggregate	Diesel	1.213963064	69.46686997	2.600171616	0.007624458	0.023935947	0.012398767	5.878585192

Note: Units: g/mile for RUNEX, g/vehicle/day for IDLEX

Using the population size of each model year it is possible to calculate the weighted average aggregate value for the fleet of heavy duty vehicles using the Project Site. Based on the averaged emissions from the table above (limiting the fleet to vehicles built before the year 2021) it is clear that changing the minimum allowable model year from 2010 to 2014 or 2018 would result in:

- A 31% reduction in running NO_x emissions (NO_x RUNEX) from trucks operating on site if the vehicles were restricted to model year 2014 or later.
- A 44% reduction in running NO_x emissions (NO_x RUNEX) from trucks operating on site if the vehicles were restricted to model year 2018 or later.
- A 27.5% reduction in DPM emissions from trucks measured as $PM_{2.5}$ operating on site ($PM_{2.5}$ RUNEX) if the vehicles were restricted to model year 2014 or later.
- A 46.8% reduction in DPM emissions from trucks measured as $PM_{2.5}$ operating on site (PM2.5 RUNEX) if the vehicles were restricted to model year 2018 or later.
- A 9.5% reduction in ROGs from trucks operating on site (ROG RUNEX) if the vehicles were restricted to model year 2014 or later.
- A 14.8% reduction in ROGs from trucks operating on site (ROG RUNEX) if the vehicles were restricted to model year 2018 or later.

The County must reassess the impact that restricting the model year of vehicles operating during the construction phase of the Project in Mitigation Measure AQ-1 to newer models than 2010 in a revised EIR.

3. **The Underlying Assumptions Regarding The Number of Vehicles Associated With Each Square Foot of Building Utilized In The Air Quality Analysis Is Not Supported By ITE Guidance On High Cube Warehouses. The Critical Value For Estimating Daily Trips From The Project (Weighted Average Daily Trip Per 1,000 Square Feet) Has A Low Level Of Correlation Between Building Gross Square Footage And Vehicle Trips.**

The County ignores the SCAQMD's recommendation to utilize an average daily vehicle trip rate per 1,000 square feet and an average daily truck trip rate per 1,000 square feet. The County's analysis cites the use of the 2016 study of High-Cube Warehouse Distribution Centers (HCWs) by the SCAQMD and Institute of Transportation Engineers (ITE) included an analysis of high-cube

warehouses (HCW) as a reason for using a different daily trip rate. An HCW was defined as a building that typically has at least 200,000 gross square feet of floor area, has a ceiling height of 24 feet or more, and is used primarily for the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses.

In the 2016 SCAQMD study, a value of 1.432 daily vehicle trips per 1,000 GSF is calculated for Transload and Short-term Storage HCWs. The study further states that while the dataset for Transload and Short-term Storage HCWs is larger than those for Cold Storage HCWs, Fulfillment Center HCWs, and Parcel Hub HCWs, the relationship between building gross square footage and vehicle trips for Transload and Short-term HCWs *does not produce an acceptable level of correlation to develop a fitted curve equation (emphasis added)*. This suggests that the value used to justify the number of vehicle trips per day utilized by the County is not supportable and the higher rate of 1.68 daily vehicle trips per 1,000 GSF recommended by SCAQMD is more appropriate for this project. The County should re-evaluate the operational emissions based on the recommended SCAQMD rate in an R-DEIR.

4. The DEIR Fails To Consider The Health Risks From Grading Activities On-Site During The Construction Phase Of The Project Based On Historically Important Chemicals Of Concern (COCs) That Were Released From The Former Kaiser Steel Mill.

The DEIR has failed to assess impact of chemicals of potential concern (COPCs) associated with the largest source of pollution in the area, the former Kaiser Steel Mill. . The Project Site is located within the confines of the original Kaiser Steel Mill, located on approximately 1,200 acres in Fontana. The facility was an integrated steel production plant that the Kaiser Steel Corporation owned and operated from approximately 1942 to 1983. Studies of the steel mill found that it emitted large quantities of carcinogenic compounds that will persist in the environment[4] and that the emission

[4] KVB. 1970. An Inventory Of Carcinogenic Substances Released Into The Ambient Air Of California. Final Report – Task II & IV. Prepared for Science Applications, Inc by R.M. Roberts, KVB, Inc. Energy and Environmental Systems. March, 1980.

controls on the plant were deficient.[5] In 1970, a report by KVB[6] sought to identity areas where the highest concentrations of emissions might be expected to occur resulting from the use or manufacture of 11 specific carcinogenic substances in California. The report focused on recognized "hot spots" in which carcinogenic compounds were released and had the potential for dispersion after release. Concern about the emissions from the Kaiser Steel Mill as a major source of polycyclic organic matter (POMs are also known as polycyclic aromatic hydrocarbons), arsenic, cadmium, and benzene in California.[7] Arsenic, cadmium, and POMs are not subject to degradation in the environment and will represent a COPC for the area. According to the U.S. EPA's 1976 assessment of visible emissions from the Steel Mill,[8] the basic coke, iron and steel processes result in the emission to the atmosphere of excessive levels of particulate air pollutants, despite the installation of various air pollution control devices. Emissions from the plant would have covered the area of the Project Site for many decades and present a recognized environmental concern for the site.

The Project's construction phase will disturb large quantities of soils in areas that were identified in the DEIR's appendices to represent former process areas that contained measurable concentrations of COPCs from the Kaiser Steel Mill. Mechanically disturbing the soils will release impacted soils that will migrate offsite to the residences nearby. The County must assess the concentrations of contaminants that will be released offsite and calculate the potential health risks from those exposures. The County must correct this error in the hazardous materials section and health risk analysis of the DEIR and present the results in a revised environmental impact report (REIR).

5. There Are A Number Of Mitigation Measures That Will Have A Direct Impact On Operational NOx and GHG Emissions Not Explored By The County In The DEIR

[5] U.S. EPA. 1976. Visible Emission Observation, Kaiser Steel Corporation, Fontana, California, September, 1975. EPA-330/2-76-028.

[6] KVB. 1970. An Inventory Of Carcinogenic Substances Released Into The Ambient Air Of California. Final Report – Task II & IV. Prepared for Science Applications, Inc by R.M. Roberts, KVB, Inc. Energy and Environmental Systems. March, 1980.

[7] KVB. 1970. An Inventory Of Carcinogenic Substances Released Into The Ambient Air Of California. Final Report – Task II & IV. Prepared for Science Applications, Inc by R.M. Roberts, KVB, Inc. Energy and Environmental Systems. March, 1980.

[8] U.S. EPA. 1976. Visible Emission Observation, Kaiser Steel Corporation, Fontana, California, September, 1975. EPA-330/2-76-028.

Mitigation measures that have previously been recommended by the California Air Resources Board and the Air Quality Management Districts in California to reduce operational NO_x and GHG emissions not included in the DEIR by the County include:

1. Include contractual language in tenant lease agreements that requires tenants to use the cleanest technologies available to the extent feasible, and to provide the necessary infrastructure to support zero-emission vehicles and equipment that will be operating on site.
2. Include contractual language in tenant lease agreements that requires all TRUs entering the project site be plug-in capable to the extent feasible.
3. Include contractual language in tenant lease agreements that requires future tenants to exclusively use zero-emission light and medium-duty delivery trucks and vans to the extent feasible.
4. Include contractual language in tenant lease agreements requiring all TRUs, trucks, and cars entering the Project site be zero-emission to the extent feasible.
5. Include contractual language in tenant lease agreements that requires the tenant be in, and monitor compliance with, all current air quality regulations for on-road trucks including CARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation,[9] Periodic Smoke Inspection Program (PSIP),[10] and the Statewide Truck and Bus Regulation.[11]
6. Include rooftop solar panels for each proposed warehouse to the extent feasible, with a capacity that matches the maximum allowed for distributed solar connections to the grid.
7. Have truck routes clearly marked with trailblazer signs, so that trucks will not enter residential areas.

[9] In December 2008, CARB adopted a regulation to reduce greenhouse gas emissions by improving the fuel efficiency of heavy-duty tractors that pull 53-foot or longer box-type trailers. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. CARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation is available at: https://www.arb.ca.gov/cc/hdghg/hdghg.htm.

[10] The PSIP program requires that diesel and bus fleet owners conduct annual smoke opacity inspections of their vehicles and repair those with excessive smoke emissions to ensure compliance. CARB's PSIP program is available at: https://www.arb.ca.gov/enf/hdvip/hdvip.htm.

[11] The regulation requires that newer heavier trucks and buses must meet particulate matter filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 201 0 model year engines or equivalent. CARB's Statewide Truck and Bus Regulation is available at: https://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm

8. Limit the daily number of trucks allowed at the Proposed Project to levels analyzed in the CEQA document. If higher daily truck volumes are anticipated to visit the site, the County as the Lead Agency should commit to re-evaluating the Proposed Project through CEQA prior to allowing this land use or higher activity level.
9. Ensure that any check-in point for trucks is well inside the Proposed Project site to ensure that there are no trucks queuing outside of the facility.
10. Establish overnight parking within the industrial building where trucks can rest overnight.
11. Establish area(s) within the Proposed Project site for repair needs.

6. The HRA Failed To Accurately Account For The Back-up Generator (BUG) Usage Onsite. The HRA Accounts For 50 Hours Of Operation And Does Not Account For The More Likely Use of Up To 200 Hours Of Operation Per Year.

In the DEIR's Air Quality Analysis, the County states that the use of Emergency Backup Generators (BUGs) is speculative. Backup generators would only be used in the event of a power failure and would not be part of the Project's normal daily operations. Emissions from an emergency backup generator for each warehouse building were calculated separately from CalEEMod. The five 750 horse power (hp) and three 3,634 hp cold storage BUGs were assumed to be operated up to 50 hours per year.

In addition to the testing emissions, the air quality analysis must include the substantial increase in operational emissions from BUGs in the Air Basin due to unscheduled events, including but not limited to Public Safety Power Shutoff (PSPS) events and extreme heat events. Extreme heat events are defined as periods where in the temperatures throughout California exceed 100 degrees Fahrenheit. The total duration of the PSPS events lasted between 141 hours to 154 hours in 2019. In 2021, the Governor Of California declared that during extreme heat events the use of stationary generators shall be deemed an emergency use under California Code of Regulations (CCR), title 17, section 93115.4 sub. (a) (30) (A)(2). The number of Extreme Heat Events is likely to increase in California with the continuing change in climate the State is currently undergoing.

Power produced during PSPS or extreme heat events is expected to come from engines regulated by CARB and California's 35 air pollution control and air quality management districts (air districts). Of particular concern are health effects related to emissions from diesel back-up engines.

Diesel particulate matter (DPM) has been identified as a toxic air contaminant, composed of carbon particles and numerous organic compounds, including over forty known cancer-causing organic substances. The majority of DPM is small enough to be inhaled deep into the lungs and make them more susceptible to injury.

According to the California Public Utilities Commission (CPUC) de-energization report in October 2019, there were almost 806 PSPS events (emphasis added) that impacted almost 973,000 customers (~7.5% of households in California) of which ~854,000 of them were residential customers, and the rest were commercial/industrial/medical baseline/other customers. CARB's data also indicated that on average each of these customers had about 43 hours of power outage in October 2019. Using the actual emission factors for each diesel BUG engines in the air district's stationary BUGs database, CARB staff calculated that the 1,810 additional stationary generators (like those proposed for the Project) running during a PSPS in October 2019 generated 126 tons of NOx, 8.3 tons or particulate matter, and 8.3 tons of DPM.

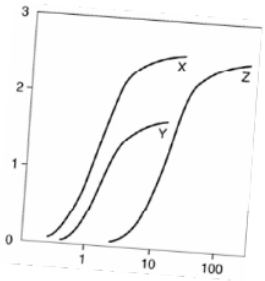
For every PSPS or Extreme Heat Event (EHE) triggered during the operational phase of the project, significant concentrations of DPM will be released. A R-DEIR should be prepared for the Project that includes an analysis of the additional operation of the BUG that will occur at the project site that is not accounted for in the current air quality and GHG analyses.

Conclusion

The facts identified and referenced in this comment letter lead me to reasonably conclude that the Project could result in significant unmitigated impacts if the DEIR is approved. The County must re-evaluate the significant impacts identified in this letter by requiring the preparation of a revised draft environmental impact report.

Sincerely,





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Principal Toxicologist

Toxicology/Exposure Assessment Modeling

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Education:

Ph.D., Environmental Health Science, University of California, 1995

M.S., Environmental Health Science, University of California, 1993

B.S., Biophysical and Biochemical Sciences, University of Houston, 1987

Professional Experience:

Dr. Clark is a well recognized toxicologist, air modeler, and health scientist. He has 20 years of experience in researching the effects of environmental contaminants on human health including environmental fate and transport modeling (SCREEN3, AEROMOD, ISCST3, Johnson-Ettinger Vapor Intrusion Modeling); exposure assessment modeling (partitioning of contaminants in the environment as well as PBPK modeling); conducting and managing human health risk assessments for regulatory compliance and risk-based clean-up levels; and toxicological and medical literature research.

Significant projects performed by Dr. Clark include the following:

LITIGATION SUPPORT

Case: James Harold Caygle, et al, v. Drummond Company, Inc. Circuit Court for the Tenth Judicial Circuit, Jefferson County, Alabama. Civil Action. CV-2009

Client: Environmental Litgation Group, Birmingham, Alabama

Dr. Clark performed an air quality assessment of emissions from a coke factory located in Tarrant, Alabama. The assessment reviewed include a comprehensive review of air quality standards, measured concentrations of pollutants from factory, an inspection of the facility and detailed assessment of the impacts on the community. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: Rose Roper V. Nissan North America, et al. Superior Court of the State Of California for the County Of Los Angeles – Central Civil West. Civil Action. NC041739

Client: Rose, Klein, Marias, LLP, Long Beach, California

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to multiple chemicals, including benzene, who later developed a respiratory distress. A review of the individual's medical and occupational history was performed to prepare an exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to respiratory irritants. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: O'Neil V. Sherwin Williams, et al. United States District Court Central District of California

Client: Rose, Klein, Marias, LLP, Long Beach, California

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to petroleum distillates who later developed a bladder cancer. A review of the individual's medical and occupational history was performed to prepare a quantitative exposure assessment. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Summary judgment for defendants.

Case: Moore V., Shell Oil Company, et al. Superior Court of the State Of California for the County Of Los Angeles

Client: Rose, Klein, Marias, LLP, Long Beach, California

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to chemicals while benzene who later developed a leukogenic disease. A review of the individual's medical and occupational history was performed to prepare a quantitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to refined petroleum hydrocarbons. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: Raymond Saltonstall V. Fuller O'Brien, KILZ, and Zinsser, et al. United States District Court Central District of California

Client: Rose, Klein, Marias, LLP, Long Beach, California

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to benzene who later developed a leukogenic disease. A review of the individual's medical and occupational history was performed to prepare a quantitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to refined petroleum hydrocarbons. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: Richard Boyer and Elizabeth Boyer, husband and wife, V. DESCO Corporation, et al. Circuit Court of Brooke County, West Virginia. Civil Action Number 04-C-7G.

Client: Frankovitch, Anetakis, Colantonio & Simon, Morgantown, West Virginia.

Dr. Clark performed a toxicological assessment of a family exposed to chlorinated solvents released from the defendant's facility into local drinking water supplies. A review of the individual's medical and occupational history was performed to prepare a qualitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to chlorinated solvents. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: JoAnne R. Cook, V. DESCO Corporation, et al. Circuit Court of Brooke County, West Virginia. Civil Action Number 04-C-9R

Client: Frankovitch, Anetakis, Colantonio & Simon, Morgantown, West Virginia.

Dr. Clark performed a toxicological assessment of an individual exposed to chlorinated solvents released from the defendant's facility into local drinking water supplies. A review of the individual's medical and occupational history was performed to prepare a qualitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to chlorinated solvents. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: Patrick Allen And Susan Allen, husband and wife, and Andrew Allen, a minor, V. DESCO Corporation, et al. Circuit Court of Brooke County, West Virginia. Civil Action Number 04-C-W

Client: Frankovitch, Anetakis, Colantonio & Simon, Morgantown, West Virginia.

Dr. Clark performed a toxicological assessment of a family exposed to chlorinated solvents released from the defendant's facility into local drinking water supplies. A review of the individual's medical and occupational history was performed to prepare a qualitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to chlorinated solvents. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: Michael Fahey, Susan Fahey V. Atlantic Richfield Company, et al. United States District Court Central District of California Civil Action Number CV-06 7109 JCL.

Client: Rose, Klein, Marias, LLP, Long Beach, California

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to refined petroleum hydrocarbons who later developed a leukogenic disease. A review of the individual's medical and occupational history was performed to prepare a qualitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to refined petroleum hydrocarbons. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: Constance Acevedo, et al., V. California Spray-Chemical Company, et al., Superior Court of the State Of California, County Of Santa Cruz. Case No. CV 146344

Dr. Clark performed a comprehensive exposure assessment of community members exposed to toxic metals from a former lead arsenate manufacturing facility. The former manufacturing site had undergone a DTSC mandated removal action/remediation for the presence of the toxic metals at the site. Opinions were presented regarding the elevated levels of arsenic and lead (in attic dust and soils) found throughout the community and the potential for harm to the plaintiffs in question.

Case Result: Settlement in favor of defendant.

Case: Michael Nawrocki V. The Coastal Corporation, Kurk Fuel Company, Pautler Oil Service, State of New York Supreme Court, County of Erie, Index Number I2001-11247

Client: Richard G. Berger Attorney At Law, Buffalo, New York

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to refined petroleum hydrocarbons who later developed a leukogenic disease. A review of the individual's medical and occupational history was performed to prepare a qualitative exposure assessment. The exposure assessment was evaluated against the

known outcomes in published literature to exposure to refined petroleum hydrocarbons. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Judgement in favor of defendant.

SELECTED AIR MODELING RESEARCH/PROJECTS

Client – Confidential

Dr. Clark performed a comprehensive evaluation of criteria pollutants, air toxins, and particulate matter emissions from a carbon black production facility to determine the impacts on the surrounding communities. The results of the dispersion model will be used to estimate acute and chronic exposure concentrations to multiple contaminants and will be incorporated into a comprehensive risk evaluation.

Client – Confidential

Dr. Clark performed a comprehensive evaluation of air toxins and particulate matter emissions from a railroad tie manufacturing facility to determine the impacts on the surrounding communities. The results of the dispersion model have been used to estimate acute and chronic exposure concentrations to multiple contaminants and have been incorporated into a comprehensive risk evaluation.

Client – Los Angeles Alliance for a New Economy (LAANE), Los Angeles, California

Dr. Clark is advising the LAANE on air quality issues related to current flight operations at the Los Angeles International Airport (LAX) operated by the Los Angeles World Airport (LAWA) Authority. He is working with the LAANE and LAX staff to develop a comprehensive strategy for meeting local community concerns over emissions from flight operations and to engage federal agencies on the issue of local impacts of community airports.

Client – City of Santa Monica, Santa Monica, California

Dr. Clark is advising the City of Santa Monica on air quality issues related to current flight operations at the facility. He is working with the City staff to develop a comprehensive strategy for meeting local community concerns over emissions from flight operations and to engage federal agencies on the issue of local impacts of community airports.

Client: Omnitrans, San Bernardino, California

Dr. Clark managed a public health survey of three communities near transit fueling facilities in San Bernardino and Montclair California in compliance with California Senate Bill 1927. The survey included an epidemiological survey of the effected communities, emission surveys of local businesses, dispersion modeling to determine potential emission concentrations within the communities, and a comprehensive risk assessment of each community. The results of the study were presented to the Governor as mandated by Senate Bill 1927.

Client: Confidential, San Francisco, California

Summarized cancer types associated with exposure to metals and smoking. Researched the specific types of cancers associated with exposure to metals and smoking. Provided causation analysis of the association between cancer types and exposure for use by non-public health professionals.

Client: Confidential, Minneapolis, Minnesota

Prepared human health risk assessment of workers exposed to VOCs from neighboring petroleum storage/transport facility. Reviewed the systems in place for distribution of petroleum hydrocarbons to identify chemicals of concern (COCs), prepared comprehensive toxicological summaries of COCs, and quantified potential risks from carcinogens and non-carcinogens to receptors at or adjacent to site. This evaluation was used in the support of litigation.

Client – United Kingdom Environmental Agency

Dr. Clark is part of team that performed comprehensive evaluation of soil vapor intrusion of VOCs from former landfill adjacent residences for the United Kingdom's Environment

Agency. The evaluation included collection of liquid and soil vapor samples at site, modeling of vapor migration using the Johnson Ettinger Vapor Intrusion model, and calculation of site-specific health based vapor thresholds for chlorinated solvents, aromatic hydrocarbons, and semi-volatile organic compounds. The evaluation also included a detailed evaluation of the use, chemical characteristics, fate and transport, and toxicology of chemicals of concern (COC). The results of the evaluation have been used as a briefing tool for public health professionals.

EMERGING/PERSISTENT CONTAMINANT RESEARCH/PROJECTS

Client: Ameren Services, St. Louis, Missouri

Managed the preparation of a comprehensive human health risk assessment of workers and residents at or near an NPL site in Missouri. The former operations at the Property included the servicing and repair of electrical transformers, which resulted in soils and groundwater beneath the Property and adjacent land becoming impacted with PCB and chlorinated solvent compounds. The results were submitted to U.S. EPA for evaluation and will be used in the final ROD.

Client: City of Santa Clarita, Santa Clarita, California

Dr. Clark is managing the oversight of the characterization, remediation and development activities of a former 1,000 acre munitions manufacturing facility for the City of Santa Clarita. The site is impacted with a number of contaminants including perchlorate, unexploded ordinance, and volatile organic compounds (VOCs). The site is currently under a number of regulatory consent orders, including an Immanent and Substantial Endangerment Order. Dr. Clark is assisting the impacted municipality with the development of remediation strategies, interaction with the responsible parties and stakeholders, as well as interfacing with the regulatory agency responsible for oversight of the site cleanup.

Client: Confidential, Los Angeles, California

Prepared comprehensive evaluation of perchlorate in environment. Dr. Clark evaluated the production, use, chemical characteristics, fate and transport, toxicology, and remediation of perchlorate. Perchlorates form the basis of solid rocket fuels and have recently been detected in water supplies in the United States. The results of this research

were presented to the USEPA, National GroundWater, and ultimately published in a recent book entitled *Perchlorate in the Environment*.

Client – Confidential, Los Angeles, California

Dr. Clark is performing a comprehensive review of the potential for pharmaceuticals and their by-products to impact groundwater and surface water supplies. This evaluation will include a review if available data on the history of pharmaceutical production in the United States; the chemical characteristics of various pharmaceuticals; environmental fate and transport; uptake by xenobiotics; the potential effects of pharmaceuticals on water treatment systems; and the potential threat to public health. The results of the evaluation may be used as a briefing tool for non-public health professionals.

PUBLIC HEALTH/TOXICOLOGY

Client: Brayton Purcell, Novato, California

Dr. Clark performed a toxicological assessment of residents exposed to methyl-tertiary butyl ether (MTBE) from leaking underground storage tanks (LUSTs) adjacent to the subject property. The symptomology of residents and guests of the subject property were evaluated against the known outcomes in published literature to exposure to MTBE. The study found that residents had been exposed to MTBE in their drinking water; that concentrations of MTBE detected at the site were above regulatory guidelines; and, that the symptoms and outcomes expressed by residents and guests were consistent with symptoms and outcomes documented in published literature.

Client: Confidential, San Francisco, California

Identified and analyzed fifty years of epidemiological literature on workplace exposures to heavy metals. This research resulted in a summary of the types of cancer and non-cancer diseases associated with occupational exposure to chromium as well as the mortality and morbidity rates.

Client: Confidential, San Francisco, California

Summarized major public health research in United States. Identified major public health research efforts within United States over last twenty years. Results were used as a briefing tool for non-public health professionals.

Client: Confidential, San Francisco, California

Quantified the potential multi-pathway dose received by humans from a pesticide applied indoors. Part of team that developed exposure model and evaluated exposure concentrations in a comprehensive report on the plausible range of doses received by a specific person. This evaluation was used in the support of litigation.

Client: Covanta Energy, Westwood, California

Evaluated health risk from metals in biosolids applied as soil amendment on agricultural lands. The biosolids were created at a forest waste cogeneration facility using 96% whole tree wood chips and 4 percent green waste. Mass loading calculations were used to estimate Cr(VI) concentrations in agricultural soils based on a maximum loading rate of 40 tons of biomass per acre of agricultural soil. The results of the study were used by the Regulatory agency to determine that the application of biosolids did not constitute a health risk to workers applying the biosolids or to residences near the agricultural lands.

Client – United Kingdom Environmental Agency

Oversaw a comprehensive toxicological evaluation of methyl-*tertiary* butyl ether (M*t*BE) for the United Kingdom's Environment Agency. The evaluation included available data on the production, use, chemical characteristics, fate and transport, toxicology, and remediation of M*t*BE. The results of the evaluation have been used as a briefing tool for public health professionals.

Client – Confidential, Los Angeles, California

Prepared comprehensive evaluation of *tertiary* butyl alcohol (TBA) in municipal drinking water system. TBA is the primary breakdown product of M*t*BE, and is suspected to be the primary cause of M*t*BE toxicity. This evaluation will include available information on the production, use, chemical characteristics, fate and transport in the environment, absorption, distribution, routes of detoxification, metabolites, carcinogenic potential, and remediation of TBA. The results of the evaluation were used as a briefing tool for non-public health professionals.

Client – Confidential, Los Angeles, California

Prepared comprehensive evaluation of methyl *tertiary* butyl ether (MTBE) in municipal drinking water system. MTBE is a chemical added to gasoline to increase the octane

rating and to meet Federally mandated emission criteria. The evaluation included available data on the production, use, chemical characteristics, fate and transport, toxicology, and remediation of MTBE. The results of the evaluation have been were used as a briefing tool for non-public health professionals.

Client – Ministry of Environment, Lands & Parks, British Columbia

Dr. Clark assisted in the development of water quality guidelines for methyl tertiary-butyl ether (MTBE) to protect water uses in British Columbia (BC). The water uses to be considered includes freshwater and marine life, wildlife, industrial, and agricultural (e.g., irrigation and livestock watering) water uses. Guidelines from other jurisdictions for the protection of drinking water, recreation and aesthetics were to be identified.

Client: Confidential, Los Angeles, California

Prepared physiologically based pharmacokinetic (PBPK) assessment of lead risk of receptors at middle school built over former industrial facility. This evaluation is being used to determine cleanup goals and will be basis for regulatory closure of site.

Client: Kaiser Venture Incorporated, Fontana, California

Prepared PBPK assessment of lead risk of receptors at a 1,100-acre former steel mill. This evaluation was used as the basis for granting closure of the site by lead regulatory agency.

RISK ASSESSMENTS/REMEDIAL INVESTIGATIONS

Client: Confidential, Atlanta, Georgia

Researched potential exposure and health risks to community members potentially exposed to creosote, polycyclic aromatic hydrocarbons, pentachlorophenol, and dioxin compounds used at a former wood treatment facility. Prepared a comprehensive toxicological summary of the chemicals of concern, including the chemical characteristics, absorption, distribution, and carcinogenic potential. Prepared risk characterization of the carcinogenic and non-carcinogenic chemicals based on the exposure assessment to quantify the potential risk to members of the surrounding community. This evaluation was used to help settle class-action tort.

Client: Confidential, Escondido, California

Prepared comprehensive Preliminary Endangerment Assessment (PEA) of dense non-aqueous liquid phase hydrocarbon (chlorinated solvents) contamination at a former printed circuit board manufacturing facility. This evaluation was used for litigation support and may be used as the basis for reaching closure of the site with the lead regulatory agency.

Client: Confidential, San Francisco, California

Summarized epidemiological evidence for connective tissue and autoimmune diseases for product liability litigation. Identified epidemiological research efforts on the health effects of medical prostheses. This research was used in a meta-analysis of the health effects and as a briefing tool for non-public health professionals.

Client: Confidential, Bogotá, Columbia

Prepared comprehensive evaluation of the potential health risks associated with the redevelopment of a 13.7 hectares plastic manufacturing facility in Bogotá, Colombia The risk assessment was used as the basis for the remedial goals and closure of the site.

Client: Confidential, Los Angeles, California

Prepared comprehensive human health risk assessment of students, staff, and residents potentially exposed to heavy metals (principally cadmium) and VOCs from soil and soil vapor at 12-acre former crude oilfield and municipal landfill. The site is currently used as a middle school housing approximately 3,000 children. The evaluation determined that the site was safe for the current and future uses and was used as the basis for regulatory closure of site.

Client: Confidential, Los Angeles, California

Managed remedial investigation (RI) of heavy metals and volatile organic chemicals (VOCs) for a 15-acre former manufacturing facility. The RI investigation of the site included over 800 different sampling locations and the collection of soil, soil gas, and groundwater samples. The site is currently used as a year round school housing approximately 3,000 children. The Remedial Investigation was performed in a manner

that did not interrupt school activities and met the time restrictions placed on the project by the overseeing regulatory agency. The RI Report identified the off-site source of metals that impacted groundwater beneath the site and the sources of VOCs in soil gas and groundwater. The RI included a numerical model of vapor intrusion into the buildings at the site from the vadose zone to determine exposure concentrations and an air dispersion model of VOCs from the proposed soil vapor treatment system. The Feasibility Study for the Site is currently being drafted and may be used as the basis for granting closure of the site by DTSC.

Client: Confidential, Los Angeles, California

Prepared comprehensive human health risk assessment of students, staff, and residents potentially exposed to heavy metals (principally lead), VOCs, SVOCs, and PCBs from soil, soil vapor, and groundwater at 15-acre former manufacturing facility. The site is currently used as a year round school housing approximately 3,000 children. The evaluation determined that the site was safe for the current and future uses and will be basis for regulatory closure of site.

Client: Confidential, Los Angeles, California

Prepared comprehensive evaluation of VOC vapor intrusion into classrooms of middle school that was former 15-acre industrial facility. Using the Johnson-Ettinger Vapor Intrusion model, the evaluation determined acceptable soil gas concentrations at the site that did not pose health threat to students, staff, and residents. This evaluation is being used to determine cleanup goals and will be basis for regulatory closure of site.

Client –Dominguez Energy, Carson, California

Prepared comprehensive evaluation of the potential health risks associated with the redevelopment of 6-acre portion of a 500-acre oil and natural gas production facility in Carson, California. The risk assessment was used as the basis for closure of the site.

Kaiser Ventures Incorporated, Fontana, California

Prepared health risk assessment of semi-volatile organic chemicals and metals for a fifty-year old wastewater treatment facility used at a 1,100-acre former steel mill. This evaluation was used as the basis for granting closure of the site by lead regulatory agency.

ANR Freight - Los Angeles, California

Prepared a comprehensive Preliminary Endangerment Assessment (PEA) of petroleum hydrocarbon and metal contamination of a former freight depot. This evaluation was as the basis for reaching closure of the site with lead regulatory agency.

Kaiser Ventures Incorporated, Fontana, California

Prepared comprehensive health risk assessment of semi-volatile organic chemicals and metals for 23-acre parcel of a 1,100-acre former steel mill. The health risk assessment was used to determine clean up goals and as the basis for granting closure of the site by lead regulatory agency. Air dispersion modeling using ISCST3 was performed to determine downwind exposure point concentrations at sensitive receptors within a 1 kilometer radius of the site. The results of the health risk assessment were presented at a public meeting sponsored by the Department of Toxic Substances Control (DTSC) in the community potentially affected by the site.

Unocal Corporation - Los Angeles, California

Prepared comprehensive assessment of petroleum hydrocarbons and metals for a former petroleum service station located next to sensitive population center (elementary school). The assessment used a probabilistic approach to estimate risks to the community and was used as the basis for granting closure of the site by lead regulatory agency.

Client: Confidential, Los Angeles, California

Managed oversight of remedial investigation most contaminated heavy metal site in California. Lead concentrations in soil excess of 68,000,000 parts per billion (ppb) have been measured at the site. This State Superfund Site was a former hard chrome plating operation that operated for approximately 40-years.

Client: Confidential, San Francisco, California

Coordinator of regional monitoring program to determine background concentrations of metals in air. Acted as liaison with SCAQMD and CARB to perform co-location sampling and comparison of accepted regulatory method with ASTM methodology.

Client: Confidential, San Francisco, California

Analyzed historical air monitoring data for South Coast Air Basin in Southern California and potential health risks related to ambient concentrations of carcinogenic metals and volatile organic compounds. Identified and reviewed the available literature and calculated risks from toxins in South Coast Air Basin.

IT Corporation, North Carolina

Prepared comprehensive evaluation of potential exposure of workers to air-borne VOCs at hazardous waste storage facility under SUPERFUND cleanup decree. Assessment used in developing health based clean-up levels.

Professional Associations

American Public Health Association (APHA)
Association for Environmental Health and Sciences (AEHS)
American Chemical Society (ACS)
California Redevelopment Association (CRA)
International Society of Environmental Forensics (ISEF)
Society of Environmental Toxicology and Chemistry (SETAC)

Publications and Presentations:

Books and Book Chapters

Sullivan, P., **J.J. J. Clark,** F.J. Agardy, and P.E. Rosenfeld. (2007). *Synthetic Toxins In The Food, Water and Air of American Cities*. Elsevier, Inc. Burlington, MA.

Sullivan, P. and **J.J. J. Clark**. 2006. *Choosing Safer Foods, A Guide To Minimizing Synthetic Chemicals In Your Diet*. Elsevier, Inc. Burlington, MA.

Sullivan, P., Agardy, F.J., and **J.J.J. Clark**. 2005. *The Environmental Science of Drinking Water*. Elsevier, Inc. Burlington, MA.

Sullivan, P.J., Agardy, F.J., **Clark, J.J.J.** 2002. *America's Threatened Drinking Water: Hazards and Solutions*. Trafford Publishing, Victoria B.C.

Clark, J.J.J. 2001. "TBA: Chemical Properties, Production & Use, Fate and Transport, Toxicology, Detection in Groundwater, and Regulatory Standards" in *Oxygenates in the Environment.* Art Diaz, Ed.. Oxford University Press: New York.

Clark, J.J.J. 2000. "Toxicology of Perchlorate" in *Perchlorate in the Environment.* Edward Urbansky, Ed. Kluwer/Plenum: New York.

Clark, J.J.J. 1995. Probabilistic Forecasting of Volatile Organic Compound Concentrations At The Soil Surface From Contaminated Groundwater. UMI.

Baker, J.; **Clark, J.J.J.**; Stanford, J.T. 1994. Ex Situ Remediation of Diesel Contaminated Railroad Sand by Soil Washing. Principles and Practices for Diesel Contaminated Soils, Volume III. P.T. Kostecki, E.J. Calabrese, and C.P.L. Barkan, eds. Amherst Scientific Publishers, Amherst, MA. pp 89-96.

Journal and Proceeding Articles

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equialency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. Organohalogen Compounds, Volume 70 (2008) page 002254.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. Organohalogen Compounds, Volume 70 (2008) page 000527

Hensley A.R., Scott, A., Rosenfeld P.E., **Clark, J.J.J.** (2007). "Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." *Environmental Research.* 105:194-199.

Rosenfeld, P.E., **Clark, J. J.,** Hensley, A.R., and Suffet, I.H. 2007. "The Use Of An Odor Wheel Classification For The Evaluation of Human Health Risk Criteria For Compost Facilities" Water Science & Technology. 55(5): 345-357.

Hensley A.R., Scott, A., Rosenfeld P.E., **Clark, J.J.J.** 2006. "Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006, August 21 – 25, 2006. Radisson SAS Scandinavia Hotel in Oslo Norway.

Rosenfeld, P.E., **Clark, J. J.** and Suffet, I.H. 2005. "The Value Of An Odor Quality Classification Scheme For Compost Facility Evaluations" The U.S. Composting Council's 13th Annual Conference January 23 - 26, 2005, Crowne Plaza Riverwalk, San Antonio, TX.

Rosenfeld, P.E., **Clark, J. J.** and Suffet, I.H. 2004. "The Value Of An Odor Quality Classification Scheme For Urban Odor" WEFTEC 2004. 77th Annual Technical Exhibition & Conference October 2 - 6, 2004, Ernest N. Morial Convention Center, New Orleans, Louisiana.

Clark, J.J.J. 2003. "Manufacturing, Use, Regulation, and Occurrence of a Known Endocrine Disrupting Chemical (EDC), 2,4-Dichlorophnoxyacetic Acid (2,4-D) in California Drinking Water Supplies." National Groundwater Association Southwest Focus Conference: Water Supply and Emerging Contaminants. Minneapolis, MN. March 20, 2003.

Rosenfeld, P. and **J.J.J. Clark**. 2003. "Understanding Historical Use, Chemical Properties, Toxicity, and Regulatory Guidance" National Groundwater Association Southwest Focus Conference: Water Supply and Emerging Contaminants. Phoenix, AZ. February 21, 2003.

Clark, J.J.J., Brown A. 1999. Perchlorate Contamination: Fate in the Environment and Treatment Options. In Situ and On-Site Bioremediation, Fifth International Symposium. San Diego, CA, April, 1999.

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Browne, T., **Clark, J.J.J.** 1998. Treatment Options For Perchlorate In Drinking Water. Proceedings From the Groundwater Resource Association Seventh Annual Meeting, Walnut Creek, CA, October 23, 1998.

Clark, J.J.J., Brown, A., Rodriguez, R. 1998. The Public Health Implications of MtBE and Perchlorate in Water: Risk Management Decisions for Water Purveyors. Proceedings of the National Ground Water Association, Anaheim, CA, June 3-4, 1998.

Clark J.J.J., Brown, A., Ulrey, A. 1997. Impacts of Perchlorate On Drinking Water In The Western United States. U.S. EPA Symposium on Biological and Chemical Reduction of Chlorate and Perchlorate, Cincinnati, OH, December 5, 1997.

Clark, J.J.J.; Corbett, G.E.; Kerger, B.D.; Finley, B.L.; Paustenbach, D.J. 1996. Dermal Uptake of Hexavalent Chromium In Human Volunteers: Measures of Systemic Uptake From Immersion in Water At 22 PPM. Toxicologist. 30(1):14.

Dodge, D.G.; **Clark, J.J.J.**; Kerger, B.D.; Richter, R.O.; Finley, B.L.; Paustenbach, D.J. 1996. Assessment of Airborne Hexavalent Chromium In The Home Following Use of Contaminated Tapwater. Toxicologist. 30(1):117-118.

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Ozone Exposures in Residents of Los Angeles County. American Review of Respiratory Disease. 141(4):A70.

Tierney, D.F. and **J.J.J. Clark.** (1990). Lung Polyamine Content Can Be Increased By Spermidine Infusions Into Hyperoxic Rats. American Review of Respiratory Disease. 139(4):A41.

EXHIBIT B

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

CALIFORNIA
WASHINGTON
NEW YORK

WI #22-005

15 July 2022

Kelilah D. Federman, Esq.
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Subject: **Speedway Commerce Center II Specific Plan Project DEIR**
County of San Bernardino, California
Review and Comment on DEIR Noise Analysis

Dear Ms. Federman,

As requested, we have reviewed the information and noise impact analysis in the following document:

Speedway Commerce Center II Specific Plan Project
Draft Environmental Impact Report ("DEIR")
State Clearinghouse No. 2021120259
County of San Bernardino, California
June 2022

This letter reports our comments on the noise analysis in the subject document.

Wilson Ihrig, Acoustical Consultants, has practiced exclusively in the field of acoustics since 1966. During our 56 years of operation, we have prepared hundreds of noise studies for Environmental Impact Reports and Statements. We have one of the largest technical laboratories in the acoustical consulting industry. We also utilize industry-standard acoustical programs such as Environmental Noise Model (ENM), Traffic Noise Model (TNM), Roadway Construction Noise Model (RCNM), SoundPLAN, and CADNA. In short, we are well qualified to prepare environmental noise studies and review studies prepared by others.

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Adverse Effects of Noise[1]

Although the health effects of noise are not taken as seriously in the United States as they are in other countries, they are real and, in many parts of the country, pervasive.

Noise-Induced Hearing Loss. If a person is repeatedly exposed to loud noises, he or she may experience noise-induced hearing impairment or loss. In the United States, both the Occupational Health and Safety Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH) promote standards and regulations to protect the hearing of people exposed to high levels of industrial noise.

Speech Interference. Another common problem associated with noise is speech interference. In addition to the obvious issues that may arise from misunderstandings, speech interference also leads to problems with concentration fatigue, irritation, decreased working capacity, and automatic stress reactions. For complete speech intelligibility, the sound level of the speech should be 15 to 18 dBA higher than the background noise. Typical indoor speech levels are 45 to 50 dBA at 1 meter, so any noise above 30 dBA begins to interfere with speech intelligibility. The common reaction to higher background noise levels is to raise one's voice. If this is required persistently for long periods of time, stress reactions and irritation will likely result. The problems and irritation that are associated with speech disturbance became and to some extent remain more pronounced during the COVID-19 pandemic because many people find themselves and the people they live with trying to work and learn simultaneously in spaces that were not designed for speech privacy.

Sleep Disturbance. Noise can disturb sleep by making it more difficult to fall asleep, by waking someone after they are asleep, or by altering their sleep stage, e.g., reducing the amount of rapid eye movement (REM) sleep. Noise exposure for people who are sleeping has also been linked to increased blood pressure, increased heart rate, increase in body movements, and other physiological effects. Not surprisingly, people whose sleep is disturbed by noise often experience secondary effects such as increased fatigue, depressed mood, and decreased work performance.

Cardiovascular and Physiological Effects. Human's bodily reactions to noise are rooted in the "fight or flight" response that evolved when many noises signaled imminent danger. These include increased blood pressure, elevated heart rate, and vasoconstriction. Prolonged exposure to acute noises can result in permanent effects such as hypertension and heart disease.

Impaired Cognitive Performance. Studies have established that noise exposure impairs people's abilities to perform complex tasks (tasks that require attention to detail or analytical processes) and it makes reading, paying attention, solving problems, and memorizing more difficult. This is why there are standards for classroom background noise levels and why offices and libraries are designed to provide quiet work environments. When working and learning from home, many people find their tasks more difficult because their home environment is not as quiet as their office or school was.

[1] More information on these and other adverse effects of noise may be found in *Guidelines for Community Noise*, eds B Berglund, T Lindvall, and D Schwela, World Health Organization, Geneva, Switzerland, 1999. (https://www.who.int/docstore/peh/noise/Comnoise-1.pdf)

Comments on DEIR Noise Analysis

This project is sited in a largely industrial area, and the current land use – a motorsports venue – is itself a noise generator. Therefore, it is not surprising that the proposed project which consists of seven warehouses does not cause many significant noise impacts. It does, however, cause one impact due to the large number of vehicular trips the project would generate:

> . . . the proposed Project would result in approximately 43,549 daily trips at full buildout, including approximately 9,865 daily truck trips. [DEIR at p. 4.13-22]
>
> Project generated traffic would result in a maximum increase of 3.8 dBA CNEL along Randall Avenue (from Cherry Avenue to Citrus Avenue). . . . AA Table 18 shows that increases in traffic noise levels along Randall Avenue (from Cherry Avenue to Citrus Avenue) would exceed 3.0 dBA and would exceed the County's applicable noise standard of 60 dBA CNEL for residential uses. The impacted roadway segments along Randall Avenue comprise approximately three miles and land use along this stretch are primarily residential. Potential mitigation measures to reduce the Project's traffic noise impacts at the impacted residences would include the construction of sound walls, noise abatement design features (e.g., providing upgraded windows), and/or re-paving the impacted roadway segments with rubberized asphalt. However, there are several issues with the aforementioned measures that would make off-site mitigation for traffic noise impacts infeasible . . . [DEIR at p. 4.13-22]

I do not dispute that the introduction of 33,684 automotive trips and 9,865 truck trips will cause a significant noise impact along "primarily residential" Randall Avenue, but I do dispute that it is infeasible to mitigate the noise impact by providing the residences with upgraded acoustical windows. The DEIR claims that the infeasibility is because

> The Project applicant (and the future Master Developer/Site Developers) does not have jurisdiction over the . . . existing residences to directly mitigate traffic noise impacts at the impacted receivers.

and

> Individual residences may deny approval of . . . upgraded windows.
>
> [DEIR at p. 4.13-23]

The second reason quoted above inadvertently reveals that the preparers of the DEIR know that a viable mitigation option is to offer to upgrade the acoustical insulation of the residences. Yes, some residences may deny approval, but the success of many "residential sound insulation programs" indicates that most will accept. A few of the programs of which I have peripheral knowledge include:

- San Francisco International Airport (more than 15,200 properties treated)[2]
- San José Mineta International Airport (2,675 residences treated)[3]
- Los Angeles World Airports (7,400 of 8,200 eligible residences in Los Angeles treated)[4]
- Sound Transit (303 residences treated)[5]

The *LAX Noise Management Program* document notes the many economic and other benefits that LAX operations bring to Southern California, but it also notes that "with these benefits, though, come impacts – such as . . . . noise – on the densely populated areas adjacent to the airport" and then explains how the residential sound insulation program available in Los Angeles, Inglewood, and El Segundo is one means of providing relief for those affected. Similarly, the development of the Speedway Commerce Center will provide many benefits to the communities of Fontana, Rancho Cucamonga, and others in San Bernardino and Riverside Counties, but CEQA requires that the environmental impacts that are brought about by the development be mitigated to the extent feasible, and offering to improve the acoustical insulation of homes along Randall Avenue is, indeed, a feasible mitigation measure.

♦ ♦ ♦ ♦ ♦

Please contact me if you have any questions about these comments on the feasibility of noise mitigation for the Speedway Commerce Center II Specific Plan Project.

Very truly yours,

WILSON IHRIG

Derek L. Watry
Principal

2022-07-15 - speedway - comments on deir - noise - d watry.docx

[2] https://www.flysfo.com/about/community-noise/noise-office/sound-insulation-program

[3] *Amendment to Norman Y. Mineta San José International Airport Master Plan*, City of San José, November 2019.

[4] *LAX Noise Management Program*, Los Angeles International Airport Environmental & Land Use Planning Division (www.lawa.org)

[5] Central Puget Sound Transit Regional Transit Authority *Motion No. M2011-21 RSIP Engineering and Construction Management Services*, March 24, 2011.

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

DEREK L. WATRY

Principal

Since joining Wilson Ihrig in 1992, Derek has gained experienced in many areas of practice including environmental, construction, forensic, architectural, and industrial. For all of these, he has conducted extensive field measurements, established acceptability criteria, and calculated future noise and vibration levels. In the many of these areas, he has prepared CEQA and NEPA noise technical studies and EIR/EIS sections. Derek has a thorough understanding of the technical, public relations, and political aspects of environmental noise and vibration compliance work. He has helped resolve complex community noise issues, and he has also served as an expert witness in numerous legal matters.

Education

- M.S. Mechanical Engineering, University of California, Berkeley
- B.S. Mechanical Engineering, University of California, San Diego
- M.B.A. Saint Mary's College of California

Project Experience

12th Street Reconstruction, Oakland, CA
Responsible for construction noise control plan from pile driving after City received complaints from nearby neighbors. Attendance required at community meetings.

525 Golden Gate Avenue Demolition, San Francisco, CA
Noise and vibration monitoring and consultation during demolition of a multi-story office building next to Federal, State, and Municipal Court buildings for the SFDPW.

911 Emergency Communications Center, San Francisco, CA
Technical assistance on issues relating to the demolition and construction work including vibration monitoring, developing specification and reviewing/recommending appropriate methods and equipment for demolition of Old Emergency Center for the SFDPW.

Central Contra Costa Sanitary District, Grayson Creek Sewer, Pleasant Hill, CA
Evaluation of vibration levels due to construction of new sewer line in hard soil.

City of Atascadero, Review of Walmart EIR Noise Analysis, Atascadero, CA
Review and Critique of EIR Noise Analysis for the Del Rio Road Commercial Area Specific Plan.

City of Fremont, Ongoing Environmental Services On-Call Contract, Fremont, CA
Work tasks primarily focus on noise insulation and vibration control design compliance for new residential projects and peer review other consultant's projects.

City of Fremont, Patterson Ranch EIR, Fremont, CA
Conducted noise and vibration portion of the EIR.

City of King City, Silva Ranch Annexation EIR, King City, CA
Conducted the noise portion of the EIR and assessed the suitability of the project areas for the intended development. Work included a reconnaissance of existing noise sources and receptors in and around the project areas, and long-term noise measurements at key locations.

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

Conoco Phillips Community Study and Expert Witness, Rodeo, CA
Investigated low frequency noise from exhaust stacks and provided expert witness services representing Conoco Phillips. Evaluated effectiveness of noise controls implemented by the refinery.

Golden Gate Park Concourse Underground Garage, San Francisco, CA
Noise and vibration testing during underground garage construction to monitor for residences and an old sandstone statue during pile driving for the City of San Francisco.

Laguna Honda Hospital, Clarendon Hall Demolition, San Francisco, CA
Project manager for performed vibration monitoring during demolition of an older wing of the Laguna Honda Hospital.

Loch Lomond Marina EIR, San Rafael, CA
Examined traffic noise impacts on existing residences for the City of San Rafael. Provided the project with acoustical analyses and reports to satisfy the requirements of Title 24.

Mare Island Dredge and Material Disposal, Vallejo, CA
EIR/EIS analysis of noise from planned dredged material off-loading operations for the City of Vallejo.

Napa Creek Vibration Monitoring Review, CA
Initially brought in to peer review construction vibration services provided by another firm, but eventually was tapped for its expertise to develop a vibration monitoring plan for construction activities near historic buildings and long-term construction vibration monitoring.

San Francisco DPW, Environmental Services On-Call, CA
Noise and vibration monitoring for such tasks as: Northshore Main Improvement project, and design noise mitigation for SOMA West Skate Park.

San Francisco PUC, Islais Creek Clean Water Program, San Francisco, CA
Community noise and vibration monitoring during construction, including several stages of pile driving. Coordination of noise and ground vibration measurements during pile driving and other construction activity to determine compliance with noise ordinance. Coordination with Department of Public Works to provide a vibration seminar for inspectors and interaction with Construction Management team and nearby businesses to resolve noise and vibration issues.

San Francisco PUC, Richmond Transport Tunnel Clean Water Program, San Francisco, CA
Environmental compliance monitoring of vibration during soft tunnel mining and boring, cut-and-cover trenching for sewer lines, hard rock tunnel blasting and site remediation. Work involved long-term monitoring of general construction activity, special investigations of groundborne vibration from pumps and bus generated ground vibration, and interaction with the public (homeowners).

Santa Clara VTA, Capitol Expressway Light Rail (CELR) Bus Rapid Transit (BRT) Update EIS, CA
Reviewed previous BRT analysis and provide memo to support EIS.

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

Shell Oil Refinery, Martinez, CA
Identified source of community noise complaints from tonal noise due to refinery equipment and operations. Developed noise control recommendations. Conducted round-the-clock noise measurements at nearby residence and near to the property line of the refinery and correlated results. Conducted an exhaustive noise survey of the noisier pieces of equipment throughout the refinery to identify and characterize the dominant noise sources that were located anywhere from a quarter to three-quarters of a mile away. Provided a list of actions to mitigate noise from the noisiest pieces of refinery equipment. Assisted the refinery in the selection of long-term noise monitoring equipment to be situated on the refinery grounds so that a record of the current noise environment will be documented, and future noise complaints can be addressed more efficiently.

Tyco Electronics Corporation, Annual Noise Compliance Study, Menlo Park, CA
Conducted annual noise compliance monitoring. Provided letter critiquing the regulatory requirements and recommending improvements.

University of California, San Francisco Mission Bay Campus Vibration Study, CA
Conducted measurements and analysis of ground vibration across site due to heavy traffic on Third Street. Analysis included assessment of pavement surface condition and propensity of local soil structure.

EXHIBIT C

SMITH ENGINEERING & MANAGEMENT

July 18, 2022

Ms. Kelilah Federman
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037

Subject: Speedway Commerce Center II Specific Plan DEIR P22013

Dear Ms. Federman:

Per your request, I reviewed the Draft Environmental Impact Report (the "DEIR") for the Speedway Commerce Center II Specific Plan Project (the "Project") in the County of San Bernardino (the "County"). My review is with respect to transportation and circulation considerations.

My qualifications to perform this review include registration as a Civil and Traffic Engineer in California, over 50 years professional consulting practice in these fields and both preparation and review of the traffic and transportation components of numerous environmental documents prepared under the California Environmental Quality Act ("CEQA"). My professional resume is attached hereto.

The County's VMT Significance Threshold Is Unreasonably Lenient and Not Based on Substantiated Analysis. The More Rigorous Threshold Recommended By OPR Would Result In Findings of Significant Impact

Although the technical analysis of the Project's Vehicle Miles Traveled ("VMT") seems to have been reasonably performed, the significance threshold is set at just 4% below the existing average VMT per employee in non-urbanized portions of the County. This is instead of the 15% below prevailing average recommended by the Governor's Office of Planning and Research ("OPR"), the organization that maintains CEQA and its guidelines. There is also no evidence

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whether this less rigorous threshold – barely one-quarter of the OPR-recommended VMT reduction - conforms to the legislative intent of SB 843 which designated VMT as the principal measure of transportation impact for the purpose of reducing greenhouse gas and air pollution emissions. Additionally there is no evidence of any professional technical analysis affirming a 4% reduction is the maximum theoretical reduction feasible in the non-urbanized areas of San Bernardino County. It appears a percentage subjectively picked as less than zero to give pro forma impression of conformance to legislative intent but much closer to zero, the status quo, than the 15 percent recommended by OPR. Furthermore, since this an area under County jurisdiction that is surrounded by lands in the Cities of Rancho Cucamonga, Fontana and San Bernardino, it appears illogical for the non-urbanized VMT threshold to be used instead of one reflecting the urbanized condition in those three cities.

In this Particular Situation, LOS Impacts and Mitigation Are Subject To Review and Comment Under CEQA. Proposed Mitigations Do Not Qualify Under CEQA Due to Lack of Assured Timeliness.

The first condition of transportation impact under CEQA is an affirmative response to the following question: Would the Project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? In this instance the Cities of Rancho Cucamonga and Fontana, San Bernardino County and Caltrans have retained certain traffic Level of Service ("LOS") policies. This makes any non-adherence to those policies as the result of the Project a CEQA impact and makes mitigation of those impacts also subject to CEQA review. DEIR Appendix L does identify numerous locations in the various scenarios studied where the Project would cause or cumulatively contribute to noncompliance with the relevant LOS policies. Although it does identify mitigations for these situations, it presumes without any specificity to each instance that the mitigations can be implemented through financial contributions to established fee programs, payment of fair share fees or a combination of both. However, it cannot be assured that completion of mitigation improvements under such vaguely described financial measures will occur in a sequence that is timely relative to the time of occurrence of the Project's impacts. Consequently, the measures do not qualify as mitigation under CEQA.

Rail Crossings Issue

Roadway improvements related to the Project involve improving and converting two private rail crossings to public crossings and improving another public rail crossing. These are involved and time consuming matters involving the California Public Utilities Commission and the consent of the involved railroads. The DEIR states at page 4.17-22 that "This application process would be

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conducted after approval of the Final EIR in conjunction with applicable agencies." Hence, there is no assurance mitigation will be implemented in a manner that is timely if ever. Because this involves public safety at rail crossings, this is a reviewable matter under CEQA.

Conclusion

Given all of the above, the DEIR's transportation analysis is deficient, should be revised and recirculated in Draft status.

Sincerely,

Smith Engineering & Management
A California Corporation



Daniel T. Smith Jr., P.E.
President

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Ms. Kelilah Federman
Adams Broadwell Joseph & Cardozo
July 18, 2022
Page 4

SMITH ENGINEERING & MANAGEMENT

DANIEL T. SMITH, Jr.
President

EDUCATION

Bachelor of Science, Engineering and Applied Science, Yale University, 1967
Master of Science, Transportation Planning, University of California, Berkeley, 1968

PROFESSIONAL REGISTRATION

California No. 21913 (Civil) Nevada No. 7969 (Civil) Washington No. 29337 (Civil)
California No. 938 (Traffic) Arizona No. 22131 (Civil)

PROFESSIONAL EXPERIENCE

Smith Engineering & Management, 1993 to present. President.
DKS Associates, 1979 to 1993. Founder, Vice President, Principal Transportation Engineer.
De Leuw, Cather & Company, 1968 to 1979. Senior Transportation Planner.
Personal specialties and project experience include:

Litigation Consulting. Provides consultation, investigations and expert witness testimony in highway design, transit design and traffic engineering matters including condemnations involving transportation access issues; traffic accidents involving highway design or traffic engineering factors; land use and development matters involving access and transportation impacts; parking and other traffic and transportation matters.

Urban Corridor Studies/Alternatives Analysis. Principal-in-charge for State Route (SR) 102 Feasibility Study, a 35-mile freeway alignment study north of Sacramento. Consultant on I-280 Interstate Transfer Concept Program, San Francisco, an AA/EIS for completion of I-280, demolition of Embarcadero freeway, substitute light rail and commuter rail projects. Principal-in-charge, SR 238 corridor freeway/expressway design/environmental study, Hayward (Calif.) Project manager, Sacramento Northeast Area multi-modal transportation corridor study. Transportation planner for I-80N West Terminal Study, and Harbor Drive Traffic Study, Portland, Oregon. Project manager for design of surface segment of Woodward Corridor LRT, Detroit, Michigan. Directed staff on I-80 National Strategic Corridor Study (Sacramento-San Francisco), US 101-Sonoma freeway operations study, SR 92 freeway operations study, I-880 freeway operations study, SR 152 alignment studies, Sacramento RTD light rail systems study, Tasman Corridor LRT AA/EIS, Fremont-Warm Springs BART extension plan/EIR, SRs 70/99 freeway alternatives study, and Richmond Parkway (SR 93) design study.

Area Transportation Plans. Principal-in charge for transportation element of City of Los Angeles General Plan Framework, shaping nations largest city two decades into 21'st century. Project manager for the transportation element of 300-acre Mission Bay development in downtown San Francisco. Mission Bay involves 7 million gsf office/commercial space, 8,500 dwelling units, and community facilities. Transportation features include relocation of commuter rail station; extension of MUNI-Metro LRT; a multi-modal terminal for LRT, commuter rail and local bus; removal of a quarter mile elevated freeway; replacement by new ramps and a boulevard; an internal roadway network overcoming constraints imposed by an internal tidal basin; freeway structures and rail facilities; and concept plans for 20,000 structured parking spaces. Principal-in-charge for circulation plan to accommodate 9 million gsf of office/commercial growth in downtown Bellevue (Wash.). Principal-in-charge for 64 acre, 2 million gsf multi-use complex for FMC adjacent to San Jose International Airport. Project manager for transportation element of Sacramento Capitol Area Plan for the state governmental complex, and for Downtown Sacramento Redevelopment Plan. Project manager for Napa (Calif.) General Plan Circulation Element and Downtown Riverfront Redevelopment Plan, on parking program for downtown Walnut Creek, on downtown transportation plan for San Mateo and redevelopment plan for downtown Mountain View (Calif.), for traffic circulation and safety plans for California cities of Davis, Pleasant Hill and Hayward, and for Salem, Oregon.

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Transportation Centers. Project manager for Daly City Intermodal Study which developed a $7 million surface bus terminal, traffic access, parking and pedestrian circulation improvements at the Daly City BART station plus development of functional plans for a new BART station at Colma. Project manager for design of multi-modal terminal (commuter rail, light rail, bus) at Mission Bay, San Francisco. In Santa Clarita Long Range Transit Development Program, responsible for plan to relocate system's existing timed-transfer hub and development of three satellite transfer hubs. Performed airport ground transportation system evaluations for San Francisco International, Oakland International, Sea-Tac International, Oakland International, Los Angeles International, and San Diego Lindberg.

Campus Transportation. Campus transportation planning assignments for UC Davis, UC Berkeley, UC Santa Cruz and UC San Francisco Medical Center campuses; San Francisco State University; University of San Francisco; and the University of Alaska and others. Also developed master plans for institutional campuses including medical centers, headquarters complexes and research & development facilities.

Special Event Facilities. Evaluations and design studies for football/baseball stadiums, indoor sports arenas, horse and motor racing facilities, theme parks, fairgrounds and convention centers, ski complexes and destination resorts throughout western United States.

Parking. Parking programs and facilities for large area plans and individual sites including downtowns, special event facilities, university and institutional campuses and other large site developments; numerous parking feasibility and operations studies for parking structures and surface facilities; also, resident preferential parking .

Transportation System Management & Traffic Restraint. Project manager on FHWA program to develop techniques and guidelines for neighborhood street traffic limitation. Project manager for Berkeley, (Calif.), Neighborhood Traffic Study, pioneered application of traffic restraint techniques in the U.S. Developed residential traffic plans for Menlo Park, Santa Monica, Santa Cruz, Mill Valley, Oakland, Palo Alto, Piedmont, San Mateo County, Pasadena, Santa Ana and others. Participated in development of photo/radar speed enforcement device and experimented with speed humps. Co-author of Institute of Transportation Engineers reference publication on neighborhood traffic control.

Bicycle Facilities. Project manager to develop an FHWA manual for bicycle facility design and planning, on bikeway plans for Del Mar, (Calif.), the UC Davis and the City of Davis. Consultant to bikeway plans for Eugene, Oregon, Washington, D.C., Buffalo, New York, and Skokie, Illinois. Consultant to U.S. Bureau of Reclamation for development of hydraulically efficient, bicycle safe drainage inlets. Consultant on FHWA research on effective retrofits of undercrossing and overcrossing structures for bicyclists, pedestrians, and handicapped.

MEMBERSHIPS

Institute of Transportation Engineers Transportation Research Board

PUBLICATIONS AND AWARDS

Residential Street Design and Traffic Control, with W. Homburger *et al.* Prentice Hall, 1989.

Co-recipient, Progressive Architecture Citation, *Mission Bay Master Plan*, with I.M. Pei WRT Associated, 1984.

Residential Traffic Management, State of the Art Report, U.S. Department of Transportation, 1979.

Improving The Residential Street Environment, with Donald Appleyard et al., U.S. Department of Transportation, 1979.

Strategic Concepts in Residential Neighborhood Traffic Control, International Symposium on Traffic Control Systems, Berkeley, California, 1979.

Planning and Design of Bicycle Facilities: Pitfalls and New Directions, Transportation Research Board, Research Record 570, 1976.

Co-recipient, Progressive Architecture Award, *Livable Urban Streets, San Francisco Bay Area and London*, with Donald Appleyard, 1979.

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Response to Comment Letter O3 – Adams Broadwell Joseph & Cardozo

O3-1 The comment provides introductory comments which are noted for the record. All attachments to the comment letter have been received. As the specific comments in the letter re-state the comments in the attachments, responses to the letter also fully respond to the more detailed comments provided in the attached exhibits.

O3-2 The comment provides a general description of the Project. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O3-3 The commenter makes general statements that the Draft EIR does not provide an adequate project description or environmental baseline, lacks substantial evidence, and does not adequately identify potentially significant air quality, greenhouse gas (GHG), soil contamination, noise, and transportation impacts. The comment also states the Project is not consistent with the County's General Plan and requests the Draft EIR be recirculated for public review and comment. Please see Responses O3-13 through O3-22 that address more detailed comments on air quality and GHG; Responses O3-23 through O3-25 that address soil contamination concerns; Responses O3-28 and O3-29 that address noise; and Responses O3-26 and O3-27 that address transportation. Please see Master Response 1 and Response O3-5 that address comments regarding the adequacy of the project description and baseline.

Regarding recirculation, Section 15088.5 of the CEQA Guidelines states recirculation of an EIR is required when "significant new information" is added to the EIR after public notice is given of the availability of the Draft EIR for public review but prior to certification of the Final EIR. The term "information" can include changes in the project or environmental setting, as well as additional data or other information. New information added to an EIR is not "significant" unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative). The changes described in this Final EIR clarify and amplify the existing language. Thus, none of these changes involves "significant new information" triggering recirculation because the changes did not result in any new significant environmental effects, any substantial increase in the severity of any previously identified significant effects, or otherwise trigger recirculation. Instead, the modifications were either environmentally benign or environmentally neutral, and thus represent the kinds of changes that commonly occur as the environmental review process works towards its conclusion. Under such circumstances, recirculation of a Draft EIR is not required.

O3-4 The commenter provides a summary of the Californians Allied for a Responsible Economy (CARECA) organization, which is noted for the record. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O3-5 The comment summarizes general CEQA requirements and case law related to the purpose and requirements of an EIR. This comment does not raise any specific issues with the environmental analysis provided in the Draft EIR. To the extent that the commenter expresses general criticism of the adequacy of the Draft EIR, detailed responses to specific issues raised elsewhere within the comment letter are provided in Responses O3-6 to O3-29, below. In addition, the Draft EIR relies on recent technical reports for analysis; includes mitigation measures for significant impacts; includes alternatives to address impacts; meets the requirement for a disclosure document; does not rely on inaccurate or flawed information; and accurately identifies any significant Project impacts.

O3-6 This comment incorrectly asserts that the Draft EIR does not include an accurate and complete Project Description, while summarizing CEQA requirements and case law related to a project description. The County agrees with commenter that a project description must be "accurate, stable, and finite," which is what is provided in the Draft EIR. Refer to Master Response 1 and Response O3-7 below.

O3-7 The commenter states that the Draft EIR fails to identify reasonably foreseeable uses of the Project site. As disclosed in the Draft EIR, end users of the Project were not known at the time the Draft EIR was prepared and remain unknown at the time of preparation of the Final EIR. However, the speculative nature of the Project does not preclude a thorough analysis of its potential effects. Based on the experience and expertise of the EIR preparer (Kimley-Horn), information provided by the Project Applicant, and the independent judgment of the County, the Draft EIR made reasonable assumptions that the Project would be built out by future high-cube logistics and e-commerce uses, which are the reasonably foreseeable uses of the Project site. These use assumptions provide a worst-case scenario due to impacts associated with cold storage including truck trips and use of refrigerated trucks. To provide a conservative ("worst-case") analysis, and to inform the public and County decision-makers of the full scope of environmental impacts that could occur should the Project be approved, the Draft EIR provided a comprehensive analysis of the potential environmental impacts that would occur. See also Response O3-6 above. The Project is fully described in *Section 3.0, Project Description* of the Draft EIR.

The commenter incorrectly asserts that the Project Description is lacking detail regarding reasonably foreseeable Project operations and the associated impacts; however, the commenter fails to substantiate this claim. The Project is a Specific Plan to allow future development to include high-cube and e-commerce uses, including cold storage. The assertion made that a specific end user tenant is not named, is unreasonable as there would be no way of identifying future occupant(s). The Project analyzed a conservative, worst-case scenario against existing land use allowances and regulatory thresholds. This remains true in the analysis of alternatives.

Specifically, the Air Quality Assessment provided in Draft EIR *Section 4.3, Air Quality* analyzed the Project for build out assuming a worst-case scenario. Refrigerated buildings and Transport Refrigeration Units (TRU) were assumed for modeling purposes to provide a worst-case scenario. The worst-case scenario was also considered when evaluating greenhouse gas emissions, noise, and transportation impacts.

The comment incorrectly states that the Draft EIR fails to identify reasonably foreseeable uses of the Project site. It should be noted that for the purposes of trip generation, the traffic analysis assumed a mix of high-cube logistics and e-commerce space (i.e., 2,641,000 square feet of high-cube logistics and 2,773,050 square feet of e-commerce uses, which total 5,414,050 square feet). E-commerce uses have a higher trip generation rate than high-cube logistics uses but have a lower floor area ratio (FAR). E-commerce uses have a lower FAR (i.e., smaller building size) to accommodate additional parking from higher rates of employees per square foot. Potential tenants and end users are unknown at this time; therefore, the exact square footage allocation between high-cube logistics and e-commerce uses also cannot be determined at this time. Therefore, future development of high-cube logistics and e-commerce uses within the Project site would occur in a combination that would not exceed the maximum number of vehicle trips analyzed within the Draft EIR traffic analysis, which represents a conservative, worst-case scenario (note that a worst-case scenario is more conservative than a "reasonably foreseeable" scenario). (see Draft EIR pages 4.8-19 and 4.8-20). It should be noted that the Project would be subject to a trip budget that would ensure that vehicle trips do not exceed what was analyzed in the traffic analysis. Under the trip budget, the maximum amount of permissible warehouse development would depend upon the final mix of e-commerce and high-cube development, as, for example, 6.6 million square feet of only high-cube warehouse space would generate less trips than the 5,414,050 square foot scenario described above and would therefore be allowed. Therefore, the ultimate identity of the Project's end users would not change this analysis or result in additional or more severe environmental impacts.

For the purposes of construction air quality and greenhouse gas (GHG) emissions modeling, the maximum potential development of approximately 6.6 million square feet of warehouse building area (i.e., conservatively 1,188,460 square feet more than what is reasonably foreseeable) was modeled to reflect the maximum square footage of permissible warehouse building construction potential, as provided in Draft EIR *Section 4.8, Greenhouse Gas Emissions*. This additional building area was also evaluated in the operational air quality and GHG modeling and reflected in the mobile, area, energy, stationary, water, and solid waste emissions. Because truck trip rates vary between the e-commerce and high-cube uses, this additional building area and associated operational vehicle trips was also modeled to capture the worst case truck trip emissions to provide flexibility between land use types and phases. Specifically, the Project's Traffic Study calculated 47,352 passenger car equivalent (PCE) daily trips (34,149 non-PCE daily trips, which include 25,861 passenger cars and 8,468 trucks); refer to Table 4: Summary of Project Trip Generation, Total Trip Generation of the Traffic Study (included as Draft EIR *Appendix L*). The air quality and GHG emissions modeling evaluated 43,549 total daily vehicle trips (non-PCE), which included a total of 33,684 daily passenger car trips and 9,865 daily truck trips (refer to Draft EIR *Table 4.3-8: CalEEMod Land Use and Trip Generation*). As such, the air quality and GHG emissions analysis conservatively evaluated 9,400 additional non-PCE daily vehicle trips (8,003 passenger cars and 1,397 trucks) beyond what was included in the Traffic Study, and beyond the trips that could permissibly be generated under the Project's trip budget. As described above, this conservative analysis was evaluated to capture a "worst case" mix of e-commerce and high-cube

uses and provide flexibility between phases from an air quality and GHG emissions standpoint. As noted in Draft EIR on page 4.3-8, the overall building area and daily vehicle trips are considered conservative and additional building area (refrigerated and non-refrigerated) has also been included in the initial phases of the Project.

O3-8 Commenter discusses cold storage and states that the Draft EIR must disclose use and impacts of backup generators. See Responses O3-6 and O3-7 above. Analysis of air quality impacts associated with Project operations considered emissions from area sources, energy sources, off-road equipment, transport refrigeration units, emergency backup generators, and mobile sources, and discusses each source under the Methodology in Draft EIR *Section 4.3, Air Quality*. The Draft EIR also included a Health Risk Assessment (HRA), which is included as *Appendix C* of the Draft EIR. The HRA and *Section 4.3* include a lengthy discussion of potential impacts, including health risks, regarding diesel particulate matter (DPM). Draft EIR *Table 4.3-21: Carcinogenic Risk Assessment* on page 4.3-53 shows the unmitigated and mitigated DPM health risk for the combined construction and operations of the Project for sensitive receptors including residential, workers, and students. The analysis found that implementation of MM AQ-1 and MM AQ-9 would reduce cancer risk from Project construction and operations to below the SCAQMD's 10 in one million threshold for all types of receptors. As such, impacts related to DPM would be less than significant with the implementation of MM AQ-1 and MM AQ-9.

The use of backup generators is based on necessity and potential for power outages. Therefore, it is speculative to identify the number of generators, and the hours of use per year. For the purposes of modeling one (1) backup generator per building was assumed to evaluate potential impacts with larger generators assumed for two (2) buildings that would potentially have cold storage The commenter states that the Draft EIR must disclose whether the Project will use generators. Draft EIR *Section 4.3, Air Quality* page 4.3-17 specifically states: "As the Project warehouses are speculative, it is unknown whether emergency backup generators would be used. Backup generators would only be used in the event of a power failure and would not be part of the Project's normal daily operations. Nonetheless, emissions associated with this equipment were included to be conservative. Emissions from an emergency backup generator for each warehouse building were calculated separately from CalEEMod; refer to Draft EIR *Appendix A*. However, CalEEMod default emissions rates were used. If backup generators are required, the end user would be required to obtain a permit from the SCAQMD prior to installation. Emergency backup generators must meet SCAQMD's Best Available Control Technology (BACT) requirements and comply with SCAQMD Rule 1470 (Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines), which would minimize emissions."

Furthermore, PDF AQ-1 states that if feasible, the Project shall provide electrical hookups to the power grid, rather than use diesel-fueled generators, for the use of electric construction tools, such as saws, drills, and compressors. The analysis of operational air quality, health risks associated with stationary sources, and air emissions from truck trips is based on substantial evidence and no changes to the analysis are required.

O3-9 The commenter states that the Draft EIR fails to describe the Project's lifespan. The Project is for approval of a Specific Plan within unincorporated San Bernardino County. Future development within the Specific Plan would be included within each Planning Area until each parcel builds out. It is anticipated that all Planning Areas would develop per the phasing plan, as described in the Draft EIR *Section 3.0, Project Description*, in accordance with the requirements of State CEQA Guidelines Section 15126. Further, in order to provide annualized Project emissions, Draft EIR *Section 4.8.4: Impact Thresholds and Significance Criteria,* uses methodology recommended by agencies such as SCAQMD to amortize construction emissions. Lastly, there is no requirement in CEQA to identify a project's lifespan. As stated in CEQA Guidelines, Section 15124: "The description of the project shall contain the following information but should not supply extensive detail beyond that needed for evaluation and review of the environmental impact." While discussion of a project lifespan may be relevant to a project with a defined, limited lifespan (e.g., a reclamation plan for a proposed mining operation) the commenter does not identify any specific requirement in CEQA to specify a project lifespan in this instance, which would not be relevant to the proposed Specific Plan.

With regard to GHG emissions, construction emissions would be short-term and only occur during construction and would not be continuous over the life of a project. However, GHG thresholds are established on an annual basis. Therefore, as recommended by the SCAQMD, the Draft EIR amortizes construction emissions over a 30-year period in order to compare emissions to the annual threshold. The 30-year period is recommended by the SCAQMD in their Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13 (August 26, 2009).[2] Additionally, the International Energy Agency, Energy Efficiency Requirements for Building Codes (March 2008), states that a 30-year period is a reasonable timeframe before the first major renovation.[3] Please see Response O3-3 and Master Response 1 regarding adequacy of the project description.

O3-10 The commenter provides a general summary of the State CEQA Guidelines and case law regarding the selection of a baseline for the environmental analysis. The baseline used in the Draft EIR is based on the existing conditions present on the Project site at the time of NOP circulation, consistent with State CEQA Guidelines Section 15125(a)(1), *Environmental Setting*. According to subdivision (a) of Section 15125 of the Guidelines, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project as they exist at the time when the Notice of Preparation (NOP) is published. This "environmental setting" will normally constitute the "baseline condition" against which project-related impacts are compared. Therefore, the baseline conditions for the EIR, unless noted otherwise, are based on conditions that existed in December 2021, when the NOP was published and circulated. The CEQA Guidelines recognize that the data for establishing an environmental baseline cannot be rigid. Because physical environmental conditions may vary over a range of time, the use of environmental baselines that

[2] http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-13/ghg-meeting-13-minutes.pdf.
[3] https://iea.blob.core.windows.net/assets/3783f5e8-b14c-4c18-b04c-aab7c59d6e92/Building_Codes.pdf.

differ from the date of the NOP is reasonable and appropriate in certain circumstances when doing so results in a more accurate or conservative environmental analysis.

The environmental setting is presented in Draft EIR *Section 3.5, Project Setting*. Where appropriate, citations to information presented are included. Furthermore, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O3-11 The commenter alleges that the Draft EIR provided an incorrect baseline associated with traffic speeds surrounding the Project area. The Draft EIR utilizes the SCAQMD Rule 403 requirements, which include limiting speeds on unpaved roads to 15 miles per hour. This is also stated in *Appendix C* of the Draft EIR. MM AQ-1, which states: "All vehicle speeds on unpaved roads, driveways, or driving surfaces shall be limited to 15 miles per hour" is consistent with this SCAQMD requirement. This is describing future conditions that will occur during construction, rather than baseline conditions. The baseline conditions described in the Draft EIR are based on existing conditions present on the Project site at the time of NOP circulation, consistent with State CEQA Guidelines Section 15125(a)(1), and the commenter does not offer further support for their contention that modeling of reduced vehicle speeds during construction results in an inaccurate baseline.

O3-12 The comment provides a summary of State CEQA Guidelines and case law is noted for the record. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O3-13 The commenter described residences and schools in the Project area. The commenter then goes on to state that CARB recommended that the Draft EIR quantify and discuss the Project's air quality impacts associated with Project construction and operation and that these concerns were not adequately addressed in the Draft EIR. The Draft EIR discusses potential air quality and greenhouse gas impacts related to Project implementation in *Section 4.3* and *Section 4.8*, respectively. Data used within these sections is available in *Appendix C* and *Appendix H* of the Draft EIR and summarized in the associated Draft EIR sections. Air quality impacts are quantified and discussed in *Section 4.3.5: Impacts and Mitigation Measures*. In response to the Project's NOP, CARB responded with comments and recommendations on January 12, 2022. CARB stated that the Draft EIR should quantify and discuss the potential cancer risks from Project operations and discussions. CARB also provided recommended air pollution emission reduction measures for warehouses and distribution center. CARB recommendations were included as Standard Conditions for the Project; see *Section 4.3.5*. A Heath Risk Assessment (HRA) was prepared to evaluate impacts to sensitive receptors and is located in Draft EIR *Appendix C*. Project-related health risks were evaluated in a Health Risk Assessment (refer to Draft EIR *Appendix C*) and discussed on Draft EIR pages 4.3-51 through 4.3-53. It should be noted that the HRA also quantifies emissions from yard trucks and on-site equipment and identifies MM AQ-9, which requires zero

emissions cargo handling equipment (e.g., forklifts, yard trucks, hostlers, etc.) to reduce on-site emissions. The HRA evaluated pollutant concentrations at the closest sensitive receptors to the project site, which included residences and Redwood Elementary School. As discussed in the Draft EIR and HRA, impacts would be less than significant with mitigation incorporated. (see Draft EIR at 4.3-43 to 4.3-53). It should be noted that Live Oak Elementary School, Beech Avenue Elementary School and Almond Elementary School mentioned in the comment are further away than Redwood Elementary School. As pollutant concentrations decline further away from the Project site, impacts at these locations would be lower than what was identified in the Draft EIR. The Draft EIR also determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46).

O3-14 The commenter states that the Draft EIR fails to adequately analyze the Project's construction and operation air quality impacts. See Response O3-8. The use of backup generators may be necessary depending on each tenant and expectation of power outages. Therefore, potential use of backup generators is not known at this time. As analyzed in *Section 4.3, Air Quality*, emergency backup generators for each building were included to be conservative. If generators are required, each user would be required to obtain a permit from the SCAQMD prior to installation. Emergency backup generators must meet SCAQMD's Best Available Control Technology (BACT) requirements and comply with SCAQMD Rule 1470 (Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines), which would minimize emissions. As the end users and future tenants of the proposed Project are unknown, the need for emergency backup generators is speculative. However, emissions from an emergency backup generator for each warehouse building were calculated in *Appendix C* of the Draft EIR. The Draft EIR assumed a typical size backup generator for each warehouse building and large generators for refrigerated space for emergency purposes. Nonetheless, emissions from backup generators were quantified and incorporated into the air quality, health risk, and greenhouse gas emissions analyses (refer to Draft EIR *Section 4.3* and *Section 4.8*, and *Appendix C*. As shown in the Draft EIR, the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.353). Despite the differing opinion offered by commenter's air quality expert, the existence of disagreement among experts concerning the conclusions of an EIR or the propriety of the analytical methods employed in an EIR are not indicative of any deficiency. The County, as CEQA lead agency, is entitled to choose among conflicting expert opinions. (*Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal. 3d 376, 409; *Greenbaum v. City of Los Angeles* (1984) 153 Cal.App.3d at 412, 413; (*Browning-Ferris v. City Council* (1986) 181 Cal.App.3d 852 at 863). The opinion offered by commenter's air quality expert that backup generators would need to be used more than 150 hours per year is also speculative and is based on an October 2019 event unrelated to the Project; "argument, speculation, unsubstantiated opinion or narrative" is not substantial evidence for purposes of CEQA. (State CEQA Guidelines Section 15384). The Draft EIR analysis of backup generator operations is based on substantial evidence and no changes to the analysis are required.

O3-15 The commenter asserts that the Draft EIR utilized an inaccurate daily vehicle trip rate. As shown in Draft EIR *Section 4.17, Transportation*, vehicle trips generated by the Project were modeled using the Institute of Transportation Engineers average by land use category. The ratio of truck trips was based on the traffic study prepared for the Project. Also refer to Response O3-7 above for an explanation of how the AQGHG modeled trip generation is conservative. The Project utilized the appropriate trip generation factor for each proposed land use type. Refer also to Response O3-14 above, regarding CEQA's treatment of differing expert opinions. Therefore, the Draft EIR assumptions of daily vehicle trip rates are based on substantial evidence and no changes to the analysis are required

O3-16 The commenter provides a general summary of State CEQA Guidelines regarding the feasibility of mitigation measures and references additional mitigation measures proposed by commenter and its expert which are further addressed in responses to Comments O3-17 through O3-20. Potential mitigation measures proposed by commenters and agencies have been considered for their validity and efficacy. Any mitigation which is determined to be feasible and capable of avoiding or minimizing significant impacts will be included in the Project MMRP and *Section 3.0, Errata* of this Final EIR. It is important to note, CEQA does not require adoption of every imaginable feasible mitigation measure. CEQA's requirement applies only to feasible mitigation that will "substantially lessen" a project's significant effects. (Public Resources Code, Section 21002.) As explained by one court: A lead agency's "duty to condition project approval on incorporation of feasible mitigation measures only exists when such measures would [avoid or] 'substantially lessen' a significant environmental effect." (*San Franciscans for Reasonable Growth v. City and County of San Francisco (1989) 209 Cal.App.3d 1502, 1519*.) "Thus, the agency need not, under CEQA, adopt every nickel and dime mitigation scheme brought to its attention or proposed in the project EIR." (Ibid.) Rather, an EIR should focus on mitigation measures that are feasible, practical, and effective. (*Napa Citizens for Honest Government v. Napa County Board of Supervisors (2001) 91 Cal.App.4th 342, 365*.).This commenter lists numerous, general mitigation measures but does not explain how they could feasibly be implemented to reduce or avoid impacts for this Project.

The Draft EIR Air Quality Section (*Section 4.3*) includes numerous construction and operational mitigation measures to reduce emissions. Construction mitigation measures include use of the cleanest equipment available and dust control (MM AQ-1) and low VOC paints (MM AQ-2). Additionally, operational mitigation includes a TDM Program to reduce vehicle trips/miles (MM AQ-3), constructing EV infrastructure (MM AQ-4), conduit for Transport Refrigeration plugins (MM AQ-5), idle limits (MM AQ-6), energy efficient vendor trucks (MM AQ-7), EV charging stations and carpool parking (MM AQ-8), electric/zero emission cargo handling equipment (MM AQ-9), and compliance with SCAQMD Rule 2305 (MM AQ-10) which is a program to incentivize the purchase of cleaner trucks and charging/fueling infrastructure for the project and in the nearby community. Therefore, the Draft EIR GHG mitigation measures comply with State CEQA Guidelines Section 15041 and go above and beyond to meet the essential nexus and rough proportionality standards.

In addition, the Draft EIR GHG Section (*Section 4.8*) includes additional GHG mitigation measures, such as requiring compliance with the County's GHG reduction measures (MM GHG-1), the Draft

EIR also requires the project to implement solar energy generation (MM GHG-2), requires energy efficient buildings that exceed the building code standards (MM GHG-3), requires the solid waste diversion (MM GHG-4), and requires the use of 100 percent electrically powered landscape equipment (MM GHG-5). Refer to Master Response 2.

O3-17 The commenter states that additional mitigation is available which could reduce NO_x emissions to less than significant levels and stated that CARB-recommended measures were not included as legally binding mitigation. However, the commenter acknowledges that some CARB recommended measures were included as Project Design Features (PDFs). CARB's applicable recommendations were included as Standard Conditions for the Project and therefore are not required to be separately included as mitigation. (See *Tracy First v. City of Tracy* (2009) 177 Cal. App. 4th 912, 933-934). Standard Conditions are legally enforceable by the County in connection with the plan check process and issuance of permits for the Project. Additionally, ten mitigation measures were included to reduce potential emissions impacts. (see Draft EIR at pages 4.3-38 to 4.3-42). However, the Project was found to remain beyond the threshold of significance even with the implementation of mitigation. Additionally, refer to Master Response 2 and Responses R2-3 and R2-4 regarding mitigation measures. As noted in Response R2-4, mobile sources are already regulated by CARB and SCAQMD and even with adoption of CARB's Advanced Clean Truck Rule, CARB acknowledges that it will take time for ZE and NZE vehicles to become commercially available and to penetrate the market. For example, CARB's EMission FACtor (EMFAC) 2021 model provides detailed vehicle registration information and estimates the official emissions inventories of on-road mobile sources, vehicle population, and vehicle miles traveled (VMT) in California. The EMFAC2021 data for South Coast portion of San Bernardino County shows that in 2024 (the Project's Phase 1a opening year), approximately 85 percent of heavy trucks would still be powered by diesel and 91 percent of the VMT would occur from diesel trucks. Electric vehicles would make up approximately 0.29 percent of the heavy-duty fleet and 0.25 percent of the heavy truck VMT. The EMFAC data shows that penetration of ZE and NZE vehicles into commercial fleets will be slow. For example, for 2030, the model predicts that 81 percent of heavy trucks would be diesel-powered and that 88 percent of the heavy truck VMT would be from diesel trucks. Therefore, as CARB data anticipates that the vast majority of trucks to be diesel-powered in the Project opening year and in 2030, it would not be feasible to develop numeric targets, to establish preferential occupancy policies, or require purchasing policies applicable to future, unknown tenants. Additionally, SCAQMD Rule 2305 requires reduction in NO_X and particulate matter emissions with reduction measures and/or a mitigation fee that would be used to incentivize the purchase of cleaner trucks and charging/fueling infrastructure in communities nearby.

O3-18 The commenter expresses disagreement with the use of project design features (PDFs) as opposed to mitigation measures. As PDFs, the recommendations proposed by CARB, submitted during the NOP comment period for the project, would be incorporated into the Project design prior to emission analysis, thus eliminating their need to be included as separate mitigation. (*See Tracy First v. City of Tracy* (2009) 177 Cal. App. 4th 912, 933-934). Standard Conditions are legally enforceable by the County in connection with the plan check process and issuance of permits for the Project; thus, *Lotus v. Department of Transportation* cited by commenter is inapplicable. The

Draft EIR notes on page 4.3-21 that the PDFs facilitate compliance with regulations and latest best practices. Emissions benefits from implementation of PDF AQ-1 through PDF AQ-23 are not directly quantifiable and not quantified; no credit is taken for these measures. Quantifiable reduction measures were incorporated as mitigation measures, which would be supported by the PDFs. Tenant requirements regarding cleaner vehicles are included as Standard Conditions in the Draft EIR. Though they are not mitigation measures, PDFs are project-specific elements which are required components of Project implementation and are enforceable components of the Project.

O3-19 Recommendations made by CARB were implemented in the environmental analysis to the maximum extent feasible. However, these recommendations (as listed in Response O3-17) are not regulations or requirements. The proposed Project would be subject to all applicable requirements from public agencies. It should be noted that the comment does not demonstrate a nexus to require additional mitigation such as vegetative walls. Such a measure would only reduce localized emissions, which were shown to be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46). Aesthetic impacts were also found to be less than significant (refer to Draft EIR pages 4.1-8 through 4.1-12). Limiting non-essential idling to three minutes as required by MM AQ-1 is considered to be a feasible and achievable mitigation measure for trucks to avoid unnecessarily stopping and restarting engines and the associated startup exhaust. Requiring non-diesel fueled emergency generators is not considered feasible because non-diesel emergency generators are typically not available in the size/horsepower necessary to support warehouse buildings. Additionally, refer to the Response O3-17 regarding mitigation measures.

O3-20 The commenter expresses disagreement with air quality mitigation to reduce construction emissions and states that requiring newer model year construction diesel haul trucks would further reduce emissions. The Draft EIR identifies numerous air quality and GHG mitigation measures to minimize emissions to the greatest extent feasible. Further, while the Project has some control over mobile source efficiencies, the majority of the mobile source emissions are beyond the Project's control. The comment suggests mitigation requiring all heavy-duty construction vehicles entering the Project site to be model year 2014 or 2018 or later. However, CARB is addressing emissions from heavy duty vehicles through various regulatory programs including lower emission standards, restrictions on idling, the use of post-combustion filter and catalyst equipment, and retrofits for diesel truck fleets. These programs are expected to result in significant reductions in NO_X, ROG, PM_{10}, $PM_{2.5}$, and CO emissions as they are fully implemented by 2023. Federal and State agencies regulate and enforce vehicle emission standards. It is not feasible for San Bernardino County to effectively enforce a prohibition on trucks from entering the property that are otherwise permitted to operate in California and access other properties in the County, region, and State. Based on data from CARB, most heavy-duty trucks entering the Project site will meet or exceed 2010 model year emission standards by 2023. Specifically, according to CARB EMFAC inventories, approximately 50 percent of all instate heavy-heavy duty trucks met the 2010 engine standard in 2019, 59 percent in 2020, 62 percent in 2021. Additionally,

65 percent and 90 percent of trucks were projected to meet the 2010 engine standard in in 2022 and 2023 respectively.[4]

O3-21 The commenter states that the Draft EIR fails to analyze and mitigate significant impacts associated with air pollution dispersion. The County disagrees that the dispersion modeling must include building downwash. The commenter refers to the SCAQMD Health Risk Assessment Guidance for Analyzing Cancer Risks form Mobile Source Diesel Emissions, August 2003, page 2, for identification of building height for downwash calculations. However, this guidance document includes guidance for truck idling, ship hoteling at ports and train idling. Page 6 of said document further describes that volume or area source options are most appropriate for the DPM sources associated with truck idling and movement and that point source treatment is most appropriate for ship activity and train idling emissions. Additionally, the treatment of downwash in AERMOD is based on the Plume Rise Model Enhancements (PRIME) model which is integrated into AERMOD for point sources (Schulman et al. 2000). Therefore, the building downwash modeling option is only applicable to point and flare emission source types and is not applicable to the line-volume sources that were modeled for the proposed Project. The purpose of building downwash is to determine if stack discharge might become caught in the turbulent wakes of structures within close proximity. The Draft EIR modeled the mobile sources in the AERMOD dispersion model as line-volume sources consistent with SCAQMD guidance that represent on- and off-site truck movements and idling and is consistent with industry standard analysis. The modeling data is available in Appendix C of the Draft EIR. Additionally, the potential spectators at the speedway would not be considered sensitive receptors because they would not be exposed to the project for extended periods of time. Per AQMD, Sensitive Receptor means any residence including private homes, condominiums, apartments, and living quarters, schools as defined under paragraph (b)(57), preschools, daycare centers and health facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.

O3-22 The comment summarizes the heat island effect and data from the California Environmental Protection Agency (CalEPA). The heat island effect refers to large, urbanized areas that can experience higher temperatures during hot summer months when compared to more rural communities. Heat islands are created by a combination of heat-absorptive surfaces (such as dark pavement and roofing), heat-generating activities (such as engines and generators) and the absence of vegetation (which provides evaporative cooling).

The Project would redevelop an already urbanized area that consists of portions of the Auto Club Speedway and also associated asphalt paved areas. The Project would be required to comply with the County's GHG Reduction Measures (refer to MM GHG-1), which includes requirements for enhanced cool roofs that would actually reduce the heat island effect.

Additionally, the comment incorrectly states that the CalEPA's heat island index data shows that the Project would exacerbate the existing heat island effect. The Urban Heat Island Index data

[4] CARB. (2017). EMFAC2017, An Update to California On-Road Mobile Source Emissions Inventory. Available at: https://ww3.arb.ca.gov/msei/downloads/emfac2017_workshop_11_09_2017_final.pdf (accessed June 2022).

from the CalEPA's Heat Island Interactive Maps quantify the extent and severity of an urban heat island for individual cities. The maps allow for a comparison of different areas, but do not evaluate individual development projects or show the effect of new development. The comment provides no basis for the statement that the CalEPA data exacerbates the existing heat island effect. As noted above, the Project would replace existing asphalt (i.e., black top) with new buildings that would be required to meet the latest building codes and County requirements for light-colored solar reflective roofs that reduce the heat island effect. Furthermore, environmental components that exacerbate the urban heat island effect, such as ozone generation and other GHG emissions, are discussed in *Section 4.3* and *Section 4.8* of the Draft EIR. These sections also include mitigation measures intended to reduce impact associated with these emissions.

O3-23 A Summary Assessment of Environmental Conditions and Land Use Restrictions at the Auto Club Speedway property, 9300 Cherry Avenue, Fontana, California 92335 ("Assessment") was included as *Appendix I* to the Draft EIR. It discussed background site history (associated with Kaiser Steel Mill), environmental conditions, and restrictions. The assessment found that:

- Several areas of the greater current Auto Club Speedway Property were subject to historical remediation activities, and with the exception of ongoing groundwater monitoring, other areas have received no further action designation from the DTSC or "closure" two of these areas received closure with land use covenants (LUCs) prohibiting future development of sensitive uses (i.e., residential, daycare, schools).
- The Capped Property located in the infield of the existing racetrack and beneath existing garages is restricted by a LUC (this area is outside the boundary of the proposed Project).
- The Restricted Property located under the existing racetrack and existing grandstands is restricted by a LUC.
- The Southwest Corner parcel of the Site appears to be used for flood management and may be subject to permitting requirements with the SBCFCD.

The Summary Assessment reviewed multiple documents associated with the investigation, characterization, and remediation of the Project site. The characterization included soil investigations that characterized soil impacts in areas of concern. Impacts associated with upset and accident conditions involving the release of hazardous materials into the environment was evaluated in Draft EIR *Section 4.9, Hazards and Hazardous Materials*. Furthermore, the Draft EIR states that the removal of graded soil throughout the site could potentially release some of the hazardous materials historically found on the site. However, this is unlikely due to the previous remediation performed on the Project site and the time that has passed since remediation actions were taken. Furthermore, although some sites were noted to have previously involved the use or generation of potentially hazardous materials such as hydrocarbons and VOCs, no current violations were noted. Despite the limited potential for the exposure of the public and environment to hazardous materials, with MMs HAZ-1, HAZ-2, and HAZ-3 and compliance with all applicable Federal, State, and regional regulations, the impact would be reduced to less than significant levels with mitigation incorporated. MMs HAZ-1 and HAZ-2 would ensure proper

handling of any contaminated soils and substances which may be encountered, including regulatory oversight, as applicable. While the comment suggests that surrounding populations could be impacted by contaminated soils, the SMP outlined in MM-HAZ-1 includes requirements to properly handle contaminated soils, including proper coverage during transportation and onsite dust suppression. Impacts were found to be less than significant with mitigation incorporated. Additionally, with implementation of BMPs, impacts from uncontrolled dust would be reduced and dust control measures would be in place. Adherence to SCAQMD Rule 1403 would limit asbestos emissions from building demolition and renovation.

O3-24 See Response O3-23 above regarding disturbed soil and the site's historical use as part of the Kaiser Steel Mill. Commenter cites to the preliminary geotechnical study, which is not the relevant document with regard to assessment of hazardous/toxic substances on the site. Refer to the Assessment included as *Appendix I* to the Draft EIR. The Assessment concluded that with the exception of ongoing groundwater monitoring, all areas have received no further action designations from DTSC or "closure." Mitigation Measures HAZ-1 to HAZ-3 will ensure that any potential impacts related to residual contamination from the historic steel mill use will be less than significant. MM-HAZ-1 includes fugitive dust controls during soil disturbing activities, and therefore offsite impacts would be mitigated to a less than significant levels.

O3-25 See Responses O3-23 and O3-24 above. No further response is required. The Soil Management Plan required under MM HAZ-1 will ensure construction worker safety. At this time, future tenants/occupants are not known. However, once identified, they will be required to adhere to the requirements and regulations of Proposition 65 during construction and operations, including the provision of required notices to employees. As Proposition 65 is a state regulation, the Proposition 65 notifications and actions noted in the comment are required by law and therefore are not required as mitigation within the Draft EIR.

O3-26 The commenter states that transportation mitigation measures have been impermissibly deferred. Mitigation measures are required in situations that would generate impacts that are anticipated to be significant. Roadway impacts were not anticipated to require mitigation. However, increased traffic during raceway events were found to generate potentially significant cumulative effects regarding emergency access. Therefore, mitigation was proposed to minimize those specific effects. The mitigation is not improperly deferred because specific performance standards are included, traffic-related mitigation is known to be feasible, and review and approval is required by the County Engineer with input from the Highway Patrol and neighboring cities. A traffic management plan is properly developed after the Project's end-users have been identified and a specific development plan approved. The Transportation Management Plan (TMP) required under MM TRANS-2 will be event-specific and is required to be submitted to the County Engineer a minimum of 30 days prior to each race event; therefore, is not feasible to prepare the TMP at this point in time. This measure is fully enforceable by the County. It is well-settled under CEQA that future preparation of a plan subject to regulatory agency review and approval is not improper deferral. (*See Defend the Bay v. City of Irvine* (2004) 19 Cal.App.4th 1261, 1275-76).

O3-27 The commenter expresses disagreement with the selected VMT threshold. The Project complies with all applicable transportation regulations set by regulatory agencies. However, the Project does not control standards set by those regulatory agencies. The 2018 Technical Advisory On Evaluating Transportation Impacts in CEQA issued by OPR contains *recommendations* for thresholds, but expressly states that "this document does not alter lead agency discretion in preparing environmental documents subject to CEQA" and that "OPR is not enforcing or attempting to enforce any part of the recommendations contained herein." Under CEQA, lead agencies have the discretion to set or apply their own thresholds of significance. (*Center for Biological Diversity v. California Dept. of Fish & Wildlife* (2015) 62 Cal.4th 204, 218-223; *Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th at p. 1068.) OPR's Technical Advisory is not binding on public agencies, and CEQA allows lead agencies to "consider thresholds of significance . . . recommended by other public agencies, provided the decision to adopt those thresholds is supported by substantial evidence." (CEQA Guidelines, Section 15064.7 (c)). The VMT thresholds vary by agency, even among the agencies in the Inland Empire. In the City of Rancho Cucamonga, for example, a significant VMT impact would occur "if the project VMT/Specific Plan exceeds the Citywide average."

The County has adopted 4 percent below existing VMT as the applicable threshold and provides the following reason for the threshold in the San Bernardino County Transportation Impact Study Guidelines (July 9, 2019): "4 percent below existing was identified as an appropriate threshold through an exercise completed by Fehr & Peers as part of the General Plan process. The process focused on development in the growth areas of the County (where major development is expected to occur) and utilized the California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (August 2010) to estimate the maximum feasible VMT mitigation that could be achieved through TDM. The TDM effort identified that the maximum achievable TDM reduction associated with development in the identified growth areas would be just over 4 percent for both residential projects and for commute trips associated with employment uses. Utilizing the maximum achievable TDM reduction as the threshold provides an achievable threshold for County development to consider when processing applications" (Section 4.2: CEQA VMT Impact Threshold and Mitigation). Therefore, the use of the four percent threshold is supported by substantial evidence.

O3-28 The commenter provides a general summary of CEQA principles related to determining and documenting the feasibility of mitigation for identified significant impacts and states that feasible mitigation is available that could reduce the Project's significant and unavoidable roadway noise impacts. The Draft EIR correctly concludes that the Project applicant does not have jurisdictional authority over private residences in a manner where they can enforce the development of sound walls or installation of upgraded windows, nor could the County compel private landowners to accept the erection of soundwalls within their properties or to consent to the installation of sound-rated windows; thus, while available, such mitigation measures are deemed infeasible, because there is no means of assuring universal voluntary participation by residents exposed to potentially significant traffic noise exposure.

O3-29 See Response O3-28 above. Even if a voluntary Noise Insulation Program were proposed, off-site roadway noise impacts would still be considered significant and unavoidable for CEQA purposes since implementation of noise insulation methods by each resident that is potentially exposed to significant traffic noise levels would not be certain.

O3-30 See Responses O3-28 and O3-29 above.

O3-31 The comment states the Draft EIR must be revised and recirculated to inform the decision makers and the public of the Project's significant impacts. The commenter's request for recirculation is noted for the record. However, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary. Please see Response O3-3.

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Golden State Environmental Justice Alliance (O4)

From: Gary Ho <ho@blumcollins.com>
Sent: Wednesday, August 31, 2022 9:26 AM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Re: Speedway Commerce Center II EIR Comments

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Dear Mr. Valdez,

I write on behalf of Golden State Environmental Justice Alliance to withdraw its comments on the proposed Speedway Commerce Center II Project. Please confirm that you have received this message.

Thank you,

Gary

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Response to Comment Letter O4 – Golden State Environmental Justice Alliance

O4-1 The commenter states that they request to withdraw their comments on the proposed Project as set forth in his August 31, 2022, email is noted for the record. Nevertheless, the responses in the following Response O5 are in response to the commenter's June 30, 2022 letter.

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Blum Collins & Ho (O5)

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June 30, 2022

Steven Valdez, Senior Planner
County of San Bernadino
Land Use Services Department - Planning Division
385 North Arrowhead Avenue, First Floor
San Bernardino, CA 92415-0187

VIA EMAIL TO:
steven.valdez@lus.sbcounty.gov

Subject: Comments On Speedway Commerce Center II Specific Plan Project And EIR (SCH NO. 2021120259)

Dear Mr. Valdez,

Thank you for the opportunity to comment on the Environmental Impact Report (EIR) for the proposed Speedway Commerce Center II Specific Plan Project and EIR. Please accept and consider these comments on behalf of Golden State Environmental Justice Alliance (GSEJA). Also, GSEJA formally requests to be added to the public interest list regarding any subsequent environmental documents, public notices, public hearings, and notices of determination for this project. Send all communications to Golden State Environmental Justice Alliance P.O. Box 79222 Corona, CA 92877. 1

1.0 Summary

The project proposes the construction and operation of 6.6 million square feet (sf) of high-cube logistics and e-commerce uses, 261,360 sf of ancillary commercial uses, and approximately 98 acres of parking fields/drop lot areas, as well as ancillary open space. The Project encompasses approximately 433 acres of the approximately 522-acre site that is currently developed with the Auto Club Speedway (ACS), formerly known as the California Speedway. The Project would surround the Next Gen in California Project that will remodel the existing ACS. 2

Steven Valdez
June 30, 2022
Page 2

3.0 Project Description

The EIR does not include a floor plan, grading plan, elevations, or detailed site plan for the proposed project. The basic components of a Planning Application include a site plan, floor plan, grading plan, elevations, and written narrative. The site plan provided in Figure 3-4 does not provide any detailed information such as the earthwork quantity notes, parking requirements, site coverage, floor area ratio, etc. The EIR has excluded these required application items from public review, which does not comply with CEQA's requirements for adequate informational documents and meaningful disclosure (CEQA § 15121 and 21003(b)). Incorporation by reference (CEQA § 15150 (f)) is not appropriate as these documents contribute directly to analysis of the problem at hand. Providing a grading plan is vital as the EIR utilizes uncertain language in stating that "Earthwork for the site is *anticipated* to balance; however, there is the *potential* for import of soils. Retaining walls *may be needed* in areas of elevation differential between parcels and/or along the Project site boundary." The EIR must be revised to include a grading plan to determine the amount of soils/materials to be imported/exported from the site. These grading truck hauling trips must be included for analysis in the Air Quality, Energy, and Greenhouse Gas Emissions analysis. 3

The EIR does not include the proposed Speedway Commerce Center II Specific Plan (SCCII SP) document as an attachment for public review. The SCCII SP would include permitted uses and development standards such as maximum height, floor area ratio, parking requirements, and other items that contribute directly to the analysis of environmental impacts. Incorporation by reference (CEQA § 15150 (f)) is not appropriate as the SCCII SP contributes directly to analysis of the problem at hand. The EIR must be revised and recirculated to include the SCCII SP document for public review in order to comply with CEQA's requirements for adequate informational documents and meaningful disclosure (CEQA § 15121 and 21003(b)). 4

3.1 Project Piecemealing

The EIR does not accurately or adequately describe the project, meaning "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment" (CEQA § 15378). The proposed project is a piecemealed portion of a larger overall project to be developed in the immediate vicinity including Speedway Commerce Center (SCH No. 2020090076; 655,878 sf of industrial warehouse developed by Hillwood adjacent to west of project site; Notice of Determination published January 21, 2022) and the Next Gen in California Project (SCH No. 2008081077; approved in December 2020 and modified in June 2021). The proximate timeline of submittal and approval of these piecemealed projects to the proposed project further clarifies that 5

the overall development plan for the site was known and planned at the time of the first Next Gen revision in December 2020. 5

CEQA § 15165 - Multiple and Phased Projects requires that "Where individual projects are, or a phased project is, to be undertaken and where the total undertaking comprises a project with significant environmental effect, the Lead Agency shall prepare a single program EIR for the ultimate project as described in Section 15168." The EIR misleads the public and decision makers by circumventing adequate and accurate environmental analysis for the whole of the action - construction and operation of all Speedway Commerce Center buildings and the Next Gen in California project as a whole. A program EIR must be prepared which accurately represents the whole of the action without piecemealing the project into separate, smaller development projects or development areas to present unduly low environmental impacts. Table 4-1 Cumulative Projects List did not include the Next Gen in California Project for cumulative analysis. Including this project for analysis is vital as construction and operations of Next Gen and the proposed project have significant potential to overlap and result in significant cumulative impacts. 6

It must be noted that this is especially vital as the the Next Gen in California Project utilized two EIR Addendums as the environmental analysis documents for approval. EIR Addendums do not require public review and comment periods, which reduce transparency in the public process. The environmental analysis for these piecemealed projects exclude a meaningful analysis that includes all proposed development. The EIR must be revised to comply with CEQA § 15165 by preparing a Program EIR pursuant to CEQA § 15168 and provide a cumulative analysis of all piecemealed projects. 7

4.3 Air Quality, 4.6 Energy, and 4.8 Greenhouse Gas Emissions

Please refer to attachments from SWAPE for a complete technical commentary and analysis.

The EIR does not include for analysis relevant environmental justice issues in reviewing potential impacts, including cumulative impacts from the proposed project. This is especially significant as the surrounding community is highly burdened by pollution. According to CalEnviroScreen 4.0[1], CalEPA's screening tool that ranks each census tract in the state for pollution and socioeconomic vulnerability, the proposed project's census tract (6071002204) ranks worse than 96% of the rest of the state overall. The proposed project's census tract (6071002204) and surrounding community, including residences to the north and east, Kaiser Park to the south, and Live Oak Elementary School and Sequoia Middle School to the east, bears the impact of multiple sources of 8

[1] CalEnviroScreen 4.0 https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40

pollution and is more polluted than average on several pollution indicators measured by CalEnviroScreen. For example, the project census tract ranks in the 95th percentile for ozone burden, the 94th percentile for PM 2.5 burden, the 90th percentile for diesel particulate matter burden, and the 70th percentile for traffic impacts. All of these environmental factors are typically attributed to heavy truck activity in the area. The census tract also ranks in the 97th percentile for hazardous waste impacts. Hazardous waste generators and facilities contribute to the contamination of air, water and soil near waste generators and facilities can harm the environment as well as people[2]. Additionally, the census tract ranks in the 95th percentile for solid waste facility impacts, which can expose people to hazardous chemicals, release toxic gases into the air (even after these facilites are closed), and chemicals can leach into soil around the facility and pose a health risk to nearby populations[3]. 8

Further, the census tract is a diverse community including 75% Hispanic, 7% African-American, and 6% Asian-American residents that are especially vulnerable to the impacts of pollution. The community has a high rate of low educational attainment, meaning 79% of the census tract over age 25 has not attained a high school diploma, which is an indication that they may lack health insurance or access to medical care. Medical care is vital for this census tract as it ranks in the 86th percentile for incidence of cardiovascular disease and 72nd percentile for incidence of asthma. The community also has a high rate of linguistic isolation, meaning 73% of the census tract speaks little to no English and faces further challenges and inequities due to this. 9

Additionally, the project's census tract (6071002204) and the census tracts adjacent to the project site (6077005119 (east), 6077005122 (east), 6077005302 (west), 6077005206 (west), and 6077003900 (north)) are identified as SB 535 Disadvantaged Communities, which is not discussed or presented for analysis in the EIR. 10

The State of California lists three approved energy compliance modeling softwares for non-residential buildings: CBECC-Com, EnergyPro, and IES VE. CalEEMod is not listed as an approved software. The spreadsheet-based analysis and CalEEMod modeling in Appendix E does not comply with the 2019 Building Energy Efficiency Standards and under-reports the project's significant Energy impacts and fuel consumption to the public and decision makers. Since the EIR did not accurately or adequately model the energy impacts in compliance with Title 24, an additional finding of significance must be made. A revised EIR with modeling in one of the 11

[2] OEHHA Hazardous Waste Generators and Facilities https://oehha.ca.gov/calenviroscreen/indicator/hazardous-waste-generators-and-facilities
[3] OEHHA Solid Waste Facilities https://oehha.ca.gov/calenviroscreen/indicator/solid-waste-sites-and-facilities

approved software types must be circulated for public review in order to adequately analyze the project's significant environmental impacts. This is vital as the EIR utilizes CalEEMod as a source in its methodology and analysis, which is clearly not one of the approved softwares. 11

4.11 Land Use and Planning

Table 4.11-3: Consistency with SCAG 2020-2024 RTP/SCS erroneously finds consistency with SCAG's Connect SoCal RTP/SCS document. Due to errors in modeling as noted throughout this comment letter and the EIR's determination that the project will result in significant and unavoidable impacts to Air Quality (cumulatively considerable), Energy (cumulatively considerable), Greenhouse Gas Emissions (cumulatively considerable), and Noise (cumulatively considerable), the proposed project is directly inconsistent with Goal 5 to reduce greenhouse gas emissions and improve air quality, Goal 6 to support healthy and equitable communities, and Goal 7 to adapt to a changing climate. The EIR must be revised to include a finding of significance due to inconsistency with SCAG's Connect SoCal RTP/SCS. 12

Additionally, due to errors in in modeling as noted throughout this comment letter and the EIR's determination that the project will result in significant and unavoidable impacts to Air Quality (cumulatively considerable), Energy (cumulatively considerable), Greenhouse Gas Emissions (cumulatively considerable), and Noise (cumulatively considerable) within the County's Western Fontana Environmental Justice Focus Area/an SB 535 Disadvantaged Community, the project is inconsistent with the following applicable items from the General Plan and the EIR has not provided a consistency analysis:

Goal HZ-3 Environmental Justice: For unincorporated environmental justice focus areas, equitable levels of protection from environmental and health hazards; expanded opportunities for physical activity and meaningful civic engagement; and access to healthy food, public facilities, safe and sanitary housing. 13

Policy HZ-3.18 Application requirements. In order for a Planning Project Application (excluding Minor Use Permits) to be deemed complete, we require applicants to indicate whether the project is within or adjacent to an unincorporated environmental justice focus area and, if so, to:

- document to the County's satisfaction how an applicant will address environmental justice concerns potentially created by the project; and
- present a plan to conduct at least one public meeting for nearby residents, businesses, and property owners to obtain public input for applications involving a change in zoning or the Policy Plan. The County will require additional public outreach if the proposed project changes substantively in use, scale, or intensity.

Goal NR-1 Air Quality. Air quality that promotes health and wellness of residents in San Bernardino County through improvements in locally-generated emissions.

Policy NR-1.7 Greenhouse gas reduction targets. We strive to meet the 2040 and 2050 greenhouse gas emission reduction targets in accordance with state law.

Policy NR-1.9 Building design and upgrades. We use the CALGreen Code to meet energy efficiency standards for new buildings and encourage the upgrading of existing buildings to incorporate design elements, building materials, and fixtures that improve environmental sustainability and reduce emissions.

Policy LU-2.3 Compatibility with natural environment. We require that new development is located, scaled, buffered, and designed for compatibility with the surrounding natural environment and biodiversity.

Policy LU-4.5 Community identity. We require that new development be consistent with and reinforce the physical and historical character and identity of our unincorporated communities, as described in Table LU-3 and in the values section of Community Action Guides. In addition, we consider the aspirations section of Community Action Guides in our review of new development.

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Analysis of the proposed project in accordance with these goals and policies is vital as there is significant potential for inconsistency with the General Plan. For example, the project site is located within an EJ focus area (west Fontana census tract 6071002204) and the EIR does not include any information regarding the required EJ concerns documentation and public outreach meeting. Additionally, the project will result in significant and unavoidable impacts to Air Quality (cumulatively considerable), Energy (cumulatively considerable), Greenhouse Gas Emissions (cumulatively considerable), and Noise (cumulatively considerable) within the project census tract that is a San Bernardino County Environmental Justice Focus Area and is designated as a SB 535 Disadvantaged Community. The EIR must be revised to include this information for analysis in order to provide an adequate, accurate environmental analysis.

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4.14 Population and Housing

The EIR's justification of no impact to population and housing relies upon the total 2019 existing workforce of San Bernardino County. The EIR states that the project would "comprise approximately 0.4 percent of the County's 2019 workforce." However, the threshold for impact analysis is: "Would the project induce substantial *unplanned* population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through

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extension of roads or other infrastructure)?" The EIR's reliance upon the existing workforce to fill the project's operational jobs does not analyze to any extent the *planned* population or employment growth within San Bernardino County. 15

The planned growth for San Bernardino County is developed by the Southern California Association of Governments (SCAG). SCAG's Connect SoCal Demographics and Growth Forecast[4] states that the unincorporated areas of San Bernardino County will add 14,100 jobs between 2016 - 2045. Utilizing the EIR's calculation of 3,732 employees, the project represents 26% of unincorporated San Bernardino County's employment growth from 2016 - 2045. SCAG's Growth Forecast states that unincorporated San Bernardino County's population will increase by 45,000 residents between 2016 - 2045. Utilizing the EIR's calculation of 3,732 employees, the project represents 8.3% of unincorporated San Bernardino County's population growth from 2016 - 2045. A single project accounting for these amounts of growth within unincorporated San Bernardino County over 29 years represents a significant amount of growth. The EIR must be revised to include this analysis, and also provide a cumulative analysis discussion of projects approved since 2016 and projects "in the pipeline" to determine if the project will exceed SCAG's employment and/or population growth forecast. 16

The EIR does not provide a quantified analysis of construction jobs generated by the proposed project. The EIR relies upon uncertain language in its analysis of construction jobs generated by the proposed project. The EIR states that "Construction of the Project would generate *temporary* employment opportunities, including short-term design, engineering, and construction jobs. Construction related jobs would not result in a significant population increase because those jobs are temporary in nature and are expected to be filled by persons within the *local area*." Additionally, the EIR does not define the boundaries of the "local area," or demonstrate how the project will not need any workers from outside the "local area." Relying upon the workforce of the greater SCAG region will increase VMT and air quality/greenhouse gas emissions, and a revised EIR must be prepared to reflect this. The revised EIR must also include information and analysis regarding the number of construction jobs generated by the project and their potential to relocate to the County. 17

[4] SCAG Connect SoCal Demographics and Growth Forecast adopted September 3, 2020 https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf?1606001579

4.17 Transportation

Appendix L: VMT/Traffic calculates the project's VMT using "two components – the total number of trips generated and the average trip length of each vehicle." However, the VMT analysis does not provide the number of trips generated or the average trip length of each vehicle. The EIR must be revised to include this information for analysis in order to be an adequate informational document. This is vital as Appendix C: Air Quality utilizes the following trip generation information for analysis:

Phase 1a Passenger Cars

29,518,574 Annual Mitigated VMT
7,583 Average Daily Trips (ADT)

3,892 VMT Daily

Phase 1a Trucks

56,779,851 Annual Mitigated VMT
4,664 ADT

12,174 VMT Daily

Phase 1a Vans

18,540,139 Annual Mitigated VMT
4,707 ADT

3,938 VMT Daily

Phase 1a Total VMT Daily = 20,004

Phase 1b Passenger Cars

23,740,625 Annual Mitigated VMT

6,099 ADT

3,892 VMT Daily

Phase 1b Trucks
42,801,696 Annual Mitigated VMT
3,541 ADT

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12,087 VMT Daily

Phase 1b Vans

14,657,440 Annual Mitigated VMT
3,765 ADT

3,893 VMT Daily

Phase 1b Total VMT Daily = 19,872

Phase 2 Passenger Cars

7,785,257 Annual Mitigated VMT
2,023 ADT

3,848 VMT Daily

Phase 2 Trucks

15,690,861 Annual Mitigated VMT
1,298 ADT

12,088 VMT daily

Phase 2 Total VMT Daily = 15,936

General Commercial

18,554,948 Annual Mitigated VMT
9,866 ADT

1,880 VMT daily

Full Operations Total VMT Annually = 228,069,391
Full Operations Total VMT Daily = 57,692

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The EIR states that the VMT per employee for the project is 17.5, which is 6.9% less than the San Bernardino Unincorporated County Average of 19.6 VMT per employee. The EIR does not provide a source or methodology for the calculation of County Average VMT per employee. This must be included as part of a revised EIR. The EIR relies on the project's alleged 6.9% reduction in VMT per employee to conclude that the project will result in less than significant impacts to VMT. However, the operational nature of industrial/warehouse uses involves high rates of

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truck/trailer VMT due to traveling from large regional distribution centers to smaller industrial parks (such as the proposed project) and then to their final delivery destinations. As shown above, Appendix A: Air Quality calculates that the project's operational VMT is 228,069,391 miles annually, which results in an average of 57,692 miles per day based on the number of average daily trips. The project's truck/trailer activity is unable to utilize public transit and it is misleading to the public and decision makers to conclude the project will result in less than significant VMT impacts. A revised EIR must be prepared which reflects the average daily trips and VMT utilized for Air Quality modeling regarding the potentially significant project transportation impacts, including cumulative impacts. 19

5.0 Other CEQA Considerations

5.3 Growth Inducing Impacts

The EIR utilizes uncertain language in stating that "*Most* construction workers would be *anticipated* to come from within the County *or from the nearby region*, which already has a population of substantial size to supply the needed workers." The EIR does not provide any specific information, details, or meaningful evidence regarding the "nearby region" and its "population of substantial size." The boundaries of the "nearby region" are also undefined. Relying upon the regional workforce of the greater SCAG region will increase VMT and air quality/greenhouse gas emissions, and a revised EIR must be prepared to reflect this. The revised EIR must also include information and analysis regarding the number of construction jobs generated by the project and their potential to relocate to the County. 20

The EIR is internally inconsistent. The population and housing analysis in this section states the project will generate "approximately 3,127 employees" at full project operation. Section 4.14 Population and Housing states the project will generate 3,732 employees at full project operation. The EIR must be revised to state the project will generate 3,732 employees. Further, the EIR relies upon the notion that the number of operational employees is less than the number of unemployed persons within the County to determine less than significant impacts. However, the EIR does not give any information regarding if the County's unemployed population is qualified for or interested in work in the industrial sector. The EIR has not provided meaningful evidence to support the conclusion that the project will result in less than significant impacts. A finding of significance must be made. 21

The EIR is misleading and an inadequate informational document. In response to the threshold, "Would the Project encourage or facilitate other activities that could significantly affect the environment, either individually or cumulatively?" the EIR simply states "Refer to Section 4.1 through Section 4.20 of this EIR." This response is not adequate and circumvents providing a 22

direct analysis of the project in response to this threshold. The EIR must be revised here to discuss and analyze the project's significant and unavoidable cumulatively considerable impacts to Air Quality, Energy, Greenhouse Gas Emissions, and Noise. Project implementation will result in growth that does not comply with the AQMP, has significant potential to cumulatively contribute to population/employment growth that exceed planned growth, and will have additional environmental impacts that cannot be mitigated. These significant and irreversible environmental changes caused by the project necessitate a finding of significance in this section. 22

The EIR must also include a cumulative analysis discussion here to demonstrate the impact of the proposed project in a cumulative setting. For example, other recent warehousing projects in San Bernardino County including but not limited to Arrow Route Warehouse represents 1.2% of the unincorporated County's employment growth from 2016 - 2045, Whittram Avenue Warehouse represents 1.2% of this growth, and Bloomington Business Park represents 20% of this growth. Cumulatively, these three projects plus the proposed project represent 48.4% of employment growth over the 29 year period. 23

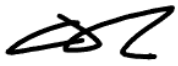
6.0 Alternatives

The EIR is required to evaluate a reasonable range of alternatives to the proposed project which will avoid or substantially lessen any of the significant effects of the project (CEQA § 15126.6.) The alternatives chosen for analysis include "No Project," "Reduced Footprint," and "Commercial Development." The EIR does not evaluate a reasonable range of alternatives as only two alternatives beyond the required No Project alternative are analyzed. The EIR does not include an alternative that meets the project objectives and also eliminates all of the project's significant and unavoidable impacts. The EIR must be revised to include analysis of a reasonable range of alternatives and foster informed decision making (CEQA § 15126.6). This could include alternatives such as development of the site with a project that reduces all of the proposed project's significant and unavoidable impacts to less than significant levels. 24

Conclusion

For the foregoing reasons, GSEJA believes the EIR is flawed and a revised EIR must be prepared for the proposed project and recirculated for public review. Golden State Environmental Justice Alliance requests to be added to the public interest list regarding any subsequent environmental documents, public notices, public hearings, and notices of determination for this project. Send all communications to Golden State Environmental Justice Alliance P.O. Box 79222 Corona, CA 92877. 25

Sincerely,



Gary Ho
Blum Collins & Ho, LLP

Attachments:
1. SWAPE Comment Letter

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June 30, 2022

Gary Ho
Blum Collins LLP
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Los Angeles, CA 90017

Subject: Comments on the Speedway Commerce Center II Specific Plan Project (SCH No. 2021120259)

Dear Mr. Ho,

We have reviewed the June 2022 Draft Environmental Impact Report ("DEIR") for the Speedway Commerce Center II Specific Plan Project ("Project") located in the County of San Bernardino ("County"). The Project proposes to construct up to approximately 6,600,000-square-feet ("SF") of high-cube logistics and e-commerce development with approximately 261,360-SF of ancillary commercial uses and 98 acres of parking lot areas on the 433-acre site.

Our review concludes that the DEIR fails to adequately evaluate the Project's air quality, health risk, and greenhouse gas impacts. As a result, emissions and health risk impacts associated with construction and operation of the proposed Project are underestimated and inadequately addressed. An updated EIR should be prepared to adequately assess and mitigate the potential air quality, health risk, and greenhouse gas impacts that the project may have on the environment.

Air Quality

Failure to Implement All Feasible Mitigation to Reduce Emissions

The DEIR concludes that the Project's construction, operational, and buildout emissions would be significant-and-unavoidable. Specifically, the DEIR estimates that the NO_X emissions associated with Phase 1a, Phase 1b, and Phase 2 of Project construction would exceed the applicable South Coast Air

Quality Management District ("SCAQMD") threshold of 100 pounds per day ("lbs/day") (see excerpt below) (p. 4.3-27 – 4.3-29, Table 4.3-9, Table 4.3-10, Table 4.3-11).[1]

Table 4.3-9: Phase 1a Construction Emissions

Construction Year	Emissions (Maximum Pounds Per Day)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Unmitigated Emissions[1]						
Year 2023	372.22	555.14	702.91	2.12	155.16	54.34
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Exceed SCAQMD Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**
Mitigated Emissions[2]						
Year 2023	43.04	465.49	702.91	2.12	94.27	31.30
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Exceed SCAQMD Threshold?	**No**	**Yes**	**Yes**	**No**	**No**	**No**

ROG = Reactive Organic Gases; NO_X = Nitrogen Oxides; CO = Carbon Monoxide; SO_2 = Sulfur Dioxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less

1. SCAQMD Rule 403 Fugitive Dust applied. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; water exposed surfaces three times daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the SCAQMD CEQA Handbook (Tables XI-A through XI-E) were applied. No mitigation was applied to construction equipment. Refer to Appendix A for Model Data Outputs.
2. Mitigation includes the incorporation of MM AQ-1 and MM AQ-2. MM AQ-1 requires dust control and exhaust measures including requiring off-road equipment 50 horsepower or greater to meet CARB Tier 4 Final standards. MM AQ-2 requires the use of "Super-Compliant" low VOC paints.

Source: CalEEMod version 2020.4.0. Refer to Appendix A of the Air Quality Assessment for model outputs.

Furthermore, the DEIR estimates that the ROG and NO_X emissions associated with Phase 1a, Phase 1b, and Phase 2 of Project operation would exceed the applicable SCAQMD thresholds of 55 lbs/day (see excerpt below) (p. 4.3-30 – 4.3-34; Table 4.3-13, Table 4.3-14, Table 4.3-15).[2]

Table 4.3-13: Phase 1a Operational Emissions

Source	Maximum Pounds Per Day					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Unmitigated Operations						
Area Sources	72.84	0.00	0.33	0.00	0.00	0.00
Energy	0.37	3.39	2.85	0.02	0.26	0.26
Mobile – Passenger Cars	23.53	21.13	251.32	3.13	55.16	19.73
Mobile – Trucks	10.36	524.13	247.61	4.13	124.59	38.14
Mobile – Vans	9.56	98.97	32.86	0.40	36.76	11.01
Off-Road – Forklifts[1]	8.7	82.02	107.77	0.15	4.69	4.32
Off-Road – Yard Trucks[1]	1.48	4.78	69.53	0.11	0.20	0.18
Emergency Backup Generator	3.54	39.79	12.20	0.06	0.90	0.90
Transport Refrigeration Units	49.94	41.87	5.68	0.01	1.11	1.03
Total Emissions	**180.32**	**816.08**	**730.15**	**8.01**	**223.67**	**75.57**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Mitigated Operations						
Area Sources	72.83	0.00	0.19	0.00	0.00	0.00
Energy	0.31	2.78	2.34	0.02	0.21	0.21
Mobile – Passenger Cars	23.48	20.94	248.92	3.07	54.51	19.49
Mobile – Trucks	10.36	524.13	247.61	4.13	124.59	38.14
Mobile – Vans	9.48	97.85	32.63	0.40	36.33	10.88
Off-Road – Forklifts[1]	0	0	0	0	0	0
Off-Road – Yard Trucks[1]	0	0	0	0	0	0
Emergency Backup Generator	3.54	39.79	12.20	0.06	0.90	0.90
Transport Refrigeration Units	49.94	41.87	5.68	0.01	1.11	1.03
Total Emissions	**169.94**	**727.36**	**549.57**	**7.69**	**217.65**	**70.65**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded With Mitigation?	**Yes**	**Yes**	**No**	**No**	**Yes**	**Yes**

ROG = Reactive Organic Gases; NO_X = Nitrogen Oxides; CO = Carbon Monoxide; SO_2 = Sulfur Dioxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less
1. Unmitigated emissions assume diesel off-road equipment (i.e., forklifts and yard trucks).
Source: CalEEMod version 2020.4.0. Refer to Appendix A of the Air Quality Assessment for model outputs.

[1] Only emissions associated with Phase 1a ("Table 4.3-9: Phase 1a Construction Emissions") are presented below.
[2] Only emissions associated with Phase 1a ("Table 4.3-11: Phase 1a Operational Emissions") are presented below.

Finally, the DEIR estimates that the ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$ emissions associated with Project buildout would exceed the applicable SCAQMD thresholds of 55-, 55-, 550-, 150-, and 55-lbs/day, respectively (see excerpt below) (p. 4.3-35; Table 4.3-15).

Table 4.3-17: Project Buildout Emissions

Source	Maximum Pounds Per Day					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Unmitigated Emissions[1]						
Maximum Construction[2]	372.22	555.14	702.91	2.12	155.16	54.34
Operations						
• Phase 1a[3]	180.32	816.08	730.15	8.01	223.67	75.57
• Phase 1b[4]	116.32	548.68	539.79	5.99	171.20	56.68
• Phase 2[5]	89.32	244.43	258.61	2.12	52.10	18.71
• Commercial[6]	33.87	21.13	158.71	1.82	34.58	12.16
Total Unmitigated Operations	*419.83*	*1,630.32*	*1,687.26*	*17.94*	*481.55*	*163.12*
Total Overlapping Construction and Operations (Unmitigated)	**792.05**	**2,185.46**	**2,390.17**	**20.06**	**636.71**	**217.46**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Mitigated Emissions						
Maximum Construction	43.04	465.49	702.91	2.12	94.27	31.30
Operations						
• Phase 1a[3]	169.94	727.36	549.57	7.69	217.65	70.65
• Phase 1b[4]	109.80	496.78	403.04	5.75	167.67	53.94
• Phase 2[5]	84.17	205.06	135.38	1.92	50.06	16.93
• Commercial[6]	33.87	21.13	158.71	1.82	34.58	12.16
Total Mitigated Operations	397.78	1,450.33	1,246.70	17.18	469.96	153.68
Total Overlapping Construction and Operations (Mitigated)	**440.82**	**1,915.82**	**1,949.61**	**19.30**	**564.23**	**184.98**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded With Mitigation?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

ROG = Reactive Organic Gases; NO_X = Nitrogen Oxides; CO = Carbon Monoxide; SO_2 = Sulfur Dioxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less
1. Unmitigated emissions assume diesel off-road equipment (i.e., forklifts and yard trucks).
2. Phase 1a construction is used as the overall maximum construction emissions
3. See Table 4.3-13 for detailed Phase 1a operational emissions.
4. See Table 4.3-14 for detailed Phase 1b operational emissions.
5. See Table 4.3-15 for detailed Phase 2 operational emissions.
6. See Table 4.3-16 for detailed Commercial Phase operational emissions.
Source: CalEEMod version 2020.4.0. Refer to Appendix A of the Air Quality Assessment for model outputs.

As a result, the DEIR concludes that the impacts associated with Project construction, operation, and buildout would be significant-and-unavoidable (p. 4.3-34). However, while we agree that the Project's criteria air pollutant emissions would result in a significant air quality impact, the DEIR's conclusion that these impacts are "significant and unavoidable" is incorrect. According to CEQA Guidelines § 15096(g)(2):

> "When an EIR has been prepared for a project, the Responsible Agency shall not approve the project as proposed if the agency finds any feasible alternative or feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment."

As stated above, an impact can only be labeled as significant and unavoidable after all available, feasible mitigation is considered. Here, while the DEIR includes Project Design Feature ("PDF") AQ-1 through AQ-23, Standard Condition ("SC") AQ-1 through AQ-11, and Mitigation Measure ("MM") AQ-1 through AQ-10 the DEIR fails to implement *all* feasible mitigation (p. 4.3-21 – 4.3-23; 4.3-37 – 4.3-38; 4.3-38 – 4.3-42). Therefore, the DEIR's conclusion that the Project's air quality impacts are significant-and-

unavoidable is unsubstantiated. To reduce the Project's air quality impacts to the maximum extent possible, additional feasible mitigation measures should be incorporated, such as those suggested in the section of this letter titled "Feasible Mitigation Measures Available to Reduce Emissions." Thus, the Project should not be approved until an updated EIR is prepared, incorporating all feasible mitigation to reduce emissions to less-than-significant levels.

Failure to Include PDFs as Mitigation Measures

As discussed above, the DEIR concludes that the Project would have significant construction and operational air quality impacts after the incorporation of Project Design Features ("PDFs") and mitigation. Specifically, the DEIR indicates "the Project would comply with various SCs and includes numerous PDFs and MMs that would minimize emissions," including PDF AQ-1 through PDF AQ-23 (p. 4.3-32; p. 4.3-21 – 4.3-23). For example, the DEIR incorporates PDF AQ-4, which states:

> "Tenant lease agreements shall include contractual language restricting trucks and support equipment from idling longer than five minutes while on site" (p. 4.3-21).

As demonstrated above, PDF AQ-4 requires tenant lease agreements to restrict idling to less than five minutes. Furthermore, the DEIR incorporates PDF AQ-8, which states:

> "During operations, tenants/facility operators shall ensure that all heavy-duty vehicles (i.e., fleet equipment with a gross vehicle weight rating greater than 14,000 pounds) registered in California entering or operated on the Project site shall be model year 2010 emissions equivalent or later as currently defined in California Code of Regulations Title 13, Division 3, Chapter 1, Article 4.5, Section 2025. Tenants/facility operators shall maintain records on its fleet equipment and ensure that all heavy-duty trucks accessing the Project site use year 2010 or newer engines. The records shall be maintained on-site and be made available for inspection by the County. Encouraging the use of model year 2010 or newer trucks and other efficiency measures could incentivize near zero emission (NZE) or zero emission (ZE) truck visits, which would facilitate compliance with SCAQMD Rule 2305 (Warehouse Indirect Source Rule)" (p. 4.3-22).

As demonstrated above, all heavy-duty vehicles accessing the Project site should be model year 2010 or later. However, the Project's air quality analysis is inadequate, as the DEIR should have incorporated all of the above-mentioned PDFs as formal mitigation measures. According to the Association of Environmental Professionals ("AEP") *CEQA Portal Topic Paper* on Mitigation Measures:

> "While not "mitigation", a good practice is to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP). Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, it is easy for someone not involved in the original environmental process to approve a

> change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact."[3]

As you can see in the excerpt above, PDFs that are not formally included as mitigation measures may be eliminated from the Project's design altogether. Thus, as the PDFs described in the DEIR are not formally included as mitigation measures, we cannot guarantee that they would be implemented, monitored, and enforced on the Project site. As a result, until the PDFs are included as mitigation measures, the DEIR's air quality analysis should not be relied upon to determine Project significance.

Disproportionate Health Risk Impacts of Warehouses on Surrounding Communities

Upon review of the DEIR, we have determined that the development of the proposed Project would result in disproportionate health risk impacts on community members living, working, and going to school within the immediate area of the Project site. According to the SCAQMD:

> "Those living within a half mile of warehouses are more likely to include communities of color, have health impacts such as higher rates of asthma and heart attacks, and a greater environmental burden."[4]

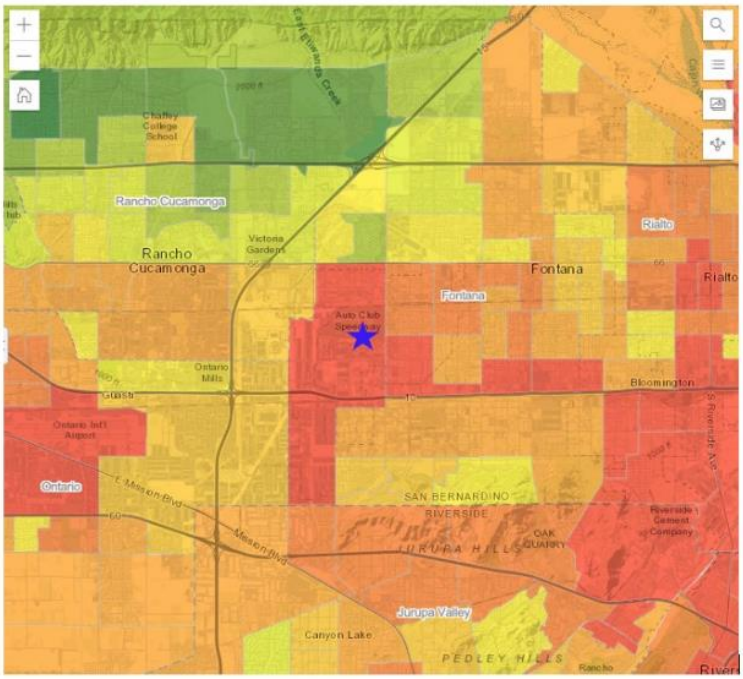
In particular, the SCAQMD found that more than 2.4 million people live within a half mile radius of at least one warehouse, and that those areas not only experience increased rates of asthma and heart attacks, but are also disproportionately Black and Latino communities below the poverty line.[5] Another study similarly indicates that "neighborhoods with lower household income levels and higher percentages of minorities are expected to have higher probabilities of containing warehousing facilities."[6] Additionally, a report authored by the Inland Empire-based People's Collective for Environmental Justice and University of Redlands states:

> "As the warehouse and logistics industry continues to grow and net exponential profits at record rates, more warehouse projects are being approved and constructed in low-income communities of color and serving as a massive source of pollution by attracting thousands of polluting truck trips daily. Diesel trucks emit dangerous levels of nitrogen oxide and particulate matter that cause devastating health impacts including asthma, chronic obstructive pulmonary

[3] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.
[4] "South Coast AQMD Governing Board Adopts Warehouse Indirect Source Rule." SCAQMD, May 2021, *available at:* http://www.aqmd.gov/docs/default-source/news-archive/2021/board-adopts-waisr-may7-2021.pdf?sfvrsn=9.
[5] "Southern California warehouse boom a huge source of pollution. Regulators are fighting back." Los Angeles Times, May 2021, *available at:* https://www.latimes.com/california/story/2021-05-05/air-quality-officials-target-warehouses-bid-to-curb-health-damaging-truck-pollution.
[6] "Location of warehouses and environmental justice: Evidence from four metros in California." MetroFreight Center of Excellence, January 2018, *available at:* https://www.metrans.org/assets/research/MF%201.1g_Location%20of%20warehouses%20and%20environmental%20justice_Final%20Report_021618.pdf, p. 21.

disease (COPD), cancer, and premature death. As a result, physicians consider these pollution-burdened areas 'diesel death zones."[7]

It is evident that the continued development of industrial warehouses within these communities poses a significant environmental justice challenge. However, the acceleration of warehouse development is only increasing despite the consequences on public health. The Inland Empire alone is adding 10 to 25 million SF of new industrial space each year.[8] San Bernardino County, the setting of the proposed Project, has long borne a disproportionately high pollution burden compared to the rest of California. When using CalEnviroScreen 4.0, CalEPA's screening tool that ranks each census tract in the State for pollution and socioeconomic vulnerability, we found that the Project's census tract is in the 93rd percentile of most polluted census tracts in the State (see excerpt below).[9]



[7] "Warehouses, Pollution, and Social Disparities: An analytical view of the logistics industry's impacts on environmental justice communities across Southern California." People's Collective for Environmental Justice, April 2021, *available at:* https://earthjustice.org/sites/default/files/files/warehouse_research_report_4.15.2021.pdf, p. 4.
[8] "2020 North America Industrial Big Box Review & Outlook." CBRE, 2020, *available at:* https://www.cbre.com/-/media/project/cbre/shared-site/insights/local-responses/industrial-big-box-report-inland-empire/local-response-2020-ibb-inland-empire-overview.pdf, p. 2.
[9] "CalEnviroScreen 4.0." California Office of Environmental Health Hazard Assessment (OEHHA), October 2021, *available at:* https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40.

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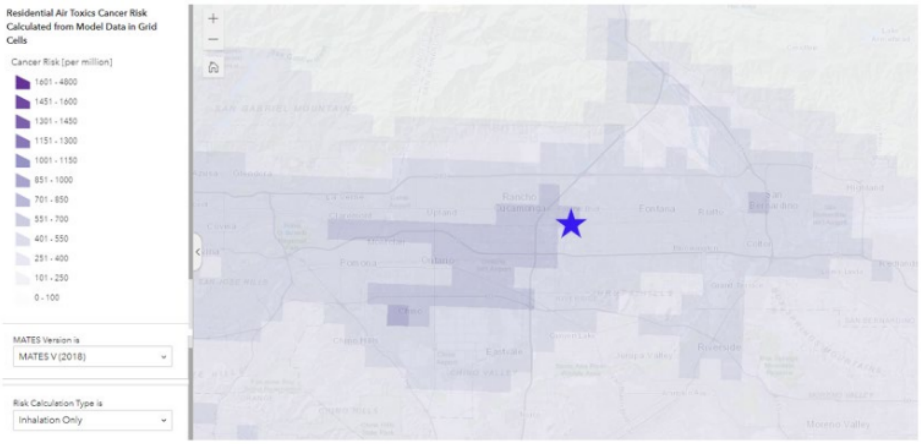
The DEIR's Health Risk Assessment ("HRA"), provided in Appendix C, elaborates on the Project's high pollution burden itself, stating:

> "OEHHA has developed CalEnviroScreen 3.0, which is a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce scores for every census tract in the State. The scores are mapped so that different communities can be compared. An area with a high score is one that experiences a much higher pollution burden than areas with low scores.
>
> According to CalEnviroScreen, the Project site and the nearest residences to the northeast are located within Census Tract 6071002204, which is within the 93rd percentile" (p. 11).

Furthermore, the Data Visualization Tool for Mates V, a monitoring and evaluation study conducted by SCAQMD, demonstrates that the Project site already exhibits a heightened residential carcinogenic risk from exposure to air toxics (see excerpt below).[10]



Therefore, development of the proposed warehouse would disproportionately contribute to and exacerbate the health conditions of the residents in San Bernardino County.

In April 2022, the American Lung Association ranked San Bernadino County as the worst for ozone pollution in the nation.[11] The Los Angeles Times also reported that San Bernardino County had 130 bad

[10] "Residential Air Toxics Cancer Risk Calculated from Model Data in Grid Cells." MATES V, 2018, *available at:* https://experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/Main-Page/?views=Click-tabs-for-other-data%2CGridded-Cancer-Risk; see also: "MATES V Multiple Air Toxics Exposure Study." SCAQMD, *available at:* http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v.
[11] "State of the Air 2022." American Lung Association, April 2022, *available at:* https://www.lung.org/research/sota/key-findings/most-polluted-places.

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air days for ozone pollution in 2020, violating federal health standards on nearly every summer day.[12] Downtown Los Angeles, by comparison, had 22 ozone violation days in 2020. This year, the County continues to face the worst ozone pollution, as it has seen the highest recorded Air Quality Index ("AQI") values for ground-level ozone in California.[13] The U.S. Environmental Protection Agency ("EPA") indicates that ozone, the main ingredient in "smog," can cause several health problems, which includes aggravating lung diseases and increasing the frequency of asthma attacks. The U.S. EPA states:

> "Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure. Children are also more likely than adults to have asthma."[14]

Furthermore, regarding the increased sensitivity of early-life exposures to inhaled pollutants, the California Air Resources Board ("CARB") states:

> "Children are often at greater risk from inhaled pollutants, due to the following reasons:
>
> - Children have unique activity patterns and behavior. For example, they crawl and play on the ground, amidst dirt and dust that may carry a wide variety of toxicants. They often put their hands, toys, and other items into their mouths, ingesting harmful substances. Compared to adults, children typically spend more time outdoors and are more physically active. Time outdoors coupled with faster breathing during exercise increases children's relative exposure to air pollution.
>
> - Children are physiologically unique. Relative to body size, children eat, breathe, and drink more than adults, and their natural biological defenses are less developed. The protective barrier surrounding the brain is not fully developed, and children's nasal passages aren't as effective at filtering out pollutants. Developing lungs, immune, and metabolic systems are also at risk.
>
> - Children are particularly susceptible during development. Environmental exposures during fetal development, the first few years of life, and puberty have the greatest potential to influence later growth and development."[15]

[12] "Southern California warehouse boom a huge source of pollution. Regulators are fighting back." Los Angeles Times, May 2021, *available at:* https://www.latimes.com/california/story/2021-05-05/air-quality-officials-target-warehouses-bid-to-curb-health-damaging-truck-pollution.
[13] "High Ozone Days." American Lung Association, 2022, *available at:* https://www.lung.org/research/sota/city-rankings/states/california.
[14] "Health Effects of Ozone Pollution." U.S. EPA, May 2021, *available at:* https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution.
[15] "Children and Air Pollution." California Air Resources Board (CARB), *available at:* https://ww2.arb.ca.gov/resources/documents/children-and-air-pollution.

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A Stanford-led study also reveals that children exposed to high levels of air pollution are more susceptible to respiratory and cardiovascular diseases in adulthood.[16] Thus, given children's higher propensity to succumb to the negative health impacts of air pollutants, and as warehouses release more smog-forming pollution than any other sector, it is necessary to evaluate the specific health risk that warehouses pose to children in the nearby community.

According to the above-mentioned study by the People's Collective for Environmental Justice and University of Redlands, there are 640 schools in the South Coast Air Basin that are located within half a mile of a large warehouse, most of them in socio-economically disadvantaged areas.[17] Regarding the proposed Project itself, the DEIR indicates that the Project is located near several residential communities and schools (see excerpt below) (p. 4.3-5, Table 4.3-3):

Table 4.3-3: Sensitive Receptors

Receptor Description	Distance and Direction from the Project
Single-family Residential Unit	410 feet to the northeast
Single-family Residential Unit(s)	540 feet to the northeast
Single-family Residential Unit(s)	675 feet to the north
Paduma Monastery	1,100 feet to the north
Single-family Residential Unit(s)	1,300 feet to the east
Redwood Elementary School	1,370 feet to the northeast
Single-family Residential Unit(s)	1,800 feet to the north
Living Waters Ministry Church of God in Christ	2,000 feet to the north
Single-family Residential Unit(s)	2,100 feet to the north

Source: Google Earth, 2021.

As demonstrated above, an elementary school, church, and several residential homes are located within the Project's vicinity. This poses a significant threat because, as outlined above, children are a vulnerable population that are more susceptible to the damaging side-effects of air pollution. As such, the Project would have detrimental short-term and long-term health impacts on local residents and children if approved.

An updated EIR should be prepared to evaluate the disproportionate impacts of the proposed warehouse on the community adjacent to the Project, including an analysis of the impact on children and people of color who live and attend school in the surrounding area. Finally, in order to evaluate the cumulative air quality impact from the several warehouse projects proposed or built in a one-mile radius of the Project site, the updated EIR should prepare a cumulative HRA to quantify the adverse health outcome from the effects of exposure to multiple warehouses in the immediate area in conjunction with the poor ambient air quality in the Project's census tract.

[16] "Air pollution puts children at higher risk of disease in adulthood, according to Stanford researchers and others." Stanford, February 2021, *available at:* https://news.stanford.edu/2021/02/22/air-pollution-impacts-childrens-health/.

[17] "Warehouses, Pollution, and Social Disparities: An analytical view of the logistics industry's impacts on environmental justice communities across Southern California." People's Collective for Environmental Justice, April 2021, *available at:* https://earthjustice.org/sites/default/files/files/warehouse_research_report_4.15.2021.pdf, p. 4.

Greenhouse Gas

Failure to Adequately Evaluate Greenhouse Gas Impacts

The DEIR estimates that the Project would result in mitigated net annual greenhouse gas ("GHG") emissions of 207,327 metric tons of carbon dioxide equivalents per year ("MT CO_2e/year") (see excerpt below) (p. 4.8-22 – 4.8-23, Table 4.8-3).

Table 4.8-3: Project Greenhouse Gas Emissions

Emissions Source	$MTCO_2e$ per Year				
	Phase 1a	Phase 1b	Phase 2	Commercial	Total
Unmitigated					
Construction Amortized Over 30 Years	494	359	382	19	1,254
Area Sources	0.09	0.05	0.04	0.01	0.19
Energy[1]	2,753	2,051	2,856	499	8,158
Mobile - Passenger Cars	9,458	7,406	2,371	6,355	25,590
Mobile - Trucks	78,081	56,615	20,370	N/A	155,067
Mobile - Vans	4,657	3,565	N/A	N/A	8,222
Off-Road - Forklifts	2,602	1,569	1,280	N/A	5,451
Off-Road - Yard Trucks	1,885	1,200	1,028	N/A	4,113
Backup Generators	133	39	286	N/A	458
Transport Refrigeration Units	1,218	727	975	N/A	2,920
Waste	1,488	898	734	138	3,259
Water and Wastewater[3]	2,475	1,468	1,179	81	5,203
Unmitigated Total	**105,244**	**75,898**	**31,462**	**7,092**	**219,696**
Mitigated					
Construction Amortized Over 30 Years	494	359	382	19	1,254
Area Sources	0.05	0.03	0.02	0.01	0.10
Energy[1]	2,296	1,772	2,614	358	7,040
Mobile - Passenger Cars	9,349	7,321	2,344	6,286	25,300
Mobile - Trucks	78,081	56,615	20,370	N/A	155,067
Mobile - Vans	4,603	3,524	N/A	N/A	8,127
Off-Road - Forklifts	573	336	266	N/A	1,175
Off-Road - Yard Trucks	470	291	242	N/A	1,003
Backup Generators	133	39	286	N/A	458
Transport Refrigeration Units	1,218	727	975	N/A	2,920
Waste	372	225	184	35	815
Water and Wastewater[3]	1,981	1,175	944	68	4,168
Mitigated Total	**99,571**	**72,385**	**28,607**	**6,765**	**207,327**

1. Mitigation Measure GHG-2 requires the installation of photovoltaic solar panels to offset energy emissions. Mitigation Measure GHG-3 requires the buildings to meet or exceed CalGreen Tier 2 standards.
2. Mitigation Measure AQ-3 (refer to the Projects Air Quality Assessment) requires implementation of a TDM program.
3. Energy savings from water conservation resulting from the Green Building Code Standards for indoor water use and the County's Water Efficient Landscape Ordinance for outdoor water use are not included in CalEEMod. These are regulatory measures have been incorporated into the CalEEMod mitigation module.

Source: CalEEMod version 2020.4.0. Refer to *Appendix H* for model outputs.

As a result, the DEIR concludes that the Project's GHG emissions would exceed the County's significance threshold of 3,000 MT CO_2e/year (p. 4.8-23). After the implementation of MM GHG-1 through MM GHG-5, the DEIR concludes that the Project's GHG emissions would be significant-and-unavoidable, stating:

> "The Project would achieve more than 100 points from the County's GHG Reduction Plan Screening tables and would not conflict with the County's GHG Reduction Plan. However, due to the size of the Project, the Project's emissions could be considered significant. Additionally, 86 percent of the total emissions are from mobile sources. Mitigation measures would be required to reduce emissions to the maximum extent feasible; however, emissions of motor vehicles are controlled by State and Federal standards and the Project has no control over these standards. CARB is addressing emissions from heavy duty vehicles through various regulatory programs including lower emission standards, restrictions on idling, the use of post-combustion filter and catalyst equipment, and retrofits for diesel truck fleets. Additionally, as described above, the SCAQMD is addressing mobile source emissions through the implementation of the Warehouse Indirect Source Rule (Rule 2305), which would reduce the Project's emissions. Nonetheless, impacts related to GHG emissions are conservatively considered significant and unavoidable despite the implementation of all feasible mitigation" (p. 4.8-25).

However, the DEIR's GHG analysis, as well as the subsequent significant-and-unavoidable impact conclusion, is incorrect for two reasons.

First, while we acknowledge that the Project incorporates MM GHG-1, which requires the implementation of a minimum of 100 points per the County's Screening Tables, we recommend that individual design features be included as formal mitigation measures. According to the Association of Environmental Professionals' ("AEP") *CEQA Portal Topic Paper* on Mitigation Measures:

> "While not 'mitigation', a good practice is to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP). Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact."[18]

As demonstrated above, design features that are not formally included as mitigation measures may be eliminated from the Project's design altogether. Thus, as the specific reduction features are not formally included as mitigation measures in the DEIR, we cannot guarantee that they would be implemented, monitored, and enforced on the Project site. As such, until the specific reduction measures are included as mitigation measures, the Project's GHG analysis should not be relied upon to determine Project significance.

[18] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.

Second, as discussed above, the DEIR concludes that the proposed Project's GHG emissions would be significant-and-unavoidable (p. 4.8-25). However, while we agree that the Project would result in a significant GHG impact, the DEIR's conclusion that this impact is "significant and unavoidable" is incorrect. As previously stated, according to CEQA Guidelines § 15096(g)(2):

> "When an EIR has been prepared for a project, the Responsible Agency shall not approve the project as proposed if the agency finds any feasible alternative or feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment."

As you can see, an impact can only be labeled as significant-and-unavoidable after all available, feasible mitigation is considered. Here, while the DEIR implements MM GHG-1 through MM GHG-5, as well as SC GHG-1 through GHG-9, the DEIR fails to implement *all* feasible mitigation (p. 4.8-31 – 4.8-33). Therefore, the DEIR's conclusion that Project's GHG emissions would be significant-and-unavoidable is unsubstantiated. To reduce the Project's GHG impacts to the maximum extent possible, additional feasible mitigation measures should be incorporated, such as those suggested in the section of this letter titled "Feasible Mitigation Measures Available to Reduce Emissions." Thus, the Project should not be approved until an updated EIR is prepared, incorporating all feasible mitigation to reduce emissions to less-than-significant levels.

Mitigation

Feasible Mitigation Measures Available to Reduce Emissions

Our analysis demonstrates that the Project results in significant air quality and GHG impacts that should be mitigated further. As such, in an effort to reduce the Project's emissions, we identified several mitigation measures that are applicable to the proposed Project. Feasible mitigation measures can be found in the Department of Justice Warehouse Project Best Practices document.[19] Therefore, to reduce the Project's emissions, consideration of the following measures should be made:

- Prohibiting off-road diesel-powered equipment from being in the "on" position for more than 10 hours per day.
- Providing electrical hook ups to the power grid, rather than use of diesel-fueled generators, for electric construction tools, such as saws, drills and compressors, and using electric tools whenever feasible.
- Limiting the amount of daily grading disturbance area.
- Prohibiting grading on days with an Air Quality Index forecast of greater than 100 for particulates or ozone for the project area.
- Forbidding idling of heavy equipment for more than two minutes.
- Keeping onsite and furnishing to the lead agency or other regulators upon request, all equipment maintenance records and data sheets, including design specifications and emission control tier classifications.

[19] "Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act." State of California Department of Justice.

- Conducting an on-site inspection to verify compliance with construction mitigation and to identify other opportunities to further reduce construction impacts.
- Providing meal options onsite or shuttles between the facility and nearby meal destinations for construction employees.
- Requiring all heavy-duty vehicles entering or operated on the project site to be zero-emission beginning in 2030.
- Requiring on-site equipment, such as forklifts and yard trucks, to be electric with the necessary electrical charging stations provided.
- Requiring tenants to use zero-emission light- and medium-duty vehicles as part of business operations.
- Forbidding trucks from idling for more than two minutes and requiring operators to turn off engines when not in use.
- Installing and maintaining, at the manufacturer's recommended maintenance intervals, air filtration systems at sensitive receptors within a certain radius of facility for the life of the project.
- Installing and maintaining, at the manufacturer's recommended maintenance intervals, an air monitoring station proximate to sensitive receptors and the facility for the life of the project, and making the resulting data publicly available in real time. While air monitoring does not mitigate the air quality or greenhouse gas impacts of a facility, it nonetheless benefits the affected community by providing information that can be used to improve air quality or avoid exposure to unhealthy air.
- Constructing electric truck charging stations proportional to the number of dock doors at the project.
- Constructing electric plugs for electric transport refrigeration units at every dock door, if the warehouse use could include refrigeration.
- Constructing electric light-duty vehicle charging stations proportional to the number of parking spaces at the project.
- Requiring all stand-by emergency generators to be powered by a non-diesel fuel.
- Requiring facility operators to train managers and employees on efficient scheduling and load management to eliminate unnecessary queuing and idling of trucks.
- Requiring operators to establish and promote a rideshare program that discourages single-occupancy vehicle trips and provides financial incentives for alternate modes of transportation, including carpooling, public transit, and biking.
- Achieving certification of compliance with LEED green building standards.
- Providing meal options onsite or shuttles between the facility and nearby meal destinations.
- Posting signs at every truck exit driveway providing directional information to the truck route.
- Improving and maintaining vegetation and tree canopy for residents in and around the project area.
- Requiring that every tenant train its staff in charge of keeping vehicle records in diesel technologies and compliance with CARB regulations, by attending CARB approved courses. Also

require facility operators to maintain records on-site demonstrating compliance and make records available for inspection by the local jurisdiction, air district, and state upon request.

- Requiring tenants to enroll in the United States Environmental Protection Agency's SmartWay program, and requiring tenants to use carriers that are SmartWay carriers.
- Providing tenants with information on incentive programs, such as the Carl Moyer Program and Voucher Incentive Program, to upgrade their fleets.

Additionally, to further reduce the Project's emissions, we recommend consideration of SCAG's 2020 *RTP/SCS* PEIR's Air Quality Project Level Mitigation Measures ("PMM-AQ-1") and Greenhouse Gas Project Level Mitigation Measures ("PMM-GHG-1"), as described below: [20]

SCAG RTP/SCS 2020-2045
Air Quality Project Level Mitigation Measures – PMM-AQ-1: In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the *State CEQA Guidelines*, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to violating air quality standards. Such measures may include the following or other comparable measures identified by the Lead Agency:
j) Require contractors to assemble a comprehensive inventory list (i.e., make, model, engine year, horsepower, emission rates) of all heavy-duty off-road (portable and mobile) equipment (50 horsepower and greater) that could be used an aggregate of 40 or more hours for the construction project. Prepare a plan for approval by the applicable air district demonstrating achievement of the applicable percent reduction for a CARB-approved fleet.
m) Provide an operational water truck on-site at all times. Use watering trucks to minimize dust; watering should be sufficient to confine dust plumes to the project work areas. Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.
n) Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
o) Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.
p) As appropriate require that portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, obtain CARB Portable Equipment Registration with the state or a local district permit. Arrange appropriate consultations with the CARB or the District to determine registration and permitting requirements prior to equipment operation at the site.
q) Require projects within 500 feet of residences, hospitals, or schools to use Tier 4 equipment for all engines above 50 horsepower (hp) unless the individual project can demonstrate that Tier 4 engines would not be required to mitigate emissions below significance thresholds.

[20] "4.0 Mitigation Measures." Connect SoCal Program Environmental Impact Report Addendum #1, September 2020, available at: https://scag.ca.gov/sites/main/files/file-attachments/fpeir_connectsocal_addendum_4_mitigationmeasures.pdf?1606004420, p. 4.0-2 – 4.0-10; 4.0-19 – 4.0-23; See also: "Certified Final Connect SoCal Program Environmental Impact Report." Southern California Association of Governments (SCAG), May 2020, *available at:* https://scag.ca.gov/peir.

r) Projects located within the South Coast Air Basin should consider applying for South Coast AQMD "SOON" funds which provides funds to applicable fleets for the purchase of commercially available low-emission heavy-duty engines to achieve near-term reduction of NOx emissions from in-use off-road diesel vehicles.
s) Projects located within AB 617 communities should review the applicable Community Emissions Reduction Plan (CERP) for additional mitigation that can be applied to individual projects.
t) Where applicable, projects should provide information about air quality related programs to schools, including the Environmental Justice Community Partnerships (EJCP), Clean Air Ranger Education (CARE), and Why Air Quality Matters programs.
u) Projects should work with local cities and counties to install adequate signage that prohibits truck idling in certain locations (e.g., near schools and sensitive receptors).
y) Projects that will introduce sensitive receptors within 500 feet of freeways and other sources should consider installing high efficiency of enhanced filtration units, such as Minimum Efficiency Reporting Value (MERV) 13 or better. Installation of enhanced filtration units can be verified during occupancy inspection prior to the issuance of an occupancy permit.
z) Develop an ongoing monitoring, inspection, and maintenance program for the MERV filters.
aa) Consult the SCAG Environmental Justice Toolbox for potential measures to address impacts to low-income and/or minority communities.
bb) The following criteria related to diesel emissions shall be implemented on by individual project sponsors as appropriate and feasible: - Diesel nonroad vehicles on site for more than 10 total days shall have either (1) engines that meet EPA on road emissions standards or (2) emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85% - Diesel generators on site for more than 10 total days shall be equipped with emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%. - Nonroad diesel engines on site shall be Tier 2 or higher. - Diesel nonroad construction equipment on site for more than 10 total days shall have either (1) engines meeting EPA Tier 4 nonroad emissions standards or (2) emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 85% for engines for 50 hp and greater and by a minimum of 20% for engines less than 50 hp. - Emission control technology shall be operated, maintained, and serviced as recommended by the emission control technology manufacturer. - Diesel vehicles, construction equipment, and generators on site shall be fueled with ultra-low sulfur diesel fuel (ULSD) or a biodiesel blend approved by the original engine manufacturer with sulfur content of 15 ppm or less. - The construction contractor shall maintain a list of all diesel vehicles, construction equipment, and generators to be used on site. The list shall include the following: i. Contractor and subcontractor name and address, plus contact person responsible for the vehicles or equipment. ii. Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel usage and hours of operation. iii. For the emission control technology installed: technology type, serial number, make, model, manufacturer, EPA/CARB verification number/level, and installation date and hour-meter reading on installation date. - The contractor shall establish generator sites and truck-staging zones for vehicles waiting to load or unload material on site. Such zones shall be located where diesel emissions have the least impact on abutters, the general public, and especially sensitive receptors such as hospitals, schools, daycare facilities, elderly housing, and convalescent facilities. - The contractor shall maintain a monthly report that, for each on road diesel vehicle, nonroad construction equipment, or generator onsite, includes:

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i. Hour-meter readings on arrival on-site, the first and last day of every month, and on off-site date.
ii. Any problems with the equipment or emission controls.
iii. Certified copies of fuel deliveries for the time period that identify:
1. Source of supply
2. Quantity of fuel
3. Quantity of fuel, including sulfur content (percent by weight)

cc) Project should exceed Title-24 Building Envelope Energy Efficiency Standards (California Building Standards Code). The following measures can be used to increase energy efficiency:

- Provide pedestrian network improvements, such as interconnected street network, narrower roadways and shorter block lengths, sidewalks, accessibility to transit and transit shelters, traffic calming measures, parks and public spaces, minimize pedestrian barriers.
- Provide traffic calming measures, such as:
  i. Marked crosswalks
  ii. Count-down signal timers
  iii. Curb extensions iv. Speed tables
  iv. Raised crosswalks
  v. Raised intersections
  vi. Median islands
  vii. Tight corner radii
  viii. Roundabouts or mini-circles
  ix. On-street parking
  x. Chicanes/chokers
- Create urban non-motorized zones
- Provide bike parking in non-residential and multi-unit residential projects
- Dedicate land for bike trails
- Limit parking supply through:
  i. Elimination (or reduction) of minimum parking requirements
  ii. Creation of maximum parking requirements
  iii. Provision of shared parking
- Require residential area parking permit.
- Provide ride-sharing programs
  i. Designate a certain percentage of parking spacing for ride sharing vehicles
  ii. Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles
  iii. Providing a web site or messaging board for coordinating rides
  iv. Permanent transportation management association membership and finding requirement.

Greenhouse Gas Project Level Mitigation Measures – PMM-GHG-1

In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the *State CEQA Guidelines*, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to violating air quality standards. Such measures may include the following or other comparable measures identified by the Lead Agency:

c) Include off-site measures to mitigate a project's emissions.

e) Measures that encourage transit use, carpooling, bike-share and car-share programs, active transportation, and parking strategies, including, but not limited to the following:

i. Promote transit-active transportation coordinated strategies;
ii. Increase bicycle carrying capacity on transit and rail vehicles;
iii. Improve or increase access to transit;
iv. Increase access to common goods and services, such as groceries, schools, and day care;

v. Incorporate affordable housing into the project; vi. Incorporate the neighborhood electric vehicle network; vii. Orient the project toward transit, bicycle and pedestrian facilities; viii. Improve pedestrian or bicycle networks, or transit service; ix. Provide traffic calming measures; x. Provide bicycle parking; xi. Limit or eliminate park supply; xii. Unbundle parking costs; xiii. Provide parking cash-out programs; xiv. Implement or provide access to commute reduction program;
f) Incorporate bicycle and pedestrian facilities into project designs, maintaining these facilities, and providing amenities incentivizing their use; and planning for and building local bicycle projects that connect with the regional network;
g) Improving transit access to rail and bus routes by incentives for construction and transit facilities within developments, and/or providing dedicated shuttle service to transit stations; and
i) Designate a percentage of parking spaces for ride-sharing vehicles or high-occupancy vehicles, and provide adequate passenger loading and unloading for those vehicles;
j) Land use siting and design measures that reduce GHG emissions, including: i. Developing on infill and brownfields sites; ii. Building compact and mixed-use developments near transit; iii. Retaining on-site mature trees and vegetation, and planting new canopy trees; iv. Measures that increase vehicle efficiency, encourage use of zero and low emissions vehicles, or reduce the carbon content of fuels, including constructing or encouraging construction of electric vehicle charging stations or neighborhood electric vehicle networks, or charging for electric bicycles; and v. Measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse.
k) Consult the SCAG Environmental Justice Toolbox for potential measures to address impacts to low-income and/or minority communities. The measures provided above are also intended to be applied in low income and minority communities as applicable and feasible.
l) Require at least five percent of all vehicle parking spaces include electric vehicle charging stations, or at a minimum, require the appropriate infrastructure to facilitate sufficient electric charging for passenger vehicles and trucks to plug-in.
m) Encourage telecommuting and alternative work schedules, such as: i. Staggered starting times ii. Flexible schedules iii. Compressed work weeks
n) Implement commute trip reduction marketing, such as: i. New employee orientation of trip reduction and alternative mode options ii. Event promotions iii. Publications
o) Implement preferential parking permit program
p) Implement school pool and bus programs
q) Price workplace parking, such as: i. Explicitly charging for parking for its employees;

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ii. Implementing above market rate pricing;
iii. Validating parking only for invited guests;
iv. Not providing employee parking and transportation allowances; and
v. Educating employees about available alternatives.

These measures offer a cost-effective, feasible way to incorporate lower-emitting design features into the proposed Project, which subsequently, reduce emissions released during Project construction and operation. An updated EIR should be prepared to include all feasible mitigation measures, as well as include updated air quality and GHG analyses to ensure that the necessary mitigation measures are implemented to reduce emissions to below thresholds. The updated EIR should also demonstrate a commitment to the implementation of these measures prior to Project approval, to ensure that the Project's significant emissions are reduced to the maximum extent possible.

Disclaimer

SWAPE has received limited discovery regarding this project. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Sincerely,



Matt Hagemann, P.G., C.Hg.



Paul E. Rosenfeld, Ph.D.

Attachment A: Matt Hagemann CV
Attachment B: Paul E. Rosenfeld CV

Attachment A

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Matthew F. Hagemann, P.G., C.Hg., QSD, QSP

Geologic and Hydrogeologic Characterization
Investigation and Remediation Strategies
Litigation Support and Testifying Expert
Industrial Stormwater Compliance
CEQA Review

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 30 years of experience in environmental policy, contaminant assessment and remediation, stormwater compliance, and CEQA review. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) and directed efforts to improve hydrogeologic characterization and water quality monitoring. For the past 15 years, as a founding partner with SWAPE, Matt has developed extensive client relationships and has managed complex projects that include consultation as an expert witness and a regulatory specialist, and a manager of projects ranging from industrial stormwater compliance to CEQA review of impacts from hazardous waste, air quality and greenhouse gas emissions.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2104, 2017;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at more than 100 industrial facilities.
- Expert witness on numerous cases including, for example, perfluorooctanoic acid (PFOA) contamination of groundwater, MTBE litigation, air toxins at hazards at a school, CERCLA compliance in assessment and remediation, and industrial stormwater contamination.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted

public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9.

Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific

principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt is currently a part time geology instructor at Golden West College in Huntington Beach, California where he taught from 2010 to 2014 and in 2017.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

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Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examinations, 2009-2011.

Attachment B

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

SOIL WATER AIR PROTECTION ENTERPRISE
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Email: prosenfeld@swape.com

Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on volatile organic compound filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

Professional Experience

Dr. Rosenfeld has over 25 years' experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, industrial, military and agricultural sources, unconventional oil drilling operations, and locomotive and construction engines. His project experience ranges from monitoring and modeling of pollution sources to evaluating impacts of pollution on workers at industrial facilities and residents in surrounding communities. Dr. Rosenfeld has also successfully modeled exposure to contaminants distributed by water systems and via vapor intrusion.

Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing lead, heavy metals, mold, bacteria, particulate matter, petroleum hydrocarbons, chlorinated solvents, pesticides, radioactive waste, dioxins and furans, semi- and volatile organic compounds, PCBs, PAHs, creosote, perchlorate, asbestos, per- and poly-fluoroalkyl substances (PFOA/PFOS), unusual polymers, fuel oxygenates (MTBE), among other pollutants. Dr. Rosenfeld also has experience evaluating greenhouse gas emissions from various projects and is an expert on the assessment of odors from industrial and agricultural sites, as well as the evaluation of odor nuisance impacts and technologies for abatement of odorous emissions. As a principal scientist at SWAPE, Dr. Rosenfeld directs air dispersion modeling and exposure assessments. He has served as an expert witness and testified about pollution sources causing nuisance and/or personal injury at sites and has testified as an expert witness on numerous cases involving exposure to soil, water and air contaminants from industrial, railroad, agricultural, and military sources.

Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_2O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

Publications:

Remy, L.L., Clay T., Byers, V., **Rosenfeld P. E.** (2019) Hospital, Health, and Community Burden After Oil Refinery Fires, Richmond, California 2007 and 2012. *Environmental Health.* 18:48

Simons, R.A., Seo, Y. **Rosenfeld, P**., (2015) Modeling the Effect of Refinery Emission On Residential Property Value. Journal of Real Estate Research. 27(3):321-342

Chen, J. A, Zapata A. R., Sutherland A. J., Molmen, D.R., Chow, B. S., Wu, L. E., **Rosenfeld, P. E.,** Hesse, R. C., (2012) Sulfur Dioxide and Volatile Organic Compound Exposure To A Community In Texas City Texas Evaluated Using Aermod and Empirical Data. *American Journal of Environmental Science*, 8(6), 622-632.

Rosenfeld, P.E. & Feng, L. (2011). *The Risks of Hazardous Waste.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2010). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences*. 113–125.

Feng, L., Wu, C., Tam, L., Sutherland, A.J., Clark, J.J., **Rosenfeld, P.E.** (2010). Dioxin and Furan Blood Lipid and Attic Dust Concentrations in Populations Living Near Four Wood Treatment Facilities in the United States. *Journal of Environmental Health*. 73(6), 34-46.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2010). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Wood and Paper Industries.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2009). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Petroleum Industry*. Amsterdam: Elsevier Publishing.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. *WIT Transactions on Ecology and the Environment, Air Pollution,* 123 (17), 319-327.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. *Organohalogen Compounds*, 70, 002252-002255.

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Rosenfeld, P. E. (1991). How to Build a Small Rural Anaerobic Digester & Uses Of Biogas In The First And Third World. Bachelors Thesis. University of California.

Presentations:

Rosenfeld, P.E., "The science for Perfluorinated Chemicals (PFAS): What makes remediation so hard?" Law Seminars International, (May 9-10, 2018) 800 Fifth Avenue, Suite 101 Seattle, WA.

Rosenfeld, P.E., Sutherland, A; Hesse, R.; Zapata, A. (October 3-6, 2013). Air dispersion modeling of volatile organic emissions from multiple natural gas wells in Decatur, TX. *44th Western Regional Meeting, American Chemical Society.* Lecture conducted from Santa Clara, CA.

Sok, H.L.; Waller, C.C.; Feng, L.; Gonzalez, J.; Sutherland, A.J.; Wisdom-Stack, T.; Sahai, R.K.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Atrazine: A Persistent Pesticide in Urban Drinking Water. *Urban Environmental Pollution*. Lecture conducted from Boston, MA.

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Rosenfeld, P.E. (April 19-23, 2009). Perfluoroctanoic Acid (PFOA) and Perfluoroactane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*, Lecture conducted from Tuscon, AZ.

Rosenfeld, P.E. (April 19-23, 2009). Cost to Filter Atrazine Contamination from Drinking Water in the United States" Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*. Lecture conducted from Tuscon, AZ.

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Rosenfeld, P. E. (October 15-18, 2007). Moss Point Community Exposure To Contaminants From A Releasing Facility. *The 23rd Annual International Conferences on Soils Sediment and Water.* Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant. *The 23rd Annual International*

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Rosenfeld P. E. (March 2007). Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP). *The Association for Environmental Health and Sciences (AEHS) Annual Meeting*. Lecture conducted from San Diego, CA.

Rosenfeld P. E. (March 2007). Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama. *The AEHS Annual Meeting.* Lecture conducted from San Diego, CA.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (August 21 – 25, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006*. Lecture conducted from Radisson SAS Scandinavia Hotel in Oslo Norway.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (November 4-8, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *APHA 134 Annual Meeting & Exposition.* Lecture conducted from Boston Massachusetts.

Paul Rosenfeld Ph.D. (October 24-25, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. Mealey's C8/PFOA. *Science, Risk & Litigation Conference.* Lecture conducted from The Rittenhouse Hotel, Philadelphia, PA.

Paul Rosenfeld Ph.D. (September 19, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, *Toxicology and Remediation PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel, Irvine California.

Paul Rosenfeld Ph.D. (September 19, 2005). Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP. *PEMA Emerging Contaminant Conference.* Lecture conducted from Hilton Hotel in Irvine, California.

Paul Rosenfeld Ph.D. (September 26-27, 2005). Fate, Transport and Persistence of PDBEs. *Mealey's Groundwater Conference.* Lecture conducted from Ritz Carlton Hotel, Marina Del Ray, California.

Paul Rosenfeld Ph.D. (June 7-8, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. *International Society of Environmental Forensics: Focus On Emerging Contaminants*. Lecture conducted from Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Fate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals. *2005 National Groundwater Association Ground Water And Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation. *2005 National Groundwater Association Ground Water and Environmental Law Conference.* Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. and Rob Hesse R.G. (May 5-6, 2004). Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. *National Groundwater Association. Environmental Law Conference*. Lecture conducted from Congress Plaza Hotel, Chicago Illinois.

Paul Rosenfeld, Ph.D. (March 2004). Perchlorate Toxicology. *Meeting of the American Groundwater Trust*. Lecture conducted from Phoenix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse (2004). Perchlorate Contamination of the Colorado River. *Meeting of tribal representatives*. Lecture conducted from Parker, AZ.

Paul Rosenfeld, Ph.D. (April 7, 2004). A National Damage Assessment Model For PCE and Dry Cleaners. *Drycleaner Symposium. California Ground Water Association*. Lecture conducted from Radison Hotel, Sacramento, California.

Rosenfeld, P. E., Grey, M., (June 2003) Two stage biofilter for biosolids composting odor control. *Seventh International In Situ And On Site Bioremediation Symposium Battelle Conference* Orlando, FL.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. (February 20-21, 2003) Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. *National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants*.. Lecture conducted from Hyatt Regency Phoenix Arizona.

Paul Rosenfeld, Ph.D. (February 6-7, 2003). Underground Storage Tank Litigation and Remediation. *California CUPA Forum*. Lecture conducted from Marriott Hotel, Anaheim California.

Paul Rosenfeld, Ph.D. (October 23, 2002) Underground Storage Tank Litigation and Remediation. *EPA Underground Storage Tank Roundtable*. Lecture conducted from Sacramento California.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Understanding Odor from Compost, *Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Using High Carbon Wood Ash to Control Compost Odor. *Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Grey, M. A. (September 22-24, 2002). Biocycle Composting For Coastal Sage Restoration. *Northwest Biosolids Management Association*. Lecture conducted from Vancouver Washington..

Rosenfeld, P.E. and Grey, M. A. (November 11-14, 2002). Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Soil Science Society Annual Conferenc*e. Lecture conducted from Indianapolis, Maryland.

Rosenfeld. P.E. (September 16, 2000). Two stage biofilter for biosolids composting odor control. *Water Environment Federation.* Lecture conducted from Anaheim California.

Rosenfeld. P.E. (October 16, 2000). Wood ash and biofilter control of compost odor. *Biofest.* Lecture conducted from Ocean Shores, California.

Rosenfeld, P.E. (2000). Bioremediation Using Organic Soil Amendments. *California Resource Recovery Association*. Lecture conducted from Sacramento California.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. *Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings*. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., and C.L. Henry. (1999). An evaluation of ash incorporation with biosolids for odor reduction. *Soil Science Society of America*. Lecture conducted from Salt Lake City Utah.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. *Brown and Caldwell.* Lecture conducted from Seattle Washington.

Rosenfeld, P.E., C.L. Henry. (1998). Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. *Biofest.* Lecture conducted from Lake Chelan, Washington.

Rosenfeld, P.E, C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., C.L. Henry, R. B. Harrison, and R. Dills. (1997). Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. *Soil Science Society of America*. Lecture conducted from Anaheim California.

Teaching Experience:

UCLA Department of Environmental Health (Summer 2003 through 20010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focused on the health effects of environmental contaminants.

National Ground Water Association, Successful Remediation Technologies. Custom Course in Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5, 2002. Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

Academic Grants Awarded:

California Integrated Waste Management Board. $41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: $10,000 grant awarded to San Diego State University.
Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. $100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. $20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: $10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: $15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. $500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993

Deposition and/or Trial Testimony:

In the Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 5-14-2021
Trial, October 8-4-2021

In the Circuit Court of Cook County Illinois
Joseph Rafferty, Plaintiff vs. Consolidated Rail Corporation and National Railroad Passenger Corporation d/b/a AMTRAK,
Case No.: No. 18-L-6845
Rosenfeld Deposition, 6-28-2021

In the United States District Court For the Northern District of Illinois
Theresa Romcoe, Plaintiff vs. Northeast Illinois Regional Commuter Railroad Corporation d/b/a METRA Rail, Defendants
Case No.: No. 17-cv-8517
Rosenfeld Deposition, 5-25-2021

In the Superior Court of the State of Arizona In and For the Cunty of Maricopa
Mary Tryon et al., Plaintiff vs. The City of Pheonix v. Cox Cactus Farm, L.L.C., Utah Shelter Systems, Inc.
Case Number CV20127-094749
Rosenfeld Deposition: 5-7-2021

In the United States District Court for the Eastern District of Texas Beaumont Division
Robinson, Jeremy et al *Plaintiffs*, vs. CNA Insurance Company et al.
Case Number 1:17-cv-000508
Rosenfeld Deposition: 3-25-2021

In the Superior Court of the State of California, County of San Bernardino
Gary Garner, Personal Representative for the Estate of Melvin Garner vs. BNSF Railway Company.
Case No. 1720288
Rosenfeld Deposition 2-23-2021

In the Superior Court of the State of California, County of Los Angeles, Spring Street Courthouse
Benny M Rodriguez vs. Union Pacific Railroad, A Corporation, et al.
Case No. 18STCV01162
Rosenfeld Deposition 12-23-2020

In the Circuit Court of Jackson County, Missouri
Karen Cornwell, *Plaintiff,* vs. Marathon Petroleum, LP, *Defendant.*
Case No.: 1716-CV10006
Rosenfeld Deposition. 8-30-2019

In the United States District Court For The District of New Jersey
Duarte et al, *Plaintiffs,* vs. United States Metals Refining Company et. al. *Defendant.*
Case No.: 2:17-cv-01624-ES-SCM
Rosenfeld Deposition. 6-7-2019

In the United States District Court of Southern District of Texas Galveston Division
M/T Carla Maersk, *Plaintiffs,* vs. Conti 168., Schiffahrts-GMBH & Co. Bulker KG MS "Conti Perdido" *Defendant.*
Case No.: 3:15-CV-00106 consolidated with 3:15-CV-00237
Rosenfeld Deposition. 5-9-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
Carole-Taddeo-Bates et al., vs. Ifran Khan et al., Defendants
Case No.: No. BC615636
Rosenfeld Deposition, 1-26-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
The San Gabriel Valley Council of Governments et al. vs El Adobe Apts. Inc. et al., Defendants
Case No.: No. BC646857
Rosenfeld Deposition, 10-6-2018; Trial 3-7-19

In United States District Court For The District of Colorado
Bells et al. Plaintiff vs. The 3M Company et al., Defendants
Case No.: 1:16-cv-02531-RBJ
Rosenfeld Deposition, 3-15-2018 and 4-3-2018

In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow Agrosciences, LLC, et al., Defendants
Cause No.: 1923
Rosenfeld Deposition, 11-17-2017

In The Superior Court of the State of California In And For The County Of Contra Costa
Simons et al., Plaintiffs vs. Chevron Corporation, et al., Defendants
Cause No C12-01481
Rosenfeld Deposition, 11-20-2017

In The Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 8-23-2017

In United States District Court For The Southern District of Mississippi
Guy Manuel vs. The BP Exploration et al., Defendants
Case: No 1:19-cv-00315-RHW
Rosenfeld Deposition, 4-22-2020

In The Superior Court of the State of California, For The County of Los Angeles
Warrn Gilbert and Penny Gilber, Plaintiff vs. BMW of North America LLC
Case No.: LC102019 (c/w BC582154)
Rosenfeld Deposition, 8-16-2017, Trail 8-28-2018

In the Northern District Court of Mississippi, Greenville Division
Brenda J. Cooper, et al., *Plaintiffs,* vs. Meritor Inc., et al., *Defendants*
Case Number: 4:16-cv-52-DMB-JVM
Rosenfeld Deposition: July 2017

In The Superior Court of the State of Washington, County of Snohomish
Michael Davis and Julie Davis et al., Plaintiff vs. Cedar Grove Composting Inc., Defendants
Case No.: No. 13-2-03987-5
Rosenfeld Deposition, February 2017
Trial, March 2017

In The Superior Court of the State of California, County of Alameda
Charles Spain., Plaintiff vs. Thermo Fisher Scientific, et al., Defendants
Case No.: RG14711115
Rosenfeld Deposition, September 2015

In The Iowa District Court In And For Poweshiek County
Russell D. Winburn, et al., Plaintiffs vs. Doug Hoksbergen, et al., Defendants
Case No.: LALA002187
Rosenfeld Deposition, August 2015

In The Circuit Court of Ohio County, West Virginia
Robert Andrews, et al. v. Antero, et al.
Civil Action N0. 14-C-30000
Rosenfeld Deposition, June 2015

In The Iowa District Court For Muscatine County
Laurie Freeman et. al. Plaintiffs vs. Grain Processing Corporation, Defendant
Case No 4980
Rosenfeld Deposition: May 2015

In the Circuit Court of the 17th Judicial Circuit, in and For Broward County, Florida
Walter Hinton, et. al. Plaintiff, vs. City of Fort Lauderdale, Florida, a Municipality, Defendant.
Case Number CACE07030358 (26)
Rosenfeld Deposition: December 2014

In the County Court of Dallas County Texas
Lisa Parr et al, *Plaintiff*, vs. Aruba et al, *Defendant.*
Case Number cc-11-01650-E
Rosenfeld Deposition: March and September 2013
Rosenfeld Trial: April 2014

In the Court of Common Pleas of Tuscarawas County Ohio
John Michael Abicht, et al., *Plaintiffs,* vs. Republic Services, Inc., et al., *Defendants*
Case Number: 2008 CT 10 0741 (Cons. w/ 2009 CV 10 0987)
Rosenfeld Deposition: October 2012

In the United States District Court for the Middle District of Alabama, Northern Division
James K. Benefield, et al., *Plaintiffs*, vs. International Paper Company, *Defendant*.
Civil Action Number 2:09-cv-232-WHA-TFM
Rosenfeld Deposition: July 2010, June 2011

In the Circuit Court of Jefferson County Alabama
Jaeanette Moss Anthony, et al., *Plaintiffs*, vs. Drummond Company Inc., et al., *Defendants*
Civil Action No. CV 2008-2076
Rosenfeld Deposition: September 2010

In the United States District Court, Western District Lafayette Division
Ackle et al., *Plaintiffs*, vs. Citgo Petroleum Corporation, et al., *Defendants*.
Case Number 2:07CV1052
Rosenfeld Deposition: July 2009

Response to Comment Letter O5 – Blum Collins & Ho, LLP

O5-1 The comment provides general introductory comments and notes comments are on behalf of the Golden State Environmental Justice Alliance (GSEJA) and requests to be notified for any public information or notices associated with the Project. The request to be added to the public noticing list is noted for the record and the commenter will be notified, as requested. All attachments to the comment letter have been received. As the specific comments in the letter re-state the comments in the attachments, responses to the letter also fully respond to the attachments.

O5-2 The comment provides a general description of the Project. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O5-3 This comment incorrectly asserts that the Draft EIR does not include a complete Project Description due to not including a floor plan, grading plan, elevations, or a detailed site plan, while summarizing CEQA requirements related to a project description. The County agrees with commenter that a project description must meet the requirement for "adequate informational documents and meaningful disclosure," which is exactly what is provided in the Draft EIR. The Project Description included in *Section 3.0* of the Draft EIR includes a detailed description of the Project including the conceptual site plan, Land Use Plan and description, and description of grading activities that are further described and analyzed in the Draft EIR. Project information specific to earthwork, parking requirements, site coverage and floor area ratio is described in *Section 3.0, Project Description* of the Draft EIR. The Draft EIR provides the required level of detail in *Section 3.0* to evaluate impacts of the Project, as required under Section 15124 of the CEQA Guidelines. Impacts associated with short term construction activities (e.g., air and GHG emissions, truck trips), including onsite grading are addressed in *Section 4.3, Air Quality, Section 4.8, Greenhouse Gas Emissions, and Section 4.17, Transportation*. The Project proposes the approval of a Specific Plan which is a policy plan for the future build out of development within the Specific Plan area. Future site specific (Planning Area) entitlement plans will be required for each parcel which will include full project plans including elevations, grading, site plans, landscape plan, etc. However, the anticipated future buildout of "up to 6.6 million square feet" for the Project does not preclude a thorough analysis of its potential effects. Based on the experience and expertise of the EIR preparer (Kimley-Horn), information provided by the Project Applicant, and the independent judgment of the County, the Draft EIR made reasonable assumptions that the Project would be built out by future high cube logistics and e-commerce uses, and the analysis includes limitations on the maximum amount of combined warehouse space that may be developed and trips that the Project may generate. To provide a conservative ("worst case") analysis, and to inform the public and County decision-makers of the full scope of environmental impacts that could occur should the Project be approved, the Draft EIR provided a comprehensive analysis of the potential environmental impacts that would occur. The Project is therefore analyzed in a conservative, worst-case scenario against existing land use allowances and regulatory thresholds. Please see Master Response 1 and Response O3-3.

O5-4 The commenter notes that the Draft EIR does not include the SCCIISP as an attachment, and that the incorporation by references is not appropriate. The commenter closes by stating that the Draft EIR must be revised and recirculated to include the Specific Plan for public review. Although the Specific Plan may be provided as an attachment to the Draft EIR, it is not required. As defined under Section 15080 of the CEQA Statutes, the EIR process should be combined with the planning review process to the extent possible. *Section 3.0, Project Description* and *Section 4.11, Land Use and Planning*, described the Specific Plan development standards, project Planning Areas, circulation elements, and other features which provide a thorough description of the Project. CEQA Guidelines Section 15124 provides that the description of the project should not supply extensive detail beyond that needed for evaluation and review of the environmental impact and that requirement has been satisfied. There is no need to include the proposed SCCIISP in the Draft EIR and the commenter cites no authority to the contrary.".

O5-5 See Master Response 1. The Project is not a part of, or associated with, the Next Gen project, which has been separately approved by the County. The Next Gen project would be implemented to serve separate motorsports and entertainment purposes that are unrelated to the industrial purposes of the SCCIISP Project. As stated in Draft EIR *Section 3.0, Project Description*, page 3-4 "The Next Gen in California Project has received all necessary approvals and CEQA clearance for its construction and operation, and it is not part of the SCCIISP Project." Industrial development of the surrounding property is not required for the implementation of the Next Gen project, which would be done independently by a separate project proponent. The Next Gen project has received all necessary approvals and CEQA clearance for its construction and operation and is no longer subject to discretional review by the County. In addition, the County's approval of the Next Gen project did not commit the County to any further approvals or preclude CEQA review of any subsequent project in the area, as evidenced by the current environmental review process for the SCCII SP Project.

The Project is not a part of, or associated with, the Speedway Commerce Center I project, which has been separately approved by the City of Rancho Cucamonga. The SCCII SP project and the Speedway Commerce Center I project do not together comprise one large project, but instead are two separate and complete projects. Further, the Speedway Commerce Center I was included in the cumulative projects list as identified in *Section 3.0, Project Description* of the Draft EIR and evaluated in the respective analysis.

The Project would entail the approval of a Specific Plan consisting of acceptable design standards. While the Specific Plan prepared for the Project would provide for community benefits and facilities that would encourage a more integrated circulation, placemaking, parking, and open space/walkway connection, this would be in an effort to enhance the connections between the two separate Projects and buffer the existing Next Gen motorsports facility. California Public Resources Code Section 21065 defines a 'Project' as an activity that could result in a direct or indirect physical change in the environment and which involves the issuance to a person of an entitlement by one or more public agencies. Piecemealing occurs when a Project is segmented in a way that environmental evaluation of some of the activities associated with the Project is deferred. The Next Gen Motorsports Facility project was undertaken by someone other than the

Master Developer and its entitlements (and the associated environmental determination) were approved, and the approvals were final and non-appealable when the subject Project began. The Next Gen Project and the subject Project are separate Projects undertaken by separate persons at different times and therefore, piecemealing is not possible and has not occurred.

O5-6 Commenter begins by defining CEQA Guidelines Section 15165 – Multiple and Phased Projects and goes on to state that the EIR misleads the public and decisions makers by circumventing adequate and accurate environmental analysis for the whole of the action – SCCII and Next Gen in California. See Response O5-5 above. As discussed in Response O5-5, the Project is not proposed as a phase of the Speedway Commerce Center I Project or the Next Gen Project, which were both approved prior to the circulation of the NOP for the SCCIISP Project. Further, the Next Gen Project was described in detail in Draft EIR *Section 3.0, Project Description* with a thorough description of the previous entitlements, historical background, and CEQA clearance for construction and operation of the motorsports facility. This discussion also makes clear how the SCCIISP Project would be designed and developed to be compatible with the Next Gen Project. In addition, the Draft EIR includes mitigation to address transportation-related issues that could occur on Next Gen Project event days when the SCCIISP Project is operating.

The Major Revision to Approved Action for the Next Gen project, which has been evaluated in the EIR analysis, simply removes from the coverage of the Planned Development governing the Next Gen project the approximately 433 acres of property that would be subject to the SCCIISP. This approval does not affect the development or operations permitted for the Next Gen Project, as approved by the County in June 2021. The environmental analysis in the Draft EIR discusses relevant cumulative impacts which may occur as a result of Project implementation. Lastly, the Next Gen Project was described in detail in Draft EIR *Section 3.0, Project Description* with a thorough description of the previous entitlements, historical background, and CEQA clearance for construction and operation of the motorsports facility. This discussion also makes clear how the SCCIISP Project would be designed and developed to be compatible with the Next Gen Project. In addition, the Draft EIR includes mitigation to address transportation-related issues that could occur on Next Gen Project event days when the SCCIISP Project is operating. *Section 3.0, Errata* of this Final EIR includes revisions to the Draft EIR, *Section 4.0, Environmental Impact Analysis* which adds the Next Gen In California Project to the Cumulative Projects List. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications.

O5-7 The commenter again refers to project piecemealing. Comment is noted for the record. See Responses O5-5 and O5-6 above. The Next Gen Project is a separate project and the adequacy of the CEQA review prepared for that project is not relevant. However, the Next Gen Project has received all necessary approvals and CEQA clearance, which were properly issued by the County and are no longer subject to review. The commenter's general criticism of EIR Addendums is noted but is not relevant to this Project (see, e.g., CEQA Guidelines Section 15164). As explained in Response O5-5, the Next Gen Project proposes motorsports and entertainment uses that are separate and unrelated to the industrial uses proposed by the SCCIISP Project, and each project would be independently implemented by separate proponents. These are not "phased" projects,

and separate environmental review of each is contemplated by the authority cited by the commenter. A Project level EIR is the appropriate CEQA document for the SCCIISP Project and includes a thorough discussion of the Project's potential impacts, including cumulative impacts.

O5-8 The comment starts with a sentence that refers to an attachment to the letter from SWAPE ("SWAPE Letter") and refers the reader to the SWAPE Letter for technical commentary and analysis related to Air Quality, Energy and Greenhouse Gas Emissions. The comment letter is a distillation of the information in the SWAPE Letter for support of their comments. The SWAPE Letter does not include any additional information or comments that is not included in the commentor's letter. As such, this response and Responses O5-9, O5-10, and O5-11 are responding to both the Commentor's letter and the SWAPE Letter.

The comment asserts that the EIR does not include analysis relevant to environmental justice (EJ) issues and that the community is impacted per the California Communities Environmental Health Screening Tool (CalEnviroScreen). CalEnviroScreen has been developed by the Office of Environmental Health Hazard Assessment (OEHHA) and California Environmental Protection Agency (CalEPA). While CalEnviroScreen can assist CalEPA in prioritizing resources and helping promote greater compliance with environmental laws, it is important to note some of its limitations. The tool's output provides a relative ranking of communities based on a selected group of available datasets, through the use of a summary score. Unlike the Health Risk Assessment (HRA) prepared for the Project, the CalEnviroScreen score is not an expression of health risk and does not provide quantitative information on increases in cumulative impacts for specific sites or projects. Further, as a comparative screening tool, the results do not provide a basis for determining when differences between scores are significant in relation to public health or the environment. Accordingly, CalEnviroScreen is not intended to be used as a health or ecological risk assessment for a specific area or site, but a tool used by the state to identify those areas that need additional resources and assistance in promoting greater compliance with environmental laws. Also refer to Master Response 1.

Furthermore, although the EIR is not required to include analysis of potential EJ issues, as Environmental Justice is not listed amongst the "Environmental Factors Potentially Affected" in Appendix G, Environmental Checklist Form, to the State CEQA Guidelines[5], the County analyzed the Project with the Countywide goals and policies and incorporated elements of the findings from this analysis and the public outreach meetings to support the Countywide goals through additional programs, facilities and community benefits in the Specific Plan and in the analysis of the Draft EIR including enhancements of open space, mitigation measures to reduce pollution exposure, and more. In addition, while the State CEQA Guidelines do not specifically call out EJ issues, EJ concerns do include the secondary or indirect effects (air quality and GHG Emissions) and direct effects (noise, transportation, and hazards and hazardous materials), which are analyzed throughout the Draft EIR. The County does not dispute the data from CalEPA's CalEnviroScreen. These results are presented for comparative purposes and cannot be used and are not intended to be used to determine whether a project will result in a significant impact. The

[5] Title 14. Natural Resources. (2018). Retrieved from: http://files.resources.ca.gov/ceqa/docs/2018_CEQA_FINAL_TEXT_122818.pdf.

fact that the Project is located in an area that CalEnviroScreen identifies as in the 96th percentile for pollution burden is not indicative of a CEQA impact.

Furthermore, it should be noted that the Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

O5-9 The comment summarizes the demographic makeup of the census tract and speculates that the community may lack health insurance or access to medical care. However, as noted above in Response O4-8 and in the Draft EIR, the Project would not result in significant health effects. Additionally, speculation whether individuals within a community may or may not have health insurance or access to medical care is not required to be considered under CEQA. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O5-10 The Project has been analyzed for its impacts to nearby communities and the surrounding environment. Requirements regarding Environmental Justice (EJ) have been complied with during the preparation of the Specific Plan document and included outreach workshops as discussed below. The comment states that the Project is adjacent to census tracts that are designated as SB 535 Disadvantaged Communities. It should be noted that SB 535 does not include project-specific requirements or prohibit developments in proximity to the designated communities. SB 535 directs 25 percent of the proceeds from the state's Greenhouse Gas Reduction Fund (i.e., funds from the AB 32 cap-and-trade program) to go to projects that provide a benefit to disadvantaged communities (as identified by the OEHHA mapping). As noted throughout this Final EIR, an HRA was prepared for the Project and quantified risk levels at nearby sensitive receptors and determined that impacts would be less than significant.

Further, the Project held two EJ outreach workshops: on January 12, 2022, and on July 9, 2022. Additional analysis of the Project design was conducted after the initial scoping meeting and EJ outreach workshop and based on community input and interest, the Specific Plan was modified to incorporate elements of the findings from these outreach meetings to support additional programs, facilities and community benefits through enhancements of open space, community art, exercise stations, reduction of pollution generation through reliance on on-site solar, enhanced wellness walks, and more. Furthermore, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O5-11 This comment identifies compliance modeling software approved by the CEC to show compliance with Title-24 Standards using the performance method. The comment then implies that only these modeling programs can be used to estimate energy consumption for CEQA energy analysis. The

County disagrees with the assertions that the Draft EIR must use one of three approved compliance modeling software for non-residential buildings and that the EIR does not comply with the 2019 Building Energy Efficiency Standards. This is not the case. Showing compliance with Title-24 Standards is not a requirement of CEQA analysis and CEQA does not require the use of specific programs. The software listed by the CEC and referenced in the comment are to be utilized for performance approach (energy budget) method of compliance for Title 24 Energy Standards and are to be used for demonstrating performance compliance. As stated in the CalEEMod User's Guide, CalEEMod utilizes widely accepted methodologies for estimating emissions combined with default data. The sources for the methodologies include studies commissioned by the CEC and also utilize energy conservation standards subject to Title 24.[6] The energy analysis and associated thresholds are provided on Draft EIR pages 4.6-17 through 4.6-28. The analysis specifically responds to the guidance for energy analysis in the State CEQA Guidelines Appendix F, which requires a determination on if a project would increase wasteful energy consumption and conflict with state or local energy efficiency plans. The analysis is used to disclose the amount of energy that the Project would require and is not utilized to demonstrate compliance for performance. Additionally, the Draft EIR discloses the Project's electricity consumption, natural gas consumption, and transportation fuel consumption and determined that the Project's energy consumption would not be inefficient or wasteful as the Project will be required by the CALGreen Code to comply with the Title 24 Building Energy Efficiency Standards (Nonresidential) published by the CEC, which contain stringent mandatory standards for mechanical systems, lighting (indoor and outdoor), and appliances to minimize energy use. Therefore, the Project used the appropriate model to calculate and disclose the Project's energy use, and also demonstrated that the Project would be required to comply with the CALGreen Code and Title 24.

O5-12 The comment states that the Project's analytical findings have not been substantiated due to errors in the modeling that result in significant and unavoidable impacts in air quality, energy, greenhouse gas emissions, and noise. Therefore, the Project is inconsistent with SCAG's Connect SoCal RTP/SCS. The Project's significant and unavoidable impacts and their consistency with the SCAG RTP/SCS goals are documented in *Section 4.11, Land Use and Planning*, of the Draft EIR. As discussed on Draft EIR pages 4.11-11 and 4.11-12, the Project would be consistent with Connect SoCal Goals 5 (Reduce GHG emissions and improve air quality), 6 (Support healthy and equitable communities), and 7 (Adapt to a changing climate and support an integrated regional development pattern and transportation network). With regards to Goal 5, the Project would not result in more severe air quality or GHG emissions impacts beyond the significant unavoidable impacts that were already disclosed and analyzed within the Countywide Plan EIR. The Project is consistent with the County's Greenhouse Gas Reduction Plan Update, which includes the County GHG reduction measures and actions that are committed to increasing sustainability awareness and resilience by making resource-efficient choices to conserve water, energy, and materials, and improve air quality. Development of the Project site would be consistent with current building

[6] CalEEMod User's Guide. (2021). Retrieved from: http://www.aqmd.gov/docs/default-source/caleemod/user-guide-2021/01_user-39-s-guide2020-4-0.pdf?sfvrsn=6.

codes, state and federal requirements including Green Building Standards. This includes EV charging spaces, energy-efficient buildings, and use of construction and grading equipment that complies with current air quality standards. As it pertains to Goal 6, the development of the Project would not only increase employment for the County and its residents', but it would also introduce quality of life improvements for the community as well. These planned improvements include a 10-foot-wide multi-purpose trail, with exercise pop-outs along the trail to promote exercise and healthy lifestyle, along Street "A," connecting Cherry Avenue in the City of Fontana, to Napa Street in the City of Rancho Cucamonga, and roadway improvements to reduce traffic hazards. Lastly, with regard to Goal 7, the Project proposes non-motorized transportation improvements in the form of a multi-purpose trail along Street "A" which would encourage alternative forms of transportation such as bicycling and walking by providing an east/west connection from Cherry Avenue in the City of Fontana to Napa Street in the City of Rancho Cucamonga.

Lastly, the goal of the consistency analysis is to provide the reader with a general overview of whether the project is in harmony with the overall intent of the applicable goals and policies. It is within the County's purview to decide if the project is consistent or inconsistent with applicable goals or policies. Under state law, a Specific Plan must be consistent with the General Plan (Cal. Gov't Code Section 65454) and cannot be approved if it is inconsistent with the General Plan; therefore, the project could not proceed if determined by the Board of Supervisors to be inconsistent with the General Plan.

O5-13 The commenter notes that due to errors in modeling and determination of significant and unavoidable impacts, the Project is inconsistent with specified goals and policies. The commenter refers to Goal HZ-3 and associated Policy HZ-3.18; Goal NR-1 and associated policies NR-1.7 and NR-1.9; and policies LU-2.3 and LU-4.5. See Responses O5-8 and O5-10 above. The Project conducted outreach in accordance with Countywide Plan Goal HZ-3 regarding Environmental Justice. Further, the Specific Plan includes language discussing environmental justice assessments. Additionally, mitigation measures, PDFs, and standard conditions proposed for the Project include provisions for meeting air quality goals set by the state, the air district and the County. Finally, the Project has been designed in accordance with applicable local regulations and land use policies. This comment provides anecdotal claims with no justification or substantiation and no further response is needed.

O5-14 Commenter states that the EIR must be revised to include EJ information for analysis in order to provide an adequate, accurate environmental analysis. See Response O5-10 regarding the discussion of environmental justice.

O5-15 The Draft EIR relied on relevant, available information at the time of its drafting. The Draft EIR did not predict future growth beyond what was set by SCAG in 2045, and other reputable sources. Further prediction of workforce trends would have been conjecture, and not adequate analysis. Draft EIR *Section 4.14, Population and Housing* does state that construction of the Project would generate temporary employment opportunities, including short-term design, engineering, and construction jobs. Construction related jobs would not result in a significant population increase

because those jobs are temporary in nature and are expected to be filled by persons within the local area. This expectation is based, among other things, on the County's 7.7 percent unemployment rate. Furthermore, the small percentage of skilled and managerial construction-related positions could either be filled by the local workforce or by persons from the larger region. Therefore, Project construction would not directly or indirectly induce substantial, unplanned population growth in the County resulting in a less-than-significant impact.

O5-16 The Draft EIR concluded on page 4.14-7 that the temporary nature of construction employment associated with the Project would not constitute a significant permanent increase in population since the County's unemployment rate would be large enough to absorb the additional workforce without necessitating the additional influx of residents. Furthermore, the commenter uses incorrect population counts, as stated in *Draft EIR Table 4.14-2: San Bernardino County Projected Population* the SCAG expects a population increase of approximately 225,741 people by the year 2045, not 45,000.

O5-17 The commenter states that the Draft EIR does not provide a quantified analysis of construction jobs generated by the Project. The Draft EIR identifies the County of San Bernardino and its unemployment rate when discussing local labor. Further, short-term construction and long-term employment estimates are based on average estimates published by SCAG. Due to the temporary nature of construction activities, focus was given to sustained potential employment which would remain through the life of the Project. According to Draft EIR *Table 4.14-5: Project Employment Generation*, the Project would generate 3,732 employees. Local area is this unincorporated area of San Bernardino County and the surrounding incorporated cities of Fontana, Rancho Cucamonga, and Ontario.

O5-18 The VMT analysis was prepared in conformance with San Bernardino County Transportation Impact Study Guidelines (July 2019; VMT/Traffic guidelines). Per the guidelines, the VMT/employee is provided in the VMT analysis. The Office of Planning and Research (OPR) has indicated that for the purposes of SB 743 CEQA Transportation analysis, automobile VMT will be considered. The County's threshold is established based on Employee VMT per Capita metric and the same metric is used to measure project's VMT consistent with County guidelines to provide an apples-to-apples comparison. The Air Quality analysis utilizes a different tool (CalEEMod) to calculate VMT and the methodology for Air Quality analysis is consistent with SCAQMD requirements.

O5-19 Calculations were made using SBTAM, consistent with the VMT analysis methodology noted in the San Bernardino County VMT/Traffic guidelines. The VMT metric used for measuring the Project's transportation impact is Home-based Work VMT/employee, an efficiency metric which does not include trucks or trucks equivalents. As such, trucks were not included for measuring against SB 743 VMT which is the threshold adopted by the County of San Bernardino. In addition, to evaluate the Project's effect on VMT for the region, link based total VMT per service population was also calculated for both San Bernardino County and Unincorporated San Bernardino County without and with the project. The link based total VMT calculation included the truck trips and

showed the VMT per service population for the region with project is less than baseline VMT per service population, resulting in a less than significant impact.

O5-20 Commenter states that the EIR uses uncertain language in stating that "Most construction workers would be anticipated to come from within the County or from the nearby region, which already has a population of substantial size to supply the needed workers." The Draft EIR *Section 4.14, Population and Housing* includes analysis regarding the number of anticipated short-term and long-term construction-related jobs based on the 2019 American Community Survey data profiles and job characteristics. Local area or nearby region is this unincorporated area of San Bernardino County and the surrounding incorporated cities of Fontana, Rancho Cucamonga, and Ontario.

O5-21 The reference to only the potential logistics employment (3,127 employees) in *Section 4.14, Population and Housing* of the Draft EIR will be revised to encapsulate the entirety of the Project (3,732 employees) in *Section 3.0, Errata* of the Final EIR. The updated information does not change the conclusions of the Draft EIR, and changes merely clarify, amplify, or make insignificant modifications. Draft EIR *Section 5.0, Other CEQA Considerations* is based on analysis from the Draft EIR *Section 4.14, Population and Housing* that relies on the number of employees provided in the 2019 American Community Survey data profiles and job characteristics and information from the 2020-2045 RTP/SCS Growth Forecast. Specifically, the County's 7.7 percent 2019 unemployment rate was applied to the Project and further postulated with existing 2019 employment density by industry provided by American Community Survey data. The 605 commercial employees and 3,127 high-cube logistics/e-commerce employees anticipated to be generated by the Project were therefore found to create an unsubstantial increase in the County's 2021 population. Continuing to gauge the interest of the County's unemployed population in construction focused employment would be conjecture and would not constitute adequate CEQA analysis.

O5-22 The Draft EIR provides a cumulative impact analysis for each technical area in its respective section. The reference in *Section 5.3, Growth-Inducing Impacts* of the Draft EIR to the technical sections was provided to refer the reader to where the detailed cumulative analysis is provided. Cumulatively significant effects were individually discussed in each of the environmental technical area's (*Sections 4.1* through *4.20* of the Draft EIR) Cumulative Impacts subsection.

Short-term construction emissions associated with the Project would represent a cumulatively considerable contribution to significant cumulative air quality impacts. Operational impacts would also remain significant. With regard to energy, due to the high volume of diesel fuel consumption, the Project's diesel fuel consumption would be cumulatively considerable. There are no additional feasible mitigation measures that would reduce this impact. Therefore, cumulative impacts would be potentially significant. Despite Project Design Features, Standard Conditions, Mitigation Measures and CARB and SCAQMD efforts to reduce mobile source emissions, the Project would result in a potentially significant cumulative GHG impact. Project construction would not result in a cumulatively considerable contribution to a significant cumulative impact related to

construction noise. However, cumulative off-site traffic noise levels would result in a significant and unavoidable impact.

O5-23 See Response O5-22 above. The cumulative project list prepared for the Project and included in the Draft EIR was considered to evaluate cumulative impacts per Sections 15130 and 15355 of the State CEQA Guidelines. The cumulative project list available at the time of Notice of Preparation (NOP) was released in December 2021 was the most current available at that time. Furthermore, State CEQA Guidelines, Section 15125(a)(1) states that generally, the lead agency should describe physical environmental conditions as they exist at the time the NOP is published, including the proper baseline for cumulative impacts analysis. The cumulative analysis included in the Draft EIR adequately evaluates the Project's contribution to any existing cumulative impacts; therefore, no further revision to the cumulative projects analyzed in the Draft EIR is required.

O5-24 This comment summarizes the CEQA requirements related to the provision of reasonable range of alternatives to the proposed project which will avoid or substantially lessen any of the significant effect of the project. The State CEQA Guidelines do not require a specific number of alternatives be evaluated, rather only those alternatives necessary to foster informed decision-making. As defined in Section 15126.6(f), the rule of reason limits alternatives analyzed to those that would avoid or substantially lessen one or more of the significant effects of a project. Of those alternatives, an EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. It would be infeasible to develop the site with industrial uses that reduce all of the significant unavoidable impacts to less-than-significant levels and meet the Project objectives, because this would require a much smaller development that would not meet Project objectives. See Master Response 3 which provides information on Project alternatives.

O5-25 The commenter's request for the Draft EIR to be recirculated is noted for the record. Please see Response O3-3 that addresses recirculation. The commenter's request to be provided subsequent public noticing and hearing information is noted for the record and the commenter will be added to the list and sent notices of upcoming hearings or notices related to the Project.

Center for Community Action and Environment Justice (O6)

Center for Community Action and Environmental Justice (O5)

CENTER FOR COMMUNITY ACTION AND ENVIRONMENTAL JUSTICE
"Bringing People Together to Improve Our Social and Natural Environment"

July 18, 2022

County of San Bernardino
Attn: Steven Valdez, Senior Planner
385 N. Arrowhead Avenue, First Floor
San Bernardino, CA 92415-0187

Submitted via email to Steven.Valdez@lus.sbcounty.gov.

Re: Speedway Commerce Center II Specific Plan Draft Environmental Impact Report (SCH #2021120259)

Dear Mr. Valdez:

This letter is being submitted on behalf of the Center for Community Action and Environmental Justice (CCAEJ) in response to the Draft Environmental Impact Report ("DEIR") which was prepared for the Speedway Commerce Center II Specific Plan ("Project") and made available for public review and comment. After reviewing the available documentation, there are a number of concerns with the Project based on the information from the DEIR. **This Project has violated several County policies and will result in unmitigated significant impacts to the community and should not be built.** 1

The first concern is over the very development of the Project itself. It is concerning to see that the County is using loopholes to shirk its responsibility as set out in the policies of the Countywide Plan ("Plan"). Per Policy LU-6.4 Industrial amendments near schools and parks of the Plan, it is stated that industrial amendments are not allowed if within half a mile of an existing or future school or park. The Live Oak Elementary School is located approximately four-ninths of a mile from the proposed Project, falling within the range where County policy states that no industrial amendments would be approved. Additionally, Sequoia Middle School falls just beyond the half-mile boundary but which is very much still within range of the impacts of the Project. 2

Unfortunately, the policy left a loophole of being submitted via a specific plan which is the method being used here. This is problematic because the County also has also set forth a requirement in Policy HZ-3.18 Application requirements to ensure that environmental justice communities are active participants in the development of applications for projects submitted in those areas to ensure that the community does not continue to be a dumping ground for polluting sources or uses.

However, the required engagement has not been provided for this Project. The first evidence of a public meeting that was found for this Project was the scoping meeting as is required for CEQA compliance for the preparation of the DEIR. However, a scoping meeting cannot possibly be considered to be a reasonable part of the required two meeting series because there generally is **not** a plan or expectation to make substantial changes to a project at that point. Instead, a scoping meeting happens after the project has been largely decided upon. Thus, by not conducting any of the required meetings for gathering public input prior to the scoping meeting when the Project had already been decided on, it puts the Project out of compliance with Policy HZ-318 Application 3

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requirements which itself is also a significant impact under CEQA. We demand that the County and applicant take the Project back to the drawing board and actually follow the policy as set forth to engage the public *prior* to deciding on what the Project would look like, **not** after. 3

However, it is the even bigger concern is also what underscores why the refusal to actually follow the policies is so infuriating and problematic for the community. Based on the data from the DEIR, the Project will be wildly out-of-compliance with Air Quality standards as well as Greenhouse Gas (GHG) emissions, leaving Significant Impacts in those categories even after mitigation. This includes a number of criteria of pollutants which would be pumped into a community which per CalEnviroScreen, is already one of the most-impacted in the state for diesel particulate matter, ozone, and $PM_{2.5}$.

Per Section 4.3.5 Impacts and Mitigation Measures of the DEIR, the Project will produce emissions which exceed the South Coast Air Quality Management District's thresholds for both construction and operational phases of the Project, even after mitigation. Based on the DEIR, the Project will even after mitigation, create the following emissions which nearly or completely exceed the SCAQMD's thresholds in pounds per day (threshold value): 4

- Table 4.3-9: Phase 1a Construction Emissions
  - NO_X – 465.49 (100)
  - CO – 702.91 (550)
- Table 4.3-10: Phase 1b Construction Emissions
  - NO_X – 362.88 (100)
- Table 4.3-11: Phase 2 Construction Emissions
  - NO_X – 354.33 (100)
- Table 4.3-13: Phase 1a Operational Emissions
  - ROG – 169.94 (55)
  - NO_X – 727.36 (55)
  - CO – 549.57 (550)*
  - PM_{10} – 217.65 (150)
  - $PM_{2.5}$ – 70.65 (55)
- Table 4.3-14: Phase 1b Operational Emissions
  - ROG – 109.80 (55)
  - NO_X – 496.78 (55)
  - PM_{10} – 167.67 (150)
  - $PM_{2.5}$ – 53.94 (55)*
- Table 4.3-15: Phase 2 Operational Emissions
  - ROG – 84.17 (55)
  - NO_X – 205.06 (55)
- Table 4.3-17: Project Buildout Emissions
  - ROG – 440.82 (55)
  - NO_X – 1,915.82 (55)
  - CO – 1,949.61 (550)
  - PM_{10} – 564.23 (150)
  - $PM_{2.5}$ – 184.98 (55)

As is evident, from that information, the Project would have a substantial impact on the community and section 4.3.7 Significant Unavoidable Impacts of the DEIR documents indicates that there will be no additional measures taken to mitigate the impacts to air quality. Yet, the Project will produce emissions which are up to *nearly 35 times higher* than the allowed limits. While it is true that on occasion, many projects do indeed have significant and unavoidable impacts, it is a stretch of the imagination to assert that it is reasonable to simply allow for impacts to remain unmitigated without taking further action when the difference is as large as in this Project. 5

These significant impacts for Air Quality which would be produced by the Project do not belong in any community. They especially do not belong in a community which per CalEnviroScreen, is already more impacted than 93% of other census tracts in the state, they do not belong in a 6

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community where the pollution burden is even higher at the 96th percentile, and they certainly do not belong in a community in the 72nd percentile for asthma (see Figure 1 attached). It is simply unacceptable that they be treated as "Significant and Unavoidable" and no additional measures be taken to reduce the impacts to even a more reasonable overage which are not dozens of times larger than the standards. All these impacts and concerns are issues which could have been identified ahead of time had the appropriate public notification and involvement as is required per the County's policies been followed.

We call on the County to have the applicant take this Project back to the drawing board and properly engage the community as the policies call for to create a plan for a project that would actually meet the needs and desires of what the community wants to see done, not produce one of the most polluting sources in an area already heavily impacted and in urgent need of cleanup to address existing sources of pollution.

Thank you for your time and attention to this matter. If there are any concerns or questions regarding our comments, please do not hesitate to reach out to have them answered. 6

Sincerely,



Marven Norman
Policy Specialist

CCAEJ is a long-standing community based organization with over 40 years of experience advocating for stronger regulations through strategic campaigns and building a base of community power. Most notably, CCAEJ's founder Penny Newman won a landmark federal case against Stringfellow Construction which resulted in the `Stringfellow Acid Pits' being declared one of the first Superfund sites in the nation. ***CCAEJ*** prioritizes community voices as we continue our grassroots efforts to bring lasting environmental justice to the Inland Valley Region.

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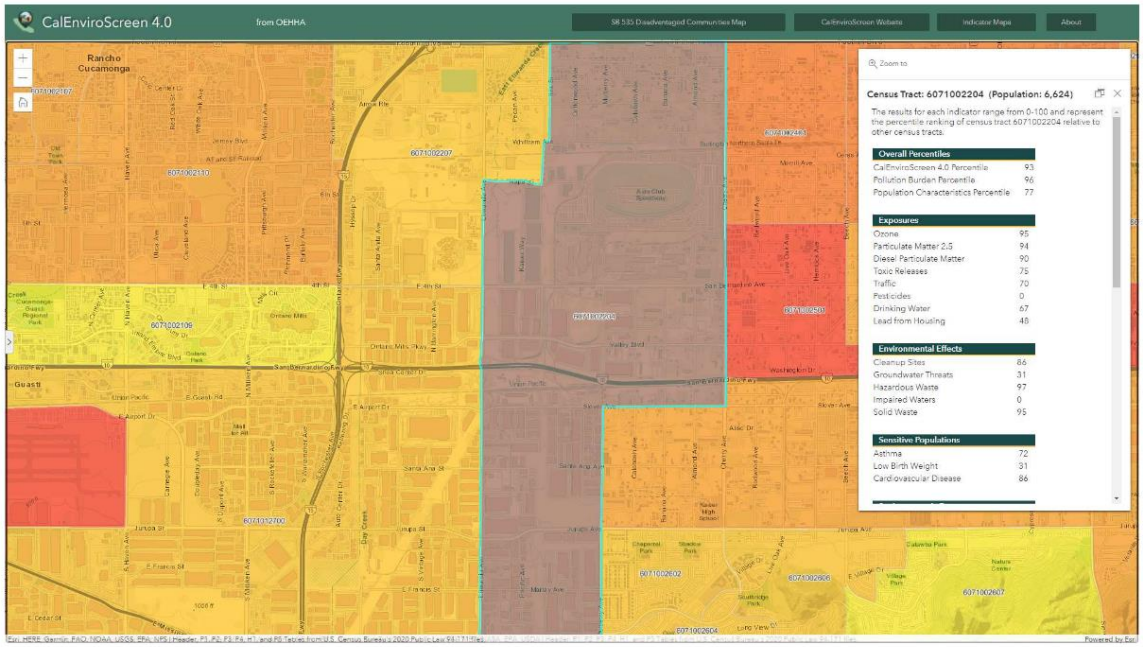

Figure 1. CalEnviroScreen 4.0 results for census tract 6071002204 where the proposed Project would be located.

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Response to Comment Letter O6 – Center for Community Action and Environmental Justice

O6-1 The commenter indicates the letter is submitted on behalf of the Center for Community Action and Environmental Justice (CCAEJ) which addresses the implementation of the Speedway Commerce Center II Specific Plan ("Project") and states the Project has violated several County policies, would result in significant impacts to the community and should not be constructed. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O6-2 The commenter is concerned that Project development does not meet Countywide Plan policies, specifically Countywide Plan Policy LU-6.4. This policy states the following:

Policy LU-6.4 Industrial amendments near schools and parks: We approve Land Use Plan amendments for new industrial development only if they are at least one-half mile from an existing or planned public primary or secondary school or public park. *We may waive this requirement for obsolete school or park sites or for industrial amendments submitted through a specific plan.*[7] *(emphasis added)*

The commenter addresses that Live Oak Elementary School is located approximately four-ninths of a mile from the proposed Project, and Sequoia Middle School falls just beyond the half-mile boundary, and that the Countywide Plan policies are not being met.

As discussed in Draft EIR *Section 3.0, Project Description*, the Project site is located in the Policy Plan Commercial (C) Land Use Category and in the Special Development - Commercial (SD-COM) Zoning. The Project requires the approval of a Specific Plan, Development Agreement, Revision to Approved Action – Major, and a Tentative Map. Neither a General Plan Amendment nor a Zone Change is required to allow or authorize the uses permitted in the Specific Plan area. Although the Project site currently contains a commercial land use designation, the underlying special development zoning allows for combination of residential, commercial, industrial, agricultural, open space and recreation uses, and similar and compatible uses. A text and map amendment to the Development Code and General Plan will be made to identify the Specific Plan designation on the official map. The Project is consistent with Policy LU-6.4. See also Response O3-13.

O6-3 The commenter addresses a loophole that the Project doesn't meet Countywide Plan Policy HZ-3.18, which ensures environmental justice communities are active participants in Project application development review. Countywide Policy Plan Policy HZ-3.18 states the following:

Policy HZ-3.18 Application requirements: In order for a Planning Project Application (excluding Minor Use Permits) to be deemed complete, we require applicants to indicate whether the project is within, adjacent to, or nearby an unincorporated environmental justice focus area and, if so, to:

[7] https://countywideplan.com/policy-plan/land-use/

- document to the County's satisfaction how an applicant will address environmental justice concerns potentially created by the project; and
- present a plan to conduct at least two public meetings for nearby residents, businesses, and property owners to obtain public input for applications involving a change in zoning or the Policy Plan. The County will require additional public outreach if the proposed project changes substantively in use, scale, or intensity from the proposed project presented at previous public outreach meeting(s).[8]

While the Project did hold a Public Scoping Meeting (via Zoom on January 11, 2022) during the NOP comment period, it also held two publicly-noticed Environmental Justice (EJ) outreach workshops: the first on January 12, 2022, and the second on July 9, 2022. Noticing for these meetings was provided as follows: via letters mailed to all property owners within a 1,300-foot radius per County Code requirement a notice was posted on the County's website and on the Project website; notices were hand delivered within the project area; and, for the second workshop, distributed at the local farmers market (Thursday, June 30th and Thursday, July 7th of 2022); and provided at the local community center (Cypress Neighborhood Center). All notices were provided in both English and Spanish. Furthermore, additional analysis of the Project design was conducted after the initial scoping meeting and after the EJ outreach workshops. As a result of the additional analysis and based on community input, the Specific Plan was refined to incorporate additional programs, facilities and community benefits through enhancements of open space, community art, exercise stations, reduction of pollution exposure through solar, enhanced wellness walks, and more. The commenter states that the County is out of compliance with this policy. However, the Project met the requirement of Policy HZ-3.18 and conducted the required public outreach to obtain feedback from the community on potential EJ concerns.

O6-4 The comment incorrectly states that the Project would be out of compliance with Air Quality standards and GHG emissions standards and would have significant impacts even after mitigation, including criteria pollutants. The commenter addresses the Project will exceed the SCAQMD's thresholds for construction and operation, even with mitigation. The Project's exceedance of regional air quality emissions thresholds and GHG thresholds does not necessarily indicate that a project is not in compliance with applicable standards. For significant impacts, CEQA requires consideration of feasible mitigation measures that will substantially lessen the project's significant impacts. The Air Quality analysis and mitigation is identified in *Section 4.3, Air Quality*. The exceedance of the regional thresholds is a direct function of the Project's size.

Although emissions would exceed regional level thresholds, the Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant with mitigation (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Although the regional thresholds were developed to determine a

[8] https://countywideplan.com/policy-plan/hazards/

level at which a project could affect the ambient air quality standards, these thresholds are the same for projects of all sizes and locations. The health risk LST analyses more accurately evaluate emissions based on the location and scale of the project. For example, LSTs for larger sites are higher than smaller sites to account for additional dispersion that occurs over a larger area. Additional dispersion also lowers the concentration of a pollutant. Also refer to Master Response 2.

The Project would be required to comply with all applicable SCAQMD and CARB rules and regulations. In addition, the Draft EIR identifies numerous air quality and GHG mitigation measures would minimize emissions to the greatest extent feasible. Furthermore, Draft EIR *Section 4.8* (Greenhouse Gas Emission), *Table 4.8-4: San Bernardino County GHG Reduction Measures Screening Table*, demonstrates that the Project would comply with the County's GHG Reduction Measures and would be consistent with the GHG Reduction Plan. Nonetheless, the Draft EIR conservatively concludes that impacts would remain significant and unavoidable due to the size of the Project and resulting emissions.

Exceedance of the regional emissions thresholds indicates when emissions reduction mitigation measures would be required. The Draft EIR identifies numerous design features and mitigation measures to minimize emissions to the maximum extent feasible (refer to Draft EIR pages 4.3-21 through 4.3-23, 4.3-38 through 4.3-42, and 4.8-31 through 4.8-33). The comment does not identify any specific air quality or GHG standards that the Project would not comply with. Nor does the commenter identify any additional mitigation measures it believes could be feasibly implemented. Refer to Master Response 2 regarding CalEnviroScreen and rankings.

O6-5 The commenter states that the Draft EIR document indicates that there will be no additional measures taken to mitigate impacts to air quality, and that the Project will produce emission up to nearly 35 times higher than the allowed limits. The commenter suggests that the impacts will remain unmitigated. Refer to Response O6-4 above. Specifically, the Air Quality Assessment provided in Draft EIR *Section 4.3, Air Quality* analyzed the Project for build out assuming a worst-case scenario. Refrigerated buildings and Transport Refrigeration Units (TRU) were assumed for modeling purposes to provide a worst-case scenario. The worst-case scenario was also considered when evaluating greenhouse gas emissions, noise, and transportation impacts. Furthermore, it is assumed that overtime, emission will decrease as regulations are implemented and programs such as alternative fuels and clean fleets are required. As noted above, the Draft EIR identifies numerous project design features and mitigation measures to minimize air quality and GHG emissions impacts (refer to Draft EIR pages 4.3-21 through 4.3-23, 4.3-38 through 4.3-42, and 4.8-31 through 4.8-33). All feasible mitigation has been applied to mitigate all environmental impacts, including air quality and GHG emissions impacts.

O6-6 The commenter suggests the Air Quality impacts produced by the Project impacts a community, which per CalEnviroScreen, is already more impacted that 93 percent of other census tracts in the state, and where the pollution burden is in the 96th percentile, and the community is in the 72nd percentile for asthma. The commenter suggest and the Project should include additional engagement with the community, to meet the needs and desires of the what the area needs . The

commenter indicates the Project fails to engage the community properly and therefore is not following the County policies.

CalEnviroScreen has been developed by the Office of Environmental Health Hazard Assessment (OEHHA) and California Environmental Protection Agency (CalEPA). While CalEnviroScreen can assist CalEPA in prioritizing resources and helping promote greater compliance with environmental laws, it is important to note some of its limitations. The tool's output provides a relative ranking of communities based on a selected group of available datasets, through the use of a summary score. Unlike the Health Risk Assessment (HRA) prepared for the Project, the CalEnviroScreen score is not an expression of health risk and does not provide quantitative information on increases in cumulative impacts for specific sites or projects. Further, as a comparative screening tool, the results do not provide a basis for determining when differences between scores are significant in relation to public health or the environment. Accordingly, CalEnviroScreen is not intended to be used as a health or ecological risk assessment for a specific area or site. Please refer to Draft EIR *Section 4.3, Air Quality* for a full evaluation of the Project's CEQA air quality effects. Furthermore, it should be noted that the Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant with mitigation (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

The Project is consistent with the General Plan and existing zoning and proposes uses allowed by the Development Code. The Draft EIR proposed mitigation measures are intended to mitigate potential air quality and greenhouse gas emissions to the extent feasible. While the effects were found to be significant and unavoidable, mitigation was proposed to reduce these impacts to the maximum extent feasible.

The Project adhered to County policies by conducting two publicly-noticed EJ meetings, as noted in Response O6-3. The commenter's request for performing additional community outreach is noted for the record. However, the commenter has presented no substantial evidence (only conclusory non-expert opinion) that the Draft EIR is legally inadequate or which would necessitate additional outreach or further evaluation. Therefore, no further action is required at this time.

Inland Empire Biking Alliance (O7)

INLAND EMPIRE BIKING ALLIANCE

Inland Empire Biking Alliance (O6)

15 July 2022

County of San Bernardino
Attn: Steven Valdez, Senior Planner
385 N. Arrowhead Avenue, First Floor
San Bernardino, CA 92415-0187

Submitted via email to Steven.Valdez@lus.sbcounty.gov.

Re: Speedway Commerce Center II Specific Plan Draft Environmental Impact Report (SCH #2021120259)

Dear Mr. Valdez:

I am writing on behalf of the Inland Empire Biking Alliance to respond to the draft environmental impact report for the Speedway Commerce Center II Specific Plan ("Project"). After reviewing the documents, it is clear that this Project must do more to mitigate the impacts which remain unmitigated, impacts which bicycles are well-suited to address. It is imperative that additional headway be made toward reducing the impacts this Project will impose on the community than has currently been demonstrated in the DEIR.

Based on the data and information presented in the DEIR and its appendices, it is abundantly clear that motor vehicles are the major issue which is plaguing this Project and leading to emissions which exceed the limits, sometimes by cartoonishly obscene amounts. This remains the case even after applying several mitigation measures. However, it is simply unacceptable that impacts of this magnitude would be approached with essentially hands thrown in the air and no further efforts made to address them. The Project **must** do more to reduce the driver of those impacts: Motor vehicle traffic. To accomplish that, there must be a far more robust investment into alternatives to driving than has been provided in the DEIR, not just merely as options which are there "just in case" someone might not have access to a car, but as part of a concerted effort to intentionally make those other options at least as equally if not more attractive for using to reach the Project than driving.[1] 1

[1] The YouTube video about business parks (found here: https://www.youtube.com/watch?v=SDXB0CY2tSQ) from the channel Not Just Bikes is an outstanding example of how to do things better.

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Bicycles and various other similar devices which are emerging onto the market offer an opportunity to make sizable reductions in motor vehicle use[23] at the Project and thus the associated emissions, but it requires being intentional about making the policy and design decisions which are necessary to ensure that these alternative modes are a viable and attractive option for future tenants, employees, and visitors of the Project. Yet, despite Policy TM-1.9 New transportation options of the Countywide Plan stating that the County "support[s] the use of" various alternative and "emerging transportation options" to do things including "reduce congestion, minimize land area needed for roadways, create more pedestrian- and bicycle-friendly streets, reduce VMT, or reduce dependency on privately-owned vehicles," it does not appear that it has been effectively employed with this Project as there remain a number of other steps which are certainly feasible and should be employed to further reduce emissions from the proposed Project. 2

Although there is much more that must be done, it is heartening to see that the Project does plan to include a "10-foot-wide multi-purpose trail along Street 'A'" in the design. That could represent a step forward as compared to what has traditionally been provided for projects as it would be a welcome change that allows future employees to be able to have a choice of how they would access their place of employment by removing one of the major barriers to ridership—safety. Numerous studies have identified that when provided with infrastructure which provides a low-stress environment,[4] people are more likely to consider[5] and use a bike for making more of their trips, including to work.[6][7] 3

In many instances, there are often constraints imposed by the existing environment that hamper the ability for agencies to provide the best practice designs and infrastructure due to the changes that would be required, and a balance is struck which usually provides some, but not all, of the improvements and design elements needed. However, developments such as the proposed Project offer the opportunity of essentially a blank slate which does not suffer from the issues which often impair the construction of good bikeways but instead provides the opportunity to design around the usual impediments from the

[2] Fitch, D. (2019). Electric Assisted Bikes (E-bikes) Show Promise in Getting People out of Cars. *UC Office of the President: University of California Institute of Transportation Studies*. Retrieved from https://escholarship.org/uc/item/3mm040km

[3] Fyhri, A., Heinen, E., Fearnley, N., & Sundfør, H. B. (2017). A push to cycling—exploring the e-bike's role in overcoming barriers to bicycle use with a survey and an intervention study. *International journal of sustainable transportation*, *11*(9), 681-695.

[4] Salon, D., Wang, K., Conway, M. W., & Roth, N. (2019). Heterogeneity in the relationship between biking and the built environment. *Journal of transport and land use*, *12*(1), 99-126.

[5] Fitch, D., Carlen, J., & Handy, S. (2020). *Making Bicycling Comfortable: Identifying Minimum Infrastructure Needs by Population Segments Using a Video Survey.*

[6] Furth, P. G., Putta, T. V., & Moser, P. (2018). Measuring low-stress connectivity in terms of bike-accessible jobs and potential bike-to-work trips: A case study evaluating alternative bike route alignments in northern Delaware. *Journal of Transport and Land Use, 11*(1). https://doi.org/10.5198/jtlu.2018.1159

[7] Wang, K., Akar, G., Lee, K., & Sanders, M. (2020). Commuting patterns and bicycle level of traffic stress (LTS): Insights from spatially aggregated data in Franklin County, Ohio. *Journal of transport geography*, *86*, 102751.

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very beginning. It is imperative that the opportunity not be wasted but instead used to do better than mediocre and provide the most up-to-date designs for bicyclist travel. 3

As referenced earlier, it is now well-established via research that providing infrastructure for bicyclists that enables them to travel without having to mix with fast or heavy motor traffic is critical to both safety as well as ridership. Thus, while the multi-purpose trail along Street "A" is a good start, it is not enough. Despite looking through the DEIR and Appendices several times, forecast traffic counts of the internal streets to the Project remained elusive. Nevertheless, the description of the planned Streets "A" through "D" on e.g. Figure 3-5: Circulation Plan states that they would all be constructed as a "Collector" with varying widths. However, it seems rather unlikely that the traffic conditions on these new Streets would fall under the limits set forth by guidelines from Caltrans[8] or the FHWA on where it is acceptable to expect that bicyclists would not be provided the requisite infrastructure for safe travel, a violation of the County's Policy TM-4.9 Bike and pedestrian safety. 4

But there is also some confusion in this regard because Figure 3-4: Conceptual Site Plan does in fact show an "Enhanced Greenway 10'-0" Multi-Use Path (Typ)" along Streets "B" and "C" and along most of Street "D" up until Street "B." If that is in fact the plan, then that would address the concern stated above about the lack of provision of safe bikeways beyond along Street "A." However, if the written description is correct and no trail is planned along 5



Figure 1: Bikeway along Peelo Oost in an industrial area of Assen, NL provides a model of what the Project could accomplish. Image credit: Marven Norman.

[8] Flournoy, M. (2020). Contextual guidance for bike facilities. Caltrans. Retrieved from https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/office-of-smart-mobility-and-climate-change/planning-contextual-guidance-memo-03-11-20-a11y.pdf.

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Streets "B" through "D" as shown in Figure 3-4, then the importance of including them cannot be understated. Although Policy TM-4.9 does state that the County would "monitor…bicycle traffic accidents and promote safety improvements," it is asinine to propose to construct bike facilities which are known to be less safe, then wait for crashes to happen to try chasing down grants to fix a situation that did not have to exist in the first place. Streets "B" through "D" all need a separate bikeway just like Street "A" (or modifications need to be made to the proposed design to bring the speed and/or volume of motor traffic on Streets "B" through "D" to within the acceptable range for mixed traffic). Doing so would set this Project forward as a model nationally and potentially on par with the best provision in places which are more well-known for their bike-friendliness (e.g. Figure 1). 5

It also is critical to address the design of the bicycle facilities themselves. Per the various descriptions within the DEIR, the trail(s) would be 10 feet wide. However, it is important to design for the future and that includes providing additional width to ensure that the space exists for future demand of the facility, including potential use by micromobility delivery services from the Project such as are being trialed by Amazon, DHL, UPS, the USPS, or others.[9] With the planned San Sevaine Trail that also connects to the Pacific-Electric Trail, the growing network of bikeways provides an increasing area of the region that is reachable via a low-stress connection, offering the opportunity for deliveries to homes and businesses along those routes. 6

As the paths gain popularity, it paramount to not see crowding on the trails become a problem. To avoid that outcome, it would be ideal to see that the width be increased from the 10 feet as currently planned to 12-13 feet (or at least 11 feet if there is a separate sidewalk provided). Such a width is enough to enable safe and comfortable travel by all on the trails even as usage grows and is especially necessary if they are intended to be shared with pedestrians instead of having separate sidewalks.

Another issue is that of lighting as well as wayfinding for the paths within the Project. Presumably, highway-scale streetlights would be provided along the Streets, but it is vital for usability that there is also lighting of the appropriate scale provided along the paths. This is critical from the standpoint of both social safety (i.e. CPTED principles) as well as to ensure that users are able to have enough lighting to be able to see and safely navigate the path. Similarly, wayfinding along the path (though it can serve double duty if provided at a scale that is relevant and useful to motorists on the road) is an important tool to help people navigate[10] within the Project as well as connections to other locations such as the San Sevaine Trail. It is also helpful to include distances and travel times to the locations as part of the wayfinding. 7

[9] Several of the various models now or soon on the market in this space can be seen in this video: https://www.youtube.com/watch?v=EhMCKY-fTmY.

[10] Van Lierop, D., Soemers, J., Hoeke, L., Liu, G., Chen, Z., Ettema, D., & Kruijf, J. (2020). Wayfinding for cycle highways: Assessing e-bike users' experiences with wayfinding along a cycle highway in the Netherlands. *Journal of Transport Geography*, *88*, 102827.

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The third vital issue to be identified is of intersection design. How precisely this matter would be addressed is not clear from the DEIR documents. However, the importance of getting this part right cannot be stressed enough. Bad intersection designs hamper the usefulness of bikeways at best and while separate bike facilities offer overall safety benefits, they can be undermined by bad intersection design. Again, it is critical to draw attention to the fact that this is a Project with a substantial blank slate opportunity so there is no reason to not have the best designs in use for its construction. There are several resources available for this purpose in both video form[11] as well as published guides,[12] but it is critically important that the chosen designs maximize nonstop travel for bicyclists, including at driveways, and that signalized intersections include the appropriate signals *and curb cut or ramp designs* specifically for bikeways as well. 8

Additionally, Policy TM-2.4 Atypical intersection controls states that the County will "allow the use of atypical intersection concepts" to "improve traffic flow and safety compared to conventional intersection controls." In this regard, grade-separation is an option that should be on the list. Doing so is helpful for ensuring safety of bicyclists at major intersections as well as ensuring that bicycling is as inviting as possible by reducing the number of stops required when riding, something which has a real impact on how far people are willing to ride. Ideally, grade-separations should be designed such that motorized traffic makes the change of grade while human-powered users are provided with a route closer to flat or which allows for the gaining of momentum on the descent that is useful coming up on the other side. Typically, this leads to a tunnel or underpass being the preferred option in situations such as are present in the Project, though there are also examples such as the world-famous Hovenring which are accomplished by lowering the road surface to allow the bikeway to remain relatively flat[13] while passing over it. But these facilities are not just something that are limited to international locations as many have been built in communities around the United States, even in small towns,[14] with more under construction. 9

This Project should be added to that list. As a major construction with a blank slate, it offers an opportunity for the inclusion of such a facility in lieu of an at-grade intersection with the bikeway at the intersection of Streets "A" and "B." That would improve safety and support ridership by providing the ability for people to get to almost anywhere within the Project from the San Sevaine Trail without having to stop at all. By raising the road several feet above the grade, it would be possible to build a

[11] BicycleDutch (2014). Junction design in the Netherlands. https://www.youtube.com/watch?v=XpQMgbDJPok
[12] Separated Bike Lane Planning & Design Guide: Chapter 4:Intersections. Massachusetts Department of Transportation. Retrieved online from https://www.mass.gov/doc/chapter-4-intersection-design-0/download.
[13] Stuckless, J. (2020, November 5). Holland's Hovenring roundabout cycling bridge is an engineering marvel – ebikes Int'l. eBikes International. Retrieved July 19, 2022, from https://ebikes-international.com/hollands-hovenring-roudabout-suspension-bridge-is-a-cycling-engineering-marvel/.
[14] Short Elliott Hendrickson Inc. (2022, June 17). *Northfield roundabout transformation*. Retrieved July 24, 2022, from https://www.sehinc.com/portfolio/northfield-roundabout-transformation.

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tunnel or underpass for the bikeway which minimizes or eliminates the need for a long approach ramp and thus reducing the amount of descending and ascending people would need to make as well as being better for social safety. 9

Additionally, per Policy TM-4.2 Complete streets improvements, the County states that "we require new development to contribute to complete street improvements…" Looking over the Recommended Improvements in Appendix L – VMT Traffic, nearly all of them would have a direct impact on bikeways included in the bike, active transportation, or mobility plans for the various jurisdictions in the area and some are in direct conflict with the improvements identified in those places which represents an unmitigated impact. They are summarized in the table below along with the improvements that need to be included at the same time. 10

Recommended Improvement from DEIR	Description	ATP	Needed improvement
#15 – Citrus Ave at Baseline Ave	Add a dedicated northbound right-turn lane with overlap phasing	Implement Class IV bikeway on Citrus from Baseline Avenue to SCE Utility South	Include Class IV bikeway and bike-specific signals
#20 – Etiwanda Ave at Foothill Blvd	Widen all approaches by 1 through lane	City of Rancho Cucamonga designates Foothill Blvd as a "Boulevard" which prioritizes bike, pedestrian, and transit, **not** automobiles	Include Class IV bikeway based on Caltrans/FHWA guidelines; bike-specific signals for bikeway
#22 – Beech Ave at Foothill Blvd	Traffic signal recommended	Class II on Foothill Blvd	Include Class IV bikeway instead of Class II bike lanes based on Caltrans/FHWA guidelines; bike-specific signals for bikeway
#23 – Citrus Ave at Foothill Blvd	Widen north, south, and eastbound approaches by 1 through lane	Class II on Foothill Blvd, Citrus Ave	Include Class IV bikeway instead of Class II bike lane based on Caltrans/FHWA guidelines; bike-specific signals for bikeway

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#24 – Sierra Ave at Foothill Blvd	Restripe southbound approach to provide dual left-turn lanes	Class IV on Sierra Ave	Class IV on Sierra Ave with appropriate bike-specific signals
#25 – Etiwanda Ave at Arrow Rte	Add 2nd eastbound through lane	Both are arterials in City of RC PlanRC2040 which allows bike traffic	Include Class IV bikeway based on Caltrans/FHWA guidelines; bike-specific signals for bikeway
#26 – Cherry Ave at Arrow Rte	Widen all approaches by 1 through lane	Class II on Arrow Rte, Cherry Ave	Include Class IV bikeway instead of Class II bike lane based on Caltrans/FHWA guidelines; bike-specific signals for bikeway
#30 – Etiwanda Ave at Whittram Ave	Widen north and southbound approaches by 1 through lane	Class II on Etiwanda Ave	Include Class IV bikeway instead of Class II bike lane based on Caltrans/FHWA guidelines; bike-specific signals for bikeway
#32 – Beech Ave at Whittram Ave	Traffic signal recommended under HY2040 conditions	none	Include Class IV bikeway based on Caltrans/FHWA guidelines; bike-specific signals for bikeway
#33 – Etiwanda Ave at Napa St	Widen north and southbound approaches by 1 through lane	Class II on Etiwanda Ave	Include Class IV bikeway instead of Class II bike lane based on Caltrans/FHWA guidelines; bike-specific signals for bikeway
#34 – Cherry Ave at Merrill Ave	Widen north and southbound approaches by 1 through lane	Class II on Cherry Ave, Merrill Ave	Include Class IV bikeway instead of Class II bike lane based on Caltrans/FHWA guidelines; bike-specific signals for bikeway
#35 – Beech Ave at Merrill Ave	Traffic signal recommended under HY2040 conditions	Class II on Merrill Ave	Include appropriate bikeway based on Caltrans/FHWA

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			guidelines; bike-specific signals for bikeway
#39 – Cherry Ave at Randall Ave	- Modified eastbound approach – 1 left, 1 through, and 2 rights - Modified westbound approach – 1 left, 2 through, 1 right	Class II on Cherry Ave	Employ appropriate design of path shown on Figure 3-4 and signals to facilitate east-west travel to/from Randall Ave, to provide a transition to the path for northbound cyclists on Cherry, and to provide access to paths within the Project
#40 – Beech Ave at Randall Ave	Traffic signal recommended under HY2040 conditions	none	Include appropriate bikeway based on Caltrans/FHWA guidelines; bike-specific signals for bikeway
#41 – Fontana Ave/Catawba Ave at Randall Ave	Traffic signal recommended under HY2040 conditions	Class II on Fontana Ave, Randall Ave; Randall identified for road rebalancing	Include appropriate bikeway based on Caltrans/FHWA guidelines; bike-specific signals for bikeway; implement road rebalancing
#49 – Cherry Ave at San Bernardino Ave	Widen westbound approach by 1 through lane	Class II on Cherry Ave, San Bernardino Ave	Include Class IV bikeway instead of Class II bike lane based on Caltrans/FHWA guidelines; bike-specific signals for bikeway
#41 – Fontan Ave/Elm St at San Bernardino Ave	Widen eastbound approach by 1 through lane	Class II on Fontana Ave, San Bernardino Ave; San Bernardino Ave. identified for road rebalancing	Include appropriate bikeway based on Caltrans/FHWA guidelines; bike-specific signals for bikeway; no widening, implement road rebalancing
#59 – Beech Ave at Valley Blvd	- Traffic signal recommended in HY2040 - Widen all approaches by 1 through lane	Class II on Valley Blvd	Include Class IV bikeway instead of Class II bike lane based on Caltrans/FHWA

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			guidelines; bike-specific signals for bikeway

Of course, it is not just important that the Project do the bare minimum and not undermine the existing bike master plans within the region, but rather the developer should be conditioned to making fair share contributions to the various other non-car-focused transportation projects and missing links that would connect to bikeways as well as transit. This includes efforts to fill in gaps in existing bike infrastructure and sidewalks to help ensure that people seeking to access the Project by alternative modes can do so in safety and comfort—just like the DEIR has worked hard to make sure is the case for people traveling by motor vehicle. 10

Finally, the DEIR makes it even more apparent that there is a real need for converting the event Metrolink station to a fulltime station. As noted in that document, the nearest stations at present are the Fontana or Rancho Cucamonga stations, both over three miles away from the Project. That distance means that for all practical purposes, they are inaccessible from the Project site. Thus, although the San Bernardino Line which passes directly north of the Project site and is forecast to have 30-minute headways by 2027 per the 2018 State Rail Plan, the potential for a convenient and competitive travel option that would greatly reduce the need for motor vehicles, a goal of Policy TM-4.5 Transit access to job access and tourist destinations, would remain unavailable for use without the effort to upgrade the existing station to be a fulltime station.

Based on current schedules, the station would be within half an hour of travel time to every station along the San Bernardino Line from Pomona – North in the west to San Bernardino – Downtown in the east and as Metrolink is undertaking several siding extension projects along the San Bernardino Line as part of their SCORE program, those improvements can enable the scheduled times to be shaved a little bit more. Additionally, SBCTA has previously studied improving service frequency to 20- or even 15-minute headways and efforts to advance that reality are ongoing. Thus, in combination with bike access,[15] people living within a mile or two of train stations in cities like Rialto, where more than 10% of households in the station area are already car-free,[16] could be able to access a job at the Project within half an hour,[17] a travel time that is competitive with driving and which compares favorably with commute times in the overall region. This would provide a meaningful reduction in motor traffic, 11

[15] Zuo, T., Wei, H., Chen, N., & Zhang, C. (2020). First-and-last mile solution via bicycling to improving transit accessibility and advancing transportation equity. *Cities*, 99, 102614.
[16] City of Rialto (2022). Figure 8: Household no access to vehicle map. Pacific Electric (PE) Trail Expansion Feasibility Study. Retrieved from: https://www.yourrialto.com/DocumentCenter/View/2499/Pacific-Electric-Trail-Expansion-Feasibility-Study.
[17] City of Rialto (2022). Figure 11: Level of traffic stress and service area map. Pacific Electric (PE) Trail Expansion Feasibility Study. Retrieved from: https://www.yourrialto.com/DocumentCenter/View/2499/Pacific-Electric-Trail-Expansion-Feasibility-Study.

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INLAND EMPIRE BIKING ALLIANCE

particularly when paired with TDM measures such as employer-provided transit passes (which is something that unfortunately appears to be missing from the list of mitigations in MM AQ-3). 11

In summary, there are several additional steps that can be taken to ensure that the Project does a better job of mitigating the impacts it is imposing on the community, a vitally important point given the fact that per CalEnviroScreen 4.0, it is one of the most impacted in the state. It is not acceptable to simply refuse to take further action to reduce the cause of the emissions and in fact, several plainly obvious measures were not even employed, putting the Project in conflict with several existing policies from the County. Ideally, this Project should have been approached from the standpoint of not just how all the trips get mitigated (which did not even happen), but rather *identify how to keep more of the trips from happening in the first place*. Instead, the Project analysis went precisely the opposite way and has assumed that all trips will be driven, then works backwards from there in attempting to address them. Thus, there is a lot more that the Project could and must do that would reduce the emissions it produces, so it is imperative that these changes to mitigations be made and incorporated. Doing so should provide the ability to reduce at least 20% of driving to the Project and thus improving the emissions by a commensurate amount. Not only is that the right thing to do, but it would set the Project apart as a leader in not just the region, but the entire nation with a model of this development done right from the ground up and it would save money in the process. 12

Sincerely,



Marven E. Norman, Executive Director

CC: City of Fontana
City of Rancho Cucamonga
County of San Bernardino Department of Public Works
San Bernardino County Transportation Authority
Metrolink
RailPAC

About IEBA The Inland Empire Biking Alliance is advocating for making the Inland Empire a better place for people from all rolls of life. From the children just learning how to ride to the mountain bikers to those headed back and forth to work, school, or their preferred shopping center and beyond, we speak up to make sure they all have safe and convenient place to ride.

P.O. BOX 8636 Redlands, CA 92375 www.iebike.org

Response to Comment Letter O7 – Inland Empire Biking Alliance

O7-1 The commenter provides a general introduction on behalf of the Inland Empire Biking Alliance and suggest additional mitigation should be included to reduce the environmental impacts associated with the Project. The commenter provides additional comments on the importance of additional modes of transportation to reduce emissions caused by motor vehicles and suggest the reduction of motor vehicle traffic.

The commenter's request for additional modes of transportation in association with the Project is noted for the record. The Project includes design features (PDFs) which promote alternate forms of transportation beyond vehicular uses such as PDF TRANS 1: Bike/Pedestrian Facilities. Sidewalks would be provided on most street sections within the Project area per the SCCIISP. Limited street sections within the Project area (i.e., along the flood control channel) will not have sidewalks to discourage pedestrian activity and existing conditions outside the Project area along VIP Access Road. For Street "A," a 10-foot-wide multi-use trail would be provided for internal connectivity. In addition, MM AQ-3 requires the implementation of a Transportation Demand Management (TDM) program to reduce single occupant vehicle trips and encourage transit. Additionally, the Project would implement various PDFs that encourage the use of alternate transportation. PDF TRANS-1 through PDF TRANS-3 listed on page 4.17-13 of the Draft EIR would result in the construction of bike and pedestrian facilities, increase consultation with Omni Trans to increase bus routes to the Project area as needed, and to implement a Commuter Trip Reduction Program. Implementation of these mitigation measures and PDFs would reduce emissions by reducing the number of employee vehicles on-site, encouraging bike and pedestrian modes of travel, and facilitating electric vehicle (EV) infrastructure.

The Draft EIR found no significant and unavoidable transportation impacts. Mitigation measures proposed within the Draft EIR are those that were found to be feasible and within the scope of the Project.

O7-2 The commenter states that bicycles would create reductions in motor vehicle use, however this would require policy and design decisions to ensure these alternative modes of transportation are used in the future of Project implementation. The commenter also indicates Policy TM-1.9 is not effective with this Project.

Countywide Plan Policy TM-1.9 does not include a quantifiable requirement for alternative transportation options. However, the Project has proposed a circulation plan which promotes pedestrian travel and bicycle usage within the Specific Plan and to connect to future trail improvements. The Project also includes PDFs which promote alternate forms of transportation beyond vehicular uses. For example, MM AQ-3 requires the implementation of a TDM program to reduce single occupant vehicle trips and encourage transit. Other PDFs that would encourage the use of alternate transportation include PDF TRANS-1 through PDF TRANS-3 which include the construction of bike and pedestrian facilities, increase consultation with Omni Trans to increase bus routes to the Project area as needed, and to implement a Commuter Trip Reduction Program. PDF TRANS 3 also includes bicycle end-trip facilities (parking, showers, and lockers).

For Street "A," a 10-foot multi-use path is provided for internal connectivity. This multi-use path provides a Class I bicycle lane with a landscaped parkway area providing separation between cyclists and on-street vehicles. The multi-use path runs the full east/west length of the Project area from Cherry Avenue to the connection point at Napa Street. The multi-use path also connects with both Street "B" and Street "C" to allow riders greater accessibility throughout the Project area. Sidewalks are provided on all street sections within the Project area. The Project proposes to provide exercise stations, employee walking loops, wayfinding signage and other community benefit programs such as public art and green spaces. Further, the Project includes opportunities for enhanced pedestrian walkway connections between the parking lots/drop lots and the Next Gen motorsports facility, with enhanced landscaping, signage or art installation, and pedestrian walkways.

O7-3 The commenter states that the Project does not plan to include a 10-foot wide multi-purpose trail along Street A which would provide future employees a low-stress environment and a choice of how they would access their place of employment. The commenter indicates that the Project offers the opportunity to design around the usual impediments and provide the most up-to-date designs for bicyclist travel.

Comment noted for the record. However, no specific comments on the contents or adequacy of the Draft EIR are provided. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary. However, the Project proposes to provide 10-foot wide multi-purpose path, exercise stations, employee walking loops, wayfinding signage and other community benefit programs such as public art and green spaces.

O7-4 The commenter states that providing infrastructure for bicyclists that enables them to travel without interacting with heavy motor traffic is critical for safety and ridership and addresses that the multi-purpose trail along Street A is not adequate. The commenter notes forecast traffic counts of the internal streets to the Project are elusive and the description of Streets A through D on, e.g., Figure 3-5: Circulation Plan should better address traffic conditions on these new Streets and confirm with Caltrans guidelines and the FHWA. The commenter suggest the Project violates the Countywide Policy TM-4.9.

The Project includes along Street "A" a 10-foot-wide multi-use path on the southern edge of the street that would provide a connection between Cherry Avenue and Napa Street. This multi-use path provides a Class I bicycle lane with a landscaped parkway area providing separation between cyclists and on-street vehicles. The Draft EIR addresses bicycle access in *Section 3.6, Circulation Plan*. As discussed in Draft EIR *Section 4.17, Transportation*, page 4.17-10, bikeway facilities and guidelines can be found in the San Bernardino County Non-Motorized Transportation Plan (June 2018) summarized in *Section 4.17* of the Draft EIR.

The Project would be consistent with policy TM-4.9 by including a 10-foot-wide multi-purpose path along Street "A." Street "A" is a proposed east-west trending public street and would connect Cherry Avenue on the Project area's eastern edge with existing Napa Street on the west. It would

form an intersection with Rancho Vista Drive to the east of Cherry Avenue to provide safe bicycle and pedestrian access. This multi-use path provides a Class I bicycle lane with a landscaped parkway area providing separation between cyclists and on-street vehicles.

O7-5 The commenter addresses Draft EIR *Figure 3-4: Conceptual Site Plan* does not show an "Enhanced Greenway 10' Multi-Use Path (Typ)" along Streets B and C and most of Street D and is concerned about the lack of provision of safe bikeways. The commenter indicates if the written description is correct, and no trail is planned along Streets B through D. The commenter indicates the Project violates Countywide Policy TM-4.9 and suggests Streets B through D should include a separate bikeway, same as indicated on Street A.

Street "A" proposes a 10-foot-wide multi-use pathway on the southern edge of the street. The multi-use path also connects with both Street "B" and Street "C" to allow greater accessibility throughout the Project area. See also Response O7-4. Internal roadways will include infrastructure to allow for pedestrian movement. The Project also includes an opportunity for a wellness walk which includes walking paths that connects amenity areas throughout the development.

O7-6 The commenter notes the importance for future demand of bicycle facilities and the growing network of bikeways in the region that can provide low-stress connection and offer opportunities for deliveries to homes and businesses along these routes. The commenter suggests the width of the trail be increased to 12-13 feet to avoid future overcrowding. Refer to Response O7-2.

Comment noted for the record. However, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O7-7 The commenter suggests lighting of the appropriate scale be provided along the paths to ensure safety. The commenter also suggests including distances and travel times to the locations to serve wayfinding along the path.

Lighting within the Project site would comply with all applicable regulations, including the County's development code which requires proper illumination of outdoor areas while protecting sensitive receptors to potential light leakage. Safety and directional signage for bicycle circulation shall be provided as required by the California Manual on Uniform Traffic Control Devices, Caltrans, and AASHTO Standards. Future projects should also reference the San Bernardino County Non-Motorized Transportation Plan. Furthermore, the Project would implement Crime Prevention Through Environmental Design (CPTED) practice strategies to deter and prevent crime.

Once operational, the buildings would use interior and exterior lighting. Consistent with Section 83.07.030 (Glare and Outdoor Lighting – Valley Region) of the County's Development Code, all exterior lighting used on the Project site would be fully shielded to preclude light pollution or light trespass on any of the following: An abutting residential land use zoning district; A residential parcel; or Public right-of-way. Lighting should be strategically placed to illuminate parking areas, docks/loading zones, and building entries. Lighting would utilize high-efficiency

technologies, dark-sky cutoffs, strategic orientation to avoid spillover into adjacent properties, and open space areas, and appropriate shielding or recesses to minimize glare and reflections. Public and private street lighting and parking lot lighting would meet County standards.

O7-8 The commenter suggests the intersection design is not detailed enough in the Draft EIR. The commenter notes the importance of safety being threatened by poor intersection design.

Comment noted for the record. However, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary. However, the multi-use path was designed on the south side of Street A to limit the number of driveway and street crossings. Moreover, the Draft EIR concluded that the Project would not result in a significant impact due to a hazardous design feature such as a dangerous intersection. See Draft EIR pages 4.17-21 through 4.17-23.

O7-9 The commenter suggests the Project provide grade-separation and reduce the number of slopes required for bicyclists as recommended by Countywide Policy TM-2.4 to ensure the safety and the willingness to ride of bicyclists at major intersections. The commenter suggest that motorized traffic should be required to make the necessary grade changes so bicyclists can remain on flat surfaces. The commenter further suggests additional improvements to support safe ridership.

The Draft EIR found no significant and unavoidable impacts associated with transportation effects associated with the Project. Additionally, roadway improvements are proposed with development of the Specific Plan. Moreover, the Draft EIR concluded that the Project would not result in a significant impact due to a hazardous design feature such as a dangerous intersection. See Draft EIR pages 4.17-21 through 4.17-23.

O7-10 The commenter indicates nearly all the recommended improvements in *Appendix L* – VMT Traffic have a direct impact on bikeways or felt they were in direct conflict with the improvements in the various jurisdictions. The commenter suggested that the developer make contributions to non-car-focused transportation projects.

The recommended improvements are to meet an acceptable LOS per County Standards. Project will pay development impact fee (DIF) that the County can use towards Complete Street Improvements. Refer to County Bicycle Master Plan.

O7-11 The commenter indicated that the Project shouldn't convert the event Metrolink station to a fulltime station and that transit access for jobs and tourist destinations would remain unavailable without the effort to upgrade the existing station as a fulltime station. The commenter references improving service frequency in combination with bike access, people living within a mile or two of train stations and job access to the Project within half an hour, areas an opportunity to increase transit uses.

The current event Metrolink station is not being considered as a permanent station by SBCTA or Metrolink. Therefore, the Draft EIR analyzed other options. Omnitrans is a public transit agency in the County providing bus service throughout the San Bernardino Valley. There are no existing

Omnitrans public transit routes or stops providing regular service adjacent to the Project site. The closest Omnitrans Transit System routes are Route 66 along W. Foothill Boulevard and Route 61 along San Bernardino Avenue. As the Project develops, the Transit System may assess the potential demand for these facilities in the area and may establish new or extended routes in the area in the future. Coordination with Omnitrans has begun and will be ongoing as the Project builds out to determine the need for future bus service to the Project site.

The Draft EIR found no significant and unavoidable impacts associated with transportation effects associated with the Project. Mitigation measures proposed within the Draft EIR are those that were found to be feasible and within the sphere of influence of the Project.

O7-12 The commenter concludes there are several steps that should be taken to ensure the Project better mitigates environmental impacts and summarizes the location in the most impacted state, in terms of traffic trips as a basis to support alternative transportation.

The commenter's summary of previous comments are noted for the record. Refer to Response O6-6 and Master Response 2.

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VIA E-MAIL

August 4, 2022

Steven Valdez, Senior Planner
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RE: Speedway Commerce Center II Specific Plan Project and EIR

Dear Steven Valdez,

On behalf of the Southwest Regional Council of Carpenters ("**Southwest Carpenters**" or "**SWRCC**"), my Office is submitting these comments on the County of San Bernardino's ("**County**") Draft Environmental Impact Report ("**DEIR**") (SCH No. 2021120259) for the Speedway Commerce Center II Specific Plan Project and EIR Project ("**Project**").

The Southwest Carpenters would like to express their support for this Project and withdraw their prior July 18, 2022 comment letter. After receiving clarification and further information about this Project, SWRCC believes that this Project will benefit the environment and the local economy by utilizing a local skilled and trained workforce and will be built utilizing protocols that will protect worker health and safety. 1

If the County has any questions or concerns, feel free to contact my Office.

Sincerely,

Mitchell M. Tsai
Attorneys for Southwest Regional
Council of Carpenters

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VIA E-MAIL

July 18, 2022

Steven Valdez, Senior Planner
County of San Bernardino
Land Use Services Department – Planning Division
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San Bernardino, CA 92415-0187
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Em: Steven.valdez@lus.sbcounty.gov

RE: County of San Bernardino's Speedway Commerce Center II Specific Plan and Environmental Impact Report (SCH No. 2021120259)

Dear Mr. Valdez:

On behalf of the Southwest Regional Council of Carpenters ("**SWRCC**" or "**Southwest Carpenters**"), my Office is submitting these comments regarding the County of San Bernardino's ("**County**" or "**Lead Agency**") Draft Environmental Impact Report (**DEIR**) (SCH No. 2021120259) for the Speedway Commerce Center II Specific Plan ("**SCCIISP**" or "**Project**").

The SWRCC is a labor union representing more than 57,000 union carpenters in six states, including California, and has a strong interest in well-ordered land use planning, addressing the environmental impacts of development projects, and equitable economic development.

Individual members of the SWRCC live, work, and recreate in the County and its surrounding communities and would be directly affected by the Project's environmental impacts.

The SWRCC expressly reserves the right to supplement these comments at or prior to hearings on the Project, and at any later hearing and proceeding related to this Project. Gov. Code, § 65009, subd. (b); Pub. Resources Code, § 21177, subd. (a); see *Bakersfield Citizens for Local Control v. Bakersfield* (2004) 124 Cal.App.4th 1184, 1199-1203; see also *Galante Vineyards v. Monterey Water Dist.* (1997) 60 Cal.App.4th 1109, 1121.

2

The SWRCC incorporates by reference all comments raising issues regarding the Environmental Impact Report (**EIR**) submitted prior to certification of the EIR for the Project. *Citizens for Clean Energy v. City of Woodland* (2014) 225 Cal.App.4th 173, 191 (finding that any party who has objected to the project's environmental documentation may assert any issue timely raised by other parties).

Moreover, the SWRCC requests that the County provide notice for any and all notices referring or related to the Project issued under the California Environmental Quality Act (**CEQA**), Pub. Resources Code, § 21000 *et seq.*, and the California Planning and Zoning Law ("**Planning and Zoning Law**"), Gov. Code, §§ 65000–65010. California Public Resources Code sections 21092.2 and 21167(f) and California Government Code section 65092 require agencies to mail such notices to any person who has filed a written request for them with the clerk of the agency's governing body.

3

The County should require that the Applicant provide additional community benefits by requiring local hire and the use of a skilled and trained workforce to build the Project. The County should also require the utilization of workers who have graduated from a joint labor-management apprenticeship training program approved by the State of California, who have at least as many hours of on-the-job experience in the applicable craft which would be required to graduate from such a program, or who are registered in an apprenticeship training program approved by the State of California.

Community benefits such as local hire and skilled and trained workforce requirements can also be helpful in reducing the negative environmental impact and improving the positive economic impact of the Project. Local hire provisions requiring that a certain percentage of workers reside within 10 miles or less of the Project site, for example, can reduce the length of vendor and worker trips, reduce greenhouse gas (GHG) emissions, and provide localized economic benefits from saved time and costs associated with commuting. As environmental consultants Matt Hagemann and Paul E. Rosenfeld note:

4

> [A]ny local hire requirement that results in a decreased worker trip length from the default value has the potential to result in a reduction of construction-related GHG emissions, though the significance of the reduction would vary based on the location and urbanization level of the project site.

March 8, 2021 SWAPE Letter to Mitchell M. Tsai regarding Local Hire Requirements and Considerations for Greenhouse Gas Modeling. 4

Skilled and trained workforce requirements also promote the development of skilled trades that yield sustainable economic development. As the California Workforce Development Board and the University of California, Berkeley Center for Labor Research and Education concluded:

> [L]abor should be considered an investment rather than a cost—and investments in growing, diversifying, and upskilling California's workforce can positively affect returns on climate mitigation efforts. In other words, well-trained workers are key to delivering emissions reductions and moving California closer to its climate targets.[1]

On May 7, 2021, the South Coast Air Quality Management District found that the "[u]se of a local state-certified apprenticeship program or a skilled and trained workforce with a local hire component" can result in air pollutant reductions.[2] 5

Cities are increasingly adopting local skilled and trained workforce policies and requirements into general plans and municipal codes. For example, the City of Hayward's 2040 General Plan requires the city to "promote local hiring . . . to help achieve a more positive jobs-housing balance and reduce regional commuting, gas consumption, and greenhouse gas emissions."[3]

In fact, the City of Hayward has even incorporated a skilled labor force policy into its Downtown Specific Plan and municipal code. The policy contributes to the stabilization of regional construction markets by motivating applicants of housing and nonresidential developments to require that contractors utilize apprentices from state-

[1] California Workforce Development Board (2020) Putting California on the High Road: A Jobs and Climate Action Plan for 2030 at p. ii, *available at* https://laborcenter.berkeley.edu/wp-content/uploads/2020/09/Putting-California-on-the-High-Road.pdf.

[2] South Coast Air Quality Management District (May 7, 2021) Certify Final Environmental Assessment and Adopt Proposed Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions Program, and Proposed Rule 316 – Fees for Rule 2305, Submit Rule 2305 for Inclusion Into the SIP, and Approve Supporting Budget Actions, *available at* http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2021/2021-May7-027.pdf?sfvrsn=10.

[3] City of Hayward (2014) Hayward 2040 General Plan Policy Document at p. 3-99, *available at* https://www.haywardca.gov/sites/default/files/documents/General_Plan_FINAL.pdf.

approved joint labor-management training programs.[4] The City of Hayward mandates the same measure on all projects that are 30,000 square feet or larger.[5]

5

Locating jobs closer to residential areas can also have significant environmental benefits. As the California Planning Roundtable noted in 2008:

> People who live and work in the same jurisdiction would be more likely to take transit, walk, or bicycle to work than residents of less balanced communities and their vehicle trips would be shorter. Benefits would include potential reductions in both vehicle miles traveled and vehicle hours traveled.[6]

Moreover, local hire mandates and skill training are critical facets of a strategy to reduce vehicle miles traveled (VMT). As planning experts Robert Cervero and Michael Duncan note, simply placing jobs near housing stock is insufficient to achieve VMT reductions given that the skill requirements of available local jobs must match to those held by local residents.[7] Some municipalities have gone as far as linking local hire and skilled and trained workforce policies to local development permits to address transportation issues. As Cervero and Duncan note:

6

> In nearly built-out Berkeley, CA, the approach to balancing jobs and housing is to create local jobs rather than to develop new housing. The city's First Source program encourages businesses to hire local residents, especially for entry- and intermediate-level jobs, and sponsors vocational training to ensure residents are employment-ready. While the program is voluntary, some 300 businesses have used it to date, placing more than 3,000 city residents in local jobs since it was launched in 1986. When needed, these carrots are matched by sticks, since the city is not shy about

[4] City of Hayward (2019) Hayward Downtown Specific Plan at p. 5-24, *available at* https://www.hayward-ca.gov/sites/default/files/Hayward%20Downtown%20Specific%20Plan.pdf.

[5] City of Hayward Municipal Code, Chapter 10, § 28.5.3.020, subd. (C).

[6] California Planning Roundtable (2008) Deconstructing Jobs-Housing Balance at p. 6, *available at* https://cproundtable.org/static/media/uploads/publications/cpr-jobs-housing.pdf

[7] Cervero, Robert and Duncan, Michael (2006) Which Reduces Vehicle Travel More: Jobs-Housing Balance or Retail-Housing Mixing? Journal of the American Planning Association 72 (4), 475-490, 482, *available at* http://reconnectingamerica.org/assets/Uploads/UTCT-825.pdf.

negotiating corporate participation in First Source as a condition of approval for development permits.

Therefore, the County should consider utilizing skilled and trained workforce policies and requirements to benefit the local area economically, mitigate greenhouse gas emissions, improve air quality, and reduce transportation impacts. 6

The County should also require the Project to be built to standards exceeding the current 2019 California Green Building Code to mitigate the Project's environmental impacts and to advance progress towards the State of California's environmental goals.

Sincerely,

Reza Bonachea Mohamadzadeh
Attorneys for the Southwest
Regional Council of Carpenters 7

Attached:

March 8, 2021 SWAPE Letter to Mitchell M. Tsai re Local Hire Requirements and Considerations for Greenhouse Gas Modeling (Exhibit A);

Air Quality and GHG Expert Paul Rosenfeld CV (Exhibit B); and

Air Quality and GHG Expert Matt Hagemann CV (Exhibit C).

EXHIBIT A

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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March 8, 2021

Mitchell M. Tsai
155 South El Molino, Suite 104
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Subject: Local Hire Requirements and Considerations for Greenhouse Gas Modeling

Dear Mr. Tsai,

Soil Water Air Protection Enterprise ("SWAPE") is pleased to provide the following draft technical report explaining the significance of worker trips required for construction of land use development projects with respect to the estimation of greenhouse gas ("GHG") emissions. The report will also discuss the potential for local hire requirements to reduce the length of worker trips, and consequently, reduced or mitigate the potential GHG impacts.

Worker Trips and Greenhouse Gas Calculations

The California Emissions Estimator Model ("CalEEMod") is a "statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects."[1] CalEEMod quantifies construction-related emissions associated with land use projects resulting from off-road construction equipment; on-road mobile equipment associated with workers, vendors, and hauling; fugitive dust associated with grading, demolition, truck loading, and on-road vehicles traveling along paved and unpaved roads; and architectural coating activities; and paving.[2]

The number, length, and vehicle class of worker trips are utilized by CalEEMod to calculate emissions associated with the on-road vehicle trips required to transport workers to and from the Project site during construction.[3]

[1] "California Emissions Estimator Model." CAPCOA, 2017, *available at:* http://www.aqmd.gov/caleemod/home.
[2] "California Emissions Estimator Model." CAPCOA, 2017, *available at:* http://www.aqmd.gov/caleemod/home.
[3] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.

Specifically, the number and length of vehicle trips is utilized to estimate the vehicle miles travelled ("VMT") associated with construction. Then, utilizing vehicle-class specific EMFAC 2014 emission factors, CalEEMod calculates the vehicle exhaust, evaporative, and dust emissions resulting from construction-related VMT, including personal vehicles for worker commuting.[4]

Specifically, in order to calculate VMT, CalEEMod multiplies the average daily trip rate by the average overall trip length (see excerpt below):

> "$VMT_d = \Sigma(\text{Average Daily Trip Rate}_i * \text{Average Overall Trip Length}_i)_n$
>
> Where:
>
> n = Number of land uses being modeled."[5]

Furthermore, to calculate the on-road emissions associated with worker trips, CalEEMod utilizes the following equation (see excerpt below):

> "$\text{Emissions}_{pollutant} = VMT * EF_{running,pollutant}$
>
> Where:
>
> $\text{Emissions}_{pollutant}$ = emissions from vehicle running for each pollutant
>
> VMT = vehicle miles traveled
>
> $EF_{running,pollutant}$ = emission factor for running emissions."[6]

Thus, there is a direct relationship between trip length and VMT, as well as a direct relationship between VMT and vehicle running emissions. In other words, when the trip length is increased, the VMT and vehicle running emissions increase as a result. Thus, vehicle running emissions can be reduced by decreasing the average overall trip length, by way of a local hire requirement or otherwise.

Default Worker Trip Parameters and Potential Local Hire Requirements

As previously discussed, the number, length, and vehicle class of worker trips are utilized by CalEEMod to calculate emissions associated with the on-road vehicle trips required to transport workers to and from the Project site during construction.[7] In order to understand how local hire requirements and associated worker trip length reductions impact GHG emissions calculations, it is important to consider the CalEEMod default worker trip parameters. CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act ("CEQA") requires that such changes be justified by substantial evidence.[8] The default number of construction-related worker trips is calculated by multiplying the

[4] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 14-15.
[5] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 23.
[6] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 15.
[7] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.
[8] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 1, 9.

number of pieces of equipment for all phases by 1.25, with the exception of worker trips required for the building construction and architectural coating phases.[9] Furthermore, the worker trip vehicle class is a 50/25/25 percent mix of light duty autos, light duty truck class 1 and light duty truck class 2, respectively."[10] Finally, the default worker trip length is consistent with the length of the operational home-to-work vehicle trips.[11] The operational home-to-work vehicle trip lengths are:

> "[B]ased on the *location* and *urbanization* selected on the project characteristic screen. These values were *supplied by the air districts or use a default average for the state*. Each district (or county) also assigns trip lengths for urban and rural settings" (emphasis added). [12]

Thus, the default worker trip length is based on the location and urbanization level selected by the User when modeling emissions. The below table shows the CalEEMod default rural and urban worker trip lengths by air basin (see excerpt below and Attachment A).[13]

Worker Trip Length by Air Basin

Air Basin	Rural (miles)	Urban (miles)
Great Basin Valleys	16.8	10.8
Lake County	16.8	10.8
Lake Tahoe	16.8	10.8
Mojave Desert	16.8	10.8
Mountain Counties	16.8	10.8
North Central Coast	17.1	12.3
North Coast	16.8	10.8
Northeast Plateau	16.8	10.8
Sacramento Valley	16.8	10.8
Salton Sea	14.6	11
San Diego	16.8	10.8
San Francisco Bay Area	10.8	10.8
San Joaquin Valley	16.8	10.8
South Central Coast	16.8	10.8
South Coast	19.8	14.7
Average	**16.47**	**11.17**
Minimum	**10.80**	**10.80**
Maximum	**19.80**	**14.70**
Range	**9.00**	**3.90**

[9] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.
[10] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 15.
[11] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 14.
[12] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 21.
[13] "Appendix D Default Data Tables." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4, p. D-84 – D-86.

3

As demonstrated above, default rural worker trip lengths for air basins in California vary from 10.8- to 19.8-miles, with an average of 16.47 miles. Furthermore, default urban worker trip lengths vary from 10.8- to 14.7-miles, with an average of 11.17 miles. Thus, while default worker trip lengths vary by location, default urban worker trip lengths tend to be shorter in length. Based on these trends evident in the CalEEMod default worker trip lengths, we can reasonably assume that the efficacy of a local hire requirement is especially dependent upon the urbanization of the project site, as well as the project location.

Practical Application of a Local Hire Requirement and Associated Impact

To provide an example of the potential impact of a local hire provision on construction-related GHG emissions, we estimated the significance of a local hire provision for the Village South Specific Plan ("Project") located in the City of Claremont ("City"). The Project proposed to construct 1,000 residential units, 100,000-SF of retail space, 45,000-SF of office space, as well as a 50-room hotel, on the 24-acre site. The Project location is classified as Urban and lies within the Los Angeles-South Coast County. As a result, the Project has a default worker trip length of 14.7 miles.[14] In an effort to evaluate the potential for a local hire provision to reduce the Project's construction-related GHG emissions, we prepared an updated model, reducing all worker trip lengths to 10 miles (see Attachment B). Our analysis estimates that if a local hire provision with a 10-mile radius were to be implemented, the GHG emissions associated with Project construction would decrease by approximately 17% (see table below and Attachment C).

Local Hire Provision Net Change	
Without Local Hire Provision	
Total Construction GHG Emissions (MT CO_2e)	3,623
Amortized Construction GHG Emissions (MT CO_2e/year)	120.77
With Local Hire Provision	
Total Construction GHG Emissions (MT CO2e)	3,024
Amortized Construction GHG Emissions (MT CO_2e/year)	100.80
% Decrease in Construction-related GHG Emissions	***17%***

As demonstrated above, by implementing a local hire provision requiring 10 mile worker trip lengths, the Project could reduce potential GHG emissions associated with construction worker trips. More broadly, any local hire requirement that results in a decreased worker trip length from the default value has the potential to result in a reduction of construction-related GHG emissions, though the significance of the reduction would vary based on the location and urbanization level of the project site.

This serves as an example of the potential impacts of local hire requirements on estimated project-level GHG emissions, though it does not indicate that local hire requirements would result in reduced construction-related GHG emission for all projects. As previously described, the significance of a local hire requirement depends on the worker trip length enforced and the default worker trip length for the project's urbanization level and location.

[14] "Appendix D Default Data Tables." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4, p. D-85.

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Disclaimer

SWAPE has received limited discovery. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Sincerely,

Matt Hagemann, P.G., C.Hg.

Paul E. Rosenfeld, Ph.D.

Attachment A

Location Type	Location Name	Rural H-W (miles)	Urban H-W (miles)
Air Basin	Great Basin	16.8	10.8
Air Basin	Lake County	16.8	10.8
Air Basin	Lake Tahoe	16.8	10.8
Air Basin	Mojave Desert	16.8	10.8
Air Basin	Mountain	16.8	10.8
Air Basin	North Central	17.1	12.3
Air Basin	North Coast	16.8	10.8
Air Basin	Northeast	16.8	10.8
Air Basin	Sacramento	16.8	10.8
Air Basin	Salton Sea	14.6	11
Air Basin	San Diego	16.8	10.8
Air Basin	San Francisco	10.8	10.8
Air Basin	San Joaquin	16.8	10.8
Air Basin	South Central	16.8	10.8
Air Basin	South Coast	19.8	14.7
Air District	Amador County	16.8	10.8
Air District	Antelope Valley	16.8	10.8
Air District	Bay Area AQMD	10.8	10.8
Air District	Butte County	12.54	12.54
Air District	Calaveras	16.8	10.8
Air District	Colusa County	16.8	10.8
Air District	El Dorado	16.8	10.8
Air District	Feather River	16.8	10.8
Air District	Glenn County	16.8	10.8
Air District	Great Basin	16.8	10.8
Air District	Imperial County	10.2	7.3
Air District	Kern County	16.8	10.8
Air District	Lake County	16.8	10.8
Air District	Lassen County	16.8	10.8
Air District	Mariposa	16.8	10.8
Air District	Mendocino	16.8	10.8
Air District	Modoc County	16.8	10.8
Air District	Mojave Desert	16.8	10.8
Air District	Monterey Bay	16.8	10.8
Air District	North Coast	16.8	10.8
Air District	Northern Sierra	16.8	10.8
Air District	Northern	16.8	10.8
Air District	Placer County	16.8	10.8
Air District	Sacramento	15	10

Air District	San Diego	16.8	10.8
Air District	San Joaquin	16.8	10.8
Air District	San Luis Obispo	13	13
Air District	Santa Barbara	8.3	8.3
Air District	Shasta County	16.8	10.8
Air District	Siskiyou County	16.8	10.8
Air District	South Coast	19.8	14.7
Air District	Tehama County	16.8	10.8
Air District	Tuolumne	16.8	10.8
Air District	Ventura County	16.8	10.8
Air District	Yolo/Solano	15	10
County	Alameda	10.8	10.8
County	Alpine	16.8	10.8
County	Amador	16.8	10.8
County	Butte	12.54	12.54
County	Calaveras	16.8	10.8
County	Colusa	16.8	10.8
County	Contra Costa	10.8	10.8
County	Del Norte	16.8	10.8
County	El Dorado-Lake	16.8	10.8
County	El Dorado-	16.8	10.8
County	Fresno	16.8	10.8
County	Glenn	16.8	10.8
County	Humboldt	16.8	10.8
County	Imperial	10.2	7.3
County	Inyo	16.8	10.8
County	Kern-Mojave	16.8	10.8
County	Kern-San	16.8	10.8
County	Kings	16.8	10.8
County	Lake	16.8	10.8
County	Lassen	16.8	10.8
County	Los Angeles-	16.8	10.8
County	Los Angeles-	19.8	14.7
County	Madera	16.8	10.8
County	Marin	10.8	10.8
County	Mariposa	16.8	10.8
County	Mendocino-	16.8	10.8
County	Mendocino-	16.8	10.8
County	Mendocino-	16.8	10.8
County	Mendocino-	16.8	10.8
County	Merced	16.8	10.8
County	Modoc	16.8	10.8
County	Mono	16.8	10.8
County	Monterey	16.8	10.8
County	Napa	10.8	10.8

County	Nevada	16.8	10.8
County	Orange	19.8	14.7
County	Placer-Lake	16.8	10.8
County	Placer-Mountain	16.8	10.8
County	Placer-	16.8	10.8
County	Plumas	16.8	10.8
County	Riverside-	16.8	10.8
County	Riverside-	19.8	14.7
County	Riverside-Salton	14.6	11
County	Riverside-South	19.8	14.7
County	Sacramento	15	10
County	San Benito	16.8	10.8
County	San Bernardino-	16.8	10.8
County	San Bernardino-	19.8	14.7
County	San Diego	16.8	10.8
County	San Francisco	10.8	10.8
County	San Joaquin	16.8	10.8
County	San Luis Obispo	13	13
County	San Mateo	10.8	10.8
County	Santa Barbara-	8.3	8.3
County	Santa Barbara-	8.3	8.3
County	Santa Clara	10.8	10.8
County	Santa Cruz	16.8	10.8
County	Shasta	16.8	10.8
County	Sierra	16.8	10.8
County	Siskiyou	16.8	10.8
County	Solano-	15	10
County	Solano-San	16.8	10.8
County	Sonoma-North	16.8	10.8
County	Sonoma-San	10.8	10.8
County	Stanislaus	16.8	10.8
County	Sutter	16.8	10.8
County	Tehama	16.8	10.8
County	Trinity	16.8	10.8
County	Tulare	16.8	10.8
County	Tuolumne	16.8	10.8
County	Ventura	16.8	10.8
County	Yolo	15	10
County	Yuba	16.8	10.8
Statewide	Statewide	16.8	10.8

Worker Trip Length by Air Basin		
Air Basin	**Rural (miles)**	**Urban (miles)**
Great Basin Valleys	16.8	10.8
Lake County	16.8	10.8
Lake Tahoe	16.8	10.8
Mojave Desert	16.8	10.8
Mountain Counties	16.8	10.8
North Central Coast	17.1	12.3
North Coast	16.8	10.8
Northeast Plateau	16.8	10.8
Sacramento Valley	16.8	10.8
Salton Sea	14.6	11
San Diego	16.8	10.8
San Francisco Bay Area	10.8	10.8
San Joaquin Valley	16.8	10.8
South Central Coast	16.8	10.8
South Coast	19.8	14.7
Average	**16.47**	**11.17**
Mininum	**10.80**	**10.80**
Maximum	**19.80**	**14.70**
Range	**9.00**	**3.90**

Attachment B

Village South Specific Plan (Proposed)
Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82
tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1713	1.8242	1.1662	2.4000e-003	0.4169	0.0817	0.4986	0.1795	0.0754	0.2549	0.0000	213.1969	213.1969	0.0601	0.0000	214.6993
2022	0.6904	4.1142	6.1625	0.0189	1.3058	0.1201	1.4259	0.3460	0.1128	0.4588	0.0000	1,721.6826	1,721.6826	0.1294	0.0000	1,724.9187
2023	0.6148	3.3649	5.6747	0.0178	1.1963	0.0996	1.2959	0.3203	0.0935	0.4138	0.0000	1,627.5295	1,627.5295	0.1185	0.0000	1,630.4925
2024	4.1619	0.1335	0.2810	5.9000e-004	0.0325	6.4700e-003	0.0390	8.6300e-003	6.0400e-003	0.0147	0.0000	52.9078	52.9078	8.0200e-003	0.0000	53.1082
Maximum	**4.1619**	**4.1142**	**6.1625**	**0.0189**	**1.3058**	**0.1201**	**1.4259**	**0.3460**	**0.1128**	**0.4588**	**0.0000**	**1,721.6826**	**1,721.6826**	**0.1294**	**0.0000**	**1,724.9187**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1713	1.8242	1.1662	2.4000e-003	0.4169	0.0817	0.4986	0.1795	0.0754	0.2549	0.0000	213.1967	213.1967	0.0601	0.0000	214.6991
2022	0.6904	4.1142	6.1625	0.0189	1.3058	0.1201	1.4259	0.3460	0.1128	0.4588	0.0000	1,721.6823	1,721.6823	0.1294	0.0000	1,724.9183
2023	0.6148	3.3648	5.6747	0.0178	1.1963	0.0996	1.2959	0.3203	0.0935	0.4138	0.0000	1,627.5291	1,627.5291	0.1185	0.0000	1,630.4921
2024	4.1619	0.1335	0.2810	5.9000e-004	0.0325	6.4700e-003	0.0390	8.6300e-003	6.0400e-003	0.0147	0.0000	52.9077	52.9077	8.0200e-003	0.0000	53.1082
Maximum	**4.1619**	**4.1142**	**6.1625**	**0.0189**	**1.3058**	**0.1201**	**1.4259**	**0.3460**	**0.1128**	**0.4588**	**0.0000**	**1,721.6823**	**1,721.6823**	**0.1294**	**0.0000**	**1,724.9183**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-1-2021	11-30-2021	1.4103	1.4103
2	12-1-2021	2-28-2022	1.3613	1.3613
3	3-1-2022	5-31-2022	1.1985	1.1985
4	6-1-2022	8-31-2022	1.1921	1.1921
5	9-1-2022	11-30-2022	1.1918	1.1918
6	12-1-2022	2-28-2023	1.0774	1.0774
7	3-1-2023	5-31-2023	1.0320	1.0320
8	6-1-2023	8-31-2023	1.0260	1.0260

9	**9-1-2023**	**11-30-2023**	1.0265	1.0265
10	**12-1-2023**	**2-29-2024**	2.8857	2.8857
11	**3-1-2024**	**5-31-2024**	1.6207	1.6207
		Highest	2.8857	2.8857

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0468	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2811	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	556.6420	585.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0468	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2811	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	556.6420	585.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.7000e-004	7.5000e-004	8.5100e-003	2.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.5000e-004	2.0000e-005	6.7000e-004	0.0000	2.2251	2.2251	7.0000e-005	0.0000	2.2267
Total	**2.9000e-003**	**0.0641**	**0.0233**	**2.0000e-004**	**6.4100e-003**	**2.1000e-004**	**6.6200e-003**	**1.7300e-003**	**2.0000e-004**	**1.9300e-003**	**0.0000**	**19.6816**	**19.6816**	**1.2800e-003**	**0.0000**	**19.7136**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.7000e-004	7.5000e-004	8.5100e-003	2.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.5000e-004	2.0000e-005	6.7000e-004	0.0000	2.2251	2.2251	7.0000e-005	0.0000	2.2267
Total	**2.9000e-003**	**0.0641**	**0.0233**	**2.0000e-004**	**6.4100e-003**	**2.1000e-004**	**6.6200e-003**	**1.7300e-003**	**2.0000e-004**	**1.9300e-003**	**0.0000**	**19.6816**	**19.6816**	**1.2800e-003**	**0.0000**	**19.7136**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	6.0000e-004	6.8100e-003	2.0000e-005	1.9700e-003	2.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.7801	1.7801	5.0000e-005	0.0000	1.7814
Total	**7.7000e-004**	**6.0000e-004**	**6.8100e-003**	**2.0000e-005**	**1.9700e-003**	**2.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.7801**	**1.7801**	**5.0000e-005**	**0.0000**	**1.7814**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	6.0000e-004	6.8100e-003	2.0000e-005	1.9700e-003	2.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.7801	1.7801	5.0000e-005	0.0000	1.7814
Total	**7.7000e-004**	**6.0000e-004**	**6.8100e-003**	**2.0000e-005**	**1.9700e-003**	**2.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.7801**	**1.7801**	**5.0000e-005**	**0.0000**	**1.7814**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5405	103.5405	0.0335	0.0000	104.3776
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5405**	**103.5405**	**0.0335**	**0.0000**	**104.3776**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6400e-003	1.2700e-003	0.0144	4.0000e-005	4.1600e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.7579	3.7579	1.1000e-004	0.0000	3.7607
Total	**1.6400e-003**	**1.2700e-003**	**0.0144**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.2000e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.7579**	**3.7579**	**1.1000e-004**	**0.0000**	**3.7607**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5403	103.5403	0.0335	0.0000	104.3775
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5403**	**103.5403**	**0.0335**	**0.0000**	**104.3775**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6400e-003	1.2700e-003	0.0144	4.0000e-005	4.1600e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.7579	3.7579	1.1000e-004	0.0000	3.7607
Total	**1.6400e-003**	**1.2700e-003**	**0.0144**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.2000e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.7579**	**3.7579**	**1.1000e-004**	**0.0000**	**3.7607**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.1000e-004	2.4400e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6679	0.6679	2.0000e-005	0.0000	0.6684
Total	**2.8000e-004**	**2.1000e-004**	**2.4400e-003**	**1.0000e-005**	**7.7000e-004**	**1.0000e-005**	**7.7000e-004**	**2.0000e-004**	**1.0000e-005**	**2.1000e-004**	**0.0000**	**0.6679**	**0.6679**	**2.0000e-005**	**0.0000**	**0.6684**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.1000e-004	2.4400e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6679	0.6679	2.0000e-005	0.0000	0.6684
Total	**2.8000e-004**	**2.1000e-004**	**2.4400e-003**	**1.0000e-005**	**7.7000e-004**	**1.0000e-005**	**7.7000e-004**	**2.0000e-004**	**1.0000e-005**	**2.1000e-004**	**0.0000**	**0.6679**	**0.6679**	**2.0000e-005**	**0.0000**	**0.6684**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1324	293.1324	0.0702	0.0000	294.8881
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1324**	**293.1324**	**0.0702**	**0.0000**	**294.8881**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.4088	0.3066	3.5305	0.0107	1.1103	8.8700e-003	1.1192	0.2949	8.1700e-003	0.3031	0.0000	966.8117	966.8117	0.0266	0.0000	967.4773
Total	**0.4616**	**2.0027**	**3.9885**	**0.0152**	**1.2243**	**0.0121**	**1.2363**	**0.3278**	**0.0112**	**0.3390**	**0.0000**	**1,408.7952**	**1,408.7952**	**0.0530**	**0.0000**	**1,410.1208**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1321	293.1321	0.0702	0.0000	294.8877
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1321**	**293.1321**	**0.0702**	**0.0000**	**294.8877**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.4088	0.3066	3.5305	0.0107	1.1103	8.8700e-003	1.1192	0.2949	8.1700e-003	0.3031	0.0000	966.8117	966.8117	0.0266	0.0000	967.4773
Total	**0.4616**	**2.0027**	**3.9885**	**0.0152**	**1.2243**	**0.0121**	**1.2363**	**0.3278**	**0.0112**	**0.3390**	**0.0000**	**1,408.7952**	**1,408.7952**	**0.0530**	**0.0000**	**1,410.1208**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2789	286.2789	0.0681	0.0000	287.9814
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2789**	**286.2789**	**0.0681**	**0.0000**	**287.9814**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.3753	0.2708	3.1696	0.0101	1.0840	8.4100e-003	1.0924	0.2879	7.7400e-003	0.2957	0.0000	909.3439	909.3439	0.0234	0.0000	909.9291
Total	**0.4135**	**1.5218**	**3.5707**	**0.0144**	**1.1953**	**9.8700e-003**	**1.2051**	**0.3200**	**9.1400e-003**	**0.3292**	**0.0000**	**1,327.3369**	**1,327.3369**	**0.0462**	**0.0000**	**1,328.4916**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2785	286.2785	0.0681	0.0000	287.9811
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2785**	**286.2785**	**0.0681**	**0.0000**	**287.9811**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.3753	0.2708	3.1696	0.0101	1.0840	8.4100e-003	1.0924	0.2879	7.7400e-003	0.2957	0.0000	909.3439	909.3439	0.0234	0.0000	909.9291
Total	**0.4135**	**1.5218**	**3.5707**	**0.0144**	**1.1953**	**9.8700e-003**	**1.2051**	**0.3200**	**9.1400e-003**	**0.3292**	**0.0000**	**1,327.3369**	**1,327.3369**	**0.0462**	**0.0000**	**1,328.4916**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.7000e-004	3.1200e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.8963	0.8963	2.0000e-005	0.0000	0.8968
Total	**3.7000e-004**	**2.7000e-004**	**3.1200e-003**	**1.0000e-005**	**1.0700e-003**	**1.0000e-005**	**1.0800e-003**	**2.8000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.8963**	**0.8963**	**2.0000e-005**	**0.0000**	**0.8968**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.7000e-004	3.1200e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.8963	0.8963	2.0000e-005	0.0000	0.8968
Total	**3.7000e-004**	**2.7000e-004**	**3.1200e-003**	**1.0000e-005**	**1.0700e-003**	**1.0000e-005**	**1.0800e-003**	**2.8000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.8963**	**0.8963**	**2.0000e-005**	**0.0000**	**0.8968**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.1000e-004	4.9200e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4697	1.4697	4.0000e-005	0.0000	1.4706
Total	**5.9000e-004**	**4.1000e-004**	**4.9200e-003**	**2.0000e-005**	**1.8100e-003**	**1.0000e-005**	**1.8200e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.4697**	**1.4697**	**4.0000e-005**	**0.0000**	**1.4706**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.1000e-004	4.9200e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4697	1.4697	4.0000e-005	0.0000	1.4706
Total	**5.9000e-004**	**4.1000e-004**	**4.9200e-003**	**2.0000e-005**	**1.8100e-003**	**1.0000e-005**	**1.8200e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.4697**	**1.4697**	**4.0000e-005**	**0.0000**	**1.4706**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0101	6.9900e-003	0.0835	2.8000e-004	0.0307	2.3000e-004	0.0309	8.1500e-003	2.2000e-004	8.3700e-003	0.0000	24.9407	24.9407	6.1000e-004	0.0000	24.9558
Total	**0.0101**	**6.9900e-003**	**0.0835**	**2.8000e-004**	**0.0307**	**2.3000e-004**	**0.0309**	**8.1500e-003**	**2.2000e-004**	**8.3700e-003**	**0.0000**	**24.9407**	**24.9407**	**6.1000e-004**	**0.0000**	**24.9558**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0101	6.9900e-003	0.0835	2.8000e-004	0.0307	2.3000e-004	0.0309	8.1500e-003	2.2000e-004	8.3700e-003	0.0000	24.9407	24.9407	6.1000e-004	0.0000	24.9558
Total	**0.0101**	**6.9900e-003**	**0.0835**	**2.8000e-004**	**0.0307**	**2.3000e-004**	**0.0309**	**8.1500e-003**	**2.2000e-004**	**8.3700e-003**	**0.0000**	**24.9407**	**24.9407**	**6.1000e-004**	**0.0000**	**24.9558**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Unmitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,512.6465	2,512.6465	0.1037	0.0215	2,521.6356
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,512.6465	2,512.6465	0.1037	0.0215	2,521.6356
NaturalGas Mitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.4267	1,383.4267	0.0265	0.0254	1,391.6478
NaturalGas Unmitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.4267	1,383.4267	0.0265	0.0254	1,391.6478

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30613e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1468
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91840	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30613e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1468
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91840	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.6465**	**0.1037**	**0.0215**	**2,521.6356**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.6465**	**0.1037**	**0.0215**	**2,521.6356**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Unmitigated	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1187	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1187	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	585.8052	3.0183	0.0755	683.7567
Unmitigated	585.8052	3.0183	0.0755	683.7567

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		**585.8052**	**3.0183**	**0.0755**	**683.7567**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		**585.8052**	**3.0183**	**0.0755**	**683.7567**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	207.8079	12.2811	0.0000	514.8354
Unmitigated	207.8079	12.2811	0.0000	514.8354

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		**207.8079**	**12.2811**	**0.0000**	**514.8354**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		**207.8079**	**12.2811**	**0.0000**	**514.8354**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Village South Specific Plan (Proposed)
Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82
tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2769	46.4588	31.6840	0.0643	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,234.7974	6,234.7974	1.9495	0.0000	6,283.5352
2022	5.3304	38.8967	49.5629	0.1517	9.8688	1.6366	10.7727	3.6558	1.5057	5.1615	0.0000	15,251.5674	15,251.5674	1.9503	0.0000	15,278.5288
2023	4.8957	26.3317	46.7567	0.1472	9.8688	0.7794	10.6482	2.6381	0.7322	3.3702	0.0000	14,807.5269	14,807.5269	1.0250	0.0000	14,833.1521
2024	237.1630	9.5575	15.1043	0.0244	1.7884	0.4698	1.8628	0.4743	0.4322	0.5476	0.0000	2,361.3989	2,361.3989	0.7177	0.0000	2,379.3421
Maximum	**237.1630**	**46.4588**	**49.5629**	**0.1517**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**15,251.5674**	**15,251.5674**	**1.9503**	**0.0000**	**15,278.5288**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2769	46.4588	31.6840	0.0643	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,234.7974	6,234.7974	1.9495	0.0000	6,283.5352
2022	5.3304	38.8967	49.5629	0.1517	9.8688	1.6366	10.7727	3.6558	1.5057	5.1615	0.0000	15,251.5674	15,251.5674	1.9503	0.0000	15,278.5288
2023	4.8957	26.3317	46.7567	0.1472	9.8688	0.7794	10.6482	2.6381	0.7322	3.3702	0.0000	14,807.5269	14,807.5269	1.0250	0.0000	14,833.1520
2024	237.1630	9.5575	15.1043	0.0244	1.7884	0.4698	1.8628	0.4743	0.4322	0.5476	0.0000	2,361.3989	2,361.3989	0.7177	0.0000	2,379.3421
Maximum	**237.1630**	**46.4588**	**49.5629**	**0.1517**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**15,251.5674**	**15,251.5674**	**1.9503**	**0.0000**	**15,278.5288**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1168**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1168**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1273	4.0952	0.9602	0.0119	0.2669	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.2413	1,292.2413	0.0877		1,294.4337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1916**	**4.1394**	**1.5644**	**0.0136**	**0.4346**	**0.0139**	**0.4485**	**0.1176**	**0.0133**	**0.1309**		**1,463.0568**	**1,463.0568**	**0.0927**		**1,465.3750**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1273	4.0952	0.9602	0.0119	0.2669	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.2413	1,292.2413	0.0877		1,294.4337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1916**	**4.1394**	**1.5644**	**0.0136**	**0.4346**	**0.0139**	**0.4485**	**0.1176**	**0.0133**	**0.1309**		**1,463.0568**	**1,463.0568**	**0.0927**		**1,465.3750**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0772	0.0530	0.7250	2.0600e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		204.9786	204.9786	6.0400e-003		205.1296
Total	**0.0772**	**0.0530**	**0.7250**	**2.0600e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**204.9786**	**204.9786**	**6.0400e-003**		**205.1296**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0772	0.0530	0.7250	2.0600e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		204.9786	204.9786	6.0400e-003		205.1296
Total	**0.0772**	**0.0530**	**0.7250**	**2.0600e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**204.9786**	**204.9786**	**6.0400e-003**		**205.1296**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0857	0.0589	0.8056	2.2900e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		227.7540	227.7540	6.7100e-003		227.9217
Total	**0.0857**	**0.0589**	**0.8056**	**2.2900e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**227.7540**	**227.7540**	**6.7100e-003**		**227.9217**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0857	0.0589	0.8056	2.2900e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		227.7540	227.7540	6.7100e-003		227.9217
Total	**0.0857**	**0.0589**	**0.8056**	**2.2900e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**227.7540**	**227.7540**	**6.7100e-003**		**227.9217**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0803	0.0532	0.7432	2.2100e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		219.7425	219.7425	6.0600e-003		219.8941
Total	**0.0803**	**0.0532**	**0.7432**	**2.2100e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**219.7425**	**219.7425**	**6.0600e-003**		**219.8941**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0803	0.0532	0.7432	2.2100e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		219.7425	219.7425	6.0600e-003		219.8941
Total	**0.0803**	**0.0532**	**0.7432**	**2.2100e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**219.7425**	**219.7425**	**6.0600e-003**		**219.8941**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4079	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.5482	3,896.5482	0.2236		3,902.1384
Worker	3.2162	2.1318	29.7654	0.0883	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,800.6857	8,800.6857	0.2429		8,806.7582
Total	**3.6242**	**15.3350**	**33.1995**	**0.1247**	**9.8688**	**0.0949**	**9.9637**	**2.6381**	**0.0883**	**2.7263**		**12,697.2339**	**12,697.2339**	**0.4665**		**12,708.8966**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4079	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.5482	3,896.5482	0.2236		3,902.1384
Worker	3.2162	2.1318	29.7654	0.0883	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,800.6857	8,800.6857	0.2429		8,806.7582
Total	**3.6242**	**15.3350**	**33.1995**	**0.1247**	**9.8688**	**0.0949**	**9.9637**	**2.6381**	**0.0883**	**2.7263**		**12,697.2339**	**12,697.2339**	**0.4665**		**12,708.8966**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3027	10.0181	3.1014	0.0352	0.9156	0.0116	0.9271	0.2636	0.0111	0.2747		3,773.8762	3,773.8762	0.1982		3,778.8300
Worker	3.0203	1.9287	27.4113	0.0851	8.9533	0.0681	9.0214	2.3745	0.0627	2.4372		8,478.4408	8,478.4408	0.2190		8,483.9160
Total	**3.3229**	**11.9468**	**30.5127**	**0.1203**	**9.8688**	**0.0797**	**9.9485**	**2.6381**	**0.0738**	**2.7118**		**12,252.3170**	**12,252.3170**	**0.4172**		**12,262.7460**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3027	10.0181	3.1014	0.0352	0.9156	0.0116	0.9271	0.2636	0.0111	0.2747		3,773.8762	3,773.8762	0.1982		3,778.8300
Worker	3.0203	1.9287	27.4113	0.0851	8.9533	0.0681	9.0214	2.3745	0.0627	2.4372		8,478.4408	8,478.4408	0.2190		8,483.9160
Total	**3.3229**	**11.9468**	**30.5127**	**0.1203**	**9.8688**	**0.0797**	**9.9485**	**2.6381**	**0.0738**	**2.7118**		**12,252.3170**	**12,252.3170**	**0.4172**		**12,262.7460**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0566**	**0.0361**	**0.5133**	**1.5900e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**158.7723**	**158.7723**	**4.1000e-003**		**158.8748**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0566**	**0.0361**	**0.5133**	**1.5900e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**158.7723**	**158.7723**	**4.1000e-003**		**158.8748**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0535**	**0.0329**	**0.4785**	**1.5400e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**153.8517**	**153.8517**	**3.7600e-003**		**153.9458**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0535**	**0.0329**	**0.4785**	**1.5400e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**153.8517**	**153.8517**	**3.7600e-003**		**153.9458**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.5707	0.3513	5.1044	0.0165	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,641.0852	1,641.0852	0.0401		1,642.0886
Total	**0.5707**	**0.3513**	**5.1044**	**0.0165**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,641.0852**	**1,641.0852**	**0.0401**		**1,642.0886**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.5707	0.3513	5.1044	0.0165	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,641.0852	1,641.0852	0.0401		1,642.0886
Total	**0.5707**	**0.3513**	**5.1044**	**0.0165**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,641.0852**	**1,641.0852**	**0.0401**		**1,642.0886**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Unmitigated	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day											lb/day				
Apartments Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day											lb/day				
Apartments Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Village South Specific Plan (Proposed)
Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82
tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27

tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2865	46.4651	31.6150	0.0642	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,221.4937	6,221.4937	1.9491	0.0000	6,270.2214
2022	5.7218	38.9024	47.3319	0.1455	9.8688	1.6366	10.7736	3.6558	1.5057	5.1615	0.0000	14,630.3099	14,630.3099	1.9499	0.0000	14,657.2663
2023	5.2705	26.4914	44.5936	0.1413	9.8688	0.7800	10.6488	2.6381	0.7328	3.3708	0.0000	14,210.3424	14,210.3424	1.0230	0.0000	14,235.9160
2024	237.2328	9.5610	15.0611	0.0243	1.7884	0.4698	1.8628	0.4743	0.4322	0.5476	0.0000	2,352.4178	2,352.4178	0.7175	0.0000	2,370.3550
Maximum	**237.2328**	**46.4651**	**47.3319**	**0.1455**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**14,630.3099**	**14,630.3099**	**1.9499**	**0.0000**	**14,657.2663**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2865	46.4651	31.6150	0.0642	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,221.4937	6,221.4937	1.9491	0.0000	6,270.2214
2022	5.7218	38.9024	47.3319	0.1455	9.8688	1.6366	10.7736	3.6558	1.5057	5.1615	0.0000	14,630.3099	14,630.3099	1.9499	0.0000	14,657.2663
2023	5.2705	26.4914	44.5936	0.1413	9.8688	0.7800	10.6488	2.6381	0.7328	3.3708	0.0000	14,210.3424	14,210.3424	1.0230	0.0000	14,235.9160
2024	237.2328	9.5610	15.0611	0.0243	1.7884	0.4698	1.8628	0.4743	0.4322	0.5476	0.0000	2,352.4178	2,352.4178	0.7175	0.0000	2,370.3550
Maximum	**237.2328**	**46.4651**	**47.3319**	**0.1455**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**14,630.3099**	**14,630.3099**	**1.9499**	**0.0000**	**14,657.2663**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.8555	1,269.8555	0.0908		1,272.1252
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.2019**	**4.1943**	**1.5706**	**0.0133**	**0.4346**	**0.0141**	**0.4487**	**0.1176**	**0.0135**	**0.1311**		**1,430.6932**	**1,430.6932**	**0.0955**		**1,433.0812**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.8555	1,269.8555	0.0908		1,272.1252
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.2019**	**4.1943**	**1.5706**	**0.0133**	**0.4346**	**0.0141**	**0.4487**	**0.1176**	**0.0135**	**0.1311**		**1,430.6932**	**1,430.6932**	**0.0955**		**1,433.0812**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0858	0.0587	0.6629	1.9400e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		193.0052	193.0052	5.6800e-003		193.1472
Total	**0.0858**	**0.0587**	**0.6629**	**1.9400e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**193.0052**	**193.0052**	**5.6800e-003**		**193.1472**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0858	0.0587	0.6629	1.9400e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		193.0052	193.0052	5.6800e-003		193.1472
Total	**0.0858**	**0.0587**	**0.6629**	**1.9400e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**193.0052**	**193.0052**	**5.6800e-003**		**193.1472**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0954	0.0652	0.7365	2.1500e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		214.4502	214.4502	6.3100e-003		214.6080
Total	**0.0954**	**0.0652**	**0.7365**	**2.1500e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**214.4502**	**214.4502**	**6.3100e-003**		**214.6080**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0954	0.0652	0.7365	2.1500e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		214.4502	214.4502	6.3100e-003		214.6080
Total	**0.0954**	**0.0652**	**0.7365**	**2.1500e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**214.4502**	**214.4502**	**6.3100e-003**		**214.6080**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.0896**	**0.0589**	**0.6784**	**2.0800e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**206.9139**	**206.9139**	**5.7000e-003**		**207.0563**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.0896**	**0.0589**	**0.6784**	**2.0800e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**206.9139**	**206.9139**	**5.7000e-003**		**207.0563**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.0750	3,789.0750	0.2381		3,795.0283
Worker	3.5872	2.3593	27.1680	0.0832	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,286.9013	8,286.9013	0.2282		8,292.6058
Total	**4.0156**	**15.5266**	**30.9685**	**0.1186**	**9.8688**	**0.0957**	**9.9645**	**2.6381**	**0.0891**	**2.7271**		**12,075.9763**	**12,075.9763**	**0.4663**		**12,087.6341**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.0750	3,789.0750	0.2381		3,795.0283
Worker	3.5872	2.3593	27.1680	0.0832	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,286.9013	8,286.9013	0.2282		8,292.6058
Total	**4.0156**	**15.5266**	**30.9685**	**0.1186**	**9.8688**	**0.0957**	**9.9645**	**2.6381**	**0.0891**	**2.7271**		**12,075.9763**	**12,075.9763**	**0.4663**		**12,087.6341**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.4007	3,671.4007	0.2096		3,676.6417
Worker	3.3795	2.1338	24.9725	0.0801	8.9533	0.0681	9.0214	2.3745	0.0627	2.4372		7,983.7318	7,983.7318	0.2055		7,988.8683
Total	**3.6978**	**12.1065**	**28.3496**	**0.1144**	**9.8688**	**0.0803**	**9.9491**	**2.6381**	**0.0743**	**2.7124**		**11,655.1325**	**11,655.1325**	**0.4151**		**11,665.5099**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.4007	3,671.4007	0.2096		3,676.6417
Worker	3.3795	2.1338	24.9725	0.0801	8.9533	0.0681	9.0214	2.3745	0.0627	2.4372		7,983.7318	7,983.7318	0.2055		7,988.8683
Total	**3.6978**	**12.1065**	**28.3496**	**0.1144**	**9.8688**	**0.0803**	**9.9491**	**2.6381**	**0.0743**	**2.7124**		**11,655.1325**	**11,655.1325**	**0.4151**		**11,665.5099**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0633**	**0.0400**	**0.4677**	**1.5000e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**149.5081**	**149.5081**	**3.8500e-003**		**149.6043**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0633**	**0.0400**	**0.4677**	**1.5000e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**149.5081**	**149.5081**	**3.8500e-003**		**149.6043**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0601**	**0.0364**	**0.4354**	**1.4500e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**144.8706**	**144.8706**	**3.5300e-003**		**144.9587**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0601**	**0.0364**	**0.4354**	**1.4500e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**144.8706**	**144.8706**	**3.5300e-003**		**144.9587**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6406	0.3886	4.6439	0.0155	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,545.2860	1,545.2860	0.0376		1,546.2262
Total	**0.6406**	**0.3886**	**4.6439**	**0.0155**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,545.2860**	**1,545.2860**	**0.0376**		**1,546.2262**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6406	0.3886	4.6439	0.0155	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,545.2860	1,545.2860	0.0376		1,546.2262
Total	**0.6406**	**0.3886**	**4.6439**	**0.0155**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,545.2860**	**1,545.2860**	**0.0376**		**1,546.2262**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Unmitigated	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day											lb/day				
Apartments Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Village South Specific Plan (Proposed)
Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27
tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1704	1.8234	1.1577	2.3800e-003	0.4141	0.0817	0.4958	0.1788	0.0754	0.2542	0.0000	210.7654	210.7654	0.0600	0.0000	212.2661
2022	0.5865	4.0240	5.1546	0.0155	0.9509	0.1175	1.0683	0.2518	0.1103	0.3621	0.0000	1,418.6554	1,418.6554	0.1215	0.0000	1,421.6925
2023	0.5190	3.2850	4.7678	0.0147	0.8497	0.0971	0.9468	0.2283	0.0912	0.3195	0.0000	1,342.4412	1,342.4412	0.1115	0.0000	1,345.2291
2024	4.1592	0.1313	0.2557	5.0000e-004	0.0221	6.3900e-003	0.0285	5.8700e-003	5.9700e-003	0.0118	0.0000	44.6355	44.6355	7.8300e-003	0.0000	44.8311
Maximum	**4.1592**	**4.0240**	**5.1546**	**0.0155**	**0.9509**	**0.1175**	**1.0683**	**0.2518**	**0.1103**	**0.3621**	**0.0000**	**1,418.6554**	**1,418.6554**	**0.1215**	**0.0000**	**1,421.6925**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1704	1.8234	1.1577	2.3800e-003	0.4141	0.0817	0.4958	0.1788	0.0754	0.2542	0.0000	210.7651	210.7651	0.0600	0.0000	212.2658
2022	0.5865	4.0240	5.1546	0.0155	0.9509	0.1175	1.0683	0.2518	0.1103	0.3621	0.0000	1,418.6550	1,418.6550	0.1215	0.0000	1,421.6921
2023	0.5190	3.2850	4.7678	0.0147	0.8497	0.0971	0.9468	0.2283	0.0912	0.3195	0.0000	1,342.4409	1,342.4409	0.1115	0.0000	1,345.2287
2024	4.1592	0.1313	0.2557	5.0000e-004	0.0221	6.3900e-003	0.0285	5.8700e-003	5.9700e-003	0.0118	0.0000	44.6354	44.6354	7.8300e-003	0.0000	44.8311
Maximum	**4.1592**	**4.0240**	**5.1546**	**0.0155**	**0.9509**	**0.1175**	**1.0683**	**0.2518**	**0.1103**	**0.3621**	**0.0000**	**1,418.6550**	**1,418.6550**	**0.1215**	**0.0000**	**1,421.6921**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-1-2021	11-30-2021	1.4091	1.4091
2	12-1-2021	2-28-2022	1.3329	1.3329
3	3-1-2022	5-31-2022	1.1499	1.1499
4	6-1-2022	8-31-2022	1.1457	1.1457
5	9-1-2022	11-30-2022	1.1415	1.1415
6	12-1-2022	2-28-2023	1.0278	1.0278
7	3-1-2023	5-31-2023	0.9868	0.9868
8	6-1-2023	8-31-2023	0.9831	0.9831

9	9-1-2023	11-30-2023	0.9798	0.9798
10	12-1-2023	2-29-2024	2.8757	2.8757
11	3-1-2024	5-31-2024	1.6188	1.6188
		Highest	2.8757	2.8757

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0468	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2811	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	556.6420	585.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0468	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2811	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	556.6420	585.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.3000e-004	6.0900e-003	2.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.5281	1.5281	5.0000e-005	0.0000	1.5293
Total	**2.6500e-003**	**0.0639**	**0.0209**	**2.0000e-004**	**5.6200e-003**	**2.0000e-004**	**5.8200e-003**	**1.5300e-003**	**1.9000e-004**	**1.7200e-003**	**0.0000**	**18.9847**	**18.9847**	**1.2600e-003**	**0.0000**	**19.0161**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.3000e-004	6.0900e-003	2.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.5281	1.5281	5.0000e-005	0.0000	1.5293
Total	**2.6500e-003**	**0.0639**	**0.0209**	**2.0000e-004**	**5.6200e-003**	**2.0000e-004**	**5.8200e-003**	**1.5300e-003**	**1.9000e-004**	**1.7200e-003**	**0.0000**	**18.9847**	**18.9847**	**1.2600e-003**	**0.0000**	**19.0161**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.3000e-004	4.8700e-003	1.0000e-005	1.3400e-003	1.0000e-005	1.3500e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2225	1.2225	4.0000e-005	0.0000	1.2234
Total	**5.8000e-004**	**4.3000e-004**	**4.8700e-003**	**1.0000e-005**	**1.3400e-003**	**1.0000e-005**	**1.3500e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.2225**	**1.2225**	**4.0000e-005**	**0.0000**	**1.2234**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.3000e-004	4.8700e-003	1.0000e-005	1.3400e-003	1.0000e-005	1.3500e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2225	1.2225	4.0000e-005	0.0000	1.2234
Total	**5.8000e-004**	**4.3000e-004**	**4.8700e-003**	**1.0000e-005**	**1.3400e-003**	**1.0000e-005**	**1.3500e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.2225**	**1.2225**	**4.0000e-005**	**0.0000**	**1.2234**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5405	103.5405	0.0335	0.0000	104.3776
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5405**	**103.5405**	**0.0335**	**0.0000**	**104.3776**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2200e-003	9.0000e-004	0.0103	3.0000e-005	2.8300e-003	2.0000e-005	2.8600e-003	7.5000e-004	2.0000e-005	7.8000e-004	0.0000	2.5808	2.5808	8.0000e-005	0.0000	2.5828
Total	**1.2200e-003**	**9.0000e-004**	**0.0103**	**3.0000e-005**	**2.8300e-003**	**2.0000e-005**	**2.8600e-003**	**7.5000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.5808**	**2.5808**	**8.0000e-005**	**0.0000**	**2.5828**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5403	103.5403	0.0335	0.0000	104.3775
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5403**	**103.5403**	**0.0335**	**0.0000**	**104.3775**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2200e-003	9.0000e-004	0.0103	3.0000e-005	2.8300e-003	2.0000e-005	2.8600e-003	7.5000e-004	2.0000e-005	7.8000e-004	0.0000	2.5808	2.5808	8.0000e-005	0.0000	2.5828
Total	**1.2200e-003**	**9.0000e-004**	**0.0103**	**3.0000e-005**	**2.8300e-003**	**2.0000e-005**	**2.8600e-003**	**7.5000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.5808**	**2.5808**	**8.0000e-005**	**0.0000**	**2.5828**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.5000e-004	1.7400e-003	1.0000e-005	5.2000e-004	0.0000	5.3000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4587	0.4587	1.0000e-005	0.0000	0.4590
Total	**2.1000e-004**	**1.5000e-004**	**1.7400e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.3000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4587**	**0.4587**	**1.0000e-005**	**0.0000**	**0.4590**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.5000e-004	1.7400e-003	1.0000e-005	5.2000e-004	0.0000	5.3000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4587	0.4587	1.0000e-005	0.0000	0.4590
Total	**2.1000e-004**	**1.5000e-004**	**1.7400e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.3000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4587**	**0.4587**	**1.0000e-005**	**0.0000**	**0.4590**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1324	293.1324	0.0702	0.0000	294.8881
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1324**	**293.1324**	**0.0702**	**0.0000**	**294.8881**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.3051	0.2164	2.5233	7.3500e-003	0.7557	6.2300e-003	0.7619	0.2007	5.7400e-003	0.2065	0.0000	663.9936	663.9936	0.0187	0.0000	664.4604
Total	**0.3578**	**1.9125**	**2.9812**	**0.0119**	**0.8696**	**9.4100e-003**	**0.8790**	**0.2336**	**8.7800e-003**	**0.2424**	**0.0000**	**1,105.9771**	**1,105.9771**	**0.0451**	**0.0000**	**1,107.1039**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1321	293.1321	0.0702	0.0000	294.8877
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1321**	**293.1321**	**0.0702**	**0.0000**	**294.8877**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.3051	0.2164	2.5233	7.3500e-003	0.7557	6.2300e-003	0.7619	0.2007	5.7400e-003	0.2065	0.0000	663.9936	663.9936	0.0187	0.0000	664.4604
Total	**0.3578**	**1.9125**	**2.9812**	**0.0119**	**0.8696**	**9.4100e-003**	**0.8790**	**0.2336**	**8.7800e-003**	**0.2424**	**0.0000**	**1,105.9771**	**1,105.9771**	**0.0451**	**0.0000**	**1,107.1039**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2789	286.2789	0.0681	0.0000	287.9814
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2789**	**286.2789**	**0.0681**	**0.0000**	**287.9814**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.2795	0.1910	2.2635	6.9100e-003	0.7377	5.9100e-003	0.7436	0.1960	5.4500e-003	0.2014	0.0000	624.5363	624.5363	0.0164	0.0000	624.9466
Total	**0.3177**	**1.4420**	**2.6646**	**0.0112**	**0.8490**	**7.3700e-003**	**0.8564**	**0.2281**	**6.8500e-003**	**0.2349**	**0.0000**	**1,042.5294**	**1,042.5294**	**0.0392**	**0.0000**	**1,043.5090**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2785	286.2785	0.0681	0.0000	287.9811
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2785**	**286.2785**	**0.0681**	**0.0000**	**287.9811**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.2795	0.1910	2.2635	6.9100e-003	0.7377	5.9100e-003	0.7436	0.1960	5.4500e-003	0.2014	0.0000	624.5363	624.5363	0.0164	0.0000	624.9466
Total	**0.3177**	**1.4420**	**2.6646**	**0.0112**	**0.8490**	**7.3700e-003**	**0.8564**	**0.2281**	**6.8500e-003**	**0.2349**	**0.0000**	**1,042.5294**	**1,042.5294**	**0.0392**	**0.0000**	**1,043.5090**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.2300e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.3000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6156	0.6156	2.0000e-005	0.0000	0.6160
Total	**2.8000e-004**	**1.9000e-004**	**2.2300e-003**	**1.0000e-005**	**7.3000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6156**	**0.6156**	**2.0000e-005**	**0.0000**	**0.6160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.2300e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.3000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6156	0.6156	2.0000e-005	0.0000	0.6160
Total	**2.8000e-004**	**1.9000e-004**	**2.2300e-003**	**1.0000e-005**	**7.3000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6156**	**0.6156**	**2.0000e-005**	**0.0000**	**0.6160**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	2.9000e-004	3.5100e-003	1.0000e-005	1.2300e-003	1.0000e-005	1.2400e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0094	1.0094	3.0000e-005	0.0000	1.0100
Total	**4.4000e-004**	**2.9000e-004**	**3.5100e-003**	**1.0000e-005**	**1.2300e-003**	**1.0000e-005**	**1.2400e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.0094**	**1.0094**	**3.0000e-005**	**0.0000**	**1.0100**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	2.9000e-004	3.5100e-003	1.0000e-005	1.2300e-003	1.0000e-005	1.2400e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0094	1.0094	3.0000e-005	0.0000	1.0100
Total	**4.4000e-004**	**2.9000e-004**	**3.5100e-003**	**1.0000e-005**	**1.2300e-003**	**1.0000e-005**	**1.2400e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.0094**	**1.0094**	**3.0000e-005**	**0.0000**	**1.0100**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4800e-003	4.9300e-003	0.0596	1.9000e-004	0.0209	1.6000e-004	0.0211	5.5500e-003	1.5000e-004	5.7000e-003	0.0000	17.1287	17.1287	4.3000e-004	0.0000	17.1394
Total	**7.4800e-003**	**4.9300e-003**	**0.0596**	**1.9000e-004**	**0.0209**	**1.6000e-004**	**0.0211**	**5.5500e-003**	**1.5000e-004**	**5.7000e-003**	**0.0000**	**17.1287**	**17.1287**	**4.3000e-004**	**0.0000**	**17.1394**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4800e-003	4.9300e-003	0.0596	1.9000e-004	0.0209	1.6000e-004	0.0211	5.5500e-003	1.5000e-004	5.7000e-003	0.0000	17.1287	17.1287	4.3000e-004	0.0000	17.1394
Total	**7.4800e-003**	**4.9300e-003**	**0.0596**	**1.9000e-004**	**0.0209**	**1.6000e-004**	**0.0211**	**5.5500e-003**	**1.5000e-004**	**5.7000e-003**	**0.0000**	**17.1287**	**17.1287**	**4.3000e-004**	**0.0000**	**17.1394**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Unmitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,512.6465	2,512.6465	0.1037	0.0215	2,521.6356
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,512.6465	2,512.6465	0.1037	0.0215	2,521.6356
NaturalGas Mitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.4267	1,383.4267	0.0265	0.0254	1,391.6478
NaturalGas Unmitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.4267	1,383.4267	0.0265	0.0254	1,391.6478

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30613e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1468
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91840	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30613e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1468
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91840	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.6465**	**0.1037**	**0.0215**	**2,521.6356**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.6465**	**0.1037**	**0.0215**	**2,521.6356**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Unmitigated	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1187	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1187	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	585.8052	3.0183	0.0755	683.7567
Unmitigated	585.8052	3.0183	0.0755	683.7567

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		**585.8052**	**3.0183**	**0.0755**	**683.7567**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		**585.8052**	**3.0183**	**0.0755**	**683.7567**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	207.8079	12.2811	0.0000	514.8354
Unmitigated	207.8079	12.2811	0.0000	514.8354

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		**207.8079**	**12.2811**	**0.0000**	**514.8354**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		**207.8079**	**12.2811**	**0.0000**	**514.8354**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Village South Specific Plan (Proposed)
Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27
tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2561	46.4415	31.4494	0.0636	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,163.4166	6,163.4166	1.9475	0.0000	6,212.1039
2022	4.5441	38.8811	40.8776	0.1240	8.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,493.4403	12,493.4403	1.9485	0.0000	12,518.5707
2023	4.1534	25.7658	38.7457	0.1206	7.0088	0.7592	7.7679	1.8799	0.7136	2.5935	0.0000	12,150.4890	12,150.4890	0.9589	0.0000	12,174.4615
2024	237.0219	9.5478	14.9642	0.0239	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,313.1808	2,313.1808	0.7166	0.0000	2,331.0956
Maximum	**237.0219**	**46.4415**	**40.8776**	**0.1240**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,493.4403**	**12,493.4403**	**1.9485**	**0.0000**	**12,518.5707**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2561	46.4415	31.4494	0.0636	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,163.4166	6,163.4166	1.9475	0.0000	6,212.1039
2022	4.5441	38.8811	40.8776	0.1240	8.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,493.4403	12,493.4403	1.9485	0.0000	12,518.5707
2023	4.1534	25.7658	38.7457	0.1206	7.0088	0.7592	7.7679	1.8799	0.7136	2.5935	0.0000	12,150.4890	12,150.4890	0.9589	0.0000	12,174.4615
2024	237.0219	9.5478	14.9642	0.0239	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,313.1808	2,313.1808	0.7166	0.0000	2,331.0955
Maximum	**237.0219**	**46.4415**	**40.8776**	**0.1240**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,493.4403**	**12,493.4403**	**1.9485**	**0.0000**	**12,518.5707**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1168**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1168**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1273	4.0952	0.9602	0.0119	0.2669	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.2413	1,292.2413	0.0877		1,294.4337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0487	0.0313	0.4282	1.1800e-003	0.1141	9.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		117.2799	117.2799	3.5200e-003		117.3678
Total	**0.1760**	**4.1265**	**1.3884**	**0.0131**	**0.3810**	**0.0135**	**0.3946**	**0.1034**	**0.0129**	**0.1163**		**1,409.5212**	**1,409.5212**	**0.0912**		**1,411.8015**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1273	4.0952	0.9602	0.0119	0.2669	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.2413	1,292.2413	0.0877		1,294.4337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0487	0.0313	0.4282	1.1800e-003	0.1141	9.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		117.2799	117.2799	3.5200e-003		117.3678
Total	**0.1760**	**4.1265**	**1.3884**	**0.0131**	**0.3810**	**0.0135**	**0.3946**	**0.1034**	**0.0129**	**0.1163**		**1,409.5212**	**1,409.5212**	**0.0912**		**1,411.8015**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0584	0.0375	0.5139	1.4100e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		140.7359	140.7359	4.2200e-003		140.8414
Total	**0.0584**	**0.0375**	**0.5139**	**1.4100e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**140.7359**	**140.7359**	**4.2200e-003**		**140.8414**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0584	0.0375	0.5139	1.4100e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		140.7359	140.7359	4.2200e-003		140.8414
Total	**0.0584**	**0.0375**	**0.5139**	**1.4100e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**140.7359**	**140.7359**	**4.2200e-003**		**140.8414**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0649	0.0417	0.5710	1.5700e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		156.3732	156.3732	4.6900e-003		156.4904
Total	**0.0649**	**0.0417**	**0.5710**	**1.5700e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**156.3732**	**156.3732**	**4.6900e-003**		**156.4904**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0649	0.0417	0.5710	1.5700e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		156.3732	156.3732	4.6900e-003		156.4904
Total	**0.0649**	**0.0417**	**0.5710**	**1.5700e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**156.3732**	**156.3732**	**4.6900e-003**		**156.4904**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0607	0.0376	0.5263	1.5100e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		150.8754	150.8754	4.2400e-003		150.9813
Total	**0.0607**	**0.0376**	**0.5263**	**1.5100e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**150.8754**	**150.8754**	**4.2400e-003**		**150.9813**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0607	0.0376	0.5263	1.5100e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		150.8754	150.8754	4.2400e-003		150.9813
Total	**0.0607**	**0.0376**	**0.5263**	**1.5100e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**150.8754**	**150.8754**	**4.2400e-003**		**150.9813**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4079	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.5482	3,896.5482	0.2236		3,902.1384
Worker	2.4299	1.5074	21.0801	0.0607	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		6,042.5585	6,042.5585	0.1697		6,046.8000
Total	**2.8378**	**14.7106**	**24.5142**	**0.0971**	**7.0087**	**0.0741**	**7.0828**	**1.8799**	**0.0691**	**1.9490**		**9,939.1067**	**9,939.1067**	**0.3933**		**9,948.9384**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4079	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.5482	3,896.5482	0.2236		3,902.1384
Worker	2.4299	1.5074	21.0801	0.0607	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		6,042.5585	6,042.5585	0.1697		6,046.8000
Total	**2.8378**	**14.7106**	**24.5142**	**0.0971**	**7.0087**	**0.0741**	**7.0828**	**1.8799**	**0.0691**	**1.9490**		**9,939.1067**	**9,939.1067**	**0.3933**		**9,948.9384**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3027	10.0181	3.1014	0.0352	0.9156	0.0116	0.9271	0.2636	0.0111	0.2747		3,773.8762	3,773.8762	0.1982		3,778.8300
Worker	2.2780	1.3628	19.4002	0.0584	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,821.4028	5,821.4028	0.1529		5,825.2254
Total	**2.5807**	**11.3809**	**22.5017**	**0.0936**	**7.0088**	**0.0595**	**7.0682**	**1.8799**	**0.0552**	**1.9350**		**9,595.2790**	**9,595.2790**	**0.3511**		**9,604.0554**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3027	10.0181	3.1014	0.0352	0.9156	0.0116	0.9271	0.2636	0.0111	0.2747		3,773.8762	3,773.8762	0.1982		3,778.8300
Worker	2.2780	1.3628	19.4002	0.0584	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,821.4028	5,821.4028	0.1529		5,825.2254
Total	**2.5807**	**11.3809**	**22.5017**	**0.0936**	**7.0088**	**0.0595**	**7.0682**	**1.8799**	**0.0552**	**1.9350**		**9,595.2790**	**9,595.2790**	**0.3511**		**9,604.0554**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0427	0.0255	0.3633	1.0900e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		109.0150	109.0150	2.8600e-003		109.0866
Total	**0.0427**	**0.0255**	**0.3633**	**1.0900e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**109.0150**	**109.0150**	**2.8600e-003**		**109.0866**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0427	0.0255	0.3633	1.0900e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		109.0150	109.0150	2.8600e-003		109.0866
Total	**0.0427**	**0.0255**	**0.3633**	**1.0900e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**109.0150**	**109.0150**	**2.8600e-003**		**109.0866**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0403	0.0233	0.3384	1.0600e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		105.6336	105.6336	2.6300e-003		105.6992
Total	**0.0403**	**0.0233**	**0.3384**	**1.0600e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**105.6336**	**105.6336**	**2.6300e-003**		**105.6992**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0403	0.0233	0.3384	1.0600e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		105.6336	105.6336	2.6300e-003		105.6992
Total	**0.0403**	**0.0233**	**0.3384**	**1.0600e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**105.6336**	**105.6336**	**2.6300e-003**		**105.6992**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4296	0.2481	3.6098	0.0113	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,126.7583	1,126.7583	0.0280		1,127.4583
Total	**0.4296**	**0.2481**	**3.6098**	**0.0113**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,126.7583**	**1,126.7583**	**0.0280**		**1,127.4583**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4296	0.2481	3.6098	0.0113	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,126.7583	1,126.7583	0.0280		1,127.4583
Total	**0.4296**	**0.2481**	**3.6098**	**0.0113**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,126.7583**	**1,126.7583**	**0.0280**		**1,127.4583**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Unmitigated	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day											lb/day				
Apartments Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day											lb/day				
Apartments Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Village South Specific Plan (Proposed)
Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82

tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27
tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2621	46.4460	31.4068	0.0635	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,154.3377	6,154.3377	1.9472	0.0000	6,203.0186
2022	4.7966	38.8851	39.6338	0.1195	8.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,035.3440	12,035.3440	1.9482	0.0000	12,060.6013
2023	4.3939	25.8648	37.5031	0.1162	7.0088	0.7598	7.7685	1.8799	0.7142	2.5940	0.0000	11,710.4080	11,710.4080	0.9617	0.0000	11,734.4497
2024	237.0656	9.5503	14.9372	0.0238	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,307.0517	2,307.0517	0.7164	0.0000	2,324.9627
Maximum	**237.0656**	**46.4460**	**39.6338**	**0.1195**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,035.3440**	**12,035.3440**	**1.9482**	**0.0000**	**12,060.6013**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2621	46.4460	31.4068	0.0635	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,154.3377	6,154.3377	1.9472	0.0000	6,203.0186
2022	4.7966	38.8851	39.6338	0.1195	8.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,035.3440	12,035.3440	1.9482	0.0000	12,060.6013
2023	4.3939	25.8648	37.5031	0.1162	7.0088	0.7598	7.7685	1.8799	0.7142	2.5940	0.0000	11,710.4080	11,710.4080	0.9617	0.0000	11,734.4497
2024	237.0656	9.5503	14.9372	0.0238	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,307.0517	2,307.0517	0.7164	0.0000	2,324.9627
Maximum	**237.0656**	**46.4460**	**39.6338**	**0.1195**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,035.3440**	**12,035.3440**	**1.9482**	**0.0000**	**12,060.6013**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	458.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.8555	1,269.8555	0.0908		1,272.1252
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0532	0.0346	0.3963	1.1100e-003	0.1141	9.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		110.4707	110.4707	3.3300e-003		110.5539
Total	**0.1835**	**4.1800**	**1.4144**	**0.0128**	**0.3810**	**0.0137**	**0.3948**	**0.1034**	**0.0131**	**0.1165**		**1,380.3262**	**1,380.3262**	**0.0941**		**1,382.6791**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.8555	1,269.8555	0.0908		1,272.1252
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0532	0.0346	0.3963	1.1100e-003	0.1141	9.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		110.4707	110.4707	3.3300e-003		110.5539
Total	**0.1835**	**4.1800**	**1.4144**	**0.0128**	**0.3810**	**0.0137**	**0.3948**	**0.1034**	**0.0131**	**0.1165**		**1,380.3262**	**1,380.3262**	**0.0941**		**1,382.6791**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0638	0.0415	0.4755	1.3300e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		132.5649	132.5649	3.9900e-003		132.6646
Total	**0.0638**	**0.0415**	**0.4755**	**1.3300e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**132.5649**	**132.5649**	**3.9900e-003**		**132.6646**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0638	0.0415	0.4755	1.3300e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		132.5649	132.5649	3.9900e-003		132.6646
Total	**0.0638**	**0.0415**	**0.4755**	**1.3300e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**132.5649**	**132.5649**	**3.9900e-003**		**132.6646**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0709	0.0462	0.5284	1.4800e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		147.2943	147.2943	4.4300e-003		147.4051
Total	**0.0709**	**0.0462**	**0.5284**	**1.4800e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**147.2943**	**147.2943**	**4.4300e-003**		**147.4051**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0709	0.0462	0.5284	1.4800e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		147.2943	147.2943	4.4300e-003		147.4051
Total	**0.0709**	**0.0462**	**0.5284**	**1.4800e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**147.2943**	**147.2943**	**4.4300e-003**		**147.4051**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0665	0.0416	0.4861	1.4300e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		142.1207	142.1207	4.0000e-003		142.2207
Total	**0.0665**	**0.0416**	**0.4861**	**1.4300e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**142.1207**	**142.1207**	**4.0000e-003**		**142.2207**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0665	0.0416	0.4861	1.4300e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		142.1207	142.1207	4.0000e-003		142.2207
Total	**0.0665**	**0.0416**	**0.4861**	**1.4300e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**142.1207**	**142.1207**	**4.0000e-003**		**142.2207**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.0750	3,789.0750	0.2381		3,795.0283
Worker	2.6620	1.6677	19.4699	0.0571	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		5,691.9354	5,691.9354	0.1602		5,695.9408
Total	**3.0904**	**14.8350**	**23.2704**	**0.0926**	**7.0087**	**0.0749**	**7.0836**	**1.8799**	**0.0699**	**1.9498**		**9,481.0104**	**9,481.0104**	**0.3984**		**9,490.9691**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.0750	3,789.0750	0.2381		3,795.0283
Worker	2.6620	1.6677	19.4699	0.0571	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		5,691.9354	5,691.9354	0.1602		5,695.9408
Total	**3.0904**	**14.8350**	**23.2704**	**0.0926**	**7.0087**	**0.0749**	**7.0836**	**1.8799**	**0.0699**	**1.9498**		**9,481.0104**	**9,481.0104**	**0.3984**		**9,490.9691**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.4007	3,671.4007	0.2096		3,676.6417
Worker	2.5029	1.5073	17.8820	0.0550	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,483.7974	5,483.7974	0.1442		5,487.4020
Total	**2.8211**	**11.4799**	**21.2591**	**0.0893**	**7.0088**	**0.0601**	**7.0688**	**1.8799**	**0.0557**	**1.9356**		**9,155.1981**	**9,155.1981**	**0.3538**		**9,164.0437**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.4007	3,671.4007	0.2096		3,676.6417
Worker	2.5029	1.5073	17.8820	0.0550	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,483.7974	5,483.7974	0.1442		5,487.4020
Total	**2.8211**	**11.4799**	**21.2591**	**0.0893**	**7.0088**	**0.0601**	**7.0688**	**1.8799**	**0.0557**	**1.9356**		**9,155.1981**	**9,155.1981**	**0.3538**		**9,164.0437**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0469	0.0282	0.3349	1.0300e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		102.6928	102.6928	2.7000e-003		102.7603
Total	**0.0469**	**0.0282**	**0.3349**	**1.0300e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**102.6928**	**102.6928**	**2.7000e-003**		**102.7603**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0469	0.0282	0.3349	1.0300e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		102.6928	102.6928	2.7000e-003		102.7603
Total	**0.0469**	**0.0282**	**0.3349**	**1.0300e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**102.6928**	**102.6928**	**2.7000e-003**		**102.7603**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0444	0.0257	0.3114	1.0000e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		99.5045	99.5045	2.4700e-003		99.5663
Total	**0.0444**	**0.0257**	**0.3114**	**1.0000e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**99.5045**	**99.5045**	**2.4700e-003**		**99.5663**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0444	0.0257	0.3114	1.0000e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		99.5045	99.5045	2.4700e-003		99.5663
Total	**0.0444**	**0.0257**	**0.3114**	**1.0000e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**99.5045**	**99.5045**	**2.4700e-003**		**99.5663**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4734	0.2743	3.3220	0.0107	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,061.3818	1,061.3818	0.0264		1,062.0410
Total	**0.4734**	**0.2743**	**3.3220**	**0.0107**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,061.3818**	**1,061.3818**	**0.0264**		**1,062.0410**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4734	0.2743	3.3220	0.0107	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,061.3818	1,061.3818	0.0264		1,062.0410
Total	**0.4734**	**0.2743**	**3.3220**	**0.0107**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,061.3818**	**1,061.3818**	**0.0264**		**1,062.0410**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Unmitigated	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day											lb/day				
Apartments Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day											lb/day				
Apartments Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment C

Local Hire Provision Net Change	
Without Local Hire Provision	
Total Construction GHG Emissions (MT CO2e)	3,623
Amortized (MT CO2e/year)	120.77
With Local Hire Provision	
Total Construction GHG Emissions (MT CO2e)	3,024
Amortized (MT CO2e/year)	100.80
% Decrease in Construction-related GHG Emissions	***17%***

EXHIBIT B

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

SOIL WATER AIR PROTECTION ENTERPRISE
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Santa Monica, California 90405
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Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on volatile organic compound filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

Professional Experience

Dr. Rosenfeld has over 25 years' experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from unconventional oil drilling operations, oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, and many other industrial and agricultural sources. His project experience ranges from monitoring and modeling of pollution sources to evaluating impacts of pollution on workers at industrial facilities and residents in surrounding communities.

Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing lead, heavy metals, mold, bacteria, particulate matter, petroleum hydrocarbons, chlorinated solvents, pesticides, radioactive waste, dioxins and furans, semi- and volatile organic compounds, PCBs, PAHs, perchlorate, asbestos, per- and poly-fluoroalkyl substances (PFOA/PFOS), unusual polymers, fuel oxygenates (MTBE), among other pollutants. Dr. Rosenfeld also has experience evaluating greenhouse gas emissions from various projects and is an expert on the assessment of odors from industrial and agricultural sites, as well as the evaluation of odor nuisance impacts and technologies for abatement of odorous emissions. As a principal scientist at SWAPE, Dr. Rosenfeld directs air dispersion modeling and exposure assessments. He has served as an expert witness and testified about pollution sources causing nuisance and/or personal injury at dozens of sites and has testified as an expert witness on more than ten cases involving exposure to air contaminants from industrial sources.

Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_2O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

Publications:

Remy, L.L., Clay T., Byers, V., **Rosenfeld P. E.** (2019) Hospital, Health, and Community Burden After Oil Refinery Fires, Richmond, California 2007 and 2012. *Environmental Health.* 18:48

Simons, R.A., Seo, Y. **Rosenfeld, P**., (2015) Modeling the Effect of Refinery Emission On Residential Property Value. Journal of Real Estate Research. 27(3):321-342

Chen, J. A, Zapata A. R., Sutherland A. J., Molmen, D.R., Chow, B. S., Wu, L. E., **Rosenfeld, P. E.,** Hesse, R. C., (2012) Sulfur Dioxide and Volatile Organic Compound Exposure To A Community In Texas City Texas Evaluated Using Aermod and Empirical Data. *American Journal of Environmental Science*, 8(6), 622-632.

Rosenfeld, P.E. & Feng, L. (2011). *The Risks of Hazardous Waste.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2010). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences*. 113–125.

Feng, L., Wu, C., Tam, L., Sutherland, A.J., Clark, J.J., **Rosenfeld, P.E.** (2010). Dioxin and Furan Blood Lipid and Attic Dust Concentrations in Populations Living Near Four Wood Treatment Facilities in the United States. *Journal of Environmental Health*. 73(6), 34-46.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2010). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Wood and Paper Industries.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2009). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Petroleum Industry*. Amsterdam: Elsevier Publishing.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. *WIT Transactions on Ecology and the Environment, Air Pollution,* 123 (17), 319-327.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. *Organohalogen Compounds*, 70, 002252-002255.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. *Organohalogen Compounds*, 70, 000527-000530.

Hensley, A.R. A. Scott, J. J. J. Clark, **Rosenfeld, P.E.** (2007). Attic Dust and Human Blood Samples Collected near a Former Wood Treatment Facility. *Environmental Research*. 105, 194-197.

Rosenfeld, P.E., J. J. J. Clark, A. R. Hensley, M. Suffet. (2007). The Use of an Odor Wheel Classification for Evaluation of Human Health Risk Criteria for Compost Facilities. *Water Science & Technology* 55(5), 345-357.

Rosenfeld, P. E., M. Suffet. (2007). The Anatomy Of Odour Wheels For Odours Of Drinking Water, Wastewater, Compost And The Urban Environment. *Water Science & Technology* 55(5), 335-344.

Sullivan, P. J. Clark, J.J.J., Agardy, F. J., **Rosenfeld, P.E.** (2007). *Toxic Legacy, Synthetic Toxins in the Food, Water, and Air in American Cities.* Boston Massachusetts: Elsevier Publishing

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash. *Water Science and Technology*. 49(9),171-178.

Rosenfeld P. E., J.J. Clark, I.H. (Mel) Suffet (2004). The Value of An Odor-Quality-Wheel Classification Scheme For The Urban Environment. *Water Environment Federation's Technical Exhibition and Conference (WEFTEC) 2004.* New Orleans, October 2-6, 2004.

Rosenfeld, P.E., and Suffet, I.H. (2004). Understanding Odorants Associated With Compost, Biomass Facilities, and the Land Application of Biosolids. *Water Science and Technology*. 49(9), 193-199.

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash, *Water Science and Technology*, 49(9), 171-178.

Rosenfeld, P. E., Grey, M. A., Sellew, P. (2004). Measurement of Biosolids Odor and Odorant Emissions from Windrows, Static Pile and Biofilter. *Water Environment Research*. 76(4), 310-315.

Rosenfeld, P.E., Grey, M and Suffet, M. (2002). Compost Demonstration Project, Sacramento California Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Integrated Waste Management Board Public Affairs Office*, Publications Clearinghouse (MS–6), Sacramento, CA Publication #442-02-008.

Rosenfeld, P.E., and C.L. Henry. (2001). Characterization of odor emissions from three different biosolids. *Water Soil and Air Pollution*. 127(1-4), 173-191.

Rosenfeld, P.E., and Henry C. L., (2000). Wood ash control of odor emissions from biosolids application. *Journal of Environmental Quality.* 29, 1662-1668.

Rosenfeld, P.E., C.L. Henry and D. Bennett. (2001). Wastewater dewatering polymer affect on biosolids odor emissions and microbial activity. *Water Environment Research*. 73(4), 363-367.

Rosenfeld, P.E., and C.L. Henry. (2001). Activated Carbon and Wood Ash Sorption of Wastewater, Compost, and Biosolids Odorants. *Water Environment Research*, 73, 388-393.

Rosenfeld, P.E., and Henry C. L., (2001). High carbon wood ash effect on biosolids microbial activity and odor. *Water Environment Research*. 131(1-4), 247-262.

Chollack, T. and **P. Rosenfeld. (**1998). Compost Amendment Handbook For Landscaping. Prepared for and distributed by the City of Redmond, Washington State.

Rosenfeld, P. E. (1992). The Mount Liamuiga Crater Trail. *Heritage Magazine of St. Kitts*, 3(2).

Rosenfeld, P. E. (1993). High School Biogas Project to Prevent Deforestation On St. Kitts. *Biomass Users Network*, 7(1).

Rosenfeld, P. E. (1998). Characterization, Quantification, and Control of Odor Emissions From Biosolids Application To Forest Soil. Doctoral Thesis. University of Washington College of Forest Resources.

Rosenfeld, P. E. (1994). Potential Utilization of Small Diameter Trees on Sierra County Public Land. Masters thesis reprinted by the Sierra County Economic Council. Sierra County, California.

Rosenfeld, P. E. (1991). How to Build a Small Rural Anaerobic Digester & Uses Of Biogas In The First And Third World. Bachelors Thesis. University of California.

Presentations:

Rosenfeld, P.E., Sutherland, A; Hesse, R.; Zapata, A. (October 3-6, 2013). Air dispersion modeling of volatile organic emissions from multiple natural gas wells in Decatur, TX. *44th Western Regional Meeting, American Chemical Society.* Lecture conducted from Santa Clara, CA.

Sok, H.L.; Waller, C.C.; Feng, L.; Gonzalez, J.; Sutherland, A.J.; Wisdom-Stack, T.; Sahai, R.K.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Atrazine: A Persistent Pesticide in Urban Drinking Water. *Urban Environmental Pollution*. Lecture conducted from Boston, MA.

Feng, L.; Gonzalez, J.; Sok, H.L.; Sutherland, A.J.; Waller, C.C.; Wisdom-Stack, T.; Sahai, R.K.; La, M.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Bringing Environmental Justice to East St. Louis, Illinois. *Urban Environmental Pollution.* Lecture conducted from Boston, MA.

Rosenfeld, P.E. (April 19-23, 2009). Perfluoroctanoic Acid (PFOA) and Perfluoroactane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*, Lecture conducted from Tuscon, AZ.

Rosenfeld, P.E. (April 19-23, 2009). Cost to Filter Atrazine Contamination from Drinking Water in the United States" Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*. Lecture conducted from Tuscon, AZ.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (20-22 July, 2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. Brebbia, C.A. and Popov, V., eds., *Air Pollution XVII: Proceedings of the Seventeenth International Conference on Modeling, Monitoring and Management of Air Pollution*. Lecture conducted from Tallinn, Estonia.

Rosenfeld, P. E. (October 15-18, 2007). Moss Point Community Exposure To Contaminants From A Releasing Facility. *The 23rd Annual International Conferences on Soils Sediment and Water.* Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant. *The 23rd Annual International Conferences on Soils Sediment and Water*. Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions. The *23rd Annual International Conferences on Soils Sediment and Water*. Lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld P. E. (March 2007). Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP). *The Association for Environmental Health and Sciences (AEHS) Annual Meeting*. Lecture conducted from San Diego, CA.

Rosenfeld P. E. (March 2007). Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama. *The AEHS Annual Meeting.* Lecture conducted from San Diego, CA.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (August 21 – 25, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006*. Lecture conducted from Radisson SAS Scandinavia Hotel in Oslo Norway.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (November 4-8, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *APHA 134 Annual Meeting & Exposition.* Lecture conducted from Boston Massachusetts.

Paul Rosenfeld Ph.D. (October 24-25, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. Mealey's C8/PFOA. *Science, Risk & Litigation Conference.* Lecture conducted from The Rittenhouse Hotel, Philadelphia, PA.

Paul Rosenfeld Ph.D. (September 19, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, *Toxicology and Remediation PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel, Irvine California.

Paul Rosenfeld Ph.D. (September 19, 2005). Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP. *PEMA Emerging Contaminant Conference.* Lecture conducted from Hilton Hotel in Irvine, California.

Paul Rosenfeld Ph.D. (September 26-27, 2005). Fate, Transport and Persistence of PDBEs. *Mealey's Groundwater Conference.* Lecture conducted from Ritz Carlton Hotel, Marina Del Ray, California.

Paul Rosenfeld Ph.D. (June 7-8, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. *International Society of Environmental Forensics: Focus On Emerging Contaminants*. Lecture conducted from Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Fate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals. *2005 National Groundwater Association Ground Water And Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation. *2005 National Groundwater Association Ground Water and Environmental Law Conference.* Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. and Rob Hesse R.G. (May 5-6, 2004). Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. *National Groundwater Association. Environmental Law Conference*. Lecture conducted from Congress Plaza Hotel, Chicago Illinois.

Paul Rosenfeld, Ph.D. (March 2004). Perchlorate Toxicology. *Meeting of the American Groundwater Trust*. Lecture conducted from Phoenix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse (2004). Perchlorate Contamination of the Colorado River. *Meeting of tribal representatives*. Lecture conducted from Parker, AZ.

Paul Rosenfeld, Ph.D. (April 7, 2004). A National Damage Assessment Model For PCE and Dry Cleaners. *Drycleaner Symposium. California Ground Water Association*. Lecture conducted from Radison Hotel, Sacramento, California.

Rosenfeld, P. E., Grey, M., (June 2003) Two stage biofilter for biosolids composting odor control. *Seventh International In Situ And On Site Bioremediation Symposium Battelle Conference* Orlando, FL.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. (February 20-21, 2003) Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. *National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants*.. Lecture conducted from Hyatt Regency Phoenix Arizona.

Paul Rosenfeld, Ph.D. (February 6-7, 2003). Underground Storage Tank Litigation and Remediation. *California CUPA Forum*. Lecture conducted from Marriott Hotel, Anaheim California.

Paul Rosenfeld, Ph.D. (October 23, 2002) Underground Storage Tank Litigation and Remediation. *EPA Underground Storage Tank Roundtable*. Lecture conducted from Sacramento California.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Understanding Odor from Compost, *Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Using High Carbon Wood Ash to Control Compost Odor. *Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Grey, M. A. (September 22-24, 2002). Biocycle Composting For Coastal Sage Restoration. *Northwest Biosolids Management Association*. Lecture conducted from Vancouver Washington..

Rosenfeld, P.E. and Grey, M. A. (November 11-14, 2002). Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Soil Science Society Annual Conferenc*e. Lecture conducted from Indianapolis, Maryland.

Rosenfeld. P.E. (September 16, 2000). Two stage biofilter for biosolids composting odor control. *Water Environment Federation.* Lecture conducted from Anaheim California.

Rosenfeld. P.E. (October 16, 2000). Wood ash and biofilter control of compost odor. *Biofest.* Lecture conducted from Ocean Shores, California.

Rosenfeld, P.E. (2000). Bioremediation Using Organic Soil Amendments. *California Resource Recovery Association*. Lecture conducted from Sacramento California.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. *Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings*. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., and C.L. Henry. (1999). An evaluation of ash incorporation with biosolids for odor reduction. *Soil Science Society of America*. Lecture conducted from Salt Lake City Utah.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. *Brown and Caldwell.* Lecture conducted from Seattle Washington.

Rosenfeld, P.E., C.L. Henry. (1998). Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. *Biofest.* Lecture conducted from Lake Chelan, Washington.

Rosenfeld, P.E, C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., C.L. Henry, R. B. Harrison, and R. Dills. (1997). Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. *Soil Science Society of America*. Lecture conducted from Anaheim California.

Teaching Experience:

UCLA Department of Environmental Health (Summer 2003 through 20010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focused on the health effects of environmental contaminants.

National Ground Water Association, Successful Remediation Technologies. Custom Course in Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5, 2002. Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

Academic Grants Awarded:

California Integrated Waste Management Board. $41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: $10,000 grant awarded to San Diego State University.
Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. $100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. $20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: $10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: $15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. $500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993

Deposition and/or Trial Testimony:

In the United States District Court For The District of New Jersey
Duarte et al, *Plaintiffs,* vs. United States Metals Refining Company et. al. *Defendant.*
Case No.: 2:17-cv-01624-ES-SCM
Rosenfeld Deposition. 6-7-2019

In the United States District Court of Southern District of Texas Galveston Division
M/T Carla Maersk, *Plaintiffs,* vs. Conti 168., Schiffahrts-GMBH & Co. Bulker KG MS "Conti Perdido" *Defendant.*
Case No.: 3:15-CV-00106 consolidated with 3:15-CV-00237
Rosenfeld Deposition. 5-9-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
Carole-Taddeo-Bates et al., vs. Ifran Khan et al., Defendants
Case No.: No. BC615636
Rosenfeld Deposition, 1-26-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
The San Gabriel Valley Council of Governments et al. vs El Adobe Apts. Inc. et al., Defendants
Case No.: No. BC646857
Rosenfeld Deposition, 10-6-2018; Trial 3-7-19

In United States District Court For The District of Colorado
Bells et al. Plaintiff vs. The 3M Company et al., Defendants
Case: No 1:16-cv-02531-RBJ
Rosenfeld Deposition, 3-15-2018 and 4-3-2018

In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow Agrosciences, LLC, et al., Defendants
Cause No 1923
Rosenfeld Deposition, 11-17-2017

In The Superior Court of the State of California In And For The County Of Contra Costa
Simons et al., Plaintiffs vs. Chevron Corporation, et al., Defendants
Cause No C12-01481
Rosenfeld Deposition, 11-20-2017

In The Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 8-23-2017

In The Superior Court of the State of California, For The County of Los Angeles
Warrn Gilbert and Penny Gilber, Plaintiff vs. BMW of North America LLC
Case No.: LC102019 (c/w BC582154)
Rosenfeld Deposition, 8-16-2017, Trail 8-28-2018

In the Northern District Court of Mississippi, Greenville Division
Brenda J. Cooper, et al., *Plaintiffs,* vs. Meritor Inc., et al., *Defendants*
Case Number: 4:16-cv-52-DMB-JVM
Rosenfeld Deposition: July 2017

In The Superior Court of the State of Washington, County of Snohomish
Michael Davis and Julie Davis et al., Plaintiff vs. Cedar Grove Composting Inc., Defendants
Case No.: No. 13-2-03987-5
Rosenfeld Deposition, February 2017
Trial, March 2017

In The Superior Court of the State of California, County of Alameda
Charles Spain., Plaintiff vs. Thermo Fisher Scientific, et al., Defendants
Case No.: RG14711115
Rosenfeld Deposition, September 2015

In The Iowa District Court In And For Poweshiek County
Russell D. Winburn, et al., Plaintiffs vs. Doug Hoksbergen, et al., Defendants
Case No.: LALA002187
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Jerry Dovico, et al., Plaintiffs vs. Valley View Sine LLC, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Doug Pauls, et al.,, et al., Plaintiffs vs. Richard Warren, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Circuit Court of Ohio County, West Virginia
Robert Andrews, et al. v. Antero, et al.
Civil Action N0. 14-C-30000
Rosenfeld Deposition, June 2015

In The Third Judicial District County of Dona Ana, New Mexico
Betty Gonzalez, et al. Plaintiffs vs. Del Oro Dairy, Del Oro Real Estate LLC, Jerry Settles and Deward DeRuyter, Defendants
Rosenfeld Deposition: July 2015

In The Iowa District Court For Muscatine County
Laurie Freeman et. al. Plaintiffs vs. Grain Processing Corporation, Defendant
Case No 4980
Rosenfeld Deposition: May 2015

In the Circuit Court of the 17th Judicial Circuit, in and For Broward County, Florida
Walter Hinton, et. al. Plaintiff, vs. City of Fort Lauderdale, Florida, a Municipality, Defendant.
Case Number CACE07030358 (26)
Rosenfeld Deposition: December 2014

In the United States District Court Western District of Oklahoma
Tommy McCarty, et al., Plaintiffs, v. Oklahoma City Landfill, LLC d/b/a Southeast Oklahoma City Landfill, et al. Defendants.
Case No. 5:12-cv-01152-C
Rosenfeld Deposition: July 2014

In the County Court of Dallas County Texas
Lisa Parr et al, *Plaintiff*, vs. Aruba et al, *Defendant.*
Case Number cc-11-01650-E
Rosenfeld Deposition: March and September 2013
Rosenfeld Trial: April 2014

In the Court of Common Pleas of Tuscarawas County Ohio
John Michael Abicht, et al., *Plaintiffs,* vs. Republic Services, Inc., et al., *Defendants*
Case Number: 2008 CT 10 0741 (Cons. w/ 2009 CV 10 0987)
Rosenfeld Deposition: October 2012

In the United States District Court of Southern District of Texas Galveston Division
Kyle Cannon, Eugene Donovan, Genaro Ramirez, Carol Sassler, and Harvey Walton, each Individually and on behalf of those similarly situated, *Plaintiffs,* vs. BP Products North America, Inc., *Defendant.*
Case 3:10-cv-00622
Rosenfeld Deposition: February 2012
Rosenfeld Trial: April 2013

In the Circuit Court of Baltimore County Maryland
Philip E. Cvach, II et al., *Plaintiffs* vs. Two Farms, Inc. d/b/a Royal Farms, Defendants
Case Number: 03-C-12-012487 OT
Rosenfeld Deposition: September 2013

EXHIBIT C

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Matthew F. Hagemann, P.G., C.Hg., QSD, QSP

Geologic and Hydrogeologic Characterization
Industrial Stormwater Compliance
Investigation and Remediation Strategies
Litigation Support and Testifying Expert
CEQA Review

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 25 years of experience in environmental policy, assessment and remediation. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) while also working with permit holders to improve hydrogeologic characterization and water quality monitoring.

Matt has worked closely with U.S. EPA legal counsel and the technical staff of several states in the application and enforcement of RCRA, Safe Drinking Water Act and Clean Water Act regulations. Matt has trained the technical staff in the States of California, Hawaii, Nevada, Arizona and the Territory of Guam in the conduct of investigations, groundwater fundamentals, and sampling techniques.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2014;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 100 environmental impact reports since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, Valley Fever, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at industrial facilities.
- Manager of a project to provide technical assistance to a community adjacent to a former Naval shipyard under a grant from the U.S. EPA.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.
- Expert witness on two cases involving MTBE litigation.
- Expert witness and litigation support on the impact of air toxins and hazards at a school.
- Expert witness in litigation at a former plywood plant.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.

3

- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt taught physical geology (lecture and lab and introductory geology at Golden West College in Huntington Beach, California from 2010 to 2014.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examination, 2009-2011.

Response to Comment Letter O8 – Mitchell M. Tsai

O8-1 The commentor notes that the letter is on behalf of the Southwest Regional Council of Carpenters (SWRCC) and provides support for the Project and withdraws their prior comment letter from July 18, 2022. The commenter notes the SWRCC believes the Project will benefit the environment and the local economy.

The commenter's support of the Project letter is noted for the record and no further response is required. Following are responses to the commenter's July 18, 2022 letter.

O8-2 The comment notes the letter is on behalf of the Southwest Regional Council of Carpenters (SWRCC) and provides introductory comments describing the labor union and claim the SWRCC employees will be directly affected by the Project's environmental impacts.

Comments are noted for the record. All attachments to the comment letter have been received. As the specific comments in the letter re-state the comments in the attachments, responses to the letter also fully respond to the more specific comments provided in the attachments.

O8-3 The commenter makes a request that the County provide the commenter with copies of any and all notices referring or related to the Project as part of the CEQA process.

The County acknowledges the commenter's request, and the County will include the commenter on the mailing list for future CEQA notices related to the Project.

Environmental review documents pertaining to the Project were circulated for public review and remain available on the County's website. The County will continue to provide public notice in compliance with State CEQA Guidelines and state law.

O8-4 The commenter asserts that the County should require the Project Applicant to provide additional community benefits by requiring hiring of local union labor during construction of the Project as well as a skilled and trained workforce to include workers who have graduated from apprenticeship training programs approved by the state. The County has no authority over the hiring practices of private businesses as part of a development review process and there is no enforceable or otherwise feasible mechanism for the County to accommodate the commenter's request. However, the Project includes a community benefit program that is identified in the Development Agreement and in the Specific Plan, that includes partnerships with local based training organizations and colleges for skilled labor and other community programs to encourage hiring local labor and to provide local job opportunities. The County hopes that the development of this Project would result in good-paying jobs for its residents; but, has no feasible mechanism for requiring such. The comment also refers to an attachment to the letter from SWAPE ("SWAPE Letter") and refers the reader to the SWAPE Letter for commentary and analysis related to local hire requirements related to greenhouse gas modeling. Please see Responses O8-5 and O8-6 which respond to both the commentor's letter and the SWAPE Letter.

O8-5 See Response O8-4 above. The comment refers to benefits to hiring skilled workers and using local labor to aid in reducing air pollutants and goes on to discuss how other jurisdictions are including general plan policies requiring the promotion of local hiring. the general information

provided by the commenter raises an economic concern that does not address the adequacy of the environmental analysis contained in the Draft EIR and does not provide any substantial evidence (only conclusory non-expert opinions) to dispute the analysis provided in the Draft EIR or to demonstrate that local hire would specifically reduce any of the Project's environmental impacts that were disclosed in the Draft EIR. No additional response is necessary.

O8-6 See Response O8-4 and O8-5 above. The comment states locating jobs closer to residential areas and mandating local hire can have significant environmental benefits and reduce VMT. The comment suggests the County should consider utilizing skilled and trained workforce policies and requirements to benefit the local economy, mitigate greenhouse gas emissions, improve air quality, and reduce transportation impacts. The commenter does not provide any data that quantifies the reduction in air emissions or vehicle trips attributed to hiring local labor. As noted above in Response O8-4, the Project includes a community benefit program that is identified in the Development Agreement and in the Specific Plan, that includes partnerships with local based training organizations and colleges for skilled labor and other community programs to encourage hiring local labor and to provide local job opportunities.

O8-7 The comment suggests the County should require the Project to be built to standards exceeding the current 2019 California Green Building Code to mitigate environmental impacts.

The state's building code (CalGreen) is periodically updated to require more energy efficient building practices. As the Specific Plan is built out subsequent development would be subject to the latest version of the state (and County's) building code. It is anticipated as the Specific Plan is implemented development would be required to comply with more stringent energy requirements that would further help reduce the Project's GHG emissions in compliance with the state's environmental goals. The Project is consistent with all applicable regulations, including the 2019 California Green Building Code, as demonstrated in the Draft EIR in *Section 4.3, Air Quality* and *Section 4.8, Greenhouse Gas Emissions*.

Robert Redford Conservancy for Southern California Sustainability (O9)

Robert Redford Conservancy for Southern California Sustainability (O7)

Robert Redford
CONSERVANCY
for Southern California Sustainability
PITZER COLLEGE

July 18, 2022

Attn: Steven Valdez
County of San Bernardino
Senior Planner

Steven.Valdez@lus.sbcounty.gov

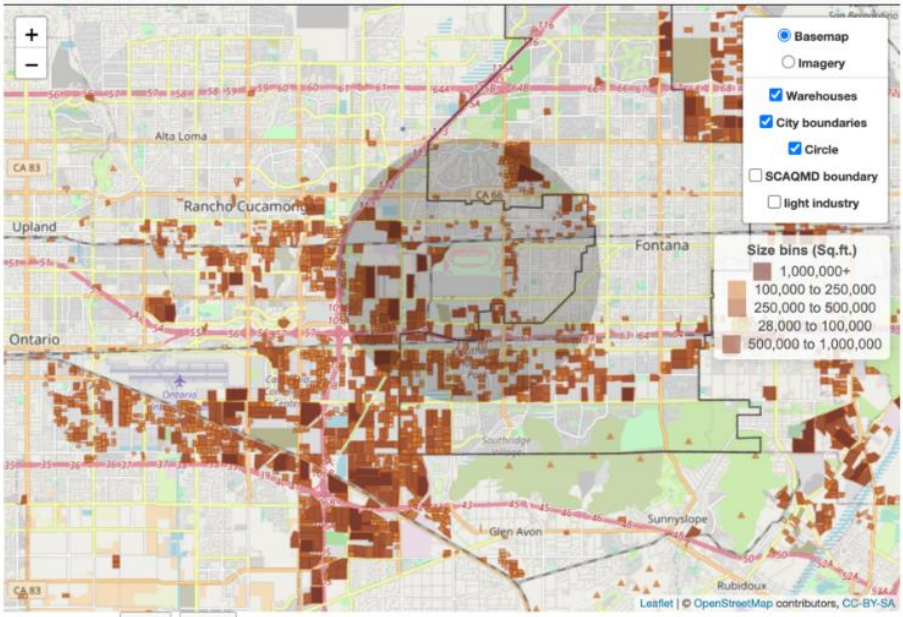
Dear Mr. Valdez:

My name is Susan Phillips and I am the Director of the Robert Redford Conservancy for Southern California Sustainability and a Professor of Environmental Analysis at Pitzer College. The Redford Conservancy aims to increase socio-ecological justice and sustainability in our surrounding communities and beyond. We support projects that bolster multiple and interconnected systems (ecological, human, political, economic and cultural), and we foster collaboration and leadership for socio-ecological justice and sustainability. We are writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. On the basis of these numbers, the County should reject the plan. 2

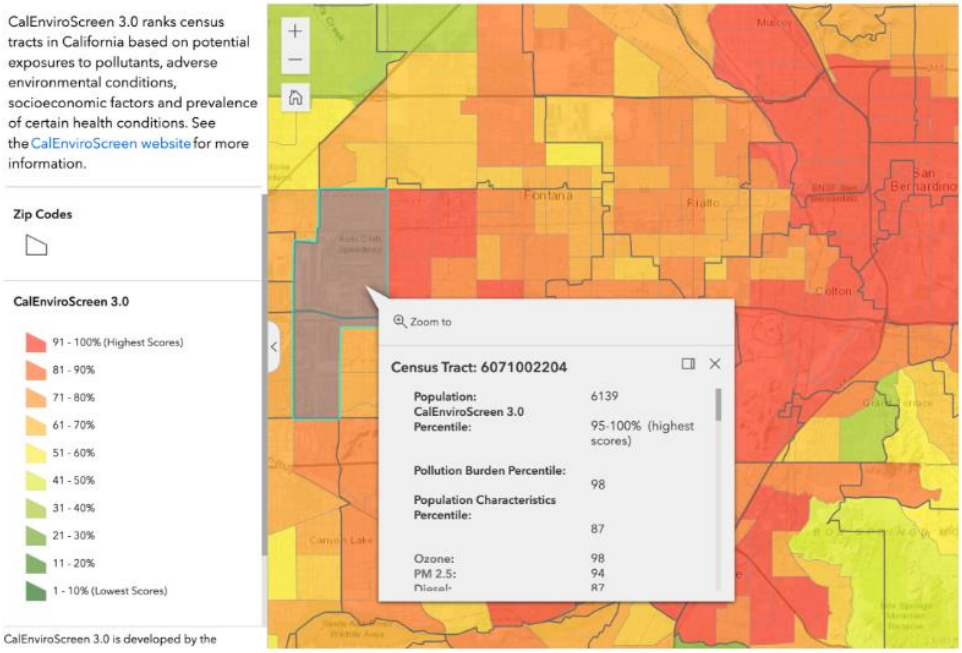
Based on our Warehouse CITY Cumulative Impact Tool, numbers associated with this area are already high enough to merit a rejection of the project. We have included two graphics below. The first shows the estimated warehouse numbers, numbers of associated truck trips per day as well as associated emissions of carbon, PMs, and NOx within a 5 km radius of the Speedway Project. Even while these numbers are most likely an underestimation, the area and nearby neighborhoods are dealing with almost 53 thousand truck trips per day, emissions of over 70 pounds per day of diesel particulate matter, over 8 thousand pounds of NOx per day, and almost 4.5 million pounds of carbon emitted per day. 3

Warehouses	Warehouse Acreage	Warehouse floor space (Sq.Ft.)	Daily Truck trips	Daily Diesel PM (pounds)	Daily NOx (pounds)	Daily CO2 (pounds)
375	2780	79060367	52970	71.7	8326	4477116



For the area near the Speedway, we also consulted the MATES tool through the AQMD. In zip code **92335**, the cancer risk is already **511** per million. According to the MATES V AQMD tool, the AQMD monitoring site adjacent the Speedway demonstrates a non-cancer health index of 8.0 out of a potential maximum of 8.1. This is already in the highest category. Furthermore, California Enviroscreen data demonstrate equally concerning statistics.

3



3

To spell this out even more clearly, we paste the section in its entirety below, which describes the elements of the 98% pollution burden this area already faces.

Pollution Burden Percentile:	98
Population Characteristics Percentile:	87
Ozone:	98
PM 2.5:	94
Diesel:	87
Pesticides:	0
Toxic Releases:	83
Traffic:	72
Drinking Water:	73
Cleanups:	88
Groundwater Threats:	22
Hazardous Waste:	99
Impaired Water:	0
Solid Waste:	96
Asthma:	82
Low Birth Weight:	41

Cardiovascular Rate:
93

With these numbers as a baseline, we are concerned about this project's addition to cumulative impacts. The large influx of additional truck traffic for this Project would have on the ability for the community to get around in addition to the health consequences. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all.

3

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, walking trails, wildland restoration projects, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project.

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.

4

Sincerely,



Susan A. Phillips, Ph.D.
Professor of Environmental Analysis
Interim Director, Robert Redford Conservancy
susan_phillips@pitzer.edu

Response to Comment Letter O9 – Robert Redford Conservancy for Southern California Sustainability

O9-1 Comment states that it is on behalf of the Robert Redford Conservancy for Southern California, which aims to increase socio-ecological justice and sustainability, and supports projects that bolster multiple interconnected systems, and foster collaboration for socio-ecological justice and sustainability. The commenter suggests the Project is bad for the community and there are too many logistic uses in the Inland Empire, which increases truck traffic and air pollution.

Comment noted for the record. However, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary. Concerns regarding the increase in truck trips and air pollutants are addressed in the responses below.

O9-2 The commenter states that the Project would bring nearly 10,000 more truck trips per day without effective mitigation measures. Additionally, the commenter notes that the community is impacted per the California Communities Environmental Health Screening Tool (CalEnviroScreen). CalEnviroScreen has been developed by the state's Office of Environmental Health Hazard Assessment (OEHHA) and California Environmental Protection Agency (CalEPA). The Project is consistent with the County's general plan land use designations in the area which includes commercial, limited industrial, and general industrial. Furthermore, the Project includes mitigation measures, project design features, and standard conditions to reduce potentially significant and significant Project impacts. While CalEnviroScreen can assist CalEPA in prioritizing resources and helping promote greater compliance with environmental laws, it is important to note some of its limitations. The tool's output provides a relative ranking of communities based on a selected group of available datasets, through the use of a summary score. Unlike the Health Risk Assessment (HRA) prepared for the Project (see Draft EIR *Appendix C*), the CalEnviroScreen score is not an expression of health risk and does not provide quantitative information on increases in cumulative impacts for specific sites or projects. Further, as a comparative screening tool, the results do not provide a basis for determining when differences between scores are significant in relation to public health or the environment. Accordingly, CalEnviroScreen is not intended to be used as a health or ecological risk assessment for a specific area or site. Refer to Draft EIR *Section 4.3* (Air Quality) for a full evaluation of the Project's air quality effects.

Furthermore, the Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (Draft EIR pages 4.3-51 through 4.353), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2 for additional information.

O9-3 The commenter provides a statement about the Project's potential to increase cumulative impacts, and notes that widening roads is not a community benefit but will create less safe streets.

The comment cites data from their Warehouse Cumulative Impact Tool but does not provide the source of the data. Refer to Response to Comment O9-2 regarding CalEnviroScreen data. Cumulative air quality impacts are discussed on Draft EIR pages 4.3-54 through 4.3-55. Additionally, the comment references the SCAQMD's Multiple Air Toxics Exposure Study (MATES) mapping. The MATES mapping was evaluated and impacts in the Project area were summarized in Draft EIR pages 4.3-8 through 4.3-9 and the Health Risk Assessment in Appendix C. The MATES estimates were based on monitoring data collected at ten fixed sites within the South Coast Air Basin. None of the fixed monitoring sites are near the Project site. However, MATES V has extrapolated the excess cancer risk levels throughout the SCAB by modeling the specific grids.

It should be noted that health risks are determined by examining the types and levels of air toxics generated and the associated impacts to air quality. As described in Response O9-2 above, The Project's impacts related to cancer risk would be less than significant with implementation of MM AQ-1 and MM AQ-9. Additionally, non-carcinogenic hazards are calculated to be less than significant. It should be noted that the Draft EIR assesses the Project's incremental contribution to health risk impacts, consistent with the SCAQMD guidance and methodology. The SCAQMD has not established separate cumulative thresholds and does not require combining impacts from cumulative projects. The SCAQMD considers projects that do not exceed the project-specific thresholds to generally not be cumulatively significant. Therefore, impacts related to health risk from the Project would be less than significant. Refer to Appendix B of the Draft EIR for additional information.

While cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time, a project's contribution to a significant cumulative impact can be determined to be less than cumulatively considerable, and thus is not significant (see Section 15130 of the State CEQA Guidelines). In the case of the Project, with the implementation of MM AQ-1 the Project's impacts would not exceed SCAQMD's 10 in one million threshold. Therefore, the project would not result in a cumulatively considerable increase in TAC emissions.

Additionally, as noted in Response O9-2, above, impacts would be less than significant (Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (Draft EIR pages 4.3-51 through 4.3-53). Also refer to Master Response 2.

O9-4 The commenter suggests the County pursues a development that is more in line with uses permitted within the commercial zoning permitted and states the Project opposes the vision the community has for the Speedway. The commenter also notes the community meetings held were not enough to ensure participation.

Alternatives developed for the Project were based on State CEQA Guidelines. As evaluated in *Section 6.0, Alternatives* of the Draft EIR, a commercial alternative was developed that includes uses permitted under the General Plan Commercial (C) Land Use Category and in the Special Development - Commercial (SD-COM) Zoning Designation. The Commercial Alternative did not meet a majority of the Project Objectives. Also see Master Response 3. Accordingly, alternatives are in fact considered in the Draft EIR.

Further, the Project did hold a Public Scoping Meeting (via Zoom on January 11, 2022) during the NOP comment period, it also held two publicly-noticed Environmental Justice (EJ) outreach workshops: the first on January 12, 2022, and the second on July 9, 2022. Noticing for these meetings was provided as follows: via letters mailed to all property owners within a 1,300 -foot radius per County Code requirement a notice was posted on the County's website and on the Project website; notices were hand delivered within the project area; and, for the second workshop, distributed at the local farmers market (Thursday, June 30th and Thursday, July 7th of 2022); and provided at the local community center (Cypress Neighborhood Center). All notices were provided in both English and Spanish. Furthermore, additional analysis of the Project design was conducted after the initial scoping meeting and after the EJ outreach workshops. As a result of the additional analysis and based on community input, the Specific Plan was refined to incorporate additional programs, facilities and community benefits through enhancements of open space, community art, exercise stations, reduction of pollution exposure through solar, enhanced wellness walks, and more. The Project met the requirement of Policy HZ-3.18 and conducted the required public outreach to obtain feedback from the community on potential EJ concerns.

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Teamsters Local Union No. 1932 (O10)

TEAMSTERS LOCAL UNION NO. 1932
Affiliated with the INTERNATIONAL BROTHERHOOD OF TEAMSTERS

July 18, 2022
Steven Valdez, Senior Planner
Land Use Services Dept, San Bernardino County
385 N Arrowhead Ave, First Floor
San Bernardino, CA 92415

RE: Speedway Commerce Center II Draft EIR, SCH#2021120259

These comments are being submitted on behalf of Teamsters Local 1932 regarding the above-captioned project, specifically in response to the San Bernardino Speedway ("the Project") project's draft environmental impact report (DEIR). Teamsters Local 1932 represents members who live in the affected area.

There are a number of areas of significant concern associated with this project. First, there are defects in the alternatives analysis offered by the County. Second, mitigation measures are insufficient to reduce impacts below significance or are insufficiently specific and binding; and third, the draft EIR failed to properly address cumulative impacts.

1

Project Background

The speedway redevelopment project is located in unincorporated southwestern San Bernardino County, within Fontana's sphere of influence. The project site is 433 acres, and currently hosts the Auto Club Speedway. Proposed for the site are approximately 6.6 million square feet of "high-cube logistics and e-commerce development" over four sub-areas, a quarter million of ancillary commercial development, nearly 100 acres of vehicle parking and drop lot areas, and variety of rights-of-way and internal circulation infrastructure.

2

Significant and Unavoidable Impacts

The Project would result in numerous significant and unavoidable impacts that cannot be reduced below significance thresholds, and recommends adoption of a statement of overriding considerations. The significant and unavoidable impacts are in the areas of air quality most significantly, energy, greenhouse gas emissions, and noise. Given that the site is to be redeveloped exclusively as a logistics and e-commerce hub, these long-term impacts are of serious concern. Development of the project without mitigation measures that reduce these impacts below significance will make permanent adverse impacts on the local community and the County as a whole, positioning the logistics industry as a negative presence for the County, and subjecting the workers and nearest neighbors to the Project to potentially serious health and quality of life impacts.

3

Issuing a statement of overriding considerations per CEQA Guidelines Section 15093, subd. (a), without more information provided to the public via the EIR process, would be in error. For a statement of overriding consideration to be properly adopted, it must be supported by substantial evidence in the record from which a reasonable person could conclude that specific economic, legal, social, technological, or other benefits" of the proposed project that "outweigh the unavoidable adverse environmental effects. See Woodward Park Homeowners Ass'n, Inc. v. City of Fresno (2007) 150 Cal. App. 4th 683, 699. Often, this substantial evidence will rest on the analysis of potential project alternatives, demonstrating that a project should go forward because there are no alternatives that could meet the project objectives.

Given the intensity of the proposed uses at the project site, the generalized nature of the project objectives and the General Plan goals, and the narrow nature of the considered alternatives, as it stands there is not substantial evidence in the record sufficient to support any statement of overriding considerations. 3

Project Alternatives Analysis is Insufficient

As a background to the alternatives analysis found in the DEIR, it is important to note that as currently proposed, the Project would entail significant impacts that should be of grave concern to the public: not only serious air quality and greenhouse gas emissions impacts, but an on-going impact that, according to the DEIR itself, would result in persistent interference with the attainment goals for air quality in the region. What this means is that by developing this Project, future developments in the County will also consistently have trouble meeting air quality attainment goals, and potentially keep the County in a statement of permanent or near-permanent non-attainment. In essence, because this DEIR is being prepared as a Project EIR–that is, that it is purporting to complete the environmental review process for numerous high-intensity and high-impact projects, adopting this EIR entitles, with limited or no further environmental review (nor opportunities to review and apply fastly-evolving mitigation technologies and practices) development of projects that will permanently degrade air quality below attainment levels. This could have a cascading effect, essentially requiring the County to keep issuing statements of overriding considerations for future projects which, even with much smaller impacts, will contribute to non-attainment. This trivializes the entire environmental review process, and counsels the County to seriously consider a broader range of alternatives (as well as more intense and flexible mitigation measures, described further below). 4

The Project Objectives most relevant to the alternatives analysis, in the sense that they underlie the adoption of any statement of overriding considerations, are Objectives 1, 4, 7, 10, and 11. These are the "logistics objectives," that give the purpose of the project as developing a competitive, large-scale "high-cube logistics and e-commerce" facility. 5

The alternatives analysis declined to study an alternative site, given that there are minimal available sites of similar size, and none which the project applicant currently controls, and since siting of the project is not the cause of the significant impacts (i.e., that the significant impacts would still materialize at any alternative location, they are not location-specific).

The analysis goes on to consider three alternatives: a "no-project" alternative, a smaller footprint, and a commercial development alternative which replaces the logistics uses with commercial and office uses. Of most importance as the second and third alternatives, "reduced footprint" and "commercial substitution" respectively. 6

Reduced Footprint Alternative

The Alternative 2 Reduced Footprint analysis does not state how the approximately 25% reduction was chosen as the alternative. This is one element of seeming circular logic meant to ensure that the public and the County would have grounds to reject the alternative. The analysis ultimately provides to reasons why the alternative should be rejected: first, because despite the reduction in footprint, the project would still result in significant and unavoidable impacts, even with mitigations and second and relatedly, because while the alternative would meet project objectives, it would not "fully" meet project objectives. This conclusion is not properly discussed or even really explained internally in the alternatives analysis: in the "Ability to Meet Project Objectives Section," the analysis begins like this: "The Reduced Footprint Alternative would generally meet the Project Objectives, including: [Objectives] (1) […] (3) […] (4) […] (5) […] (6) […] (7) […] (8) […] (9) […] (10) […] (13)[.]" The Analysis then goes on to state that the alternative does not meet the project objectives because Objectives (2), (11) and (12) are not "fully" met. The analysis also states, contradictorily, that the Reduced Footprint Alternative, by nature of being reduced footprint, "would not meet project objectives." 7

The matter is confused further because the analysis states that two of the three objectives that this Alternative seemingly does not meet are in fact "partially" met (i.e., Objectives (11) and (12)), and the remaining Objective, (2), is only not met in vague terms: i.e., because it would not allow for the development of a "larger format" high-cube e-commerce facility (or perhaps because it would not "maximize" the use of the site, which presumably means built to the absolute limit of the property).

First, the Analysis plays sleight-of-hand by saying that the Reduced Footprint Alternative does not meet three of thirteen Objectives, while it also partially meets two of the three missing alternatives. The remaining supposedly unmet objective, Objective 2, is only unmet because it sets as an objective being large as possible–or, alternatively, being "large" in some vague sense. The Analysis therefore rejects the Reduced Footprint Alternative based on a circular situation wherein one of the Objectives is written to preclude any reduction in size of the Project.

While CEQA does not require that Project Alternatives be studied with the same intensity and detail as the Project itself, the Analysis of the Reduced Footprint Alternative is deficient in its level of detail given (1) the grounds for its rejection; and (2) the potential to meet all Project Objectives with proper mitigation.

First, the grounds for rejection reduce down to one: because a single supposedly unmet Project Objective requires "maximizing" use of the site, and/or developing a "large" series of facilities, and the reduced footprint is not as big as the Project, it cannot meet this one objective. If this is the case, then there needs to be some discussion and elucidation of what constitutes a "large" or "larger" facility or set of facilities, other than simply one being smaller than the other. The related reduction of fees, due to the reduction in size, similarly needs to be explained: the Project Objective (2) does not state an optimal or necessary amount of fees, only rejects this Alternative because it is less than what is proposed. Notably, this same rationale applies to the supposed lack of sufficient employment opportunities, based on the assumption that square footage has a direct correlation to employment figures, but does not state any objective number or range of acceptable employment opportunities–possibly because the project developer and operator does not want to commit to a binding employment number of quality of jobs. 8

Second, and directly related, the Analysis only states that the proposed mitigation measures would not reduce the impacts from a Reduced Footprint Alternative after a conclusory statement about the reduction by 25% of the relevant particulates and greenhouse gas emissions and traffic. There is no discussion of whether any particular mitigations measures become more feasible because of the reduced footprint.

Commercial Substitution Alternative

The third alternative considers replacing the proposed logistics facility with commercial uses. This will plainly fail the project alternatives, which are heavily weighted towards developing a large, high-cube logistics and e-commerce development. However, the Analysis does not state why the alternative does not include a blend of logistics and commercial uses, including office and retail. This is particularly important given that courier-reliant retail developments are increasingly common and are also developed on the same site. That is, since logistics and e-commerce facility can often be developed with retail or commercial elements, and can feasibly coexist with especially large-format retail and office developments, there was no reason, and no rationale provided to the public or decision makers, why the commercial substitution alternative proposed solely commercial substitution and not a blend of commercial and logistics uses, which could feasibly meet the Project Objectives and still considerably reduce the adverse impacts. 9

Mitigation Measures are Inadequate for a Project EIR

Given that the EIR details significant and unavoidable impacts and suggests adoption of a statement of overriding considerations, the proposed mitigation measures are to some degree academic: in particular, the total air quality and greenhouse gas emissions impacts, as well as the traffic and noise impacts, so far exceed the attainment standards that just about any mitigation measures will not be able to reduce the impacts below significance.

This EIR is a Project EIR. It entitles development over phases of a series of facilities and therefore evaluations the total impact of these interrelated projects. It is critical that the mitigation measures include serious on-going engagement by the impacted agencies and the public. Three things make this more serious: first, because mitigation measures must consider feasible technological mitigations and reasonably foreseeable technological fixes to significant impacts; second, because the degree of non-attainment going into the far future means environmental entitlement of the Project now, without any mechanism for the public to intercede, means that the Project can continually operate in violation of attainment and impact standards into the future even when mitigation technologies and practices become available; and third, because should the Project be approved on the strength of a statement of overriding considerations, the public needs to be assured that the supposed economic and social benefits which outweigh the serious environmental and health impacts are in fact being met. Without such a mitigation mechanism in place, despite its plain availability, the approval of the EIR and entitlement of the Project would be in error. 10

We would strongly urge that the County include a community benefits process into as a mitigation measure, for the express purpose of regular reporting of environmental and social impacts, revisiting of mitigation technologies and practices (such as adoption of electric vehicles, renewable energy, recycling of waters and other materials, etc.) as they become available, and finally for purposes of conflict resolution with city governments, the County, and the public should conflicts arise.

This mitigation measure would simply operationalize in a binding way what the current mitigation measure currently aim for. An agreement to create and appoint a multi-agency and community-representative committee which can receive reports and issue recommendations for adoption of technologies and practices as they become widely available would make the current mitigations binding and ensure that the local agencies are able to intervene to reduce the drastic impacts of the Project area.

Cumulative Impacts

In the comments to the Notice of Preparation, the City of Ontario specifically requested that the Project be evaluated along with the cumulative impact of projects being developed within the City of Ontario. This does 11

not seem to have been done in the EIR. In fact, the cumulative impact analysis does not seem to consider the development of other high-cube logistics facilities concurrently with, and potentially as a result of, the Project; nor the likelihood of the closure of existing facilities in Ontario or other cities in the Project area. 11

Since the Spring of 2022, major e-commerce companies like Amazon have announced the closure, delay, or moving of millions of square feet of warehouse space. In general, e-commerce warehousing is already considered as overbuilt, as a result of a pandemic land-rush for delivery services infrastructure. Adding 6.6 million square feet of precisely this type of warehousing, without any attendant analysis of existing and underutilized warehouse space in the service-area communities, such as the cities of Ontario and Fontana etc., and the high potential for urban decay given the size and specific uses such structures can be put to, makes the EIR deficient. Importantly, the addition of so many millions of square feet of e-commerce capacity to the region could have a significant impact on brick-and-mortar facilities; indeed, retailers like Amazon have already begun closing brick-and-mortar retail in preference to their e-commerce operations, and e-commerce has a negative impact on brick-and-mortar stores. 12

Beyond the urban decay analysis, the lack of study of cumulative impact of reasonably foreseeable cumulative impacts from the development of the Project means there is no understanding of how adding "large high-cube" capacity could result in development of smaller scale local- or neighborhood-focused delivery station facilities of smaller scale to provide last-mile service. The draft EIR does not mention last-mile service except in reference to the type of vehicles used for deliveries. However, distribution and sorting facilities at "large" or "large-scale" high cube facilities are often for the purpose of distribution to last-mile facilities that then complete e-commerce transactions, i.e., by delivering packages to consumers' homes and businesses.

Transportation and Public Resource Analysis

The transportation analysis does not clearly identify part-time couriers (such as "gig workers") and home-delivery drivers as an element of the VMT analysis, instead relying primarily on the per-square footage calculation of number of employees. This needs to be corrected to make the DEIR sufficient, because the nature of the Project means that it is possible that e-commerce operators who deliver directly to consumers' homes can or will be developed at the site. Further, since the ultimate project operators are not identified, the EIR needs to fully evaluate the potential uses the project site will be set to. 13

Relatedly, the EIR needs to evaluate the wear-and-tear on residential roads as a result of the addition of so much capacity for e-commerce home deliveries, as well as projections of increased demand on public safety personnel to respond to moving violations and traffic accidents with the additional of potentially hundreds of thousands or millions of miles of vehicle miles traveled by courier drivers.

Conclusion

Due to the foregoing, we urge the County to refer the EIR back to the drafters to ensure that is legally adequate and meets the County's policy requirements. Alternatively, we urge the County to reject and not adopt the draft EIR.

Sincerely, 14

Randy Korgan

Randy Korgan
Secretary-Treasurer
Teamsters Local 1932

Response to Comment Letter O10 – Teamsters Local Union No. 1932

O10-1 The comment notes the letter is on behalf of the Teamsters Local 132 and provided introductory comments, which are noted for the record. The commenter asserts that there are defects in the analysis specific to alternatives, mitigation measures and cumulative impacts, but does not indicate where the analysis provided in the Draft EIR is inadequate. Thus, no additional response is necessary.

O10-2 The comment provides a general Project Description and Background. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O10-3 The commenter states that the Project would result in significant and unavoidable impacts related to air quality, energy, greenhouse gas (GHG) emissions, noise and the Draft EIR lacks substantial evidence to support a Statement of Overriding Considerations.

The Project is consistent with the County's General Plan and existing zoning and proposes uses allowed by the County's Development Code. The Draft EIR identifies numerous Standard Conditions, project design features, and mitigation measures in *Section 4.3, Air Quality* and *Section 4.8, Greenhouse Gas Emissions* to minimize air and GHG emissions to the maximum extent feasible (Draft EIR pages 4.3-21 through 4.3-23, 4.3-38 through 4.3-42, and 4.8-31 through 4.8-33). Nonetheless, the Draft EIR conservatively concludes that impacts associated with the Project's contribution to GHGs would remain significant and unavoidable due to the size of the Project. The Draft EIR mitigation measures were developed in compliance with State CEQA Guidelines Section 15041 and the essential nexus and rough proportionality standards.

A Health Risk Assessment (HRA) was prepared to evaluate impacts to nearby sensitive receptors and is located in Draft EIR *Appendix C*. Project-related health risks were evaluated in the HRA and discussed in the Draft EIR on pages 4.3-51 through 4.3-53. The HRA evaluated pollutant concentrations at the closest sensitive receptors to the Project site, which included residences and Redwood Elementary School. As discussed in the Draft EIR and HRA, impacts would be less than significant with mitigation MM AQ-1 and MM AQ-9 incorporated. (see Draft EIR pages 4.3-43 to 4.3-53). The Draft EIR also determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant because the localized significance of construction and operational emissions would not exceed SCAQMD thresholds as most of the emissions are regional and occur from vehicles traveling away from the Project site (see Draft EIR pages 4.3-43 through 4.3-46). Significant unavoidable impacts would occur with regard to AQMP consistency, Project-related construction and operational emissions, and cumulative emissions. No other significant unavoidable air quality impacts would occur.

Energy impacts are discussed in Draft EIR *Section 4.6, Energy*. With implementation of the Project, significant unavoidable impacts would occur regarding fuel consumption. Although operation of the Project would not result in wasteful, inefficient, or unnecessary consumption of diesel fuel, the potential for the Project to increase San Bernardino County's consumption of diesel fuel by

over five percent is conservatively considered significant and unavoidable. However, in the future, Project demands for diesel fuel are anticipated to decrease over time as ZE and NZE trucks become more available.

Noise impacts are discussed in *Section 4.13, Noise* of the Draft EIR. Implementation of the Project would create new sources of noise in the Project vicinity, one of which is off-site traffic noise. Implementation of the Project would generate increased traffic volumes on nearby roadway segments. The amount of traffic generated by the Project would result in a substantial increase in traffic noise in exceedance of the County's noise standards under the following scenarios: Opening Year 2024 Plus Phase 1, Opening Year 2027 Plus Phases 1 & 2, and Opening Year 2040 Plus Phases 1 & 2, and there is no feasible mitigation to reduce these impacts as the Project has exhausted all risible mitigation measures. It should be noted, however, that as electric trucks and passenger vehicles become more commercially available in accordance with California's Advanced Clean Truck (ACT) and zero emission vehicle rules, the truck fleets and passenger vehicles accessing the Project site would generate lower traffic noise levels compared to a business-as-usual scenario. Nonetheless, off-site traffic noise impacts from the Project would remain significant and unavoidable.

O10-4 See Response O10-3. The commenter provides general discussion of the County's ability to meet the air quality attainment goals and asserts that the Project should have further significant and unavoidable impacts other than those identified in the Draft EIR and therefore the County should consider a broader range of alternatives. The anticipated future buildout of "up to 6.6 million square feet" for the Project was thoroughly analysis in the Draft EIR for the Projects potential effects. Based on the experience and expertise of the EIR preparer (Kimley-Horn), information provided by the Project Applicant, and the independent judgment of the County, the Draft EIR made reasonable assumptions for the Project built out of future high cube logistics and e-commerce uses. To provide a conservative ("worst case") analysis, and to inform the public and County decision-makers of the full scope of environmental impacts that could occur should the Project be approved, the Draft EIR provided a comprehensive analysis of the potential environmental impacts that would occur. The Project is therefore analyzed in a conservative, worst-case scenario against existing land use allowances and regulatory thresholds. Further, the State CEQA Guidelines do not require a specific number of alternatives; instead, a reasonable range of alternatives must be considered as appropriate for a particular project. CEQA Guidelines Section 15126.6(a), (c). See Master Response 3 which provides information of the Project alternatives. The Project was assessed for additional alternatives beyond those studied in the Draft EIR, with none found to be feasible and warranting of additional discussion. CEQA Guidelines Section 15126.6(c).

O10-5 The commenter identifies Project Objectives 1, 4, 7, 10 and 11 as defining the goal of the Project to develop a high cube logistics and e-commerce facility.

The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to

evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O10-6 The commenter provides a summary of the Project alternatives evaluated and states an alternative site alternative, or offsite alternative was rejected as infeasible.

CEQA does not require an EIR to evaluate alternative sites, and the EIR may evaluate on-site or off-site alternatives (or both). Analysis of an alternative site may be rejected if relocation of a project would be infeasible. In the case of the Project, there are no feasible or identifiable alternative sites which meet the objectives of the Project (CEQA Guidelines Section 15126.6(f)(1).

O10-7 See Master Response 3. The commenter provides an overview of the Reduced Footprint Alternative and the Project Objectives and provides a statement of the objectives that were partially met (11 and 12) and Objective 2 is not met because it would not allow for the development of a "larger format" high- cube e-commerce facility.

As stated in Master Response 3, this Alternative would meet the Project Objectives to a lesser degree than the Project because the Reduced Footprint Alternative would not allow for the same level of development of the larger high-cube logistics and e-commerce facilities but would still require the same level of infrastructure costs; therefore, the Alternative would not fully meet all the Project objectives, and it was found to be unfavorable relative to the Project. The Reduced Footprint Alternative was arrived upon as it would provide a meaningful reduction in the development footprint while also working to achieve to some degree the Project objectives. In addition, the Reduced Footprint Alternative would reduce, but not avoid, the significant and unavoidable GHG and air quality impacts that would occur under the Project. The Reduced Footprint Alternative would not fully leverage and maximize the use of one of the few remaining large industrial sites in the County to serve the area and region with additional distribution capacity, to the same degree as the Project. The smaller facility as proposed under the Reduced Footprint Alternative would not fulfill Project objectives as fully as the Project and would not develop the Project site as efficiently, and remaining unmet demand for high-cube logistics and e-commerce facilities would require additional smaller facilities to be located throughout the region, thereby creating additional truck trips elsewhere along with the corresponding direct and indirect impacts.

O10-8 See Master Response 3 and Response O10-7 above. The commenter indicates the Reduced Footprint Alternative is deficient in its level of detail, in accordance with CEQA, given the grounds for its rejection and the potential to meet all Objectives with proper mitigation. The commenter suggests defining what constitutes "large" or "larger" facility or set of facilities and further explain reduction fees. The commenter states Objective 2 does not state an optimal or necessary amount of fees, but only rejects the Alternative because it is less than what is proposed. The commenter addresses the analysis only states the proposed mitigation measures would not reduce the impacts from a Reduced Footprint Alternative after 25 percent reduction of the relevant particulates, emissions, and traffic and indicates the analysis needs a more thorough discussion of mitigation measures that become more feasible due to the reduced project footprint.

Reducing the Project size by 25 percent would not affect the feasibility or non-feasibility of mitigation measures. The same mitigation measures would apply, and the severity of impacts in some areas would be reduced based on reduction of project size, but not to a level of insignificance.

The CEQA Guidelines notes there is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason. This rule is described in Section 15126.6(f) of the CEQA Guidelines and requires the EIR to set forth only those alternatives necessary to foster informed decision-making. As defined in Section 15126.6(f), the rule of reason limits alternatives analyzed to those that would avoid or substantially lessen one or more of the significant effects of a project. Of those alternatives, an EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project.

A reasonable range of alternatives to the Project was considered for their ability to reduce environmental impacts and meet Project objectives. Alternatives assessed for the Project were based on State CEQA Guidelines and their potential feasibility. Furthermore, the Project was assessed for additional alternatives with none found to be feasible and warranting of additional discussion.

O10-9 See Master Response 3. The commenter questions why the analysis does not state why the third alternative does not include a blend of logistics and commercial uses.

The Project as proposed already involves a blend of high-cube logistics/e-commerce and commercial uses; therefore, a commercial alternative was selected for analysis that includes uses permitted under the General Plan Commercial (C) Land Use Category and in the Special Development - Commercial (SD-COM) Zoning Designation. The Project includes approximately 261,360 square feet of ancillary commercial uses proposed in Planning Subareas 1c, 2c, and 5a. As explained in Draft EIR *Section 6.8, Comparison of Alternatives* for a list of retail uses permitted, including commercial entertainment – indoor; restaurant, café, coffee shop; and warehouse retail (Draft EIR page 6-22). The Project Objectives – the basic reasons for the Project – provide the metrics against which the Alternatives must be measured.

O10-10 The commenter notes air quality, greenhouse gas, and traffic impacts exceed the attainment standards and mitigation measures are unable to reduce the impacts below significance. The commenter indicates mitigation measures must consider feasible technological mitigations and a mechanism must be in place that can mitigate the degree of non-attainment for a Project. The commenter urges the County to include a community benefits process as a mitigation measure.

The Draft EIR proposes mitigation measures designed to lessen or remove potential environmental impacts. In addition, Project design features included in the Project have been designed to further minimize impacts on the surrounding environment. Collectively, these measures, specifically mitigation measures MM AQ-5, MM AQ-7, MM AQ-8, MM AQ-9 and MM AQ-10, require the Project to incorporate technology improvements that would minimize or avoid impacts as those technologies become feasible and widely available. The Specific Plan includes environmental justice discussions which address potential community benefits. See

Response O8-6. Additionally, the Project's Mitigation Monitoring and Reporting Program (MMRP) identifies the party responsible for the implementation of each mitigation measure, the timing of its implementation, and the party responsible for monitoring its implementation. See also, Master Response 2.

O10-11 The commenter notes the City of Ontario requested the Project be evaluated along with the cumulative impact of projects under review development within the City of Ontario in the NOP. The commenter states this has not been addressed in the Draft EIR and the cumulative impact analysis does not address other high-cube logistics facilities.

The NOP for the Project was released on December 13, 2021. The data available at the time of the preparation of the NOP was the most current at that time, and the date of the NOP is a reasonable cutoff date for the cumulative impacts analysis. Furthermore, State CEQA Guidelines, Section 15125(a)(1) states that generally, the lead agency should describe physical environmental conditions as they exist at the time the NOP is published, including relative to the proper baseline for cumulative impacts analysis. Therefore, no further revision to the cumulative projects analyzed in the Draft EIR is required. Refer to Responses O5-22 and O5-23.

O10-12 See Response O10-11 above, regarding discussion of cumulative impacts. The commenter states the number of e-commerce facilities and the significant impact of brick-and-mortar facilities, and suggests a more thorough cumulative impact analysis be completed.

The Project's impacts to other land uses within the County are discussed the Draft EIR in *Section 4.11, Land Use and Planning*, and were found to be less than significant. The evaluation of economic impacts is not a CEQA requirement unless such impacts could result in a physical impact on the environment, such as visual blight caused by urban decay. Visual blight related to urban decay is defined as a general deterioration of the urban landscape that is characterized by long-term building vacancies, poor building maintenance, and increased vandalism. (*Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) (124 Cal. App. 4th 1184). The commenter's claim that the Project could cause urban decay is based on speculation and is unsupported by any evidence that warehouse space in the region is overbuilt or that the Project could result in long-term vacancies that would be severe enough to result in urban decay in the surrounding communities.

In addition, according to a Quarter 2 (Q2) 2022 report from CBRE, Inc. regarding Inland Empire (IE) industrial development, the vacancy rate for industrial development decreased 10 basis points (bps) quarter or over quarter to an historic low of only 0.2 percent (the lowest rate in the nation). Even with construction activity ramping up, the majority of new warehouses that completed construction were immediately occupied in Q2 2022. This left little to no available product in the IE market. With the level of industrial construction activity in the IE another record-high level of development has been reached due to strong demand for industrial space. Currently, there is a record 38.9 million square feet under construction in the IE sector, of which 41.7 percent is preleased. Despite a strong construction pipeline, an increase in demand and preleasing activity are expected to keep the vacancy rate and availability rate low. This data invalidates the commenter's claim that this type of development is overbuilt and would lead to urban decay.

O10-13 The commenter claims the analysis does not clearly identify part-time couriers and home-delivery drivers as an element of the VMT analysis and needs to be corrected. The commenter also claims the EIR needs to evaluate the wear-and-tear on residential roads from the vehicle miles traveled by courier drivers.

The VMT analysis is consistent with San Bernardino County VMT/Traffic guidelines and has been reviewed and approved by the County. See Draft EIR *Section 4.15, Public Services* for discussion on demand of emergency personnel. It was determined that the Project would be adequately served by existing fire and police protection services, and no new or expanded unplanned facilities would be required, and impacts would be less than significant.

Policy TM-1.7 from the Countywide Plan's Policy Plan is as follows: Fair share contributions. We require new development to pay its fair share contribution toward off-site transportation improvements. For a summary of the Project's fair share contributions, see Table 11 of the Traffic Study in Draft EIR *Appendix L*.

O10-14 The comment urges the County to refer the Draft EIR back to the drafters to ensure it is legally adequate, and alternatively urges the County to not certify the EIR. The comment is noted for the record and forwarded the decision makers for their consideration. However, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

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Center for Biological Diversity and Sierra Club (O11)

July 18, 2022

Sent via email

Steven Valdez
Senior Planner
County of San Bernadino
Land Use Services Department - Planning Division
385 North Arrowhead Avenue, First Floor
San Bernardino, CA 92415-0187

Re: Comments on the Draft Environmental Impact Report for Speedway Commerce Center II Specific Plan, SCH # 2021120259

Dear Mr. Valdez:

These comments are submitted on behalf of the Center for Biological Diversity (the Center) and the Sierra Club regarding the Draft Environmental Impact Report (DEIR) for the Speedway Commerce Center II Specific Plan (Project), for which the County of San Bernardino (County) is the lead agency. The Center has reviewed the DEIR closely and is concerned that the DEIR fails to adequately address the Project's individual and cumulative impacts on air quality, greenhouse gas emissions, sensitive receptors, land use, and noise. Should the Project go forward, the Center urges the County to commit to clear, enforceable mitigation for these impacts. 1

The Center is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 1.7 million members and online activists throughout California and the United States. The Center has worked for many years to protect imperiled plants and wildlife, open space, air and water quality, and overall quality of life for people in San Bernadino County. 2

The Sierra Club is a national nonprofit organization of over 830,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful

Arizona . California . Colorado . Florida . N. Carolina . Nevada . New Mexico . New York . Oregon . Washington, D.C. . La Paz, Mexico
BiologicalDiversity.org

means to carry out these objectives. The San Gorgonio Chapter serves Riverside and San Bernardino Counties. 2

This Project would add an additional 6.6 million square feet (sf) of warehouse development to a low-income community of color already disproportionately impacted by unchecked warehouse development in the area. This one facility would *double* the existing warehouse footprint in the region, as the existing 37 warehouse facilities identified in the cumulative projects list total 6.4 million sq ft. (DEIR at Table 4-1, 4-14.) 3

This is a textbook example of the massive industrial development near residences that every public health official warns against and that virtually every state and local planning effort is seeking to contain. The Project would have devastating impacts on air quality, greenhouse gas emissions, sensitive receptors, land use, and noise. The Project's criteria pollutant emissions for reactive organic gases (ROG) and nitrogen oxides (NOx) are projected to be dozens of times higher than the protective standard. The Project would also emit approximately 210,000 metric tons of carbon dioxide equivalent (MTCO2e) per year—just shy of the carbon footprint of all Disney's theme parks and resorts, combined. Given the staggering individual and cumulative impacts posed by this Project, one would expect the County to consider all available mitigation measures to protect the health of its residents. Instead, the Project's mitigation barely makes a dent in reducing these impacts, despite the readily available feasible mitigation measures that the County appears not to have considered. To address these concerns and comply with the California Environmental Quality Act (CEQA), the County must consider and incorporate enforceable, evidence-backed mitigation measures into the DEIR. 4

Given the DEIR's numerous and serious inadequacies, there can be no meaningful review of the Project. The magnitude of revisions required to create a legally defensible EIR will require recirculation of a revised DEIR, not just publication of a Final EIR, to give decisionmakers and the public an accurate understanding of the environmental issues at stake (CEQA Guidelines, § 15088.5(a)(4).)

I. THIS PROJECT ADDS ADDITIONAL WAREHOUSE DEVELOPMENT TO A REGION ALREADY SUFFERING FROM HIGH POLLUTION.

The Project proposes to construct up to 6.6 million sf of high-cube logistics and e-commerce uses, 261,360 sf of ancillary commercial uses, and approximately 98 acres of parking. (DEIR at 3-1.) The DEIR projects that the Project would generate approximately 33,594 daily vehicle trips and 9,865 daily truck trips, which would route through existing residential neighborhoods. (*Id.* at 4.3-19.) The Project is slated to operate 12 hours a day, 365 days a year. (*Id.* at 4.8-24.) The Project will have approximately 475,000 sq ft of cold storage warehousing, which means diesel transport refrigeration units (TRUs) will utilize the Project site. (*Id.* at 4.3-18, 4.3-19.) Trucks with TRUs emit significantly higher levels of toxic diesel particulate matter (PM), nitrogen oxides (NOx), and greenhouse gas emissions than trucks without TRUs. 5

The Project is in unincorporated San Bernadino County, within the City of Fontana Sphere of Influence. (DEIR at 1-3.) Disadvantaged communities in Fontana are "located predominantly in parts of central Fontana and the central Sphere of Influence." (City of Fontana

GPU 2018.) An annotated image of the Project's vicinity is attached as Appendix A. The surrounding area is a mix of residential, school, and industrial uses. Homes border the northern and eastern boundaries of the Project site, with the closest homes located within 410 feet. (DEIR at 4.3-5.) Redwood Elementary School is within 1,500 feet of the Project site. (*Ibid*.) An additional four elementary schools, a middle school, and a high school are off Randall Avenue, east of the Project site. (See Exhibit 1.) Interstate 10 runs along the southern edge. 5

A. Warehouse Projects Have Documented Air Quality Impacts That the DEIR Must Address.

Air quality is a significant environmental and public health concern in California. Unhealthy, polluted air contributes to and exacerbates many diseases and increases mortality rates. The U.S. government has estimated that between 10 to 12 percent of total health costs can be attributed to air pollution. (VCAPCD 2003.) Greenhouse gases, such as the air pollutant carbon dioxide, which is released by fossil fuel combustion, contribute directly to human-induced climate change (EPA 2016), and in a positive feedback loop, poor air quality that contributes to climate change will in turn worsen the impacts of climate change and attendant air pollution. (BAAQMD 2016.)

Air pollution and its impacts are felt most heavily by young children, the elderly, pregnant women and people with existing heart and lung disease. People living in poverty are also more susceptible to air pollution as they are less able to relocate to less polluted areas, and their homes and places of work are more likely to be located near sources of pollution, such as freeways or ports, as these areas are more affordable. (ALA 2022.) Some of the nation's most polluted counties are in Southern California, and San Bernadino County continually tops the list. (ALA 2022.) According to the American Lung Association's 2022 "State of the Air" report, San Bernadino County is the ninth-worst ranked county in the state for both ozone pollution and year-round particulate matter (PM2.5) pollution, with a "Fail" grade and an average number of 180 days per year with ozone levels in the unhealthy range. (*Id*.) Even more disturbing, the same report found that San Bernadino County is one of only fourteen counties in the country that received a "Fail" grade in all air quality metrics. (*Id.*) 6

Although there are many different types of air pollution, Ozone, PM2.5, and Toxic Air Contaminants (TACs) are of greatest concern in San Bernadino County. These three air pollutants have been linked to an increased incidence and risk of cancer, birth defects, low birth weights and premature death, in addition to a variety of cardiac and lung diseases such as asthma, COPD, stroke and heart attack. (Laurent 2016; ALA 2022.) Ozone (commonly referred to as smog) is created by the atmospheric mixing of chemicals released from fossil fuel combustion – such as reactive organic gases (ROG) and nitrogen oxides (NOx) – and sunlight. Although it is invisible, ozone poses one of the greatest health risks, prompting the EPA to strengthen its National Ambient Air Quality Standard for Ozone in 2015. (ALA 2022.) PM2.5 is a common component of vehicle exhaust emissions and contributes to visible air pollution. These tiny particles are dangerous because they are small enough to escape our body's natural defenses and enter the blood stream. Fugitive dust is a term used for fine particulate matter that results from disturbance by human activity such as construction and road-building operations. (VCAPCD 2003.) TACs are released from vehicle fuels, especially diesel, which accounts for

70% of the cancer risk from TACs. (CARB 2022a.) This is especially relevant for Southern California with its abundance of diesel shipping traffic. (Bailey; Betancourt 2012.) 6

Warehouse projects are well-documented sources of air quality degradation that can create serious, negative health outcomes for surrounding communities. (Betancourt 2012, pp. 4-5.) Particulate emissions from diesel vehicles that carry freight to and from warehouses contribute to "cardiovascular problems, cancer, asthma, decreased lung function and capacity, reproductive health problems, and premature death." (*Id.* at 5.) With the rapid increase in global trade, the Ports of LA and Long Beach have become a primary entryway for goods, processing over 40 percent of all imports into the United States, and accounting for 20 percent of diesel particulate pollutants in southern California—more than from any other source. (Minkler, et al. 2012.) These goods are often 'transloaded' before leaving Southern California, meaning that they spend some time in warehouse storage facilities before they reach their final destination. (Betancourt 2012, p. 2.) This has resulted in a massive expansion of warehouse development in Southern California. 7

Nowhere has this growth been more drastic than in San Bernadino County, and particularly in Fontana. (Betancourt 2012.) The number of warehouses in San Bernardino and Riverside counties has grown from 162 in 1975 to 4,299 in 2021, according to a recent mapping project from the Robert Redford Conservancy for Southern California Sustainability at Pitzer College. (Rode 2022.) There were 970 warehouses by 2000, which almost doubled to 1,574 in 2005, then 2,089 in 2010 and to 2,757 in 2015. (*Ibid*.) From 2020 to 2021, the number rose again from 3,727 to 4,299. (*Ibid.*) The approximately 840 million square feet of new warehouse facilities—and the roads and railyards that serve them – has permanently altered the landscape of the Inland Valley area, creating a logistics hub so massive that it is now visible from space. (Pitzer 2022.)

B. This Project Would Compound the Environmental and Health Problems of People Living in this Area. 8

Exhibit 1 illustrates the conflict between warehouses, schools, and homes in the Project's vicinity. Four schools—Live Oak Elementary School, Beech Avenue Elementary School, Sequoia Middle School, and Redwood Elementary—are all located within four blocks of the Project site. A residential development also lies to the east. The Project area has experienced a rapid transformation from a primarily open, residential area to a logistics hub. The result of this development is a patchwork of conflicting land uses, leaving sensitive receptors—such as residents, students, the immunocompromised, and the elderly—increasingly surrounded by warehouses and their deleterious public health impacts.

The surrounding community, which is overwhelmingly Hispanic, is already highly burdened by pollution. According to CalEnviroScreen 4.0, CalEPA's screening tool that identifies the California communities most affected by pollution and where people are often especially vulnerable to pollution's effects, the Project's census tract is more polluted than 93% of the state's census tracts, making it among the most polluted areas in the state. (OEHHA 2021.) Residents here suffer from some of the highest exposures statewide to ozone, fine particulate matter, diesel particulate matter, and hazardous waste. The three census tracts covering the 9

nearby communities are also among the most polluted in the state. This area – commonly referred to as the Fontana Sphere of Influence area – has lower high school graduation rates than the Fontana average, with a median income of $25,000 to $50,000. (City of Fontana GP Update, Appendix 6, pp. 14-15.) Thirty to forty percent of the population is below the poverty line. (*Id.*, pp. 14-16.) This area unsurprisingly also suffers from higher-than-average rates of asthma. (City of Fontana GP Update, Chapter 6, p. 6.6.)

9

This Project is one in an extensive line in which local decisionmakers approve warehouse development close to homes, despite health warnings from state air quality officials about the elevated asthma and cancer risks caused by warehouse distribution centers, primarily due to diesel truck pollution. (Esquivel 2019.) Back in 2005, the California Air Resources Board recommended that decisionmakers keep warehouses at least 1,000 feet away from homes, based on estimates that pollution concentrations drop by 80% at that distance. (CARB 2005.) Yet, almost twenty years later and despite the overwhelming evidence of impacts, the County here proposes a warehouse immediately adjacent to existing residential development, exacerbating poor air quality in a region that is already in extreme non-attainment for ozone. (DEIR at 4.3-10.) This Project will certainly add to and compound the environmental and health problems of people living in the area.

10

II. CLIMATE CHANGE IS A CATASTROPHIC AND PRESSING THREAT TO CALIFORNIA.

A strong, international scientific consensus has established that human-caused climate change is causing widespread harms to human society and natural systems, and that the threats from climate change are becoming increasingly dangerous. The Intergovernmental Panel on Climate Change ("IPCC"), the leading international scientific body for the assessment of climate change, concluded in its 2014 Fifth Assessment Report that: "[w]arming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen," and further that "[r]ecent climate changes have had widespread impacts on human and natural systems." (IPCC 2014, p. 2.) These findings were echoed in the United States' own 2014 Third National Climate Assessment and 2017 Climate Science Special Report, prepared by scientific experts and reviewed by the National Academy of Sciences and multiple federal agencies. The Third National Climate Assessment concluded that "[m]ultiple lines of independent evidence confirm that human activities are the primary cause of the global warming of the past 50 years" (Melillo et al. 2014, p. 7) and "[i]impacts related to climate change are already evident in many regions and are expected to become increasingly disruptive across the nation throughout this century and beyond." (*Id*. at 10.) The 2017 Climate Science Special Report similarly concluded:

> [B]ased on extensive evidence, … it is extremely likely that human activities, especially emissions of greenhouse gases, are the dominant cause of the observed warming since the mid-20th century. For the warming over the last century, there is no convincing alternative explanation supported by the extent of the observational evidence.

11

> In addition to warming, many other aspects of global climate are changing, primarily in response to human activities. Thousands of studies conducted by researchers around the world have documented changes in surface, atmospheric, and oceanic temperatures; melting glaciers; diminishing snow cover; shrinking sea ice; rising sea levels; ocean acidification; and increasing atmospheric water vapor.

(USGCRP 2017, p. 10.)

The U.S. National Research Council determined that "[c]limate change is occurring, is caused largely by human activities, and poses significant risks for—and in many cases is already affecting—a broad range of human and natural systems." (NRC 2010, p. 2.) Based on observed and expected harms from climate change, in 2009 the U.S. Environmental Protection Agency found that greenhouse gas pollution endangers the health and welfare of current and future generations. (74 Fed. Reg. 66496 (Dec. 15, 2009) [U.S. EPA, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Final Rule].) 11

These authoritative climate assessments decisively establish the dominant role of anthropogenic GHG emissions in driving climate change. As the Third National Climate Assessment explains: "observations unequivocally show that climate is changing and that the warming of the past 50 years is primarily due to human-induced emissions of heat-trapping gases." (Melillo et al. 2014, p. 2; *see also id.* at 15 [Finding 1: "The global warming of the past 50 years is primarily due to human activities, predominantly the burning of fossil fuels."].) The Assessment makes clear that "reduc[ing] the risks of some of the worst impacts of climate change" will require "aggressive and sustained greenhouse gas emission reductions" over the course of this century. (*Id*. at 13-14, 649; *see also id.* at 15 [Finding 3: "Human-induced climate change is projected to continue, and it will accelerate significantly if global emissions of heat-trapping gases continue to increase."].)

The impacts of climate change will be felt by humans and wildlife. Climate change is increasing stress on species and ecosystems—causing changes in distribution, phenology, physiology, vital rates, genetics, ecosystem structure and processes—in addition to increasing species extinction risk. (Warren et al. 2011.) Climate-change-related local extinctions are already widespread and have occurred in hundreds of species. (Weins 2016.) Catastrophic numbers of species extinctions are projected to occur during this century if climate change continues unabated. (Thomas, et al. 2004; Maclean et al. 2011; Urban 2015.) In California, climate change will transform our climate, resulting in impacts including, but not limited to, increased temperatures and wildfires and a reduction in snowpack and precipitation levels and water availability.

Therefore, immediate and aggressive GHG emission reductions are necessary to keep warming well below 2°C above pre-industrial levels. The IPCC Fifth Assessment Report and other expert assessments have established global carbon budgets, or the total amount of carbon that can be burned while maintaining some probability of staying below a given temperature target. According to the IPCC, total cumulative anthropogenic emissions of CO_2 must remain below about 1,000 $GtCO_2$ from 2011 onward for a 66 percent probability of limiting warming to 12

2°C above pre-industrial levels, and to 400 $GtCO_2$ from 2011 onward for a 66 percent probability of limiting warming to 1.5°C. (IPCC 2013, p. 25; IPCC 2014, pp. 63-64, Table 2.2.) These carbon budgets have been reduced to 850 $GtCO_2$ and 240 $GtCO_2$, respectively, from 2015 onward. (Rogeli et al. 2016, Table 2.) Given that global CO_2 emissions in 2016 alone totaled 36 $GtCO_2$ (Le Quéré et al. 2017), humanity is rapidly consuming the remaining carbon budget needed to avoid the worst impacts of climate change. As of 2022, climate policies by the world's countries would lead to an estimated 3.4°C of warming, and possibly up to 4.7°C of warming, well above the level needed to avoid the worst dangers of climate change. (Climate Action Tracker 2022.)

The United States has contributed more to climate change than any other country. The U.S. is the world's biggest cumulative emitter of GHGs, responsible for 27 percent of cumulative global CO_2 emissions since 1850, and the U.S. is the world's second highest emitter on an annual and per capita basis. (World Resources Institute 2014.) Nonetheless, U.S. climate policy is wholly inadequate to meet the international climate target to hold global average temperature rise to well below 2°C above pre-industrial levels to avoid the worst dangers of climate change.

12

In its 2018 *Special Report on Global Warming of 1.5°C*, the IPCC—the leading international scientific body for the assessment of climate change—describes the devastating harms that would occur at 2°C warming. The report highlights the necessity of limiting warming to 1.5°C to avoid catastrophic impacts to people and life on Earth (IPCC 2018). The report also provides overwhelming evidence that climate hazards are more urgent and more severe than previously thought, and that aggressive reductions in emissions within the next decade are essential to avoid the most devastating climate change harms.

In response to inadequate action on the national level, California has taken steps through legislation and regulation to fight climate change and reduce statewide GHG emissions. Enforcement of and compliance with these measures is essential to help stabilize the climate and avoid catastrophic impacts to our environment. AB 32 mandates that California reach 1990 levels of GHG emissions by the year 2020, equivalent to a 15 percent reduction from a business-as-usual projection. (Health & Saf. Code § 38550.) Based on the warning of the IPPC and leading climate scientists, Governor Brown issued an executive order in April 2015 requiring GHG emissions reductions to 40 percent below 1990 levels by 2030. (Executive Order B-30-15 (2015).) The Executive Order is line with a previous Executive Order mandating the state reduce emission levels to 80 percent below 1990 levels by 2050 in order to minimize significant climate change impacts. (Executive Order S-3-05 (2005).) In enacting SB 375, the legislature has also recognized the critical role that land use planning plays in achieving greenhouse gas emission reductions in California.

The legislature has found that failure to achieve GHG emissions reductions would be "detrimental" to California's economy. (Health & Saf. Code § 38501(b).) In his 2015 Inaugural Address, Governor Brown reiterated his commitment to reduce greenhouse gas emissions with three new goals for the next fifteen years:

- To increase electricity derived from renewable sources to 50 percent;
- To reduce petroleum use in cars and trucks by 50 percent;

- To double the efficiency of existing buildings and make heating fuels cleaner.

(Brown 2015.) In 2018, Governor Brown issued Executive Order B-55-18, in which he declared it to be a statewide goal to "achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." 12

Although some sources of GHG emissions may appear insignificant in isolation, climate change is a problem with cumulative impacts and effects. (*Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, (9th Cir. 2008) 538 F.3d 1172, 1217 ["the impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis" that agencies must conduct].) One source or one small project may not appear to have a significant effect on climate change, but the combined impacts of many sources can drastically damage California's climate as a whole. Therefore, project-specific GHG emissions disclosure, analysis and mitigation is vital to California meeting its climate goals and maintaining our climate. 13

The impacts of climate change are already being felt by humans and wildlife. Thousands of studies conducted by researchers around the world have documented changes in surface, atmospheric, and oceanic temperatures; melting glaciers; diminishing snow cover; shrinking sea ice; rising sea levels; ocean acidification; and increasing atmospheric water vapor (USGCRP 2017). In California, climate change will result in impacts including, but not limited to, increased temperatures and wildfires and a reduction in snowpack and precipitation levels and water availability.

Given the increasingly urgent need for drastic action to reduce GHG emissions, the DEIR's failure to fully disclose, analyze, mitigate, or consider alternatives to reduce the Project's significant climate change effects is all the more alarming. 14

III. THE DEIR FAILS TO ADEQUATELY ANALYZE THE PROJECT'S SIGNIFICANT ENVIRONMENTAL IMPACTS.

CEQA's fundamental purpose is to ensure that a lead agency fully evaluates, discloses, and mitigates wherever feasible a project's significant environmental effects. (Pub. Resources Code, §§ 21000, et seq.) An EIR serves as an "informational document" that informs the public and decisionmakers of the significant environmental effects of a project and ways in which those effects can be minimized. (CEQA Guidelines, § 15121, subd. (a).) Accordingly, CEQA requires an EIR to include "enough detail 'to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.'" (*Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 516.) Here, the DEIR fails to properly disclose and analyze significant air quality, greenhouse gas (GHG), sensitive receptor, and land use impacts. 15

A. The DEIR Must Properly Account For the Project's Air Quality and GHG Impacts.

The DEIR's analysis of the proposed Project's air quality and GHG emissions is inadequate to the public and decision-makers. (See DEIR Sec. 4.3 and 4.8.) The DEIR finds that 16

the Project – even with the proposed mitigation – will result in a significant and unavoidable increase in criteria pollutants such as ROG, NOx, CO, PM10, and PM 2.5. (DEIR at 4.3-24, 4.3-35.) It also finds that GHG emissions after mitigation would measure 207,327 MTCO2e, nearly *seventy times* in excess of the DEIR's threshold of significance of 3,000 MTCO2e. (*Id.* at 4.8-23.) 16

The DEIR here grossly underestimates the vehicle trips associated with the Project, the main driver of the Project's air quality and greenhouse gas impacts. It estimates that the Project will generate 9,865 daily truck trips, which it calculated using the Institute of Transportation Engineers (ITE) Common Trip Generation Rates. The ITE estimates trip generations based on the type of facility and square footage of the facility. (ITE 2017; DEIR, Appendix L at 46.) The DEIR relies on two facility types: Land Use 154: High-Cube Short-Term Storage and ITE Land Use 150: Warehousing, which have generation rates of .1 and .19 trips per unit respectively (DEIR, Appendix F at 46.) Other types of warehouse projects identified by ITE, such as High-Cube Fulfillment Center Warehouses and High-Cube Parcel Hub Warehouses, have significantly higher vehicle trip estimates, 1.37 and .64 trips per unit, respectively.

The DEIR provides no information or evidence justifying its selection of high-cube short-term storage and warehousing when other types of high cube warehouse centers result in truck trip estimates orders of magnitude higher. The DEIR describes the Project generally as a "large format high-cube logistics and e-commerce center." (DEIR at 1-4.) The DEIR lacks additional detail about the type of warehouse facility it anticipates constructing. It does not disclose the number of loading docks, trailer stalls, or parking spots associated with the Project – all of which inform the intensity of use. Nor does the DEIR place limits on the type of e-commerce facility that could operate on the site. Absent additional information, it appears that any tenant could operate a high-cube center or parcel hub warehouse on the site, which would generate significantly more truck trips than the DEIR disclosed, analyzed, or mitigated. The DEIR's approach violates CEQA's requirement that an EIR fully analyze and attempt to mitigate all significant direct and indirect impacts of a project. (CEQA Guidelines, § 15126.2; Pub. Resources Code, § 21002.) 17

The County must support its choice to rely upon these lower estimates, or select an estimate that more conservatively and accurately accounts for the Project's potential to generate truck trips.[1] Should the County ultimately rely on these lower estimates, the County must condition any project approval on a lease provision that guarantees a Project tenant could not operate a high-cube fulfillment center or parcel hub warehouse on the site, absent additional environmental review and mitigation.

The DEIR then compounds its error by underestimating the diesel pollution that would be generated by each truck trip. The primary objective of the Project is to build the Project "in close proximity to the Ports of Los Angeles and Long Beach, enabling trucks servicing the site to achieve a minimum of two round trips per day." (DEIR at 1-4.) The Project is approximately 62 miles away from the Ports of LA and Long Beach. (Exhibit 2.) 18

[1] The County's underestimation of diesel impacts affects its SCAQMD Rule 2305 Warehouse Actions and Investments to Reduce Emissions Program calculation. Once recalculated, the Project may no longer comply with the SCAQMD indirect source rule and may be required to pay additional funds. (*See* DEIR at 4.3-46.)

The EIR engages in a misleading minimization of impacts by assuming that, on average, trucks will travel 33.2 miles one way, based on CARB's estimate of the average truck trip length from the Ports of LA and Long Beach to warehouse facilities in the region. (DEIR at 4.3-18; CARB 2007.)[2] Since the County plans for trucks to travel to and from the Port, the only evidence-backed metric for trip length is the Project's distance from the Port – approximately 62 miles one way. Reliance on a basin-wide average masks up to one-half of the diesel pollution that the Project will generate. 18

These same flaws that infect the DEIR's air quality analysis cause the DEIR to underestimate the Project's already significant and unavoidable GHG impacts, which are driven primarily by truck trips. (DEIR at 4.8-22.)

B. The DEIR's Analysis of and Mitigation For the Cumulative Air Quality Impacts to Sensitive Receptors is Inadequate.

The DEIR fails to properly analyze cumulative air quality impacts on sensitive receptors. As courts have explained, "[o]ne of the most important environmental lessons evident from past experience is that environmental damage often occurs incrementally from a variety of small sources." (*Kings Cty. Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 720.) Consequently, CEQA requires analysis of cumulative impacts. (CEQA Guidelines, Appendix G, §§ 15130, 15355.) 19

The DEIR's health risk assessment purports to evaluate the increased cancer risk caused by the Project. The analysis concludes that the Project's diesel particulate matter emissions could result in up to 88.53 cases of cancer for every million residents and up to 83.62 cancer cases for every million workers, well above the significance threshold of ten cancer cases per million people. (DEIR at 4.3-53.) The DEIR identifies two air quality mitigation measures – MM AQ-1 and MM AQ-9 – then concludes without explanation that these alone will reduce cancer levels to less than 10 per one million for all receptors, resulting in an insignificant impact after mitigation. (*Id.* at 4.3-53.)

An EIR that relies on mitigation measures to reduce a project's impacts must provide substantial evidence of the effectiveness of those measures to reduce the impacts. (*Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 522.) The DEIR provides no such analysis. These measures do not go nearly far enough toward reducing, avoiding, or minimizing the Project's operational impacts on sensitive receptors. MM AQ-1 involves emissions from construction only, and MM AQ-9 requires charging equipment for onsite electric/zero-emissions yard equipment. (DEIR at 1-15, 1-16.) Neither mitigation measure commits to quantifiable reductions to address the long-term air quality harms from operation of the warehouse and trips by heavy diesel trucks in and out of the facility. 20

[2] The County's Localized Operational Significance Analysis is also based on the faulty 33.2-mile estimate and must be updated. (*See* DEIR at 4.3-45.)

The proposed mitigation measures do nothing to address diesel particulate matter, a primary driver of cancer risk. (DEIR at 4.3-4 [estimating that 70 percent of the cancer risk the average California faces from TACs stems from diesel exhaust particles].) This Project is a 6.6 million sf warehouse sited within 500 feet of the nearest sensitive receptor. It would generate 9,865 daily truck trips—orders of magnitude higher than the threshold—and would emit nearly nine times the SCAQMD threshold for reactive organic gases, approximately 35 times the SCAQMD threshold for nitrogen oxide, 40 times the SCAQMD threshold for carbon monoxide, almost four times the threshold for PM10, and three times the threshold for PM2.5. (*Id. at* 4.3-35.) There is no basis for the DEIR's conclusion that cancer risks can be reduced to less than significant levels via the two measures identified in the DEIR. The DEIR must provide evidence to support its conclusion that these solutions at the margins will lead to the dramatic reduction in cancer levels the DEIR purports.[3] 21

Additionally, the EIR must be revised to incorporate evidence-backed solutions to these harms. For example, the County should consider site design adjustments to reduce the adjacent disadvantaged community's exposure, such as the location of Project docking stations. The Project places docking stations to the east of the Project site along Cherry Avenue and also to the north near residences. (DEIR at 4.13-17, 4.13-19.) This will route truck traffic through adjacent residential neighborhoods off Cherry Avenue, especially between Arrow Route and San Bernardino Avenues. The DEIR's traffic analysis shows that these intersections, with the addition of Project traffic, will operate at level of service E and F, which indicates that the County has made no effort to route diesel trucks away from these intersections and other intersections near residences. (DEIR, Appendix G pp. 75-76.) Rather than expose sensitive receptors near Cherry Avenue and elsewhere to the impacts of heavy truck traffic passing their homes, we urge the County to relocate driveways away from residences and enact turn restrictions that will prevent trucks from traversing streets with fronting sensitive receptors. 22

Pursuant to a recent settlement with the Attorney General's Office, the South Coast Air Quality Management District (SCAQMD) has committed to revise its CEQA guidance for analyzing cumulative air quality impacts. (AGO 2022; SCAQMD 2022.) SCAQMD staff have proposed an approach for new guidance that would consider existing burdens associated with nearby pollution sources and quantify cumulative air quality impacts and the effects on human health. The purpose of this new approach is to consider the impacts of concentrating polluting land uses, like warehouse projects, in disadvantaged areas, thereby encouraging local governments to site future projects in areas where they will have the least impact on human health. (AGO 2022.) Accordingly, the County may soon be required to conduct additional analysis for cumulative air quality impacts. Should SCAQMD release its updated rules, the County must update its cumulative air quality analysis. 23

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[3] If the County cannot mitigate the cancer impacts to less than 10 per one million, which appears to be the case, then the County must explain how this Project complies with the Fontana General Plan mitigation measure MM-AQ-24. MM-AQ-24 prohibits the siting of new, large warehouse facilities within 1,000 feet of a sensitive receptor whenever, as here, the incremental cancer risk exceeds 10 in 1 million. (City of Fontana GP FEIR 2-18, p. 2-7.)

C. The County Fails to Adequately Analyze the Project's Land Use Impacts.

An EIR must clearly set forth all significant effects of the Project on the environment, including impacts on land use. (Pub. Resources Code, § 21100, subd. (b)(1); CEQA Guidelines, § 15126.2, subd. (a).) The DEIR must identify and discuss any inconsistencies between the Project and applicable general, specific, and regional plans, including plans for the reduction of greenhouse gas emissions. (CEQA Guidelines, § 15125, subd. (d).) Here, the County evaluated the significance of the Project's land use impacts by considering whether the Project "has the potential to conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect." (DEIR at 4.11-9.) The DEIR concludes that the Project would not result in any adverse environmental impacts due to an inconsistency with any applicable land use plans, policies or regulations. (DEIR at 4.11-27.) The County determined that overall land use impacts would be less than significant through evaluating the Project's consistency with the Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Community Strategy and the County of San Bernardino Countywide Policy Plan.

24

The County failed to analyze the Project's consistency with relevant land use plans and thus does not disclose potentially significant impacts. Noticeably absent is any discussion of the Project's consistency with the City of Fontana's General Plan or Municipal Code, both of which apply to the Project by the DEIR's own admission. (DEIR at 2-12, 2-13 [The Fontana Forward General Plan was used in this EIR as it relates to the analysis of the project area parcels within the City of Fontana Sphere of Influence since it contains information, policies, and regulations relevant to the Project.]) This failure is especially egregious given that the recent settlement agreement between Fontana and the Attorney General to protect these vulnerable communities from the unchecked proliferation of industrial development. (AGO 2022.)

Fontana's General Plan has several policies protecting residents from excessive impacts from industrial land uses. (City of Fontana GPU 2018.) The DEIR failed to evaluate the Project's consistency with the dozens of policies in the City's Environmental Justice element, which are required by SB 1000 and designed to reduce the unique and compounded health risks in disadvantaged communities such as the Fontana Sphere of Influence (SOI). (City of Fontana Appendix Six 2018.) The City of Fontana SOI is one of the most disadvantaged communities identified in Fontana's General Plan. (City of Fontana Appendix Six 2018.) Included in the policies designed to protect the SOI are requirements that large industrial projects undergo a Health Fontana Advisory Project Review process and that noise encroachment from such projects be minimized into adjoining residential neighborhoods. (City of Fontana Appendix Six 2018.) Yet the EIR fails to explain how siting the Project near these noise-sensitive receptors is consistent with the City General Plan's requirement to minimize noise spillover from industrial uses into adjoining residential neighborhoods and noise-sensitive uses. (City of Fontana Appendix Six 2018.) Nor does the EIR explain how the Project is consistent with the green building requirements in its Sustainability and Resilience element. (City of Fontana GPU 2018.) We encourage the County to more carefully analyze the Project's consistency with applicable General Plan policies.

25

The County also failed to demonstrate consistency with Fontana's Municipal Code. Stemming from the deleterious public health impacts suffered by Fontana residents due to unchecked warehouse development, Fontana entered into a settlement with the Attorney General's Office and adopted Ordinance No. 1891, setting stringent environmental standards for all future warehouse development in Fontana. (City of Fontana 2022.) The ordinance includes a host of measures that were designed to mitigate impacts and protect Fontana residents and the air basin from the most deleterious impacts. Among other requirements, the ordinance mandates that all on-site motorized equipment be zero emission, that solar panels on-site supply 100 percent of the power needed to operate non-refrigerated portions of the facility, and that anti-idling signs reflect a 3-minute idling restriction. The DEIR does not adopt these requirements nor demonstrate consistency. 26

Third, the EIR fails to consider the Project's consistency with the mitigation measures in the final EIR for Fontana's General Plan. For example, the Fontana General Plan contains 24 mitigation measures related to air quality, most of which should apply to the Project. (City of Fontana GP Update FEIR 2018, Table 2-2, pp. 2-4 – 2-6.) Those measures set requirements for building efficiency standards, on-site equipment, and preferential vanpool parking, among others. The EIR should clarify whether those requirements have been incorporated into the Project design, and, if not, explain why the Project is inconsistent with these mitigation measures. 27

The Project does not comply with many of these requirements. Indeed, nowhere does the DEIR even mention the ordinance or attempt to demonstrate compliance. The County must either explain why these plans do not apply, contrary to the DEIR's own statements, or must show how this Project is consistent with such plans and measures.

D. The County Fails to Adequately Analyze and Mitigate the Project's Noise Impacts.

Noise can be one of the most intrusive impacts of warehouse and logistics development to nearby sensitive receptors. Diesel trucks and unloading activities can contribute substantial noise pollution to neighboring communities.

Based on faulty assumptions, the DEIR concludes that on-site noise impacts from stationary noise would be less than significant. The DEIR estimated truck and loading dock noise for the Project by relying on measured noise levels at one loading dock at the La Palma Neighborhood Walmart. (DEIR at 4.13-19.) The typical Neighborhood Walmart is around 50,000 square feet, a quarter the size of typical Walmart Supercenter, and it sells primarily groceries, lacking all the regular Walmart departments like clothing and toys. (Bowman 2016.) The La Palma Neighborhood Walmart, for example, only has 2 loading docks.[4] The Project, on the other hand, is slated to be 6.6 million sf – the size of seven Crypto.com Arenas – and will year-round handle a wide variety of consumer goods. There is no basis by which to conclude that this grocery store is an appropriate proxy to predict stationary noise levels for a massive industrial warehouse. The noise analysis must be redone using noise measurements from a 28

[4] July 14, 2022 phone call with Las Palmas Neighborhood Walmart Store Manager.

similarly sized high cube industrial warehouse facility. Accordingly, the DEIR must clarify the assumptions underlying its noise analysis. 28

Despite concluding that off-site traffic noise impacts will be significant and unavoidable and cumulatively considerable—exceeding the thresholds set by the General Plan and noise ordinance—the Draft EIR does not adopt a single mitigation measure to address off-site noise, concluding that any mitigation would be infeasible. (DEIR at 4.13-23, 4.13-25.) The County dismisses all potential mitigation based on alleged "jurisdictional and access limitations, safety and maintenance issues, and cost." (DEIR 4.13-31.) The County fails to make an adequate showing of infeasibility. The standard for feasibility is high. Whether a mitigation measure is unfeasible "is not measured by increased cost or lost profit, but upon whether the effect of the proposed mitigation is such that the project is rendered impractical." (*Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 600 (internal citation omitted).) In *Citizens of Goleta Valley v. Board of Supervisors* (1988) 197 Cal.App.3d 1167, 1180, the Court agreed with the trial court that the administrative record did not contain analysis of the project alternatives in terms of comparative costs, comparative profit or losses, or comparative economic benefit to the project applicant or the community at large. The DEIR makes no showing that the Project would be rendered impractical should it incorporate practical, routinely accepted noise mitigation measures. 29

The County must consider such mitigation measures, including ones that divert traffic away from the nearby communities that will experience significant noise impacts. Further, the County has failed to consider mitigation to route trucks away from residences. The Project's current design – with loading docks along Cherry Avenue – will route trucks along the eastern edge of the Project, adjacent to residential neighborhoods. Without mitigation, the Project presents a significant risk that a large volume of trucks will travel off truck routes and through residential areas.

E. The County Gives Short Shrift to Cumulative Impacts.

CEQA requires a lead agency consider whether the combined effects from both the proposed project and other projects would be "cumulatively considerable." (CEQA Guidelines, § 15130, subd. (a).) The incremental effects of an individual project are cumulatively considerable if the effects are significant when "viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (*Id*., §§ 15065, subd. (a)(3), 15355, subd. (b).) To perform this analysis, a lead agency must "use its best efforts to find out and disclose all that it reasonably can." (*Id*., § 15144; *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 96.) Where, as here, a community already bears a high pollution burden, the relevant question is "whether any additional amount" of pollution caused by the project "should be considered significant in light of the serious nature" of the existing problem. (*Kings County Farm Bureau*, *supra*, 221 Cal.App.3d at 718.) Absent this analysis, piecemeal approval of multiple projects with related impacts could lead to severe environmental harm. (*San Joaquin Raptor/Wildlife Rescue Ctr. v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 720.) 30

The DEIR finds cumulative significant and unavoidable impacts for air quality, GHG emissions, and noise. (DEIR at 4.4-28, 4.8-24, 4.13-25.) Despite the substantial increase in all three these metrics, the DEIR assumes any cumulative impact would be lessened due to CEQA environmental review:

> Most of the projects included in the cumulative analysis have undergone, are undergoing, or will be required to undergo, their own independent environmental review under CEQA. Significant adverse impacts of the cumulative projects would be required to be reduced, avoided, or minimized through the application and implementation of mitigation measures applicable to those separate projects. The net effect of these mitigation measures is assumed to be a general lessening of contribution to cumulative impacts. (DEIR at 4-5.)

This assumption is betrayed by the DEIR's own analysis, which finds the impacts in all three categories will be significant and unavoidable *after* mitigation and therefore create a cumulatively considerable impact. There is zero basis by which to conclude that the existence of CEQA alone will ensure going forward that cumulative impacts will be lessened.

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In light of the now-overwhelming evidence of the bevy of public health harms caused by the overconcentration of polluting warehouses near neighborhoods, even those that undergo CEQA review, the County must no longer delay in requiring substantial project design and mitigation measures for this warehouse project and all warehouse projects operating in these unincorporated areas, as the DEIR in several places appears to do. We discuss these additional measures in Part V of our DEIR-specific comments below.

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IV. THE COUNTY HAS ARTIFICALLY NARROWED ITS PROJECT OBJECTIVES AND IMPROPERLY DISCARDED REASONABLE ALTERNATIVES.

CEQA requires an EIR to identify alternatives to the proposed project. (Pub. Resources Code, § 21002.1, subd. (a).) The EIR must "describe a range of reasonable alternatives . . . which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." (CEQA Guidelines, § 15126.6, subd. (a).) The alternatives analysis must also "include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project." (CEQA Guidelines, § 15126.6, subd. (d).) "Evaluation of project alternatives and mitigation measures is the core of an EIR." (*Banning Ranch v. City of Newport Beach* (2017) 2 Cal.5th 918, 937 (alterations omitted).) Discussion of alternatives allow governmental agencies to consider alternatives to proposed actions affecting the environment. (*Laurel Heights Improvement Ass'n. v. Regents of Univ. of California* (1988) 47 Cal. 3d 376, 400 (en banc) (citing Pub. Resources Code, § 21001, subd. (g)).) To consider alternatives under CEQA, an EIR measures the chosen alternatives' environmental impacts against the Project's impacts. Selected alternatives must be able to meet some of the basic Project objectives, (CEQA Guidelines, § 15126.6, subd. (a),) though they need not meet all objectives, (*Watsonville Pilots Ass'n. v. City of Watsonville* (2010) 183 Cal.App.4th 1059, 1087 ["It is virtually a given that the alternatives to a project will not attain all of the project's objectives."].)

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In sum, "[a]n alternatives analysis in an EIR is intended to facilitate consideration of whether an environmentally superior alternative could meet *most* project objectives; therefore, the key to the selection of the range of alternatives is to identify alternatives that meet most of the project's objectives but have a reduced level of environmental impacts." (*Bay Area Citizens v. Assn. of Bay Area Govts.* (2016) 248 Cal.App.4th 966, 1014 (internal quotations and citation omitted, emphasis added); see also *Habitat and Watershed Caretakers v. City of Santa Cruz* (2013) 213 Cal.App.4th 1277, 1304 ("[a] potentially feasible alternative that might avoid a significant impact must be discussed and analyzed in an EIR").) Nonetheless, "a lead agency may not give a project's purpose an artificially narrow definition" to limit the scope of acceptable alternatives. (*N. Coast Rivers All. v. Kawamura* (2015) 243 Cal.App.4th 647, 668.) That is exactly what the County has done here. 32

The EIR defines thirteen objectives for the Project, and the majority are directed toward placement of a large warehouse at the Project site. Objectives 1, 2, 4, 7, 8, 10, and 11 expressly state this purpose:

> (1) Maximize the efficient movement of goods through the region by locating a large format high-cube logistics and e-commerce center in close proximity to the Ports of Los Angeles and Long Beach, enabling trucks servicing the site to achieve a minimum of two round trips per day;
> (2) Develop and operate a large format high-cube logistics and e-commerce center that maximizes the use of one of the few remaining large industrial sites in Southwestern San Bernardino County, to realize substantial unmet demand in Southwestern San Bernardino County and the region, and to allow Southwestern San Bernardino County to compete on a domestic and international scale through the efficient and cost-effective movement of goods;
> (4) Develop a high-cube logistics and e-commerce center that is in close proximity to Interstate I-10 and other major transportation arterials, to support the distribution of goods throughout the region and that also limits truck traffic disruption to sensitive receptors within the surrounding region;
> (7) Develop and operate an attractive large format high-cube logistics and e-commerce center in Southwestern San Bernardino County that meets industry standards for operational design criteria that will attract quality tenants and that will be competitive with other similar facilities in the region;
> (8) Develop a location for siting clean industry involving large scale buildings and impervious parking areas on a heavy industrial site that was once a steel mill;
> (10) Develop and operate a large format high-cube logistics center and e-commerce that limit [sic] truck traffic disruption to residential areas within Southwestern San Bernardino County and neighboring jurisdictions;
> (11) Develop and operate a large format high-cube logistics and e-commerce center that positively contributes to the economy. (DEIR at 1-4, 1-5.) 33

One alternative considered in the EIR is a "reduced footprint" alternative. (DEIR at 6-13.) This alternative would construct a 4,950,000 square-foot warehouse on the Project site instead of a 6.6 million square-foot warehouse. (*Ibid.*) The reduced footprint alternative would have the benefit of reducing the Project's otherwise significant and unavoidable impacts to air 34

quality and greenhouse gas emissions, promising reductions of up to 25 percent. (*Id.* at 6-14, 6-17.) The County also found this alternative "would generally meet the Project objectives." (*Id*. at 6-21.) But then, the County minimized the 25 percent reductions in pollutants and GHG as "functionally equivalent" to the Project and found that this alternative would not satisfy at least three of the thirteen objectives because it "would not allow for the same level of development of the larger high-cube logistics and e-commerce facilities" of the Project site. (*Id*. at 6-21.) There is no basis by which to conclude that a 4.9 million sf warehouse – which would still increase the area's warehouse footprint by 75 percent – is not "large." (*See* DEIR at Table 4-1, 4-14.) The Project's objectives are so artificially narrow as to require placement of the *largest* possible warehouse on the site. The DEIR's overly narrow definition of objectives to preclude all but the largest possible warehouse at the Project site violates CEQA's directives. 34

V. THE DEIR FAILS TO SUFFICIENTLY MITIGATE THE PROJECT'S SIGNIFICANT ENVIRONMENTAL IMPACTS.

An EIR must describe and adopt all feasible mitigation measures that minimize the significant environmental impacts of a project. (Pub. Resources Code, § 21002; CEQA Guidelines, § 15126.4, subd. (a)(1).) The lead agency is expected to develop mitigation in an open public process that considers measures proposed by interested agencies and the public. (*Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 93.) The CEQA Guidelines provide that, "[w]here several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified." (CEQA Guidelines, § 15126.4, subd. (a)(1)(B).) Further, mitigation measures must be fully enforceable and cannot be deferred to a future time. (*Id.*) 35

Even under the Project's unrealistic assumptions regarding the Project's vehicle traffic and the substantial emissions it would generate, the Project under the DEIR's own terms would have a profound negative impact on air quality in the region and for adjacent residential communities and would generate air pollutants, significant GHG emissions, and noise. Yet the DEIR makes little honest effort to mitigate these impacts, failing to adopt or consider the most basic and widely available of mitigation measures. Despite the Project's significant impacts, the DEIR does not incorporate several basic measures that would reduce the Project's impacts on adjacent residential communities and the region's air basin.

A. The DEIR Makes Faulty Assumptions Regarding the Feasibility of Mitigation Measures.

As discussed above, the DEIR concludes that the Project's GHG emissions will well exceed the threshold of significance, resolving to mitigate a paltry 5.5 percent of the Project's total GHG emissions. (DEIR at 4.8-23.) Authoritative climate assessments decisively recognize the dominant role of greenhouse gases in driving global climate change. As stated by the Third National Climate Assessment: "observations unequivocally show that climate is changing and that the warming of the past 50 years is primarily due to human-induced emissions of heat-trapping gases." (Mellilo 2014.) The Assessment makes clear that "reduc[ing] the risks of some of the worst impacts of climate change" will require "aggressive and sustained greenhouse gas emission reductions" over the course of this century. (*Id.*) The IPCC Sixth Assessment Report 36

and other expert assessments have established global carbon budgets, or the total amount of carbon that can be burned while maintaining some probability of staying below a given temperature target. (IPCC 2021.)

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The Project proposes to mitigate only an approximate 12,000 of the 220,000 MTC02e that the Project is estimated to generate. (DEIR at 4.8-23, 4.8-42.) Although the Project will result in significant and unavoidable GHG impacts, the DEIR concludes that the adoption of five GHG mitigation measures is sufficient and that any additional mitigation is not feasible due to the limited ability of the County to address emissions resulting from cars and trucks outside of the County's limits. (*Id*. at 4.8-33.) Such an assertion lacks basis in the science and in common sense. Whether GHG emissions result from vehicles or from construction is irrelevant because the effect of that emission is the same – a small but significant contribution to global climate change. The County cannot hide behind its limited regulatory authority to escape its obligation to reduce greenhouse gas emissions, wherever it can, to the extent feasible.

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B. The DEIR's Mitigation is Unlawfully Deferred.

CEQA mandates that mitigation for significant environmental impacts are not deferred. (CEQA Guidelines, § 15126.4(a)(1)(B).) However, when immediate mitigation is "impractical or infeasible," mitigation may be developed after project approval with certain conditions. (*Ibid*.) Deferral is permissible provided the agency "(1) commits itself to the mitigation, (2) adopts specific performance standards the mitigation will achieve, and (3) identifies the type(s) of potential action(s) that can feasibly achieve that performance standard and that will be…incorporated into the mitigation measure." (*Golden Door Properties, LLC. V. County of San Diego* (2020) 50 Cal.App.5th 467, 518-19; CEQA Guidelines, § 15126.4(a)(1)(B).) "If mitigation is feasible but impractical at the time of [project approval], it is sufficient to articulate specific performance criteria and make further approvals contingent on finding a way to meet them." (*San Joaquin Raptor Rescue Ctr. v. County of Merced* (2007) 149 Cal.App.4th 645, 670 [internal citations omitted].)

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The DEIR includes multiple mitigation measures that are improperly deferred or lack defined performance standards. The DEIR mandates zero-emission equipment when "commercially available," but does not define criteria for determining commercial availability. (See MM-AQ-1, MM-AQ-4.) Likewise, the DEIR requires incorporation of new technology when "feasible" or "as applicable," but there are no criteria describing how feasibility or applicability is to be assessed. (See PDF AQ-1, PDF AQ-5, PDF AQ-6, PDF-AQ-9, PDF-AQ-10.) Many measures delay compliance deadlines to tenant occupancy or other deadlines, such as within two years of commencing operations, rather than the time of Project approval, without reason. (MM AQ-3, MM AQ-4, MM AQ-5, MM AQ-6, MM AQ-7, MM AQ -8, MM AQ-9, MM GHG-1, MM GHG-2, MM GHG-3, MM GHG-4, MM GHG-5.) These measures should be revised in the final EIR to contain clearer and more defined terms, criteria, and timelines.

C. The DEIR Fails to Consider Proven, Feasible Mitigation Measures.

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CEQA prohibits the County from approving the Project if there are other feasible measures to reduce the Project's impacts. (Pub. Resources Code, § 21100, subd. (b)(3).)

Numerous measures exist to further mitigate the Project's impacts on local community health, regional air quality, and greenhouse gas emissions—a list of measures is below for the County's consideration. If the County declines to adopt the measures suggested in this comment, it must explain the basis for its decision as to each measure. (*Los Angeles Unified Sch. Dist. v. City of Los Angeles* (1997) 58 Cal.App.4th 1019, 1029.)

The DEIR fails to meet the County's obligation to adopt all feasible mitigation to reduce the Project's air quality impacts. The County fails to consider basic mitigation measures that have become standard for new warehouse development.

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By proposing inadequate mitigation and then concluding that the Project's air quality impacts are significant and unavoidable, the County has fallen short of CEQA's requirement that lead agencies consider all feasible mitigation to reduce or avoid the Project's significant impacts. (See Pub. Resources Code, § 21002 [It is the "policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures which will avoid or substantially lessen the significant environmental effects of such projects."], CEQA Guidelines, §§ 15092(b), 15043, 15126.4, subd. (a)(1).) Here, the EIR overlooks, or simply ignores, numerous feasible mitigation measures.

As discussed above, the Project fails to incorporate the measures required by the Fontana General Plan Update and Fontana Ordinance No. 1891, which were specifically formulated to mitigate these impacts and protect Fontana residents and the air basin from cumulative environmental impacts. (City of Fontana 2022.) The County must incorporate these requirements.

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The South Coast Air Quality Management District ("SCAQMD") recently adopted Rule 2305 - Warehouse Indirect Source Rule—Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program, which contains a host of mitigation measures that warehouse facilities can adopt. (SCAQMD 2021, Table 3.) The rule applies to individual warehouses and distribution facility projects like the Project and is intended to reduce air quality emissions from mobile sources associated with the projects. (*Ibid*.) The mitigation measures include, but are not limited to:

- Requiring that a certain percentage of trucks in warehouse operators' fleet(s) be Zero Emissions or Near Zero Emissions.
- Requiring the installation of Zero Emissions charging or fueling infrastructure
- Requiring installation and use of onsite solar panels
- Installing high-efficiency air filters or filtering systems in residences, schools, daycares, hospitals, or community centers.

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The California Office of the Attorney General also has published a document entitled "Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act" to help lead agencies comply with these requirements. (AGO 2021.) Nearly all of the example mitigation measures in this document have been adopted in a warehouse project in California, demonstrating their feasibility. (*Ibid.*) Unfortunately, the County has only incorporated a handful of them, which partially explains the severe and unmitigated air

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quality and greenhouse gas impacts. At minimum, the County should consider the following best practices and mitigation measures:

Recommended Best Practices

- Placing facility entry and exit points from the public street away from sensitive receptors, e.g., placing these points on the north side of the facility if sensitive receptors are adjacent to the south side of the facility.
- Locating warehouse dock doors and other onsite areas with significant truck traffic and noise away from sensitive receptors, e.g., placing these dock doors on the north side of the facility if sensitive receptors are adjacent to the south side of the facility.
- Screening dock doors and onsite areas with significant truck traffic with physical, structural, and/or vegetative barriers that adequately prevent or substantially reduce pollutant dispersal from the facility towards sensitive receptors.
- Posting signs indicating that all parking and maintenance of trucks must be conducted within designated on-site areas and not within the surrounding community or public streets.
- Fully analyzing impacts from truck trips. CEQA requires full public disclosure of a project's anticipated truck trips, which entails calculating truck trip length based on likely truck trip destinations, rather than the distance from the facility to the edge of the air basin. Emissions beyond the air basin are not speculative, and, because air pollution is not static, may contribute to air basin pollution. Moreover, any contributions to air pollution outside the local air basin should be quantified and their significance should be considered.

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Recommended Mitigation Measures

- Prohibiting off-road diesel-powered equipment from being in the "on" position for more than 10 hours per day.
- Providing electrical hook ups to the power grid, rather than use of diesel-fueled generators, for electric construction tools, such as saws, drills, and compressors, and using electric tools whenever feasible.
- Limiting the amount of daily grading disturbance area.
- Prohibiting grading on days with an Air Quality Index forecast of greater than one hundred for particulates or ozone for the project area.
- Forbidding idling of heavy equipment for more than two minutes.
- Keeping onsite and furnishing to the lead agency or other regulators upon request, all equipment maintenance records and data sheets, including design specifications and emission control tier classifications.
- Conducting an on-site inspection to verify compliance with construction mitigation and to identify other opportunities to further reduce construction impacts.

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- Using paints, architectural coatings, and industrial maintenance coatings that have volatile organic compound levels of less than 10 g/L.
- Requiring that all facility-owned and operated fleet equipment with a gross vehicle weight rating greater than 14,000 pounds accessing the site meet or exceed 2010 model-year emissions equivalent engine standards as currently defined in California Code of Regulations Title 13, Division 3, Chapter 1, Article 4.5, Section 2025. Facility operators shall maintain records on-site demonstrating compliance with this requirement and shall make records available for inspection by the local jurisdiction, air district, and state upon request.
- Requiring tenants to use zero-emission light- and medium-duty vehicles as part of business operations.
- Forbidding trucks from idling for more than two minutes and requiring operators to turn off engines when not in use.
- Posting both interior- and exterior-facing signs, including signs directed at all dock and delivery areas, identifying idling restrictions and contact information to report violations to CARB, the air district, and the building manager.
- Installing and maintaining, at the manufacturer's recommended maintenance intervals, air filtration systems at sensitive receptors within a certain radius of facility for the life of the project.
- Installing and maintaining, at the manufacturer's recommended maintenance intervals, an air monitoring station proximate to sensitive receptors and the facility for the life of the project and making the resulting data publicly available in real time. While air monitoring does not mitigate the air quality or greenhouse gas impacts of a facility, it nonetheless benefits the affected community by providing information that can be used to improve air quality or avoid exposure to unhealthy air.
- Constructing electric truck charging stations proportional to the number of dock doors at the project.
- Installing solar photovoltaic systems on the project site of a specified electrical generation capacity, such as equal to the building's projected energy needs.
- Requiring all stand-by emergency generators to be powered by a non-diesel fuel.
- Requiring facility operators to train managers and employees on efficient scheduling and load management to eliminate unnecessary queuing and idling of trucks.
- Requiring operators to establish and promote a rideshare program that discourages single-occupancy vehicle trips and provides financial incentives for alternate modes of transportation, including carpooling, public transit, and biking.
- Posting signs at every truck exit driveway providing directional information to the truck route.
- Improving and maintaining vegetation and tree canopy for residents in and around the project area.
- Requiring tenants to enroll in the United States Environmental Protection Agency's SmartWay program and requiring tenants to use carriers that are SmartWay carriers.

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- Plant trees and vegetation near structures to shade buildings and reduce energy requirements for heating/cooling.
- Constructing physical, structural, or vegetative noise barriers on and/or off the project site.
- Preserve or replace onsite trees (that are removed due to development) as a means of providing carbon storage.
- Locating or parking all stationary construction equipment as far from sensitive receptors as possible and directing emitted noise away from sensitive receptors.
- Verifying that construction equipment has properly operating and maintained mufflers
- Requiring all combustion-powered construction equipment to be surrounded by a noise protection barrier
- Limiting operation hours to daytime hours on weekdays.
- Paving roads where truck traffic is anticipated with low noise asphalt.
- Orienting any public address systems onsite away from sensitive receptors and setting system volume at a level not readily audible past the property line.
- Retrofit municipal water and wastewater systems with energy efficient motors, pumps, and other equipment, and recover wastewater treatment methane for energy production.
- Designing, clearly marking, and enforcing truck routes that keep trucks out of residential neighborhoods and away from other sensitive receptors.
- Installing signs in residential areas noting that truck and employee parking is prohibited.
- Constructing new or improved transit stops, sidewalks, bicycle lanes, and crosswalks, with special attention to ensuring safe routes to schools.
- Consulting with the local public transit agency and securing increased public transit service to the project area.
- Designating areas for employee pickup and drop-off.
- Placing facility entry and exit points on major streets that do not have adjacent sensitive receptors.
- Restricting the turns trucks can make entering and exiting the facility to route trucks away from sensitive receptors.
- Preparing a construction traffic control plan prior to grading, detailing the locations of equipment staging areas, material stockpiles, proposed road closures, and hours of construction operations, and designing the plan to minimize impacts to roads frequented by passenger cars, pedestrians, bicyclists, and other non-truck traffic.
- Appointing a compliance officer who is responsible for implementing all mitigation measures and providing contact information for the compliance officer to the lead agency, to be updated annually.
- Creating a fund to mitigate impacts on affected residents, schools, places of worship, and other community institutions by retrofitting their property. For example,

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retaining a contractor to retrofit/install HVAC and/or air filtration systems, doors, dual-paned windows, and sound- and vibration-deadening insulation and curtains.
- Using cool pavement to reduce heat island effects.
- Installing climate control in the warehouse facility to promote worker well-being.
- Installing air filtration in the warehouse facility to promote worker well-being.

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Additionally, the California Air Resources Board ("CARB") has compiled a list of "Recommended Air Pollution Emission Reduction Measures for Warehouses and Distribution Centers." (CARB 2019). These measures include:

Recommended Construction Measures

- Ensure the cleanest possible construction practices and equipment are used. This includes eliminating the idling of diesel-powered equipment, and providing the necessary infrastructure (e.g., electrical hookups) to support zero and near-zero equipment and tools.
- Implement, and plan accordingly for, the necessary infrastructure to support the zero and near-zero emission technology vehicles and equipment that will be operating onsite. This includes the physical (e.g., needed footprint), energy, and fueling infrastructure for construction equipment, onsite vehicles and equipment, and medium-heavy and heavy-heavy duty trucks.
- In construction contracts, include language that requires all off-road equipment with a power rating below 19 kilowatts (e.g., plate compactors, pressure washers, etc.) used during project construction be battery powered.
- In construction contracts, include language that requires all heavy-duty trucks entering the construction site, during either the grading or building construction phases be model year 2014 or later. Starting in the year 2022, all heavy-duty haul trucks should also meet CARB's lowest optional low-NOx standard.
- In construction contracts, include language that requires all construction equipment and fleets to be in compliance with all current air quality regulations. CARB staff is available to provide assistance in implementing this recommendation.

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Recommended Operation Measures

- Include contractual language in tenant lease agreements that require tenants to use the cleanest technologies available, and to provide the necessary infrastructure to support zero-emission vehicles and equipment that will be operating onsite.
- Include contractual language in tenant lease agreements that requires all service equipment (e.g., yard hostlers, yard equipment, forklifts, and pallet jacks) used within the site to be electric or powered by compressed natural gas.
- Include contractual language in tenant lease agreements that requires the tenant be in, and monitor compliance with, all current air quality regulations for on-road trucks including CARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation, Periodic Smoke Inspection Program (PSIP), and the Statewide Truck and Bus Regulation.

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- Include contractual language in tenant lease agreements that requires all heavy-duty trucks entering the project site to be model year 2014 or later.
- Include contractual language in tenant lease agreements that limits onsite TRU diesel engine runtime to no longer than 15 minutes. If no cold storage operations are planned, include contractual language and permit conditions that prohibit cold storage operations unless a health risk assessment is conducted, and the health impacts mitigated.
- Include contractual language in tenant lease agreements that requires all trucks entering the project site to meet CARB's lowest optional low-NOx standard.
- Install rooftop solar panels, with a capacity that matches the maximum allowed for distributed solar connections to the grid.

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Additionally, where all opportunities for emissions-reduction from onsite-mitigation and alternatives have been exhausted, agencies should consider the use of legally adequate carbon offset programs.

Because the DEIR improperly fails to consider these and other feasible mitigation measures, the County cannot make the requisite CEQA findings prior to approving the Project. The DEIR should be revised to include these and other measures to reduce, avoid, or minimize the Project's admittedly significant impacts to air quality and be recirculated for public review and comment. As a reminder, should the County decide that one of the suggested mitigation measures is not feasible, it must explain in the record why it concluded that specific mitigation measure was not feasible, supported by substantial evidence. (*Los Angeles Unified Sch. Dist. v. City of Los Angeles* (1997) 58 Cal.App.4th 1019, 1029.)

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After considering all available on-site mitigation, the County should also consider whether local or regional offset programs are available. Offsets are an available mitigation measure for mitigating greenhouse gas impacts. The DEIR makes no mention of offsets.

CARB and the courts have indicated that "direct investments in local projects to offset carbon emissions" may help to mitigate projects' GHG-related impacts. (*See Golden Door, supra,* 50 Cal.App.5th at 492.) A direct investment project is an action that reduces, avoids or sequesters GHG emissions, such as weatherization or tree planting projects. (*Ibid.*) Direct investment projects are valid as long as they (1) comply with protocols approved by the California Air Resources Board, the California Air Pollution Control Officers Association or the local air pollution control district which received public review prior to adoption; and (2) yield GHG reductions that are additional to reductions that would not otherwise occur. (*Id.* at 492-493.) The newest draft of CARB's Scoping Plan provides useful examples of direct, local investment projects. (CARB 2022b, pp. 16-17.) These include local urban forestry projects, building retrofit programs, financing the installation of electric vehicle charging stations, and the funding of the electrification of public buses. (*Ibid*.)

Yet the DEIR provides no information regarding offsets. The County must explain whether it made any effort to create offset programs within County limits, work with the Riverside County Transportation Commission to identify offsets or demonstrate the infeasibility of the available offset programs. Of course, the County should prioritize onsite mitigation before

offsets. But once the County considers and incorporates all feasible onsite mitigation measures, outlined above, if it finds that the Project still has significant and unavoidable impacts, then the County must consider offsets. The County should first consider local offsets, then regional, then statewide offsets. Nevertheless, the County should prioritize local offsets to benefit the nearby community with an emphasis on developing community climate resiliency and adaptation. 46

VI. THE DEIR MUST BE RECIRCULATED.

Under California law, this DEIR cannot properly form the basis of a final EIR. CEQA and the CEQA Guidelines describe the circumstances that require recirculation of a draft EIR. Such circumstances include: (1) the addition of significant new information to the EIR after public notice is given of the availability of the DEIR but before certification, or (2) the draft EIR is so "fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded." (CEQA Guidelines, § 15088.5.) 47

Here, both circumstances apply. Decisionmakers and the public cannot possibly assess the Project's impacts, or even its feasibility, through the present DEIR, which is riddled with error. Among other fundamental deficiencies, the DEIR repeatedly underestimates the Project's significant impacts and assumes that mitigation measures at the margins will effectively reduce those impacts. In order to resolve these issues, the City must prepare a revised EIR that would necessarily include substantial new information.

VII. CONCLUSION

Thank you for the opportunity to submit comments on the Draft Environmental Impact Report for the Speedway Commerce Center II Project. Given the State and Fontana's recent efforts to protect communities from the compounding ills of additional warehouse development, it is unconscionable that the County would consider such a use directly adjacent to Fontana residences.

Given the possibility that the Center and Sierra Club will be required to pursue legal remedies to ensure that the County complies with its legal obligations including those arising under CEQA, we would like to remind the County of its statutory duty to maintain and preserve all documents and communications that may constitute part of the "administrative record" of this proceeding. (§ 21167.6(e); *Golden Door Properties, LLC v. Superior Court* (2020) 53 Cal.App.5th 733, 762-65.) The administrative record encompasses any and all documents and communications that relate to any and all actions taken by the County with respect to the Project, and includes "pretty much everything that ever came near a proposed [project] or [] the agency's compliance with CEQA . . . ." (*County of Orange v. Superior Court* (2003) 113 Cal.App.4th 1, 8.) The administrative record further includes all correspondence, emails, and text messages sent to or received by the County's representatives or employees, that relate to the Project, including any correspondence, emails, and text messages sent between the County's representatives or employees and the Applicant's representatives or employees. Maintenance and preservation of the administrative record requires that, *inter alia*, the County (1) suspend all data destruction policies; and (2) preserve all relevant hardware unless an exact replica of each file is made. 48

We appreciate the opportunity to raise these concerns with the County. Please add the Center and Sierra Club to your notice list for all future updates. If you have any questions about our concerns, please contact Hallie Kutak at the email or phone number listed below.

Sincerely,



Hallie Kutak
Staff Attorney | Senior Conservation Advocate
1212 Broadway, Suite #800
Oakland, CA 94612
hkutak@biologicaldiversity.org
Tel: (510) 844-7117

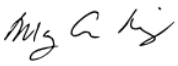

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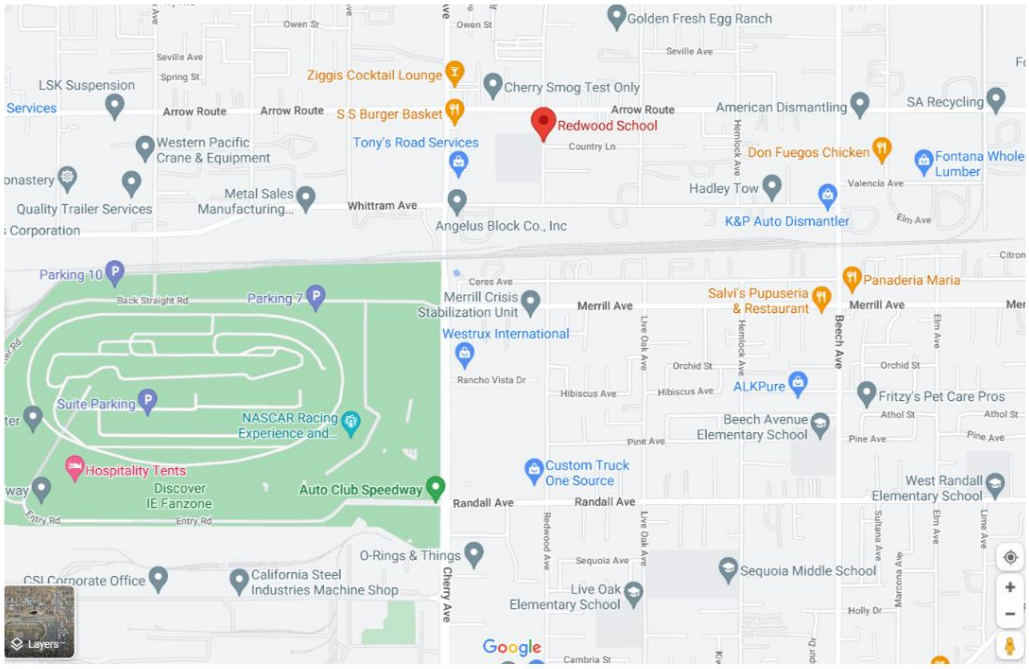
Exhibit 1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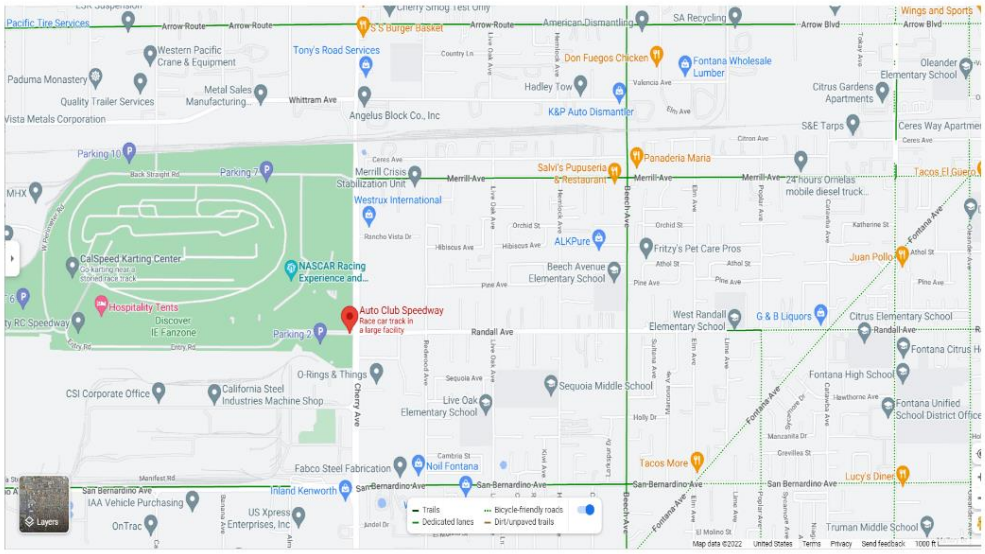
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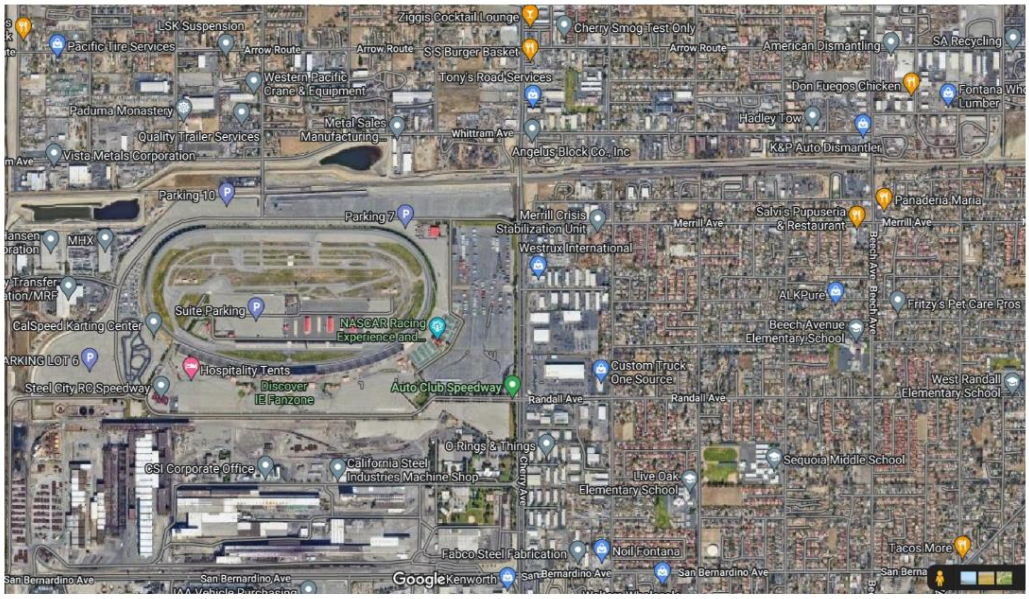
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Exhibit 2

Google Maps

Port of Los Angeles, Los Angeles, CA to Auto Club Speedway, 9300 Cherry Ave, Fontana, CA 92335

Drive 63.1 miles, 1 hr 54 min



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via I-10 E Fastest route now due to traffic conditions	1 hr 54 min 63.1 miles
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via CA-91 E Heavy traffic, as usual	2 hr 67.6 miles

7/13/22, 2:40 PM Port of Long Beach, Long Beach, CA to Auto Club Speedway - Google Maps

Google Maps

Port of Long Beach, Long Beach, CA 90802 to Auto Club Speedway, 9300 Cherry Ave, Fontana, CA 92335

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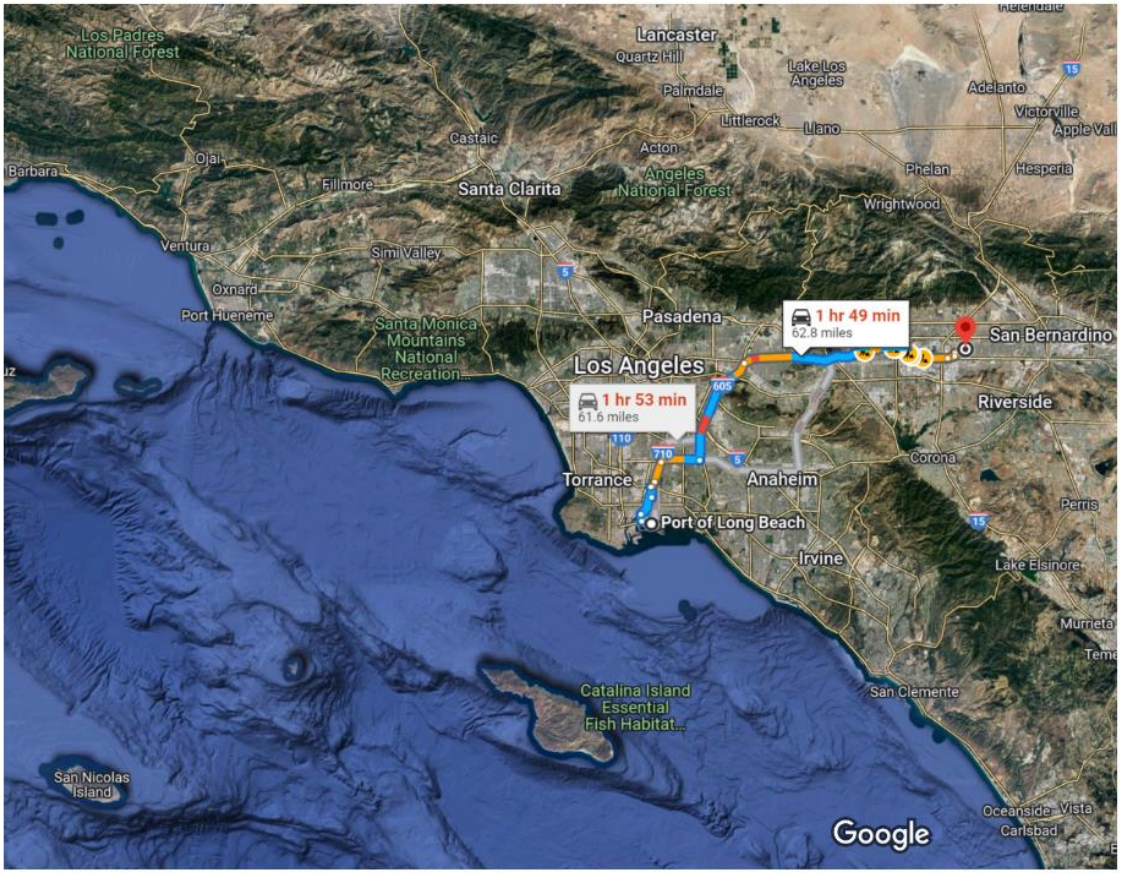

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Additional References Cited in Comment Letter O11

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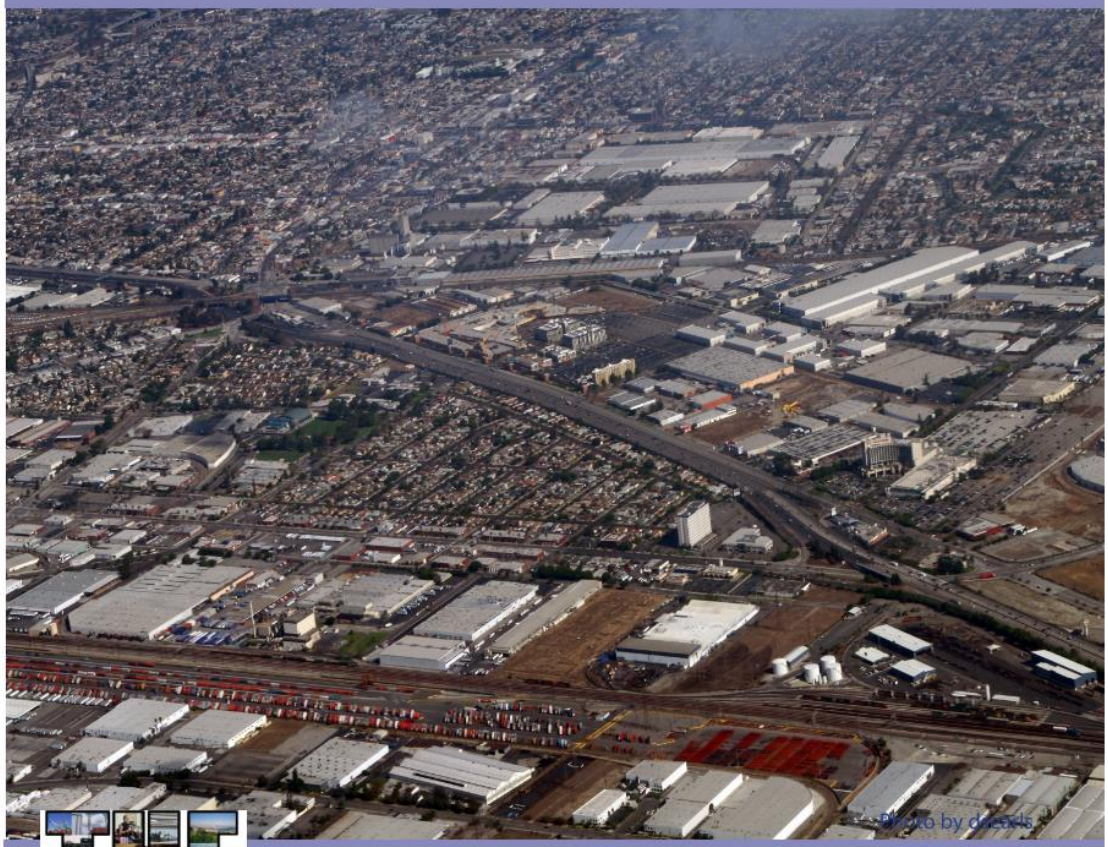
Storing Harm: the Health and Community Impacts of Goods Movement Warehousing and Logistics

THE Impact Project Policy Brief Series

January 2012



Trade, Health and Environment Impact Project
www.theimpactproject.org





Introduction

Every year millions of ocean freight containers – over half of those offloaded at the Ports of Los Angeles and Long Beach – are transported through and beyond southern California to their ultimate destination across the country. Before reaching the shelves of the nation's stores, the contents of many of these containers are stored in warehouses along transportation routes from the coastal ports to the inland deserts. Distribution center activity significantly impacts public health due to particulate pollution emitted by the trucks and trains that supply the huge warehouse buildings with goods in shipping containers. The giant warehouses used by the goods movement industry are also a sprawling and ugly land use that swallows farmland and overwhelms the scale of adjacent residential and commercial neighborhoods. Environmental justice advocates have been following the growth in the warehousing/logistics industry with concern. They have advocated for attention to be paid to residential communities impacted by warehouse expansion. Their work provides a way forward, with strategies to mitigate the health impacts of existing warehouses, design, and operate storage facilities in a more responsible manner, limit excessive concentrations of warehouses, and better regulate land use so that the future of the region is brighter than being the rent-a-storage for the nation's freight movers and retailers.

The warehouse/logistics industry

Warehousing is an integral link in the goods movement chain that distributes products imported from Asia throughout the United States. Approximately 40% of the 13-15 million shipping containers entering the region's ports each year are 'transloaded' before leaving greater Los Angeles, meaning that they spend some time in warehouse storage facilities being unpacked and repacked for their final destination.[1] The Los Angeles region currently has approximately 840 million square feet of warehouse facilities.[2] Clusters of warehouses exist along the I-710 and I-110 freeways north of the ports, in such cities as Carson, Compton, Commerce and

Bellflower; south and southeast of downtown Los Angeles; along the 91 freeway near Cerritos and Buena Park; along the 60 freeway in Puente and Rowland Heights; and in the Inland Valleys with massive concentrations in Ontario and Mira Loma (see figure 1). Modern warehouses used by the goods movement industry are vast buildings, some larger than 1.5 million square feet.[3] As close as one can come to "sprawl in a box," these structures are spartanly built, lined with dozens of truck bays. The purpose of warehouses are to service distant points – factories in China, rail yards near the ports, Wal-Mart stores in Illinois – with little connection to the fabric of life in the communities where they are located.

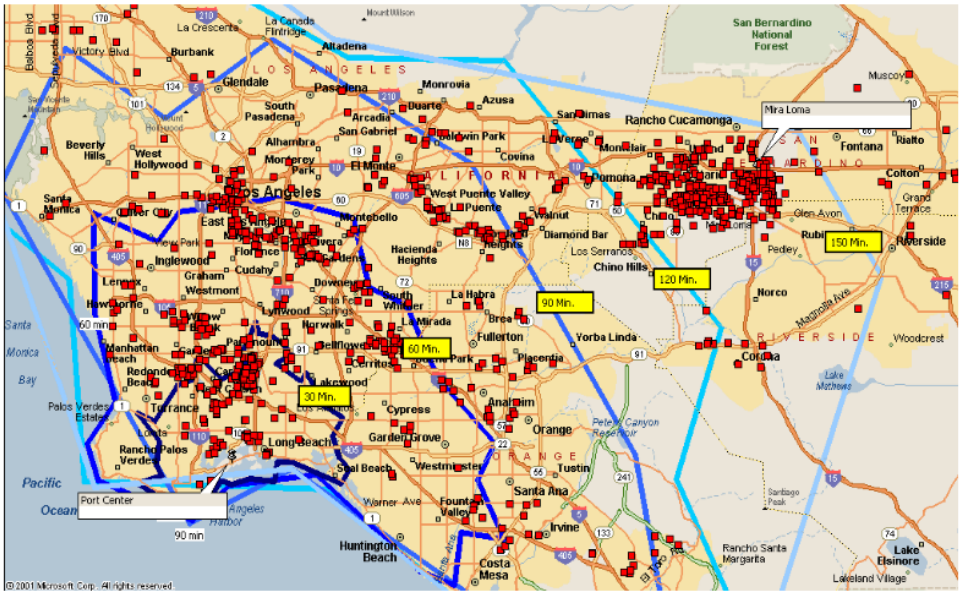


Figure 1: Map of warehouses in the Los Angeles region. From Cambridge Systematics, "Comprehensive Regional Goods Movement Plan and Implementation Strategy Study Update," Presentation to SCAG, December 3, 2009.

Case study: warehouses in the Inland Valleys

The fastest growing cluster of warehouses serving the goods movement and logistics industry lies in the Inland Valleys of Riverside and San Bernardino Counties in California. See Figure 2. In 2004, one-sixth of the commercial development in the entire nation was taking place in this area due to the rapid construction of warehouses.[4] The unchecked growth in this network of warehouses and the roads and railyards that serve them is transforming the landscape of the Inland Valley area and the health of its residents in a dramatic fashion. Farmland has been converted to immense, windowless warehouses surrounded by asphalt and chain link fencing—and some of the worst air pollution in the nation. Mira Loma, a low income Latino community in Riverside County, which is surrounded by warehouses and distribution centers,

is known to have among the highest levels of particulate pollution in the nation.[5] That pollution has resulted in startling findings — Mira Loma children have the slowest lung growth and weakest lung capacity of all children studied in southern California.[6]

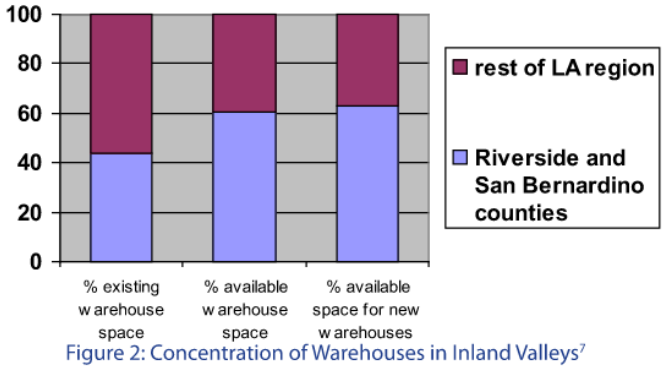


Figure 2: Concentration of Warehouses in Inland Valleys[7]

Huge warehouses and distribution centers are not just a California phenomenon. Wal-Mart alone has 40 regional distribution centers around the United States that are larger than one million square feet each. The corporation boasts that it has 53,000 trailer trucks on the move across the United States.[8] In 2007, Target opened its largest U.S. distribution center in Savannah, Georgia, which was 2.1 million square feet. In addition, there is a move to develop "inland ports" with intermodal rail facilities and distribution centers to serve East Coast ports, which anticipate a rise in imports from Asia when the Panama Canal expansion is completed in 2014.[9] Figure 3 shows some large warehouses/distribution facilities located across the country.

Figure 3: Some large distribution centers in the United States[10,11,12,13,14]

Corporation	Location	Size (millions of square feet)
Wal-Mart	Ellwood, IL (near Chicago)	3.4
Wal-Mart	Hampton Roads, VA	2.1
Target	Hampton Roads, VA	1.8
Ross Stores	Moreno Valley, CA	1.4
Ross Stores	Fort Mill, SC	1.3
Mattel	San Bernardino, CA	1.2
Pier 1	Savanna, GA	.78
Home Depot	Braselton, GA	.55

Community impacts of warehousing

Local, state, and federal environmental protections have not kept pace with the rapid growth of warehousing in the Los Angeles region. The concentration and proximity of diesel trucks and the warehousing facilities that service them threatens the health of people living and working near busy roads and logistics facilities. The trucks and trains that carry freight to be warehoused (and trucks idling engines at or near warehouse sites) pollute by emitting small toxic particles

called particulate matter (PM) into the air. These particles are of varying size and toxicity—from PM_{10} (dust and soot of 10 microns or less in size, that can irritate the throat and lungs); $PM_{2.5}$ (particles of 2.5 microns or less in size that are considered dangerous; and ultrafine particles (less than .01 microns in size) from fuel combustion, especially trucks and motor vehicles. Particulate emissions from diesel vehicles and equipment contribute to health problems that include cardiovascular problems, cancer, asthma, decreased lung function and capacity, reproductive health problems, and premature death.[15]

Beyond health threats from the transportation of freight, warehouses are also associated with negative impacts on residents' quality of life. Residents often feel a sense that they are losing their community to encroachment by warehouses and kept in the dark about what is being stored in facilities near their homes. Trucks servicing the facilities park and idle on public streets, sometimes using streets as "staging areas" because a warehouse property is over capacity or does not provide adequate on-site parking. There are also safety concerns as residents share roads not originally designed for heavy vehicles with lines of trucks. Warehouse centers also deprive local communities of land that could be used for future green space, schools and public buildings, and new residential, retail, and commercial centers.

Policy Recommendations

Local government decisions have facilitated rapid and at times irresponsible warehouse development. Acres and acres of formerly agricultural land located next to residential areas have been rezoned to permit heavy industrial uses. Once warehouses are allowed, city and county officials approve new warehouse developments very close to existing residences, schools and other sensitive receptors, even though additional scientific research shows that health risks from particulates increases significantly when pollution sources are close to where people live.[16] Jurisdictions eager to attract new development have even fast-tracked warehouse projects, approving warehouses within 90 days of submitted plans, without adequate time for nearby residents to comment on a proposed project. Officials have also regularly granted "negative declarations" to proposed warehouse developments, meaning that warehouses do not have to undergo environmental impact assessments, despite the evidence of health harms associated with warehouses and trucks.[17]

The Impact Project is committed to zero emissions technologies and regulations across all stages of goods movement. Policy recommendations to reduce rather than eliminate emissions should be considered important interim steps towards achieving zero emissions.

1. Use zoning rules to protect health and quality of life and preserve farmland
   - Create buffer zones. The California Air Resources Board recommends buffer zones between logistics facilities and sensitive receptors (homes, schools).[18] Community organizations active in THE Impact Project have often called for 1500 foot buffer zones. In addition, these rules should apply in both directions: no location of new industrial facilities near sensitive receptors, as well as no new sensitive receptors near industrial facilities.

- Do not allow additional warehouses in air pollution hot spots. New warehouses should not be permitted in residential (homes, schools, parks, etc) areas that already experience unusually high concentrations of particulate pollution until pollution levels are reduced.[19]
- Protect high value farmland. Do not allow conversion of farmlands to warehouses, especially those designated by the state as high value farmland.
- Manage traffic routes and parking. Establish warehouse facility truck operating capacity limits and ensure that warehouses have enough property to allow deliveries and truck parking on site so trucks are not using public streets as staging areas. Designate truck routes with posted no stopping and parking signs on adjacent streets. Warehouse owners should be held accountable for parking and idling violations by trucks visiting their facility.
- Limit noise and light pollution. Require sound barriers, lower lights and light deflectors; and restrict hours of operation to limit noise and light pollution to nearby residential areas.

2. Require environmentally responsible operations by warehouse operators and truck drivers
   - Require clean trucks, with warehouse owners helping subsidize purchases of new vehicles.[20] Older trucks should be phased out in order to reduce emissions. Warehouses should be electrified so that arriving vehicles can plug in rather than run their engines.[21] In the mid to long term future, all new trucks should have electric rather than internal combustion engines.
   - Plant trees and provide air filters to capture particulates. Warehouse owners should be required to plant trees around the edge of their property, especially in between the warehouse and adjacent residences. Warehouse owners should also be required to provide air filters to residents and schools located within 1500 feet of the facility. While reducing emissions should be the priority, air filters and mature trees may help reduce health impacts on nearby residents.[22,23]
   - Require sustainability features in warehouses. Warehouse roofs should be white in color to deflect heat and reduce temperatures and air conditioning.
   - Require companies to protect worker health. Warehouse workers should be given respiratory masks when opening containers because some shipping containers have had fumigant chemicals sprayed or released at their place of origin.

3. Inform and empower the public to improve community oversight
   - Notify the public about potentially toxic substances stored in warehouses and shipped on trucks. The public has a right to know what is being stored in facilities.[24]
   - Require new warehouse developments to complete environmental impact assessments. If significant impacts are found, operation should not be permitted unless these impacts are mitigated.

Conclusion

Corporations build and operate warehouses according to their own logistical needs and profit motives. Clusters of warehouses develop where land is located close to transportation infrastructure and is relatively inexpensive. But people also live near many warehouses, and warehouses bring pollution and noise, shape traffic patterns, and influence future economic and community development options. Decision-makers need to update land use rules and conditional use permits to ensure that warehouses are better neighbors, and, when appropriate, block new warehouses that would unfairly burden communities already facing polluted air.

Acknowledgements

Written by Sylvia Betancourt, Center for Community Action & Environmental Justice (CCAEJ), and Mark Vallianatos, Urban & Environmental Policy Institute (UEPI) at Occidental College with contribution from other Impact Project members. This brief is part of a series of policy papers on goods movement produced by THE Impact Project, http://www.theimpactproject.org. Funded by The Kresge Foundation and The California Endowment.

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16 One approach to reducing health impacts from diesel is to increase the distance between diesel sources and sensitive receptors. Several studies have shown that the closer one is to a diesel source the greater the health risk. In a 2002 study, "Mira Loma Specific Air Quality Study" conducted by South Coast AQMD researchers measured levels of pollution and calculated the areas in the community receiving the highest health risk. The study found that the health risk posed to local residents is reduced if the distance between the receptor and the source is increased. At a distance of 500 meters (1500 feet), the study found, the health risk drops by approximately 80%. Nazemi, M. SCAQMD Mira Loma Specific Air Management Project. (2002, August).

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Walmart's neighborhood market is crushing the competition

Jeremy Bowman, The Motley Fool Aug 29, 2016, 6:30 PM

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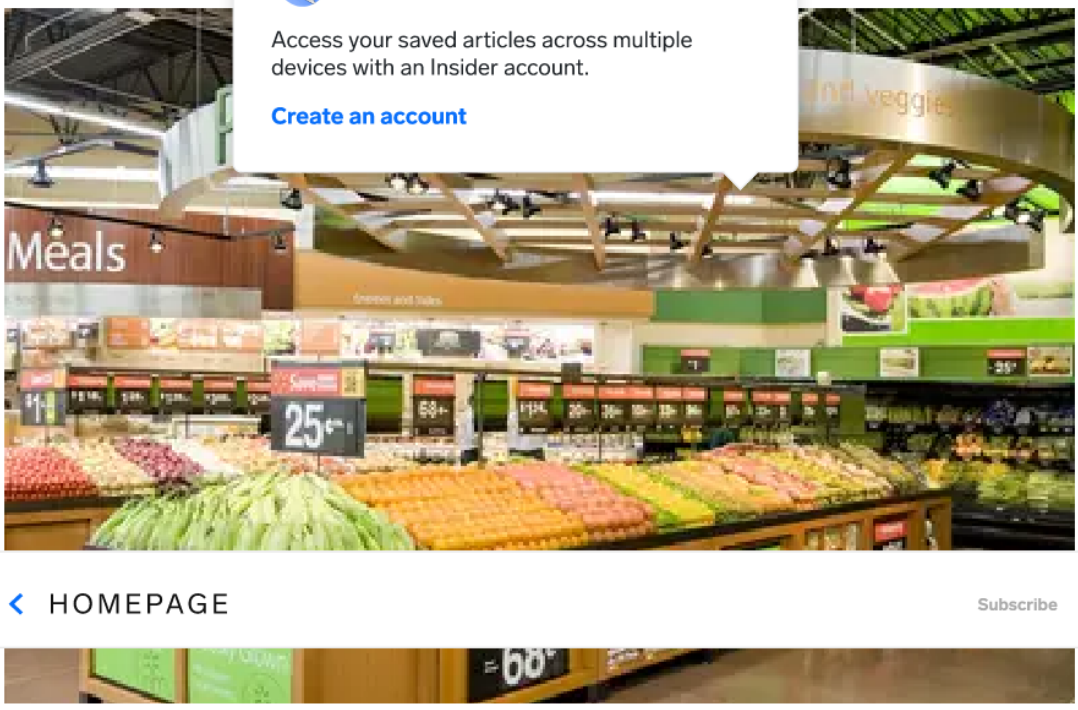

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Walmart Neighborhood Markets emphasize fresh produce. Walmart

There's a retail business with 700 stores nationwide that has 22 straight quarters of positive comparable sales growth and 11 straight quarters with comps up 5% or more.

It's not Kroger or Costco, but a division of Walmart that has been quietly crushing the competition -- the Neighborhood Market.

WalMart launched its first Neighborhood Market in 1998, but it began aggressively expanding the concept a few years ago, more than doubling the number of stores between fiscal 2013 and fiscal 2015.

The pace of expansion peaked in fiscal 2015 with 235 Neighborhood Markets opened, but the company plans to open about 90 stores this year, bringing the total to around 750 stores, about as many as Costco.

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Supercenters, which carry a wide variety of general merchandise in addition to a full

line of groceries.

Wal-Mart does not break out results from its Neighborhood Market chain, but the quick acceleration in expanding the format and its same-store sales growth show how promising the concept has been. For the last five years, including this one, the chain has made up a majority of the company's U.S. store openings.

The chart below shows how the Neighborhood Market's comparable sales growth has outpaced Wal-Mart's overall growth.

Wal-Mart Same-Store Sales Growth (in %)

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There are a number of reasons why Neighborhood Market has found success.

1. Grocery is hard to disrupt

Grocery now makes up the majority of WalMart's U.S. segment, and it's been its best performing one in recent years. The company has doubled down on the segment with the rapid expansion of Neighborhood Markets and by bringing its grocery pick-up service to 400 store in 60 markets, which allows customers to order online and then pick-up groceries from a kiosk in the parking lot.

On the most recent earnings call, management noted the impact the pick-up service was having on overall e-commerce growth as last quarter was the first time in more than two years that e-commerce growth accelerated.

Grocery is also one of the few retail categories that rivals like Amazon.com have

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delivering perishables to your doorstep remains difficult and expensive.

Sales per square foot at Walmart U.S. averaged $435 last year, but they appear to have been higher in Wal-Mart's grocery segment than the rest of the store. Using the $435 figure would mean WalMart's Neighborhood Markets generated about $11 billion in revenue last year, though the actual number is probably higher.

2. Urban penetration

Wal-Mart began its life catering to rural customers and has long struggled to penetrate markets. The company is still without a store in New York and only recently opened its first in Washington, DC. The Neighborhood Market concept, however, has given it the ability to open up in dense cities where real estate may not be suitable for a Supercenter. Wal-Mart opened its first Neighborhood Market in Chicago in 2011, and now has five of them in that city. In Atlanta and the surrounding area, it now has 12 such stores.

Wal-Mart's Neighborhood Markets can also take advantage of food deserts in such

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priced supermarket chain that is hard for competitors to match.

While the pace of Neighborhood Market openings has slowed down over the last two years, I'd expect the concept to be a continuing source of growth for the retailer, especially as management has signaled a desire to expand in groceries. With comparable sales consistently in the mid-to-high single digits, that should be one reason for investors to believe in the company's future.

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March 28, 2019

Mr. Aron Liang
Senior Planner
Land Use Services Department - Planning
385 North Arrowhead Avenue, First Floor
San Bernardino, California 92415

Dear Mr. Liang:

Thank you for providing the California Air Resources Board (CARB) with the opportunity to comment on the Notice of Preparation (NOP) for the Slover/Cactus Avenue Warehouse Facility Project (Project) Draft Environmental Impact Report (DEIR), State Clearinghouse No. 2019039033. The proposed Project consists of the development of a 257,855 square-foot warehouse facility on 13.27 acres of land located within an unincorporated area of San Bernardino County. The Project will be divided into 247,855 square feet of warehouse space and 10,000 square feet of office space. There will be 104 trailer parking spaces and the warehouse will be accessed through 38 loading dock doors.

CARB is currently engaged in statewide efforts to identify actions that minimize emissions and community health impacts from freight facilities, including warehouse and distribution facilities such as the proposed Project. Warehouse and distribution facilities can result in high daily volumes of heavy-duty diesel truck traffic and operation of onsite equipment (e.g., forklifts, yard tractors, etc.) that emit toxic diesel emissions, and contribute to regional air pollution and global climate change. The Project site is located within close proximity of existing emission sources such as warehouses, the Union Pacific (UP) rail yard, and a major freeway (I-10). There are residential receptors located immediately east, south, and west of the Project site, with the closest residence located approximately ten feet south of the Project's southern boundary. Other sensitive receptors located within one mile of the proposed Project site include Joe Baca Middle School, Ruth Grimes Elementary School, Bloomington Christian School, Crestmore Elementary School, Walter Zimmerman Elementary School, and Bloomington Head Start Preschool.

The State of California has recently placed additional emphasis on protecting local communities from the harmful effects of air pollution through the passage of Assembly Bill 617 (AB 617) (Garcia, Chapter 136, Statutes of 2017). AB 617 is a significant piece of air quality legislation that highlights the need for further emission reductions in communities with high exposure burdens, like those in which the proposed Project is located. Diesel emissions generated during the construction and operation of the

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Project would negatively impact existing sensitive receptors, which are already disproportionally impacted by air pollution, from existing freight facilities in the community.

The California Environmental Protection Agency (CalEPA) defines a disadvantaged community as a community that scores within the top 25 percent of the census tracts, as analyzed by the California Communities Environmental Health Screening Tool Version 3.0 (CalEnviroScreen). CalEnviroScreen uses a screening methodology to help identify California communities that are disproportionately burdened by multiple sources of pollution. The census tract containing the proposed Project is within the top 1 percent for Pollution Burden and is directly adjacent to Bloomington, which is a designated disadvantaged community, as defined by CalEPA.

A preliminary air quality report and health risk assessment (HRA) was prepared for the Project and is currently available for public review on the County of San Bernardino's website. CARB staff is concerned that the estimated health risks associated with the operation of the Project are underestimated. According to the project description in the NOP, the conditional use permit would not restrict the Project from including cold storage warehouse space. The operation of cold storage warehouses would include trucks with transport refrigeration units (TRU) that emit significantly higher levels of toxic diesel emissions, oxides of nitrogen (NO_x), and greenhouse gases than trucks without TRUs. Since it is unclear whether the Project would include cold storage warehouse space, the lead agency should revise the air quality technical report and HRA assuming a conservative percentage of the truck and trailer fleet serving the Project are equipped with TRUs.

In addition to the health risk associated with operations, construction health risks should be included in the HRA. Construction of the project would result in short-term diesel emissions from the use of both on-road and off-road diesel equipment required for construction activities. The Office of Environmental Health Hazard Assessment's (OEHHA) guidance recommends assessing cancer risks for construction projects lasting longer than two months.[1] Since Project construction would occur over a twelve-month period and the nearest residence is located ten feet from the Project site, the lead agency should revise the HRA to include health risks for existing residences near the Project site during construction.

The lead agency should require mitigation measures to reduce the Project's construction and operational criteria pollutant and toxics emissions. The Project should utilize all existing and emerging zero-emission technologies that could minimize NO_x and diesel emission exposure to the neighboring community. To that end, the lead

[1] Office of Environmental Health Hazard Assessment (OEHHA). Air Toxics Hot Spots Program. February 2015.

agency should apply the recommended air pollution reduction measures for warehouses and distribution centers found in Attachment A of this comment letter.

CARB appreciates the opportunity to comment on the NOP for the proposed Project and is able to provide assistance on zero-emission technologies and emission reduction strategies, as needed. Please include CARB on your State Clearinghouse list of selected State agencies that will receive the DEIR as part of the comment period. If you have questions, please contact Stanley Armstrong, Air Pollution Specialist, at (916) 440-8242 or via email at stanley.armstrong@arb.ca.gov.

Sincerely,

Richard Boyd

Richard Boyd, Chief
Risk Reduction Branch
Transportation and Toxics Division

Attachment

cc: See next page.

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ATTACHMENT A

Recommended Air Pollution Emission Reduction Measures for Warehouses and Distribution Centers

To minimize exposure burdens from air pollution, California Air Resources Board (CARB) staff recommends developers and government planners use all existing and emerging zero to near-zero emission technologies during project construction and operation. Below are some measures, currently recommend by CARB staff, specific to warehouse and distribution center projects. These recommendations are subject to change as new zero-emission technologies become available.

Recommended Construction Measures

1. Ensure the cleanest possible construction practices and equipment are used. This includes eliminating the idling of diesel-powered equipment, and providing the necessary infrastructure (e.g. electrical hookups) to support zero and near-zero equipment and tools.

2. Implement, and plan accordingly for, the necessary infrastructure to support the zero and near-zero emission technology vehicles and equipment that will be operating onsite. This includes the physical (e.g. needed footprint), energy, and fueling infrastructure for construction equipment, onsite vehicles and equipment, and medium-heavy and heavy-heavy duty trucks.

3. In construction contracts, include language that requires all off-road diesel-powered equipment used during construction to be equipped with Tier 4 or cleaner engines, except for specialized construction equipment in which Tier 4 engines are not available. In lieu of Tier 4 engines, equipment can incorporate retrofits such that emission reductions achieved equal or exceed that of a Tier 4 engine.

4. In construction contracts, include language that requires all off-road equipment with a power rating below 19 kilowatts (e.g., plate compactors, pressure washers, etc.) used during project construction be battery powered.

5. In construction contracts, include language that requires all heavy-duty trucks entering the construction site, during either the grading or building construction phases be model year 2014 or later. Starting in the year 2022, all heavy-duty haul trucks should also meet CARB's lowest optional low-NO_x standard.[1]

[1] In 2013, CARB adopted optional low-NO_x emission standards for on-road heavy-duty engines. CARB staff encourages engine manufacturers to introduce new technologies to reduce NO_x emissions below the current mandatory on-road heavy-duty diesel engine emission standards for model years 2010 and later. CARB's optional low-NO_x emission standard is available at https://www.arb.ca.gov/msprog/onroad/optionnox/optionnox.htm.

Attachment - 1

6. In construction contracts, include language that requires all construction equipment and fleets to be in compliance with all current air quality regulations. CARB staff is available to provide assistance in implementing this recommendation.

Recommended Operation Measures

1. Include contractual language in tenant lease agreements that require tenants to use the cleanest technologies available, and to provide the necessary infrastructure to support zero-emission vehicles and equipment that will be operating onsite.

2. Include contractual language in tenant lease agreements that requires all loading/unloading docks and trailer spaces be equipped with electrical hookups for trucks with transport refrigeration units (TRU) or auxiliary power units (APU). This will eliminate the amount of time that a TRU powered by a fossil-fueled internal combustion engine can operate from within the project site. Use of zero-emission all-electric plug-in TRUs, hydrogen fuel cell transport refrigeration, and cryogenic transport refrigeration are encouraged and can also be included lease agreements.[2]

3. Include contractual language in tenant lease agreements that requires all service equipment (e.g., yard hostlers, yard equipment, forklifts, and pallet jacks) used within the site to be electric or powered by compressed natural gas.

4. Include contractual language in tenant lease agreements that requires all heavy-duty trucks entering the project site to be model year 2014 or later.

5. Starting in the year 2022, include contractual language in tenant lease agreements that requires all trucks entering the project site to meet CARB's lowest optional low-NO_x standard.

[2] CARB's Technology Assessment for Transport Refrigerators provides information on the current and projected development of TRUs, including current and anticipated costs. The assessment is available at https://www.arb.ca.gov/msprog/tech/techreport/tru_07292015.pdf.

Attachment - 2

6. Include contractual language in tenant lease agreements that requires the tenant be in, and monitor compliance with, all current air quality regulations for on-road trucks including CARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation,[3] Periodic Smoke Inspection Program (PSIP),[4] and the Statewide Truck and Bus Regulation.[5]

7. Include contractual language in tenant lease agreements restricting trucks and support equipment from idling longer than five minutes while onsite.

8. Include contractual language in tenant lease agreements that limits onsite TRU diesel engine runtime to no longer than 15 minutes. If no cold storage operations are planned, include contractual language and permit conditions that prohibit cold storage operations unless a health risk assessment is conducted and the health impacts mitigated.

9. To reduce indirect greenhouse gas (GHG) emissions, include rooftop solar panels for each proposed warehouse to the extent feasible, with a capacity that matches the maximum allowed for distributed solar connections to the grid.

[3] In December 2008, CARB adopted a regulation to reduce greenhouse gas emissions by improving the fuel efficiency of heavy-duty tractors that pull 53-foot or longer box-type trailers. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. CARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation is available at https://www.arb.ca.gov/cc/hdghg/hdghg.htm.

[4] The PSIP program requires that diesel and bus fleet owners conduct annual smoke opacity inspections of their vehicles and repair those with excessive smoke emissions to ensure compliance. CARB's PSIP program is available at https://www.arb.ca.gov/enf/hdvip/hdvip.htm.

[5] The regulation requires newer heavier trucks and buses must meet PM filter requirements beginning January 1, 2012. Lighter and older heavier trucks replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. CARB's Statewide Truck and Bus Regulation is available at https://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm.

Attachment - 3

Los Angeles Times

CALIFORNIA

When your house is surrounded by massive warehouses



Some Fontana residents say they've suffered as the Inland Empire has become a national logistics hub. (Brian Vander Brug/Los Angeles Times)

BY PALOMA ESQUIVEL | STAFF WRITER

OCT. 27, 2019 9:25 AM PT

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Standing under an aging pav

years, Mary Anita Valdepeña

"It's too depressing," she said.

Her family used to gather in the yard to celebrate birthdays and holidays, under the shade of the mulberry trees her husband planted, the rounded peak of Mt. Baldy in the background.

These days, the yard is overgrown with dandelions, the mulberries are dying and her view is the towering concrete wall of a warehouse. A line of semi truck trailers is parked nearby against another, shorter, concrete wall at her property line. And from where she stands, there's a constant hum — a truck rumbles, tires squeak, a forklift beeps, metal hits metal.

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Mary Anita Valdepeña said after an adjacent warehouse was built, the condition of her Fontana yard deteriorated, as did her quality of life. (Gina Ferazzi/Los Angeles Times)

Valdepeña, 79, said she doesn't go outside unless she has to, or even open the windows. Doing so lets in the trucks docking and unloadin;

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"You want to know about the warehouses? They ruined my life," she said.

The noise, the air pollution and the trucks are a daily reality for the dozens of working-class, mostly Latino residents of Rose Avenue in south Fontana. They have been surrounded by warehouses in the last five years as the Inland Empire has been transformed into a national logistics hub, with local officials jockeying to roll out the red carpet for the industry.

The warehouses have brought thousands of jobs to a place where residents have often struggled with high unemployment and long commutes. Their proliferation makes it possible for Southern Californians to buy something online and have it arrive at their doors within hours.

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Arianna Diaz, 3, pets family horses in her backyard, which now abuts a giant warehouse. (Gina Ferazzi / Los Angeles Times)

But the industrial boom has brought warehouse projects closer to homes, despite health warnings from state ai
people within 1,000 feet of su

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In Fontana, where Mayor Acq[illegible] prides herself on being nicknamed "Warehouse Warren," developers have dramatically reshaped the city, buying dozens

of single-family homes, horse properties, chicken ranches and other small businesses and tearing them down to build millions of square feet of distribution centers for Amazon, UPS and others.

Developers offered to buy Valdepeña's home and those of her neighbors, but they refused to sell, and the warehouses went up around them. In Valdepeña's case, one warehouse's perimeter wall is right at her property line, 150 feet from her back window.

"Boxed. We're boxed in from either direction," said Josie Kuhl, 64, who has lived on Rose Avenue for 30 years. "We hear the forklifts at night. The rumbling of trucks when they're docking, it's just nonstop."

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Jerry Denney, in the frontyard of his 35-year Fontana home, has a view of a warehouse and hears trucks day and night. (Gina Ferazzi / Los Angeles Times)

Through the decades, Fontana has undergone continual reinvention — from the small town that drew Angelenos ea largest steel producers in the bedroom community for L.A.

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The warehouses, as Warren sees it, will once again remake Fontana: from a community whose residents face arduous commutes into a city where they just cross the street to get to work.

Warren was born in Compton and left in 1993, the year after jurors acquitted LAPD officers in the beating of Rodney King, sending angry residents into the streets.

"My kids, I had to get them out of there," she said.

She took a job with the city of Upland and settled in Fontana, where she said she was drawn to the trees, the parks and the family-oriented community.

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Truck traffic has increased significantly on Etiwanda Avenue as the number of warehouses has grown. (Gina Ferazzi/Los Angeles Times)

In 2011, the year after she became mayor, Warren was invited to her first ribbon-cutting, a grand opening of A , she said. It wasn't until she a

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The company's CEO pulled he aside and described the extent to which distributors were already quietly settling in her town, she recalled.

"He told me, 'We're moving product and distributing throughout the United States right here in Fontana,'" Warren said. "I had goosebumps when I left there. I think I'm onto something."

She went to the Chamber of Commerce and to City Council members and started looking for ways to make Fontana accommodating to warehouse development, she said.

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Warren faced a recall effort in 2017 over what her critics called "reckless residential and warehouse development." They criticized her for taking large amounts of campaign money from developers, but the mayor remains popular and undeterred.

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In the last five years, distribution centers have been squeezing out Fontana residents. (Brian van der Brug / Los Angeles Times)

"They started calling me 'Warehouse Warren,' and at first I was like, 'Wow, they're killing our jobs here.' But the l going with it," Warren said. " going to Orange County,' and

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During a driving tour of the city, she pointed out the Sierra Lakes Commerce Center, a new nearly 600,000-square-foot warehouse project on the city's north side.

"Look how beautiful, right across from the housing," she said, waving at a large tract across the street.

She later directed the driver to Jurupa Avenue, a major road in south Fontana.

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Big rigs pass schoolchildren waiting at a bus stop in Fontana. (Gina Ferazzi / Los Angeles Times)

"It used to be when people would come here, all of this was a hot mess. One night, a goat ran out in front of my car," Warren said. "Now ... look how clean it is."

The north side of the street was a line of new warehouses. On the south side was a tract with hundreds of single-family homes.

Tucked behind one warehouse, invisible from the street, were the about three dozen homes in the Rose Avenue neighborhood. Just down the street, about half a dozen boarded-up homes sat behind a chain link fence.

A sign on the fence announced that three warehouses, totaling 1.1 million square feet, would soon be put in their place. Nearby was St. Mary Catholic Church, where officials said they too had been approached by developers wanting to buy the property. They turned down the offer.

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Boarded-up homes in the city will be replaced by 1.1 million square feet of warehouses. (Gina Ferazzi / Los Angeles Times)

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In the last decade, more than 150 million square feet of industrial space, the vast majority of it warehouses, has been built in the Inland Empire, according to real estate services company CBRE.

In that time, about 54 warehouses have been built or are under construction in Fontana, totaling about 16 million square feet, and about 100 homes have been sold and demolished to make way for those projects, city officials said.

Warren acknowledged that there had been some "growing pains" related to development — but she dismissed most criticism. The city follows state and federal law when it comes to these projects, she said. And air pollution, she said, gets swept away by wind.

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Motorists contend with truck traffic on Etiwanda Avenue south of the 60 Freeway. (Gina Ferazzi / Los Angeles Times)

Residents complaining about things like truck traffic should consider their own shopping habits, she said.

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"People keep ordering stuff, a
movement and all that. It's h

*

Valdepeña has witnessed Fontana's reinventions first-hand. Her husband worked for Kaiser Steel for 25 years, until the mills closed down in the 1980s. He got a pension and healthcare benefits that helped sustain her family for years, she said.

These days, her son works in warehouses through a temp agency.

"They work them for three months and then ... they don't hire them," she said.

In 1965, when Valdepeña and her husband built their home on Rose Avenue, the couple and their children were surrounded by empty fields, citrus groves and grapevines.

Over the years, they bought additional plots on the street and built homes for other family members. Then other residents began to build nearby, until Rose Avenue had dozens of homes.

Eventually, a juice-box packing company opened on the street's west end. There were truck-storing businesses and a chicken ranch nearby, and some residents ran their own small businesses from their homes.

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When Mary Anita Valdepeña and her husband built their Rose Avenue home in 1965, it was surrounded by fields, citrus groves and grapevines. (Gina Ferazzi / Los Angeles Times)

But the street has kept a rural feel. Most of the lots are about half an acre, with small single-story homes. Some far

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A few years ago, developers i

park, Valdepeña and many of her neighbors recalled. They offered to buy their homes but said, for the deal to work, everyone had to agree.

"The majority didn't want to sell because they were offering very little," said Socorro Bogarin, 38.

Still, Bogarin said, she's not troubled by the warehouses around her.

"I'm comfortable," she said. "They can keep making warehouses, and I'll stay."

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Aiden Kuhl, 4, and Braiden Roberts, 10, play in the backyard of Aiden's home, next door to a giant warehouse. (Gina Ferazzi / Los Angeles Times)

Bogarin pointed to a road she said was improved when the warehouses came and said she preferred knowing there were jobs to be had inside the massive buildings.

But some officials are starting to express concern about the proliferation of warehouses near homes without an adequate buffer.

Experts have long warned about elevated asthma and cancer risks near warehouse distribution centers and other freight hubs because of the pollution emitted by trucks — physicians have even labeled these places "diesel death zones."

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The state Air Resources Board recommended in 2005 that houses be at least 1,000 feet from warehouses, based on estimates that pollution concentrations drop by 80% at that distance.

"That 1,000-foot buffer is cited in many cities as a recommendation, as a mitigation measure, but unfortunately it's not taken seriously," said Andrea Vidaurre, a policy analyst with the Center for Community Action and Environmental Justice, a local advocacy group.

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Jovita Diaz and 3-year-old Arianna head to their backyard, which has horses and a view of a warehouse. (Gina Ferazzi / Los Angeles Times)

Diesel trucks have gotten cleaner in the decade since the state board made its recommendation. But wareh
square feet or larger.

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In the last two years, city and county officials throughout the region have approved several major projects that would sit right next to homes — some 100 feet or less from

property lines — despite sometimes heated opposition from activists and residents concerned about the effects of traffic, noise and pollution.

In early 2017, Riverside residents took to City Hall carrying signs that said: "No Megahouses next to our neighborhoods," as officials approved a 1.4-million-square-foot warehouse project in the Sycamore Canyon Business Park, with one proposed building just 100 feet away from property lines in a neighborhood of tract homes.

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Warehouse projects have encroached on homes in Fontana. Residents worry about the health consequences. (Gina Ferazzi / Los Angeles Times)

That summer, San Bernardino County supervisors approved a 680,000-square-foot warehouse in the unincorporated community of Bloomington, just 90 feet from some residential properties and 260 feet from an elementary school. Later, at a meeting in which they were confronted by dozens of angry residents and activists, they voted to rezone 17 acres of residential land for a 344,000-square-foot warehouse facility just 50 feet from some residents' property lines.

And earlier this year, Fontana approved the West Valley Logistics Center, a proposed 3.4-million-square-foot warehouse project that would be bordered by a large neighborhood.

Residents and activists have pushed back against these projects, to little effect.

"I don't think many of our groups are really stopping the warehouses. I think they have a plan and it doesn't matter what the community says," said Kim Rocha, a resident of Bloomington who organized for years to try to stop the proposed development there.

A few weeks ago, trucks arrived and began grading the land for the warehouse.

It will rise directly behind Rocha's home.

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The sun sets in Fontana, where the mayor says complaining residents should consider their own shopping habits: "People keep ordering stuff, and then they wonder why they need trucks." (Gina Ferazzi / Los Angeles Times)

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CALIFORNIA

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Paloma Esquivel is an education reporter for the Los Angeles Times. She was on the team that won the 2011 Pulitzer Prize for public service for investigating corruption in the city of Bell and the team that won the 2016 Pulitzer Prize for breaking news for coverage of the San Bernardino terror attack. Prior to joining The Times in 2007, she was a freelance writer, worked in Spanish-language radio and was an occasional substitute teacher. A Southern California native, she graduated from UC Berkeley and has a master's in journalism from Syracuse University.

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School of Public Health
UNIVERSITY OF CALIFORNIA, BERKELEY

Community-Based Participatory Research:

A Strategy for Building Healthy Communities and Promoting Health through Policy Change



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The University of California, Berkeley School of Public Health uses transdisciplinary scholarship, education, and public engagement to develop diverse leaders equipped to help solve health challenges of the 21st century and beyond.

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Community-Based Participatory Research:

A Strategy for Building Healthy Communities and Promoting Health through Policy Change

A Report to The California Endowment

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This report is dedicated to the many community members who give so generously of their time and talents in partnering with academic, health department, and other professionals on research and action to advance health-promoting policies.

And to the memory of Sarah Samuels, for her outstanding contributions to high-quality research and to enhancing community and partnership capacity and building healthy communities.

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Acknowledgments

This report grew out of our belief that participatory research can be a critically important approach for community-driven efforts to improve health, in part by promoting relevant change on the policy level. We also believed that many exciting examples of such work could be found in California from which valuable lessons could be drawn. The experiences and materials collected for this project, and the dialogue held among leaders in the field, more than confirmed these beliefs: Community-based participatory research (CBPR) is already practiced effectively in California and is poised to have an even greater impact through the emphasis many partnerships increasingly are placing on policy-focused research and action.

We gratefully acknowledge our research team and advisory group members at the University of California, Berkeley School of Public Health and PolicyLink, and particularly Priscilla Gonzalez, Karemi Alvarez, Mary Lee, Mildred Thompson, and Rebecca Flournoy for their contributions. Thanks also are due the participants in an earlier statewide convening who provided important early feedback and advice on this project. We also owe much gratitude to the many community leaders, researchers, and policymakers who gave of their time and insights as part of our six case study analyses. Finally, we are deeply grateful to The California Endowment for its continued support of this work, and particularly to Evaluation Manager Mona K. Jhawar and former Research Director Will Nicholas, for their valuable insights and feedback.

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CBPR is "a collaborative process that equitably involves all partners in the research process and recognizes the unique strengths that each brings. CBPR begins with a research topic of importance to the community with the aim of combining knowledge and action for social change to improve community health and eliminate health disparities."

–Kellogg Community Health Scholars Program (2001)

I. Background and Overview of Community-Based Participatory Research

Introduction

When the discipline and drive for answers, so integral to good research, are combined with the commitment, passion, and strategic thinking of good organizing, the result can be a very powerful tool in the effort to eliminate health disparities. The principles of effective community-based participatory research (CBPR), as derived from projects all over the country and around the world over several decades, can provide very useful lessons for groups who are beginning to think about, or engage in, this work as a means of studying and improving community health and well-being. These lessons can be augmented and brought to life by the experiences of CBPR partnerships in California. This report combines lessons and best practices from around the country with insights drawn from six case studies set in California. Background and context are provided, along with promising practices and sample resources and tools to assist local leaders in planning their own CBPR-inspired projects.

As partnerships using CBPR proliferate in California, more of these efforts are going the distance, from recognition and definition of a problem all the way to bringing about policy changes. The most enduring images of CBPR are those of residents fully engaged in speaking about their community and their lives, in ways that lead to tangible progress. From the cases in this report we see:

- Residents, in partnership with environmental researchers, analyze and present the adverse consequences of local industries—including asthma and other chronic conditions—leading to major changes in the land use and transportation plans of their city.
- A group of parents and *promotoras* (community health workers) carefully and colorfully document the unacceptable conditions of their local parks and streets, conditions which work against their own and their children's chances of leading safe and healthy lives. The combination of grassroots research and organizing leads to an array of improvements to the community and a shared realization that together they have the capacity to make meaningful change.
- Young people, in a part of town known mainly for homelessness and substance abuse among adults, collect, organize, and put forward detailed, moving information about their lives and circumstances, giving them a voice and moving the school district and city authorities to take action.

CBPR is a strategy or process that can be useful across many outcome areas in the social determinants of health, from air and water quality and food access to the health and safety conditions in homes, schools, neighborhoods and the rest of the built environment. It can also be central to understanding and addressing disparities in medical care and the treatment of particular diseases, though those will not be the focus of this report. The science and research employed in CBPR can run from tightly managed clinical trials to basic community-level data collection, and the tools used can range from complex technical equipment to everyday materials. The common threads weaving across these diverse experiences are, at their most fundamental level, about how the research is conducted, how all the parties are involved, and how the work is then presented and used. This report concentrates on cases where there was a tight connection between local organizing and research, and where the information was effectively employed in the development of new policies or changes in public systems.

Although CBPR is itself a change strategy, it in turn encompasses many diverse approaches.

We provide examples of promising practices, lift up case studies, and discuss the many ways in which CBPR can be tailored for use in different geographic settings, and in relation to different outcomes of interest. We also explore how CBPR projects can help move policy. Ultimately, our aim is to help spark new ideas among coalitions and other interested groups as to how they might apply CBPR as a strategy for improving their communities and for better understanding and addressing the issues with which they are concerned.

Building healthy communities, whether through formal undertakings such as The California Endowment's ambitious 14-site initiative of the same name (BHC), or through informal efforts by community groups and their supporters in public health departments is, in part, about achieving the outcomes necessary to eliminate health disparities and enable children and their families to live healthy and productive lives. But *how we get to those outcomes* is also critical, since building healthy communities also requires fostering community trust, engagement, and multisectoral partnerships. Finally, creating the environments in which people can be healthy often requires change on the policy or systems level. Building healthy communities therefore increasingly involves working to foster health-promoting policies in both the public and private sectors.

Community-based participatory research (CBPR) is a process that has shown considerable promise in building healthy communities because of its emphasis on building trust and genuine collaborative partnerships, and on using study findings to help bring about changes in programs, practices, and policies that can in turn help improve health outcomes.

We turn first to defining some terms and guiding principles derived from many years of observing and working on these kinds of projects. Next, the report explores a range of practices that have been shown to be valuable in carrying out CBPR in a way that supports efforts at policy and systems change. Throughout the report, examples of effective practices are drawn from both the six cases explored specifically for this project (the full case studies are presented in Section IV) and from many others. A number of resources published in print or available on the Internet, as well as descriptions of organizations whose work embodies these effective practices, are inserted in the report, and a listing of these and other relevant resources is available in the Appendix.

CBPR Defined

CBPR is "a collaborative process that equitably involves all partners in the research process and recognizes the unique strengths that each brings. CBPR begins with a research topic of importance to the community with the aim of combining knowledge and action for social change to improve community health and eliminate health disparities." That is the definition agreed upon by the community and academic partners of the Kellogg Community Health Scholars Program (2001), one of the leading sources of support for these endeavors.

The research dimension of CBPR as a part of community engagement can involve a wide range of qualitative and quantitative methods. Developing and administering community surveys or focus groups; conducting walkability assessments or air monitoring; using GIS (Geographic Information Systems) mapping; conducting secondary data analysis; and even using randomized controlled trials (RCTs) to assess intervention effectiveness have all been used as part of CBPR projects. Regardless of the particular research methods used, what is unique about this orientation to research is the *way* in which the research is conceptualized and carried out; the heavy accent placed on genuine community engagement throughout the process; and the use of findings to help bring about change. The 11 principles of CBPR described below help further articulate how this orientation differs from more traditional "top down" approaches to research and is consistent with initiatives aimed at empowering community leaders and members.

CBPR Principles

Nine guiding principles developed by Barbara Israel and her community and academic colleagues in 1998 are widely used to inform and guide the process of CBPR. Two other principles were added subsequently by Meredith Minkler and Nina Wallerstein (2008) and are also critical in this work. Every partnership wishing to undertake CBPR should adapt these principles, or develop new ones, tailored to their unique context. Following the chart is a capsule description of each principle.

Principles for Community-Based Participatory Research

Effective, authentic CBPR aspires to the following qualities:

1. Recognizes community as a unit of identity.
2. Builds on strengths and resources within the community.
3. Facilitates a collaborative, equitable partnership in all phases of research, involving an empowering and power-sharing process that attends to social inequalities.
4. Fosters co-learning and capacity building among all partners.
5. Integrates and achieves a balance between knowledge generation and intervention for the mutual benefit of all partners.
6. Focuses on the local relevance of public health problems and on ecological perspectives that attend to the multiple determinants of health.
7. Involves systems development using a cyclical and iterative process.
8. Disseminates results to all partners and involves them in the wider dissemination of results.
9. Involves a long-term process and commitment to sustainability.
10. Openly addresses issues of race, ethnicity, racism, and social class, and embodies "cultural humility."
11. Works to ensure research rigor and validity but also seeks to "broaden the bandwidth of validity" with respect to research relevance.

Sources: 1-9, Israel et al., 1998 and 2005; 10-11, Minkler and Wallerstein, 2008.

Recognizes community as a unit of identity. This first principle emphasizes the significance of community for people, and the importance of using that identification with community as a starting point for the work. A definition of community extends beyond geography and racial identity, and depends heavily on members' perceptions of what "the community" really is.

Builds on strengths and resources within the community. Rather than beginning with a "deficit mentality" that emphasizes community problems and challenges, this second principle reminds us that members of communities have a wealth of knowledge and lived experience from a cultural, local, and historical lens (Corburn, 2007). This understanding can in turn provide important insider information that is typically unattainable by an outside scientific researcher.

Facilitates a collaborative, equitable partnership in all phases of research, involving an empowering and power-sharing process that attends to social inequalities. This third principle highlights the importance of shared accountability in the decision-making process, across all steps of the research process. It also recognizes the inherent inequalities that exist between researchers and community partners. Finally, it stresses the importance of addressing

these imbalances by building trusting and mutually respectful relationships grounded in an empowering process emphasizing communication, information sharing, and joint decision making.

Fosters co-learning and capacity building among all partners. This principle stresses the importance of fostering a reciprocal relationship that engages all parties in the exchange of knowledge, skills, and capacity, reminding us that all partners bring a wealth of diverse experiences, skills, and perspectives to the partnership process.

Integrates and achieves a balance between knowledge generation and intervention for the mutual benefit of all partners. CBPR reminds partnerships of the important contributions needed from both the scientific community, and community partners. It emphasizes integrating knowledge gained through the partnership, in the advancement of interventions and policies that capture the concerns of all partners and the larger communities they serve.

Focuses on the local relevance of public health problems and on ecological perspectives that attend to the multiple determinants of health. As described by the Institute of Medicine, "an ecological approach assumes that health and well-being are affected by interaction among multiple determinants including biology, behavior, and the environment." This interaction "unfolds over the life course of individuals, families and communities" (Gebbie et al., 2003, p. 32). Consistent with an ecological view of health, this sixth principle stresses a localized approach to health with data that is relevant, timely, and inclusive. It emphasizes an approach to health that extends beyond the individual, to the immediate and larger contexts in which families live, work, and play. In CBPR partnerships, the multiple determinants of health, such as social, economic, and physical environmental factors are examined through an interdisciplinary lens, and their interactions stressed.

Involves systems development using a cyclical and iterative process. Principle seven reminds us of the iterative nature of partnerships and the importance of revisiting each stage of the research process as necessary. This is done to ensure that all voices are captured and that the action agreed upon is appropriate for all partners involved.

Disseminates results to all partners and involves them in the wider dissemination of results. This principle highlights the importance of sharing findings in an accessible and respectful way with the community and other stakeholders. The principle further stresses providing opportunities for involvement in broader dissemination strategies such as publications and presentations at the local, state, and national levels.

Involves a long-term process and commitment to sustainability. This principle places an emphasis on the importance of committing to the long haul through adequate investment of time and resources in the CBPR process. It further reminds us to keep a critical eye on sustainability and enforcement of the outcomes of the CBPR process.

Openly addresses issues of race, ethnicity, racism, and social class and embodies "cultural humility." CBPR frequently brings together community partners from marginalized groups and "outside" researchers and other institutional partners who have more privileged backgrounds in terms of race/ethnicity, education, and social class. To be effective in such situations, CBPR partners must work hard to embody what Tervalon and Murray-Garcia (1998) call "cultural humility," recognizing that while no one can be truly "competent" in another's culture, we can demonstrate a commitment to self-reflection and critique, working to redress power imbalances and to develop authentic partnerships.

Works to ensure research rigor and validity but also seeks to "broaden the bandwidth of validity" with respect to research relevance. To be sound and useful in helping promote policy change and other action outcomes that can in turn help build healthy communities, the research dimension of CBPR must take seriously notions of research rigor, validity, and reliability. At the same time, as Peter Reason and Hilary Bradbury (2006) suggest, practitioners of CBPR need to "broaden the bandwidth of validity" by asking, is the research question valid or relevant to the community and are different "ways of knowing," including community lay knowledge, valued alongside more traditional scientific sources of knowledge.

The earlier principles, and many of the accompanying skills, tools, and competencies discussed in this report, are designed to increase a partnership's familiarity and comfort level with CBPR, particularly when it is focused on broader systems or policy change. But we hope that many of these same principles and skills will also be useful to communities that may not be ready to engage in CBPR. Many of the tenets and models developed and used, by both community and academic/institutional partners, for building capacity for CBPR, for example, work equally well in building individual and collective capacity for other forms of community engagement and action. And they also often hold special relevance for coalitions and partnerships whose primary concern is with reducing health disparities and creating environments in which children and their families can be healthy.

CBPR and the Fight against Health Disparities

Despite some recent progress, disparities in health based on race, ethnicity, and social class remain pronounced, and have been associated with socio-structural problems including poverty, racism, lack of employment, and inadequate public infrastructure, as well as neighborhood characteristics. Environmental factors, such as higher rates of air pollution in poor communities often associated with asthma and related conditions, further contribute to health disparities, as do differences in neighborhood **"social capital,"** or reciprocity and trust (Putnam, 2000; Kawachi et al., 2008).

These realities, and the fact that healthy communities (and societies) tend to be those in which **social equity** is highly valued, underscore the need for new approaches to studying and addressing health disparities. CBPR is uniquely suited to building healthy communities and eliminating health disparities because of its recognition of the dramatic contributions that can be made by intensive levels of civic engagement (Minkler, 2010). The voices of lay leaders and residents of communities most affected by health disparities, when included in research and policy deliberations, can help bring about innovative and sustainable solutions, while also helping ensure that the conversation addresses the root causes of health inequities and broader policy changes that can improve health outcomes. Such conversations, however, can only take place when partners are open to discussing race, class, discrimination, and racism, as these have contributed to the often substantial distrust between academically trained researchers and communities. Cultural and linguistic accommodations, understanding of intra-group disparities and openness to making institutional partners, such as health departments and universities, more culturally sensitive and open to alternative ways of thinking are important prerequisites for such conversations to take place (Iton, 2006).

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Source: Cacari-Stone, Garcia, Wallerstein, et al., in preparation.

14 Community-Based Participatory Research

II. CBPR as a Strategy for Policy Change: A Conceptual Model

A defining feature of CBPR in health and related fields is the belief that action is an essential part of the research process itself. Action aimed at policy change is increasingly being recognized as integral to building healthy communities and eliminating health disparities.

CBPR is a particularly promising vehicle in bridging research and policy, since evidence and data alone are insufficient to gain political momentum to address more deeply rooted and problematic social conditions. To help build healthy communities and move the health disparities agenda to a "front burner issue," relevant research must be accompanied by political momentum and the civic engagement of communities of color and other constituents.

Many models exist for helping understand the policymaking process. The model on page 14, however, looks specifically at how CBPR partnerships may help use their research, organizing, and advocacy efforts to help bring about policy change.

CBPR Contexts, Processes, Policy Strategies, and Outcomes

As this model suggests, a wide range of **contextual factors** influence the policy process, and the CBPR partnership's work. These include "macro" factors such as socioeconomic status (SES) and the broader socioeconomic environment, and more immediate ones, such as the history of collaboration and trust (or distrust) between the community and outside research partners.

The second oval, **CBPR Processes,** includes group structure, dynamics, and stakeholders, and addresses questions such as:

Are there policymakers who are already committed to the issue?

Are there democratic decision-making processes in place among partners?

This second oval also includes both the role of **science and evidence,** and the equally important role of **civic engagement** in helping make the case for a desired policy change. The role of science and evidence reminds us that to help change policy, research must be perceived as "useful," of high quality, available in real time, and tailored to the needs of decision makers. Of particular interest here is how community partners can adopt and integrate the evidence into their organizing strategies.

The **Policy Stages and Strategies** oval includes in the center the problem or problems to be addressed, and around the periphery, the various stages in which CBPR partnerships may be engaged. These range from agenda setting to policy formulation, adoption, implementation, and evaluation and modification. Agenda-setting involves a number of strategies including but not limited to:

- defining and prioritizing the problems within a given political environment
- creating awareness of the issue(s) among key policymakers and the public
- constructing policy alternatives based on what is timely and feasible
- deciding on which policies to pursue
- advocating for the proposed changes and policy options (typically drawing on both research findings and community members' stories and experiences)

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"Moving Out of the Nursing Home" project, Chicago, Illinois.

Although many CBPR partnerships think of their work as over when a desired policy is adopted, this is not necessarily so. Implementation involves a process that plays out in stages:

- creating the necessary operational details
- enforcing the new or modified rules
- evaluation
- modification of the policy (if necessary)

This means that the task of collecting and reviewing information is not over for an active community partnership when the policy is passed: It is necessary to garner input from constituencies about the impact of policies. Without attention to such follow up, a policy may fail to be implemented in a way that can help build healthier communities.

Lastly, the **Outcomes** oval includes changes in policy, the consequences of these outcomes, and perceptions of what has taken place and its importance. But it also includes longer-term health outcomes toward which policy changes ultimately are directed. **"Procedural justice"** is included as an outcome too, and involves making sure that community partners "gain a seat at the policymaking table—and stay at the table"—so that their views and concerns are routinely considered in future policy deliberations (Minkler, 2010). The six case studies featured in Section IV of this report, as well as other case examples highlighted in the report, illustrate some of the diverse pathways through which CBPR can link place-based work with policy change to help build healthier communities. What practices, however, make for a good case study? A few answers are provided in the following section.

III. Eight Promising CBPR Practices

Several promising approaches, under the broad rubric of CBPR, are examined in this section, with published, online, and organizational resources highlighted and examples used to illustrate their utility. We focus in particular on those practices that appear particularly relevant for having an impact on the policy or systems level, and better addressing the social determinants of health so critical to healthy communities.

1. Build an Effective CBPR Partnership.
2. Use Asset Identification.
3. Reflect Local Ways and Values.
4. Use Multiple Methods of Data Gathering.
5. Demystify the Policymaking Process.
6. Engage Children and Youth.
7. Rely on Visual and Social Media.
8. Think on a Regional Scale.

1. Build an Effective CBPR Partnership and Maintain it Over Time

There is no one starting place or technique for developing a CBPR partnership (Wallerstein et al., 2005). Each collaboration will involve different stakeholders, and while some may include trained researchers as partners, others may not. Partnerships between diverse stakeholders will be in different stages of development if, and when, the decision to embark on a CBPR project is undertaken. Since CBPR involves some new skills and ways of working in partnership, however, several strategies may be useful. These are:

1. Having each partner reflect on the strengths, resources, and potential liabilities they—and their institution or community-based organization—may bring to the work.
2. Looking at the existing partners in your collaboration and asking, "who else needs to be involved?" In some cases, this may be a university or health department-based researcher or a local political figure who shares an interest in the outcome you hope to address. Identifying such additional potential partners through appropriate networks and associations is key to getting off on the right foot.
3. Making sure that there is agreement on the health or related issues you wish to address, and if needed, reframing the problem to ensure maximum relevance for partnership members and the outcome(s) with which they are concerned.
4. Creating structures to nurture and sustain the partnership. Many CBPR partnerships develop "group rules" or formal memorandums of understanding to guide their work. But whatever strategies are decided upon, frequent check-ins on partnership process and not merely task-related updates are important to building and maintaining effective collaborations for the work.

Resources and illustrations

The community-based **restaurant worker health and safety study** in San Francisco's Chinatown District (www.cpasf.org) began by having members from the community, academic, and health department teams use ice breakers such as "what's the meaning of your name?" to help build trust and familiarity while also increasing members' understanding of each other's backgrounds and cultures. In initial meetings, full steering committee discussions of topics such as "what does your team bring to the partnership?" and "what are your concerns and expectations about working with each other in partner teams?" (e.g., the community, academic or health department team) often were preceded by subgroup meetings in which the community partners could discuss these issues among themselves while the other partner teams did the same. Such small group meetings helped to prepare partners for more confidently expressing their views in the larger group, while also bringing to the surface some shared concerns that might otherwise have been missed. Finally, partners used exercises like an interactive time line (with each partner indicating with sticky notes on the wall under seasons (fall, spring, etc.) when they believed different activities would be taking place and discussing their points of disagreement.

An excellent resource for help in building and maintaining partnerships is **Community-Campus Partnerships for Health (CCPH)** (http://www.ccph.info/) whose mission is to foster partnerships between communities and academic institutions and, building upon each other's strengths and resources, serve as change agents to improve the education of health professionals, civic responsibility and engagement, as well as the overall health of communities. Through annual conferences, frequent "webinars," and intensive trainings at the American Public Health Association annual meeting and other venues, CCPH offers newcomers and "old hands" at CBPR opportunities to learn new tools and approaches, and network with others around the country who are engaging in this work. The CCPH website is also filled with resources on many aspects of CBPR, including the



"how to's" of getting started, tools for building partnerships and assessing partnership strengths, along with information on conferences, funding opportunities, and evaluations of projects that can serve as examples of "best practices" in the field.

Partners in CBPR may also wish to utilize tools, such as Shawna Mercer, Lawrence Green, and others' (2008) **"Reliability-Tested Guidelines for Assessing Participatory Research Projects,"** to help periodically "check in" on how the coalition or partnership is doing in terms of group process and effective functioning. Alternatively, the partners may want to conduct in-depth, semi-structured interviews and close-ended questionnaires to evaluate or measure their partnership process. According to Israel and her colleagues, in a chapter entitled, **"Documentation and Evaluation of CBPR Partnerships"** (2005), it is not only important to measure the long-term outcomes of the project, but equally important to undertake early and ongoing documentation and evaluation that can help inform the partners of the effectiveness of their collaboration.



Top and above: Chinatown Restaurant Worker Health and Safety Study, San Francisco, California.

2. Use Asset Identification:
Build on Community, Academic, and Other Partners' Strengths in Studying and Addressing Shared Concerns

CBPR reminds us of the importance of identifying and validating the community's strengths and assets, to avoid an exclusive focus on problems. By elevating what is working, and viewing communities from a balanced perspective, community asset identification helps communities identify their strengths, along with the issues they hope to address. Equally important is the accent on authentic dialogue that can lead to a richer and deeper understanding of community strengths and how these might be used or built upon to better address community concerns or problems. Collectively, this process can also shed light on the strengths and capacities of each partner. This might include the scientific expertise of academic or health department partners (including their ability to provide scientific testimony), which can be complemented with the advocacy strength and role of the community partner, e.g., in providing personal stories/testimonials and applying political pressure.

Resources and illustrations

The **Healthy Neighborhoods Project (HNP),** initiated by the Public Health Department in the west part of Contra Costa County, California, began by identifying a small number of local community members who were respected by their peers and often sought out for advice and help. Invited to an initial meeting at a local community center, these informal leaders were helped to further identify their own assets (e.g., being bilingual) and invited to be hired and trained as local neighborhood health advocates or community organizers. After learning methods like **neighborhood asset and risk mapping**, they used these tools with community members, who went in groups around the neighborhood, making notes on local assets and risks, and then convened in a local park to consolidate their findings on a large map. Through both a resident-conducted community survey and community dialogues, residents identified key issues they wanted to address (e.g., getting speed bumps, restoring night bus service, and getting improved street lighting). But they also built on their own assets for helping secure these changes, researching the issues, learning about key decision makers and leverage points etc., and then writing letters, engaging in testimony, and in other ways working together to bring about change. In addition to securing the speed bumps, night bus service, and many other changes they had worked for, this CBPR project helped spawn replication projects in several other neighborhoods, including some in Berkeley and Oakland (Ellis and Walton, 2012; Iton, 2006).

A wide range of tools is available which can guide both the asset and problem identification process. These include **walking and windshield tours**, which involve walking or driving around the neighborhood, documenting observations and impressions, or using a checklist to indicate assets or risks identified. The **California Center for Physical Activity** (http://www.cawalktoschool.com/checklists.html) has a multilingual online **walkability assessment checklist** to assist community residents in answering the question, "how walkable is your community?" The tool also includes action steps residents can take to improve the walkability and safety conditions of their neighborhood. Kretzmann and McKnight's **mapping community capacity** approach, including sample maps of primary and secondary assets or building blocks in communities, and an **"associational map"** of diverse types of community groups and organizations to look for, can be found in their user-friendly workbook, ***Building Communities from the Inside Out.*** Finally, Eugenia Eng and Lynn Blanchard's **action-oriented community diagnosis** approach offers a seven-step process for helping communities or CBPR partnerships identify lay (informal) community leaders and other assets and resources while also identifying problems of local concern and providing a plan for collectively addressing these issues. Such tools, and the many others available on websites such as the **Community Tool Box** (http://ctb.ku.edu/en/tablecontents/chapter_1027.htm) and the previously mentioned **Community-Campus Partnerships for Health** website (www.ccph.info/) can be beneficial to partners interested in identifying local resources and challenges, and taking action.

3. Local Ways and Values:
Use Approaches and Processes That Reflect Local Community Culture and Ways of Doing Things—Even If It Slows Down the Process

Each community is a special and unique place that is home to a host of diverse families and subgroups, such as Hmong refugees or second generation Mexican American families. When attempting to engage in CBPR, therefore, it is critical to be mindful of local cultures and ways of doing things, and asking, for example, who are the local (informal) leaders? Where do people gather? What places or organizations hold special meaning for them, and might therefore be good potential "homes" for a CBPR project? Many tribal communities have formal protocols or processes through which nonmembers wishing to partner in CBPR or other collaborations must approach tribal leaders, explain their interests and benefits to the tribe, and seek permission to engage in a collaborative project.

Although such formality is unusual in nontribal communities, going through a process of finding and approaching local community leaders on their turf (e.g., a respected faith-based or ethnic organization), introducing yourself and the proposed project, and exploring their interest in possible collaboration, is a good approach to emulate. Although outside research partners may want to expedite the process at times to yield faster results, in doing so, critical groundwork may be missed, and important stories and other rich data not adequately captured. Partnerships that move too quickly also risk addressing an issue in ways that do not reflect community wisdom. By taking the time to establish trust and rapport and meeting community residents where they are, on their terms, and in places and at times they select, partnerships are more likely to achieve success. Getting to know and appreciate local community culture is an important prerequisite to effective CPBR and must be embraced by partnerships if they are to be successful.

Resources and illustrations

In the **Tribal Efforts Against Lead** (TEAL) project in Tar Creek, Oklahoma, a substantial amount of time was spent addressing the power and cultural differences between the outside researchers and community residents, and breaking down barriers of distrust, particularly given the historical context of rampant abuse of Native Americans by outside researchers. By showing cultural humility in their approach to the tribes and their leaders, university partners were able to enlist the support of 40 respected community elders from eight tribes who were hired and trained as "Clan Mothers and Clan Fathers," and held positions of respect and high-level decision making throughout the process. In part because of the attention paid to local ways of doing things, the project was successful not only in testing an intervention to reduce lead exposure in children, but also in helping secure policy changes (e.g., restricting the use of lead-rich mine "tailings"[1] on roads and in construction, to help decrease children's lead exposure (Kegler et al.,2004; Petersen et al., 2007).

An important resource that can help members of the dominant culture better understand the unspoken advantages they carry by virtue of their race and how it can affect work with other cultures is the "**white privilege**" **checklist** developed by Peggy McIntosh (http://www.fpg.unc.edu/~scpp/pdfs/whiteprivilegechecklist.pdf). This exercise can be used to facilitate a discussion of what unearned privilege means, and how that may affect working relationships with diverse cultures. A newer tool by Cheryl Hyde (2012), entitled, ***Challenging Ourselves: Critical Self-Reflection on Power and Privilege,*** also may be useful and includes exercises individuals and partnerships may use in such reflection. The **Community Tool Box** (http://ctb.ku.edu/en/tablecontents/chapter_1027.htm) includes many resources for partnerships under the heading, Cultural Competence in a Multicultural World, on topics including: Building relationships with people from different cultures; learning to be an ally with people from diverse groups and backgrounds; and strategies and activities for reducing racial prejudice and racism.

[1] Materials left behind following extraction of valuable minerals from iron ore.

4. Multiple Methods:
Use Forms of Data Collection That Can Provide Both the "Stories and Statistics" Needed to Help Effect Policy Change

CBPR can involve a wide range of qualitative and quantitative methods, from photovoice[2] and community members' narrative accounts to spatial statistics, secondary data analysis using large government data sets, and even randomized controlled trials (RCTs). The goal should be to aim for high-quality research, but make results easily accessible and highlight their policy relevance.

To document community concerns, there may be the need for different levels of quantitative data, e.g., the monitoring, walk-throughs or counting that the community partners can do, and more rigorous quantitative studies by academically trained partners. Yet as policymakers frequently remind us, to help move policy they need the numbers but also people's stories captured in more qualitative data collection methods. And regardless of the method used, they need to feel confident that the findings presented can "stand up to careful scrutiny." Finally, study findings need to be accessible and their policy relevance clear, e.g., through pie charts and graphs, striking quotes from focus groups or interviews, and concise policy briefs. Such products summarizing the problem, relevant findings, and potential solutions based in part on the findings need to be available and accessible to diverse audiences.

Resources and illustrations

A collection of 10 case studies of CBPR partnerships that helped move policy, entitled ***Promoting Healthy Public Policy through Community-Based Participatory Research,*** is available on the website, www.policylink.org. Developed for the W.K. Kellogg Foundation, the majority of the 10 case studies showcase projects that used multiple research methods, such as water sampling and door-to-door interviews, or secondary data analysis of public data on issues such as substance use and incarceration along with focus groups with former inmates. Providing rich qualitative data along with the hard numbers was valuable in helping the partnerships make the case for policy changes they wanted to see.

The multimethod research conducted as part of a CBPR process can be powerful and pack a substantial advocacy punch. This was well demonstrated by the work of the Harlem Community and Academic Partnership in New York, in its efforts to address the fact that fully half of the mostly African American and Latino inmates returning to the community from prison or jail annually were reincarcerated within a year, often due to substance abuse. The partners conducted: focus groups with 36 substance users and former inmates; a survey of 79 substance abuse providers; secondary data analysis, using the government's own data sets; and public opinion poll data to study the problem. Through this mixed methods research, they uncovered 11 policies (involving drug treatment, the correctional system, etc.) that worked directly against effective reintegration into the community. Using their data, and effective advocacy, the partnership was credited with helping bring about a number of policy changes, among them having Medicaid immediately reinstated at the time of release, so that former inmates could receive the treatment and other help they needed to remain with their families and communities and avoid the jail-to-community "round trip" (Freudenberg et al., 2005).

Both online resources (e.g., the **Community Tool Box)** and publications like ***A Guide to Facilitating Action Research for Youth*** (Goldwasser, 2004) may be helpful to community groups interested in learning more about research processes and methods, and their utility in place-based work. Increasingly too, articles on topics like how to conduct data analysis with communities may be found in venues like the ***American Journal of Public Health*** (www.ajph.org), ***Progress in Community Health Partnerships*** (www.press.jhu.edu/journals/progress_in_community_health_partnerships/), and ***Health Promotion Practice*** (http://hpp.sagepub.com).

[2] A photographic technique in which group members learn to capture community issues and assets in their photos, and then collectively analyze them as a basis for deeper understanding, action, and change (see page 26).

5. Demystify the Policymaking Process: Trainings, Web-Based Tools, and Links to a "Policy Mentor" Can Help Your Partnership Better Understand and Navigate the Policy Process

Although working on the policy level can be an important "intermediate step" in efforts to reduce health disparities and build healthier communities, CBPR partnerships often feel ill-equipped to work on this level, or worry that it's simply beyond the scope of what they can hope to achieve. Working to help effect policy change does take time and resources, but the longer-term payoffs of policy level change remind us of the value of engaging on this level where appropriate. CBPR partnerships may need help in understanding the policymaking process, as well as how their partnership can become effectively engaged in efforts to move policy, and what the constraints might be on such work. They may also need assistance in thinking through how current policies created the problem; who wins and loses from the current policy; what the technical, legal, engineering, and other factors are that may limit the range of solutions, and where there are possibilities for partnership around moving policy forward (Themba-Nixon, 2010; Freudenberg et al., 2005).

Many community partners already have a sophisticated understanding of power relations and the policy process, and have developed impressive and creative approaches to power mapping and advocacy, that they in turn have shared with their institutional partners and other advocates. Some of these are highlighted below.

Resources and illustrations

A useful and accessible guide to the policy process is Cassandra Ritas' user-friendly booklet, ***Speaking Truth, Creating Power: A Guide to Policy Work for CBPR Practitioners***, available on the University of Washington website (http://depts.washington.edu/ccph/pdf_files/ritas.pdf). The PolicyLink document, ***Advocating for Change*** (http://www.policylink.org/AdvocatingforChange), also may be helpful in providing a variety of resources for partnerships interested in exploring a range of policy options as well as sample tools for pursuing them. PolicyLink recently created a **policy bingo** game as a useful and fun way for community and other groups to learn key concepts and terms (Lee et al., 2012).

PolicyLink also is creating a new set of tools by which practitioners can assess the progress and impacts of their policy change efforts. This effort, known as **Getting Equity Advocacy Results** (GEAR) (with its work in progress available for review at http://www.policylink.org/gear), outlines 10 phases of activity in efforts to bring about policy change for equity, the relationships among these phases, and benchmarks and indicators for assessing a campaign or coalition's progress toward its interim and long-term goals.

For those specifically interested in media advocacy, or the "strategic use" of the mass media to help frame and present issues from a healthy communities' perspective, the **Berkeley Media Studies Group** (www.bmsg.org) and its user-friendly workbook, ***News for a Change*** (Wallack et al., 1999) may be of considerable help. **The Praxis Project** (www.thepraxisproject.org/), a national nonprofit organization that builds partnerships with local community groups to influence policymaking, also incorporates media approaches, as well as research and community-driven plans, to build local community power to effect change and address social and political structural problems. Praxis assists local groups in holding their local government agencies accountable and responsible in the pursuit of sustainable solutions. It offers technical assistance, capacity building, research and training, and useful tools and publications for partnerships. ***Talking the Walk***, a workbook by Hunter Cutting and Makani Themba-Nixon (2006), is particularly helpful in using media advocacy to promote racial/ethnic justice. Finally, the booklet, ***Working Upstream: Skills for Social Change,*** by Lori Dorfman and others (2009), provides a wealth of easy-to-access information, exercises, and tools for community groups and CBPR partnerships interested in addressing health disparities and building healthy communities through advocacy and other policy-focused change (http://bmsg.org/sites/default/files/bmsg_handbook_working_upstream.pdf).

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Coalitions and partnerships interested in helping move policy through CBPR may also benefit from identifying and collaborating with local **policy mentors** familiar with the issue and the local political scene. Such mentors may become invaluable partnership members and/or an important source of support and guidance in the work.

In San Francisco's Bayview District, a CBPR partnership was interested in increasing access to healthy foods and decreasing the advertising and availability of tobacco and alcohol products in local "mom and pop" stores. A charismatic local county supervisor became a policy mentor to youth and their organization, **Literacy for Environmental Justice** (www.lej.org), as well as the partnership's health department and other adult CBPR partners early in the process, helping them consider the feasibility of potential policy options. The partnership was originally interested in working for an ordinance requiring more access to healthy foods in neighborhood stores, for example, but their mentor pointed out that such a measure would "lack teeth," and helped them find an alternative, voluntary policy option, which was ultimately more effective. The resultant **"Good Neighbor" Program** provided incentives for stores that provided a minimum of 10 percent of shelf space for healthy foods, along with other changes, and the first of several such Good Neighbor stores showed dramatic and sustained changes in product sales—and increased profits—as a result of their participation (Hennessey Lavery, 2005; Brechwich Vásquez et al., 2007). Whether elected officials or individuals who know the "ins and outs" of the policymaking process, policy mentors can be most helpful if identified early and consulted as needed throughout a policy-focused CBPR project.

6. Engage Children and Youth in CBPR

Increasing attention has been devoted to CBPR as a means for increasing the civic engagement of children and youth while improving the self-esteem, critical thinking, and future orientation needed for success in school and beyond.

Youth can play important roles in CBPR partnerships and projects by serving as cultural brokers and/or offering high-level energy and proficiency in using Internet technologies and other new media. Policymakers have pointed out that when children and youth are involved in helping to collect data and present testimony based on the findings, "policymakers pay attention." The importance of working for change indeed appears to resonate in a more forceful way than when adults advocate for changes that would benefit children and youth. For these reasons too, and without negating the often substantial challenges involved in working with youth, their training, mentoring, and engagement may be a useful strategy for coalitions and partnerships.

Resources and illustrations

For more than 20 years before its recent closure, health departments, schools, and community partners interested in engaging youth in participatory research called upon the former Sacramento-based organization, **Youth in Focus (YIF).** With its mission of educating and working in partnership with adult partners and underrepresented communities, YIF provided consultation and assistance to organizations throughout the state wishing to use youth-led participatory action research as an empowerment strategy. YIF developed workshops, trainings, and a series of resources for youth, adults, policymakers, and educators engaged in creating social conditions in which youth and families can thrive.

Youth in Focus was a key partner in Fresno's youth-driven **Escuelas, Sí! Pintas, No! (ESPINO)**

project, a youth-led coalition in which youth and their adult partners and YIF mentors conducted youth action research and youth organizing in the California Central Valley. Through the use of policy-focused participatory research, the youth investigated the experiences of incarcerated youth. Their findings led them to successfully advocate for several changes in the California juvenile justice system. With support from Youth in Focus and their other adult partners, the youth proposed an amendment to California Senate Bill 1642, testified at the Senate Committee for a Responsible Budget Commission, screened a film, *Systems Failure*, and joined a statewide workgroup to promote policy level change. As the youth learned of the connection between education and juvenile justice issues, they challenged the initial focus of an adult-led organizing campaign aimed at countering the "No Child Left Behind…Bars" legislation. The youth reframed the issue to not only focus on the school-to-jail pipeline, but also to create a proactive school-to-college pipeline. The youth, supported by their adult partners, also investigated the impacts of the California high school exit exam, joined a statewide campaign for quality education, and testified on two bills in this area as well (Wright, 2007).

An excellent resource for helping youth develop the tools and ways of thinking necessary for effective participation in CBPR is the five-step **Community Action Model (CAM)** (www.sfdph.org/dph/comupg/oprograms/CHPP/CAM/default.asp) developed by Tobacco Free Program staff at the San Francisco Department of Public Health (SFDPH). The model has been used to teach dozens of youth critical thinking and research skills for understanding the root causes of problems, identifying contributing factors, gathering data, evaluating action-oriented change strategies, and proposing policy solutions.

In the previously mentioned LEJ partnership, youth used the CAM model in their efforts to study and address the problem of food insecurity in their San Francisco neighborhood, exploring such forces as "food deserts" which lack access to healthy foods, and then collecting their own data to help work for change. The youth's store-shelf diagramming enabled them to determine the amount of space devoted to different types of products in the 11 corner or "mom and pop" stores in this neighborhood which, until recently, had no full-service grocery store. Their findings—for example, that almost 40 percent of shelf space was devoted to packaged foods, 26 percent to alcohol and tobacco, and just 2 to 5 percent to fresh produce and other healthy foods—were critical to their subsequent use of the CAM model in pushing for relevant policy and practice changes (Hennessey Lavery, 2005; Breckwich Vásquez et al., 2007). More recently, in this same neighborhood, a group of older youth known as the **food guardians** have played a key role in working with the health department and other partners in CBPR and related projects to further increase healthy food access in the neighborhood (http://www.sfgov3.org/index.aspx?page=1183).

The Oakland-based community service center, **Youth UpRising** (www.youthuprising.org/), the Los Angeles-based **Community Coalition** (http://cocosouthla.org/), and the **Imoyase Group, Inc.** (www.imoyaseinc.com/), also in Los Angeles, frequently partner on youth-engaged CBPR and are excellent resources. Some organizations not specifically focused on youth, moreover, have become engaged in this work when the opportunity has arisen. The **United Coalition East Prevention Project (UCEPP)** in LA's Skid Row (http://www.socialmodelrecovery.org/united-coalition-east-prevention-project-ucepp) was predominantly serving the senior population in this rundown neighborhood when some local youth began hanging out. As described in Section IV, the staff at UCEPP saw an opportunity to engage the youth, and ultimately help connect them with an academic partner, laying the ground work for a powerful CBPR partnership. The youth's video and survey, and their powerful advocacy, helped bring about several policy changes (albeit without adequate enforcement) while building their own confidence and future orientation.

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7. Visual and Social Media:
Take Advantage of New Technologies to Document, Study, and Effect Change

With cell phones doubling as cameras and video recorders, and once expensive technologies now in the hands of countless Americans, even in low-income neighborhoods, the power of visual and other new media approaches for helping to build healthy communities through CBPR has never been greater. Many CBPR partnerships are relying on Internet-based technology to conduct sophisticated GIS (Geographic Information Systems) mapping and other ways of visually depicting the concerns and assets of their communities, as well as differences by race/ethnicity, income level, geography, disease prevalence, and other factors and indicators.

Resources and illustrations

An excellent overview of resources in this area may be found in ***Communicating for Change: Targeting Audiences with New Communication Tools***, and published by the HealthExChange Academy of the Center for Healthy Communities, part of The California Endowment (www.calendow.org/Article.aspx?id=3904). The guide includes sections on building user-friendly and easy-to-maintain advocacy websites, as well as podcasting, electronic letter writing and community building, and a host of websites with further information on these and other approaches.

Older visual methodologies also have gained popularity in CBPR, and may be particularly useful with youth, low literacy groups, and other marginalized populations. Among these is **photovoice** (http://www.photovoice.org), a collaborative approach to photography developed by Caroline Wang (Wang et al., 2000) that involves community members in taking and discussing photographs to promote change on the individual, community, and/or policy levels. The acronym SHOWeD frequently is used in this process, with participants collectively "digging deeper" while viewing their group's photographs to address the questions: What do we See in this picture? What's really Happening? How does this relate to Our lives, How can we become Empowered… and What can we Do to address the problem?

Photovoice projects have been used to address a broad range of health and community concerns, including asthma and diabetes, tobacco control, violence prevention, obesity and physical activity, and HIV/AIDS. The process provides training and capacity-building, opportunities for critical dialogue, and rich descriptive research. It further can enhance understanding of community assets and needs, and facilitate changes on the policy level that can help build healthy communities.

The **Youth Empowerment Strategies (YES!) Project** in West Contra Costa County, California, made photovoice a central part of its after-school program in six local schools which trained and engaged over 120 ten- to twelve-year-olds in critical thinking, participatory research, and social action organizing. As part of the YES! Curriculum, and under the guidance of college student facilitator pairs, groups of five to six youth were given inexpensive cameras and taught the basics of photography, along with **asset and risk mapping** and other methods for assessing both the strengths and the problems in their school settings. Using the SHOWeD technique, they then discussed their pictures, and collectively devised social action plans. Of the 28 YES! groups that took place over three years, all but two developed and completed social action projects, among them a public awareness campaign about the dangers of dumping in a creek behind the school; conducting a survey of students about their concerns and devising methods to address them; and writing to a building engineer to successfully remove a shack on campus that attracted drug users. Preliminary findings comparing program participants and controls at non-YES! schools showed substantial improvements in such outcomes as sense of control, future orientation, and pro-social behavior.

During exit interviews, a number of the youth also expressed their interest in continuing to engage in participatory action research and organizing (Wilson et al., 2006 and 2007).

Building on the philosophy and methodology of photovoice, a newer approach, **videovoice** (http://video-voice.org), puts videocameras in the hands of community members who similarly use this technology, together with critical analysis of community assets and problems, to collect visual data and employ it in working for changes in programs, policies, and practices. **In Harmony**, a videovoice project in post-Katrina New Orleans' 9th ward, resulted in a powerful video shown at two large community screenings. The screenings, which attracted 200 people, included lively dialogue about race, education, and other issues, and a renewed community commitment to working for change. Other outcomes included creation of a new local nonprofit organization that has since made several other videos; paid employment for several of the original team members in the city's burgeoning movie industry; thousands of hits to YouTube showings of In Harmony video segments; and use of the information gathered, and the videos themselves, to press for policy change (Catalani et al., 2012).

GIS mapping increasingly is being used by community groups to illustrate and provide powerful, visual data to help address a wide range of health disparities. For example, as described in the book ***Street Science***, by Jason Corburn (2005), a community in Brooklyn, New York, generated maps and successfully challenged the city's approval of a waste transfer station. The maps served as evidence in the argument against the anticipated cumulative environmental impacts to neighborhood residents.

The **Toxic Free Neighborhoods Campaign** in Old Town National City, San Diego County, discussed in more detail in Section IV, conducted GIS mapping to quantify and compare the toxic emissions exposures of four neighborhoods on a large scale. Using the **ESRI mapping program, ArcView™,**



New Orleans videovoice project, New Orleans, Louisiana.

the partnership was successful in creating a "footprint" of the neighborhood, comparing it to three adjacent neighborhoods, which revealed a staggeringly disproportionate number of pounds of toxic emissions to which residents were exposed. The information gathered through the mapping contributed to the partnership's ability to successfully advocate for policy change, including a Specific Plan to relocate polluting industries out of the community (EHC, 2005; Minkler et al., 2010).

The advent of a number of free or low-cost applications has made GIS mapping a powerful and accessible instrument for communities interested in finding scientific evidence to back up their concerns, and is ideally suited to many policy-focused CBPR efforts. **Google maps** is a potent and accessible online tool that CBPR partnerships can access to design and customize interactive maps of their local community (http://maps.google.com). Google maps has unique features that can assist groups in identifying place markers, such as grocery outlets, parks, and schools, which can be layered to compare, for example, the number of grocery stores against the number of liquor outlets. Free online resources like Google maps lend themselves to be shared among members of your partnership and can provide valuable information in mapping community assets and risks, while helping build a case to present to local officials.

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8. Regional Scale:
Communities Can Work Together on a Regional Level on Efforts to Improve Health and the Environment

Although most policy-focused CBPR has thus far occurred at the local level, there are situations where potential partners should also think regionally and beyond, as they consider where they can have the greatest impact, and whether their local efforts and findings might help further broader-level change efforts. Widespread recognition of the regional scale on which problems like air pollution and children's asthma are experienced, and of the power of broad-based coalitions for helping study and address such problems, have led to growing social movements stressing "regional equity." Although the fight for regional equity takes many forms and involves a wealth of diverse strategies, CBPR increasingly is being leveraged and used as a promising approach in efforts to build on local and regional assets and engage community, academic, and other partners in addressing problems that do not respect local boundaries. The new regionalism is not a substitute for action at the neighborhood or city level, but a necessary complement to it.

Resources and illustrations

In Long Beach, Los Angeles, and the Inland Empire, **THE (Trade Health and Environment) Impact Project** (http://hydra.usc.edu/scehsc/web/Index.html) described in Section IV has been effective in part *because* it is a regional coalition composed of community-based organizations and academic partners across multiple counties. While trained community members collected much useful local data (e.g., through traffic counts and air sampling), that work was complemented by the University of Southern California academic partners' analysis of potential emissions and health impacts emphasizing the regional nature of the problem of air pollution in southern California. This combined local and regional data, and effective advocacy work by the partnership and its allies, was credited with helping to delay a major freeway expansion, as well as helping secure the adoption of a "Clean Air Action Plan" in Los Angeles and other positive legislation.

In California's San Joaquin Valley, the **Community Equity Initiative**, a partnership coordinated by PolicyLink, California Rural Legal Assistance, Inc., and the CRLA Foundation, has been working with residents of disadvantaged unincorporated communities to map and survey conditions as a starting point for efforts to improve water systems, sewers, streets, parks, and other infrastructure, and to bring greater democratic participation to the governance of local service districts. Residents of three unincorporated communities have conducted door-to-door interviews, in English and Spanish, as well as windshield surveys of environmental conditions, using survey instruments and procedures developed jointly by the residents and their research partners. In one of these communities, students and faculty from UC Merced were key contributors to the data collection, as part of that new university's commitment to civic engagement in the San Joaquin Valley. For a description of the initiative, see http://www.policylink.org/site/c.lkIXLbMNJrE/b.5160111/k.8DA6/Unincorporated_Communities.htm.

Communities for a Better Environment (CBE) (www.cbecal.org/), based in Los Angeles and Richmond, has frequently engaged with academic and other partners to undertake powerful CBPR on a regional level. The **Southern California Environmental Justice Collaborative,** of which CBE is a partner, is exemplary of such regionally focused partnerships that have conducted effective CBPR and helped move regional policy (e.g., regarding exposure to toxic emissions from both stationary and mobile sources). This collaborative also has been credited for some state level policy change, including making the case to California's



Trade, Health and Environment project, Southern California.

EPA to consider cumulative and not merely individual risk exposure in its deliberations over population health and safety from environmental exposures.

The Community Action to Fight Asthma Initiative (CAFA), (www.calendow.org/Collection_Publications.aspx?coll_id=18&ItemID=306#), **Ditching Dirty Diesel** (www.pacinst.org/topics/community_strategies/ditching_dirty_diesel/index.html), and the previously mentioned **CCROPP** are examples of collaboratives that welcome new members and willingly share their expertise in using CBPR and related community-engaged strategies with a regional focus.

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Case Studies

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IV. Using CBPR to Help Effect Policy Change: Six California-Based Case Studies

A major challenge in CBPR involves being able to document the processes and pathways through which a community partnership's research and advocacy efforts "on the ground" may have contributed to changes in policy or the policy environment. In this section, we describe six cases in which an in-depth, multimethod analysis was undertaken to do just that. With an advisory group, six diverse partnerships were selected, from West Oakland through the Central Valley to Los Angeles and San Diego, to learn more about their evolution, the place-based research they conducted, and how they used their findings to help work for change on the policy level. Information was collected using methods such as in-person, "key source" interviews, focus groups, observations, and review of mass media accounts and other documents. Phone interviews were also conducted with relevant policymakers in each community to gain their perspectives on whether and to what extent these CBPR partnerships had helped bring about particular policy changes.

Drawing on these many findings, we now present the six case studies which, we believe, well illustrate the many diverse ways in which communities, working collaboratively with academics, health departments, and other partners, may indeed collect and use the "stories and statistics" that can help move policy.

Reclaiming a Latino Neighborhood in San Diego County:
The Environmental Health Coalition Partnership



Environmental Health Coalition health promotoras.

Once a vibrant Latino residential community, Old Town National City (OTNC) in San Diego County, California, has, in recent decades, "become a dumping ground for polluting industry and warehouses" (EHC, 2005). The disproportionate burden of toxic air contaminants, over two-thirds of which come from the community's many noncompliant auto body and paint shops, also contribute to a childhood asthma rate of 14 percent—almost twice the state average.

To help address these concerns, the Environmental Health Coalition (EHC) partnered with the Southern California Environmental Health Sciences Center at the University of Southern California and other key stakeholders in 2000 and engaged in a multi-pronged CBPR and policy advocacy effort. The Toxic Free Neighborhoods Campaign involved a range of research approaches from secondary data analysis and Geographic Information Systems (GIS) mapping to air sampling and survey research.

Following a six-session training on topics including land use and environmental health, and how to design and conduct surveys and minimize bias, six *promotoras* (community health workers), under the guidance of EHC researchers, conducted a 56-item survey of 119 community members and worked with staff on data interpretation and dissemination. Survey results indicated that almost a third of children lacked health insurance, making the likely proportion with undiagnosed asthma considerably higher than the 14 percent reported. Respondents also showed a high level of support for ending the neighborhood's designation as a Light Manufacturing and Residential Area, and for relocating auto body shops and other polluting industries outside the community.

The *promotoras'* findings, using ultrafine particulate counters (P-trak) to measure the smallest and most dangerous particles, also were revealing, and demonstrated a dramatic difference in air quality from 25,000 particles per cubic centimeter at a control site (City Hall) to 150,000 near a truck from the truck-driving school located opposite the community's primary school.

The academically trained research partners' broader base of information helped contextualize these local findings and concerns. "Visual footprints" produced with GIS mapping compared toxic releases for OTNC with those of three adjacent areas: 23,000 pounds of toxic air contaminants were released in National City in 2005, while the nearby footprints contain 6,000, 3,500, and 0 pounds respectively (EHC, 2005).

Based on these findings, and burden of disease data from academics at the University of Southern California, EHC staff and *promotoras* developed principles and recommendations for action, which

> *"Numbers and statistics make or break an argument…[and the] role of community members in the decision-making process is critical because of the experiences they have…They see the impacts on their neighborhood, the priorities at that point in time, they get organized, and get all of the information by going door-to-door, and provide us with their testimonial."*
> **—Vice Mayor**

were published in 2005, along with the survey and GIS findings, in a widely cited report. The partners then undertook a number of policy-related steps and activities, including a broad-based public and policymaker awareness campaign that included media advocacy, door-knocking, briefing public officials, and testifying at hearings. Although EHC's researcher and other top leadership participated in providing such testimony, a special effort was made to enable the "front and center" participation of *promotoras*. These and other community members also took part in visioning processes and strategic planning to help identify the policy strategies most likely to be effective in helping achieve their goals. After reviewing a variety of policy alternatives, the partners decided on the short-term goal of an "amortization ordinance" to phase out polluting businesses. But the partners also selected a larger policy goal: securing passage of a Specific Plan for OTNC, which would address the toxic emissions issue, but also other urgent concerns of residents. Among these were limiting gentrification pressures and increasing access to housing which would be affordable to the mostly low-income residents of OTNC.

Through a power mapping process, the partners identified the city council and several organizations and individuals as key policy targets with the power to make desired changes. EHC then worked with San Diego State University's Environmental Law Clinic to develop the legal grounds for the amortization ordinance and help advocate for its adoption. Presentations at city council meetings, including the sharing of "statistics and stories" from the partnership's research and from the lived experience of the *promotoras*; a strong relationship with the local media; and strong alliances with diverse advocates, all contributed to the successful passage of an amortization ordinance in August 2006. Maintenance of strong lines of communication with key policymakers also proved critical, as did mobilizing the community to be present at hearings and other events and show their support on this and related issues.

Although implementation of the ordinance proved less successful, the partners and their allies were effective in helping win support for their larger goal. In October 2009, the city council voted to become the first municipality in California to include environmental justice as a full element of its General Plan, and six months later, the Specific Plan was adopted. As a policymaker noted, "numbers and statistics make or break an argument," and the EHC partnership's compelling data, together with its effective organizing and policy advocacy, was widely credited as having been a major contributor to this substantial policy victory (Minkler et al., 2010).

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CBPR with Youth in Los Angeles's Skid Row



UCEPP staff member reviews *Los Angeles Times* coverage; Cover image from Coalition booklet, Children Left Behind.

Typically bringing to mind images of homeless single men, often with substance abuse issues, the 55-block square block "Skid Row" area in Central City East, Los Angeles, also includes a less visible population of families with children. From 1990-2000, the number of children under the age of 18 living in Skid Row grew from 1 percent to 15 percent of the area's population, while the number of women grew from 168 to 1,251. Although the number of youth declined substantially over the last decade, families and children remain an important, if less visible, part of the face of Skid Row.

Despite a dense network of social services, the neighborhood is not designed or equipped to meet the needs of families and youth. Much of the housing stock consists of single room occupancy (SRO) residential hotels which typically are overcrowded and in poor condition, posing threats to the health and well-being of children and adults alike. In the words of staff at the Social Model Recovery Systems, Inc.'s United Coalition East Prevention Project (UCEPP), however, in addition to adverse living conditions, the children of Skid Row have "no place to play, no sports, no chance for a good education" (UCEPP, 2005). The UCEPP report further noted that "the children living in Skid Row are not protected by law enforcement or school officials" but instead are further stigmatized or discriminated against, placing them in vulnerable or compromising positions becoming targets for "drug dealers or sex predators." In the words of UCEPP leader Zelenne Cardenas, living in these conditions has taken these youth from being "at risk" to being "in risk."

In 2003, UCEPP, located in the heart of Skid Row, began informally connecting with local youth, who had begun dropping by on a regular basis. Seeing the need for a more strategic engagement, UCEPP began working with the youth on their concerns, including "lack of recreational activities," and unsupportive school and community environments.

With the assistance of UCEPP staff and a professor at Loyola Marymount University, several of the youth—who called themselves "Coalition X" in reference to all the unknowns in their lives and futures—then helped design a survey, which they administered to 96 Skid Row youth. After conducting a preliminary analysis of the findings, the academic partner met with the youth and UCEPP staff to engage the youth in discussing and interpreting what they had learned. Among the

> *"If you put forth the effort people will listen…you have to be willing to do it and to know that change doesn't happen overnight."*
> **—Youth Partner, CBPR Partnership**

study results were that 53 percent of the youth had been suspended, 50 percent of them reported being "in trouble at school" for not having proper uniforms, and 43 percent had been ticketed for minor offenses, most often jaywalking (66 percent). Finally, and far from the image of skid row youth as homeless transients, the great majority lived with a parent or family member, over 70 percent lived in the neighborhood for at least a year, and 30 percent for four or more years (UCEPP, 2005).

Based on their findings, the youth helped their adult mentors craft recommendations directed at the Los Angeles School District, the Los Angeles Police Department, and Los Angeles Parks and Recreation. They held policy breakfasts for the media, and brought substantial attention to a little known provision in the No Child Left Behind Act which requires that homeless children not be discriminated against in terms of access to free and appropriate public education.

Findings of the partnership's research, along with their recommendations for action, were published by UCEPP in a much-publicized report, *Toxic Playground: Growing Up in Skid Row,* in 2005. Youth also shared their perspectives through media advocacy, with one of the youth authoring a first-person account in the *LA Times*.

The UCEPP partnership's research, and its strong and effective advocacy, have been credited with helping secure, albeit without needed enforcement, several policy victories. Among these was working for enforcement of the McKinney Vento Homeless Assistance Act, reauthorized in No Child Left Behind, regarding equal education access for homeless youth. The partnership's work in this regard resulted in a substantial increase in the number of case managers assigned to work with homeless youth in the Los Angeles Unified School District. The partnership also was credited with helping get the Department of Parks and Recreation to clean up and open a neighborhood park—although even today, the park typically remains locked for all but a few hours a week. Indeed, so many of these "victories" were severely curtailed by lack of enforcement and adequate resources, that the slowness of change has been a major source of frustration.

Yet the very fact that politicians took notice, and felt compelled to act, even given a dismal subsequent implementation record, made UCEPP and its youth-involved CBPR partnership a potent example of the power of youth in standing up for their right to be respected and have a safe place in which to learn, live, and play. The resilience of young people even under the most difficult circumstances also was well demonstrated in this case. In the words of one youth, "If you put forth the effort people will listen…you have to be willing to do it and to know that change doesn't happen overnight."

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The Trade, Health and Environment (THE) Impact Project:
Addressing the Ports and Goods Movement through a Collaborative Partnership

One of the key entry portals to the global trade and goods movement can be found in the southern California region, at the ports of Los Angeles and Long Beach. With the rapid increase in global trade in the 1990s, the twin ports became even more dominant, receiving over 40 percent of all imports into the United States, and accounting for 20 percent of diesel particulate pollutants in southern California—more than from any other source. The movement of goods through this area has had detrimental effects and consequences for neighborhood residents living close to the shipyards, railroad yards, and along the connecting highways (Hricko, 2006). For decades, they have been disproportionally exposed to diesel exhaust, other vehicle pollutants, and noise from congested roadways. Ironically, while goods are being transported through the southern California region to communities across the United States, the neighboring residents are left to bear the burden of the enormous negative impact of goods movement on their communities, their families' lives, and their health. Regionally, this goods movement has been estimated to account for 2,400 premature heart-related deaths, 62,000 cases of asthma symptoms, and among a million more cases of respiratory distress (CARB, 2006).

In 2006, with funding from The California Endowment, the Trade, Health and Environment (THE) Impact Project established a regional CBPR partnership between the University of Southern California, Occidental College, and four advocacy groups in a coalition to address air pollution and other community health impacts associated with the movement of goods through the Los Angeles and Long Beach ports.

THE Impact Project grew organically from residents concerned about asthma in communities close to the docks, and from advocacy groups from several spread out localities with separate concerns. The East Yard Communities for Environmental Justice (EYCEJ) in East Lost Angeles, for example, grew out of concerns about rail yard issues; the Center for Community Action and Environmental Justice (CCAEJ) in Riverside from concerns about movement near big warehouses; and the Coalition for a Safe Environment (CSE) in Wilmington from the desire to stop the expansion of a local port terminal and the effects of numerous air pollution sources. Finally, the Long Beach Alliance for Children with Asthma (LBACA) started as a clinic serving families with asthma and became another leading partnership member.

In 2001, two critical events occurred in the southern California policy environment, creating a window of opportunity for the academic-community coalition to come together over the next decade. First, the National Resources Defense Council, along with two other advocacy groups and two homeowner associations, sued the Port of Los Angeles for insufficient emission mitigation strategies for a planned large shipping terminal, winning a $50 million settlement two years later. Second, USC hosted its first town hall meeting in 2001, with 300 people attending, allowing a first -ever exchange between USC scientists showcasing their work on air pollution, and community residents sharing their concerns in the open microphone sessions. Building from CCAEJ and USC's long-term personal relationships, the town hall also offered a chance for two new advocacy partners to be introduced and to coalesce around the ports. In the words of one participant, "We realized that we'd been working on all these air pollution issues [i.e., from the railroad yards, warehouses, highways, etc.], and the ports were such a significant part of this, and they had completely escaped our attention."

In 2003, USC received a prestigious NIEHS/EPA Children's Center grant, which formalized work between USC, LBACA, and CCAEJ. As part of the grant's outreach, USC formed neighborhood assessment teams, or "A teams," which taught *promotoras* and other community members to count traffic and measure ultrafine particles. This "street science" (Corburn, 2005), coupled with new USC epidemiologic studies linking traffic exposures to higher levels of premature births and low birth rates (Wilhelm and Ritz, 2003;2005), helped build the science base for this work. As LBACA became more sophisticated in the issues, it also began to shift its focus towards policy. A major catalyst for this shift was a proposed highway bypass that would increase diesel emissions within 100 feet of homes and 700 feet of a neighborhood



THE Impact Project community partners and community forum.

school. At the same time, EYCEJ and its new partners expanded their work on railroad yard emissions.

Policy around the ports' emissions has been a consistent challenge, both because of their role as major economic engines, and because of the multiple policy jurisdictions, including city and port authorities; regional air quality districts; and state of California oversight of highways, railroads, and specific legislative initiatives, on the state and federal levels. Despite these challenges, progress has been made. Through the partners' consistent public advocacy and community organizing, in addition to another major town hall hosted by USC in 2005 with 500 people in attendance, receptive public figures, and the project's enhanced scientific research, the successful passage of the Clean Air Action Plan (CAAP) was achieved in 2006. This act created a five-year plan to reduce pollution from the ports by 45 percent. In addition, the CAAP gave a major boost to five out of the six Impact Project partners which were invited to serve on the governor's ports advisory board, as well as a similar mayor's advisory board in Los Angeles. In addition, they serve on the CAAP implementation task force.

The community-driven movement built by THE Impact project has dramatically influenced and changed how policy decisions about goods movement are made. It has shifted from one with no participation to a deeply rooted community participation approach that brings to the forefront community voices on important health issues that will ultimately impact residents' daily lives. The community organizing strategies employed by the partners engage community members who were most affected by the issue at hand. They do this through training, such as in the neighborhood assessment teams, and through skills-building. Neighborhood residents learn to collect, translate, and disseminate findings to their local neighbors at schools, churches, or other community venues, while working collectively to identify solutions to the problem.

From the inception of THE Impact Project's collaborative efforts, the goal has remained the same: to shift the policy debate and make the goods movement industry accountable for its decision making by taking into account the health and environmental impacts from the multiple sources of air pollution. This has shifted the debate among policymakers from being only about an "economic engine" and business model to encompassing a comprehensive community model. The latter takes into account the needs of the neighbors most affected by the goods movement and transportation system.

The successes of THE Impact Project at shifting the debate is grounded in the often challenging, but critical and sensitive balance between research and community organizing. THE Impact Project partners continue to have a mutually respectful and beneficial relationship with all partners involved, which, in the eyes of policymakers, has resulted in the successful marriage of strong, rigorous science to support the claims made by neighborhood residents, with community organizing strategies.

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The Central California Regional Obesity Prevention Project:
A CBPR Effort in Kern County





Greenfield Walking Group (CCROPP); children walking to school.

Despite providing much of the fresh fruits and vegetables for California, the many low-income, often immigrant residents of the San Joaquin Valley frequently have trouble affording or accessing healthy food for their own families. They also often lack access to safe streets and parks that help promote physical activity. In Kern County, as in other parts of this rural region of sprawling cities and small towns, obesity rates are above the state average.

The Central California Regional Obesity Prevention Project (CCROPP) is an initiative supported by The California Endowment and devoted to addressing these disparities through community action. In Kern County's CCROPP alliance, the lead partner—Get Moving Kern—began by seeking to learn who was *already* taking action, and identified a group of approximately 40 Latino mothers who had met in a nutrition class and subsequently formed themselves into the Greenfield Walking Group (GWG). This group planned to meet daily at the local neighborhood park to exercise, but they were confronted with barriers such as lack of access to a safe and open space. Greenfield Group members began working with other partners to study and address their number one concern: barriers to physical activity at Stiern Park.

The Greenfield residents partnered with California WALKS and received technical assistance and training on neighborhood walk audits, and invited city officials to join them. (For a description of these methods, see https://californiawalks.org.) They also used GIS mapping and small video recorders called flip cameras to further document their observations. After completing their assessments, they worked in small groups to identify, on a master map, additional information and barriers that they and their families had encountered in trying to walk or play in the park. Safety concerns included broken street and park lights, drug use and hypodermic needles, aggressive stray dogs, gang recruitment, and even a kidnapping. They also pointed out that the park's location—across from a four-lane highway without a crosswalk or pedestrian signal—posed a serious barrier for families wishing to get there safely. In the words of former Project Director Jennifer Lopez: "Everybody has a horror story about the park. The walkability assessment gave them an opportunity to share their stories with people who could help develop solutions."

Conducting walkability assessments with city officials was critical—the walking group members learned who to contact about animal control, law enforcement, and public works. Another important strategy was inviting City officials to partake in the lives of families. It is a challenge when a parent has trouble pushing a baby stroller over a cracked, narrow sidewalk or park path, but when City officials try and have difficulty, it gives them a heightened sense of reality

concerning the obstacles that families face. GWG members also worked with the local school district to study and address the need for new school policies promoting healthy eating and physical activity at school. Using flip cameras and GIS mapping, they were able to highlight areas that posed particular risks.

Eight middle-school youth from the César Chavez Leadership Program also took part in a photovoice project (http://www.photovoice.org) by taking pictures documenting health and safety risks, discussing their findings as a group, and then using selected pictures at city council meetings and other venues to press for change. Powerful pictures of an unsafe play structure and a broken and gang-tagged water fountain were among many that, together with their other data, helped catalyze action to renovate the park.

Infrastructure changes for which CCROPP and the Greenfield Walking Group have received much of the credit include new lighting and safer walking paths, the impounding of aggressive stray dogs, a new playground funded by the Kaiser Family Foundation, and a new fence—something particularly important since the neighborhood had tragically lost a small child who got through the broken fence and drowned in a sump ditch on the other side. A new phone system also is in place for reporting hazards, with directions in both Spanish and English.

Finally, and in a testament to the visibility and respect the Greenfield Walking Group has attained, many local and statewide organizations now call on the group for advice. These include the Kern Council of Governments, which has held special meetings with the group to include community health concerns as they develop both the Master Plan for the Valley, and their County General Plan for Transportation and Transit.

For more information:

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Get Moving Kern. http://www.getmovingkern.org.

Greenfield Walking Group. http://www.getmovingkern.org/Greenfield.htm.

Addressing Diesel Bus Traffic and Asthma in West Oakland



Child using inhaler at park; diesel truck moving goods; WO EIP Community Leader and now Port Commissioner Margaret Gordon; air sampling device.

Located on the shores of the San Francisco Bay, and bounded on all sides by freeways, West Oakland is a small but vibrant community of 25,000 mostly low-income African American and Latino residents. A popular destination for diesel trucks taking goods to and from the Port of Oakland, the community has long borne the brunt of disproportionate exposure to diesel exhaust and traffic-related pollutants that can cause or exacerbate asthma and adversely affect the growth of lung functioning in children (Gauderman et al., 2007).

To help address these and other community concerns, the West Oakland Environmental Indicators Project (WO EIP) began in 2000 as a partnership between a nonprofit research organization, the Pacific Institute, and the 7th Street-McClymonds Neighborhood Initiative. Through this project, the residents themselves determined the indicators to be studied, and helped collect, analyze, and use the data to effect change. The resulting 2002 report, *Neighborhood Knowledge for Change,* was cited in the local media, with one of its findings in particular—that children under age 15 in West Oakland had asthma rates seven times the state's average—drawing widespread attention. This visibility, together with the high quality of the research produced, contributed to WO EIP's becoming a community-based organization in its own right and incorporating as a nonprofit in 2004.

Together with its partners at the Pacific Institute, WO EIP then used CBPR to study and address the high volume of diesel truck traffic in West Oakland, and its potential links to high asthma rates. As part of this research, and with training from a technologies consulting firm, 10 residents gathered data on the number and type of trucks on selected neighborhood streets, as well as on truck idling at the port. Their studies revealed that 6,300 truck trips through West Oakland occurred *every day,* some in areas where trucks were prohibited. They further demonstrated that idling outside the port amounted to an estimated 280 truck-hours per day. In all, they found some 64 pounds of diesel particulate matter emissions were being generated from truck traffic and truck idling in this neighborhood daily—or about 90 times more exposure per square mile annually than in California as a whole (Buchan, Jackson and Chan, 2003).

Study findings were released in November 2003 in a widely cited report, *Clearing the Air,* and WO EIP partners and their allies then went to work on their number one priority: creating, with high-level community involvement, a designated truck route that would prevent trucks from traveling through West Oakland neighborhoods. The WO EIP partnership began by building alliances with other concerned local organizations and a city councilwoman with deep roots in West Oakland. But the partnership also reached out to less likely allies, including an independent trucking company and the Port of Oakland, which was a major change target, to collectively create a truck route committee. This group of sometimes unlikely bedfellows met monthly in the councilwoman's office to hammer out a truck route all could agree to, and strategically plan for its adoption. The partnership also leveraged its alliances with

> *"We were not doing the research 'on them' but they were leading the research effort. They were asking the questions, choosing the contractor, deciding the policy solutions, and we were supporting them with technical assistance and facilitation…This is completely the opposite of the typical academic-community partnership. What if a high-powered research institution could be put at the service of communities…what dramatic changes could result?"*
> **—Academically Trained Research Partner**

statewide groups, such as the Ditching Dirty Diesel Collaborative. Through a multipronged advocacy process, residents testified about the impact of diesel exposure on their health and quality of life, and WO EIP partners used their study findings in briefing officials and presenting at hearings.

In September 2005, WO EIP and Pacific Institute achieved a key victory when the city council unanimously passed a truck route ordinance that adhered closely to the specific truck route the partners had recommended. Although enforcement of the ordinance proved difficult, WO EIP's work helped spur other changes that have helped create a policy environment more favorable for environmental justice. The partnership's work also prompted other groups to conduct their own studies, with the California Air Resources Board beginning in 2006 a comprehensive and multiyear Health Risk Assessment for diesel exhaust in West Oakland. Policymakers and stakeholders have cited the *Clearing the Air* study as "instrumental" in catalyzing regional and statewide attention and action regarding the crisis of diesel pollution in West Oakland. The WO EIP partnership's truck count and related studies and policy level work also serve as a model for others of how CBPR can help produce solid data and use it to move forward environmental policy efforts in a way that empowers and respects the community (Gonzalez et al., 2011).

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Arronson, L. 2011. "From Housekeeper to Eco-activist." *Oprah Magazine*. October, p. 47.

Buchan W., Jackson M.D., Chan M. (2003). *Container Truck Traffic Assessment and Potential Mitigation Measures for the West Oakland Diesel Truck Emission Reduction Initiative*. Cupertino, CA: TIAX, LLC. Technical Report TR-03-176. Case D5247. Sponsored by The Pacific Institute.

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Gauderman, J., Vora, H., McConnell, R., Berhane, K., Gilliland, F., Thomas, D., Lurmann, F., Avol, E., Kunzli, N., Jerrett, M. and Peters, J. (2007). "Effect of Exposure to Traffic on Lung Development from 10 to 18 Years of Age: A Cohort Study." *The Lancet* 369(9591): 571-577.

Gonzalez, P., Minkler, M., Gordon, M., García, A.P. et al. (2011). "Community-Based Participatory Research and Policy Advocacy to Reduce Diesel Exposure in West Oakland, California." *American Journal of Public Health* Suppl 1:S166-75.

Palaniappan, M., Wu, D., Kohleriter J. (2003). *Clearing the Air: Reducing Diesel Pollution in West Oakland*. Oakland, CA: Pacific Institute In collaboration with Coalition for West Oakland Revitalization. http://www.pacinst.org/reports/diesel/clearing_the_air_final.pdf.

Engaging Youth and *Promotoras* in CBPR to Improve the Built Environment: A Case Study from Chula Vista



Chula Vista community survey; Network for a Healthy California "Champion Mom".

Nestled between the U.S.-Mexico border and downtown San Diego, Chula Vista, once the "Lemon Capital of the World," has a rich culture of diversity and a name that in Spanish means "a beautiful view." However, the "view," for many low-income families, was, until recently, less than beautiful, especially when they were seeking a safe space in which to live, work, and play.

Lauderbach Park, a local community park in southwest Chula Vista, had long suffered from vandalism, including graffiti, broken playground equipment and light fixtures, dilapidated fences, delinquency, and problematic homeless and drug activity. The forgotten park, although surrounded by family homes and adjacent to a church, had a history of ineffective patrolling by police, leaving families feeling insecure and discouraged from visiting the park for physical activity or social interaction. This decades-long situation changed, however, as a result of two independent projects, a youth leadership development project, and a faith-based *promotoras* project, which, unbeknownst to their leaders, were independently working towards a similar goal: promoting physical activity by improving the built environment.

The faith-based project was initiated by San Diego State University (SDSU) Research Foundation and named the 'Caminando con Fe' or the Walking with Faith *Promotora* Program. This program was part of the foundation's study examining the feasibility of using *promotoras* to encourage fellow Latina church members to be more physically active by catalyzing changes in the built environment. The youth leadership development project was initiated by the Healthy Eating, Active Communities (HEAC) Initiative and named CX3, or Communities of Excellence in Nutrition, Physical Activity and Obesity Prevention. CX3 youth received in-depth training in nutrition, physical activity, walkability assessment, leadership, and advocacy from community partners including CANFIT (Communities, Adolescents, Nutrition, Fitness), California Project LEAN (Leaders Encouraging Activity and Nutrition), the San Diego County Health & Human Services Agency, and WalkSanDiego.

After completing the training, CX3 youth and their adult mentors conducted walkability audits to assess obstacles to engaging in physical activity in their community and recorded the availability of fresh fruits and vegetables at neighborhood markets. The youth also took pictures to document the health and safety risks in their community.

SDSU *promotoras*, who had also received training on walkability audits from WalkSanDiego, were connected by that organization with the CX3 youth, for whom they provided mentorship and with whom they collaborated on data collection and action. Together, the *promotoras* and CX3 youth, with

guidance from staff at HEAC, SDSU, and the San Diego County Childhood Obesity Initiative, provided input on the design and wording of questionnaires, and then administered and helped analyze over 120 community surveys. The analysis corroborated existing community wisdom about the long history of the park's lack of security and the ways in which this discouraged access and physical activity.

With technical support from WalkSanDiego, in January 2008, the youth and *promotoras* prepared a report of the identified built environment barriers and provided recommended solutions. The youth wrote a letter to the city council advocating for improvements and the *promotoras*, HEAC, and WalkSanDiego all provided testimony. The City of Chula Vista, under pressure from the community, had planned to make a few changes to the park—but not nearly to the extent to which the youth and *promotoras* were advocating.

Media advocacy played an important role at this stage, with the Network for a Healthy California bringing citywide English- and Spanish-language media attention to bear to highlight the unique collaboration among youth, *promotoras*, community organizations, and city officials. Powerful testimony before the city council by the CX3youth, the *promotoras*, and other community partners also had an important impact. A councilmember and City staff in engineering, general services, and landscape architecture subsequently met with the partners, as well as with local church representatives, to discuss areas for park improvement.

As a result of these varied advocacy efforts, over $500,000 was secured to restore Lauderbach Park. Completed in September 2008, the park's revitalization included many of the recommendations that the youth, *promotoras*, and the community had identified through their surveys and walkability assessments. These included removal of the dilapidated fence dividing the park from the adjacent church; the building of restroom facilities and water fountains; improved and more energy-efficient lighting for both the park and the church exterior; a new children's playground area; a new and more level walking path; repainted benches and tables; and an enlarged soccer field. Long ignored alcohol and tobacco use bans also were enforced.

Deterring homeless people from living at Lauderbach Park was a challenge: According to the police department, the weekly free meals provided by the adjacent church and the numerous liquor stores within walking distance of the park contributed to this problem. But there were other obstacles to change: Many parents surveyed, for example, had expressed concern for their children's safety because of the homeless activity at the park, but also stated that they did not report illicit or disruptive behaviors to the police. This lack of reporting had made it difficult for the police to address the issue. Similarly, and while the dilapidated fence raised safety issues, church authorities were concerned about the removal of the fence out of fear that this would put the safety of church members at risk. Collaborating with the police department was key in this effort, as the chief of police assured church authorities that removing the fence was in alignment with the Crime Prevention through Environmental Design (CPTED) model, a multidisciplinary approach that had proven effective elsewhere in deterring criminal behavior.

An additional key outcome of the project was policy-related. Residents wanted to bring a community garden to the park to both help address food insecurity and increase a sense of community ownership. Following the park's renovation, HEAC, WalkSanDiego, and the Network for a Healthy California therefore educated policymakers about the community garden. Partners then participated in meetings with city representatives and community members, and in July 2009 the City of Chula Vista approved not only a community garden at Lauderbach Park, but a citywide community garden ordinance as well. Further, and in a noteworthy example of government-community collaboration, the City of Chula Vista developed a draft ordinance, and the Network

for a Healthy California provided feedback to help ensure that health was placed front and center in the proposed policy. Its recommendations were included in the ordinance that was then adopted.

Much of the success of this project has been attributed to the fact that youth were given the opportunity to choose the issue of most importance to them and were then helped to study and address that issue. Empowering and elevating youth voices helped lead to sustainable changes in their community: Not only was the park restored, but the youth had a place at the table, influencing the political process. Celebrating the youth's successes was also an important component of the project. A City representative expressed to the group how much City decision makers needed and valued their documentation and advocacy efforts. The youth also received, in 2009, both the WalkSanDiego's Golden Footprint Award for their leadership and commitment to the project, and the County of San Diego's Public Health Champion Award. Additionally, one of the youth was invited to present at the 2009 Active Living Research Conference, where he described the project and the impact participation had had on him. Finally, all partners involved in the project learned from one another and contributed unique resources, contacts, and expertise critical for restoring the park and securing the community garden policy. This partnership now is being used as a model of how youth-engaged research and community collaboration, including the work of *promotoras*, can maximize efforts, bring political support, and leverage resources to make a sustainable impact on community health.

For more information:

Arredondo, E.M., Mueller, K., Mejia, E., Rovira-Osterwalder, T., and Hoos, T. (in press). "Engaging Youth and *Promotoras* to Advocate for Environmental Improvements to Enhance Access to Physical Activity." *Health Promotion Practice*.

California Department of Public Health. (2010). Network for a Healthy California. Sacramento, CA: California Department of Public Health. http://www.cdph.ca.gov/programs/CPNS/Pages/default.aspx.

V. Evaluating CBPR Processes and Outcomes

An important component of CBPR is finding ways to measure progress without violating the very tenets of empowerment and high-level community engagement that lie at the core of the work. Although traditional evaluation approaches are necessary to assess progress, newer methods, variously termed **participatory evaluation** and **empowerment evaluation** and well described at **The Community Tool Box** website (http://ctb.ku.edu), also are helpful in enabling partnerships themselves to measure their progress both in growth and functioning, and in achieving the outcomes and objectives of their CBPR projects. The website of **Community-Campus Partnerships for Health** (www.ccph.info/), described earlier, also is an excellent source of resources and ideas on participatory and other means of CBPR partnership and project evaluation.

Several useful assessment tools and guidelines further have been developed to help partnerships appraise their areas of strength and room for improvement, and their progress toward shared goals. Israel et al.'s **guidelines for CBPR partnerships** (2005) as well as those developed by Mercer and Green, et al. (2008) may be particularly helpful (see references).

Evaluating Contributions to Policy Change

Particularly for policy-focused CBPR projects, where numerous players and contextual factors beyond the partnership are involved, teasing apart the partnership's contributions to helping move policy is fraught with difficulty. The California Endowment's two-volume booklet, entitled ***The Challenge of Assessing Policy and Advocacy Activities*** (www.calendow.org/uploadedFiles/challenge_assessing_policy_advocacy2.pdf), is an excellent resource for understanding how "most policy work involves multiple players 'hitting' numerous leverage points" magnifying the difficulty of assessing "the distinct effect of any individual player or any single activity." (p. 9)

In attempting to assess their role in helping achieve a policy change—or their inability to do so—CBPR partnerships must carefully consider such factors as the role of an economic downturn, the opening of a window of opportunity following a media exposé, or the appointment or election of a new policymaker who shares or opposes the partnership's goals. The role of such external forces, and the complex nature of the policymaking process, remind us not to engage in simplistically attributing causation where policy change is concerned.

Finally, the fact that policy change tends to take place over a long period of time makes evaluation of a partnership's work in this regard challenging. Paraphrasing Guthrie et al. (2006), rather than asking whether *policy* has changed, more fruitful questions might be:

How did the [partnership's] work *improve the policy environment* for this issue?

How successful was the [partnership] *in taking the necessary steps toward the policy change?*

To help address such questions, **triangulation**, or the use of multiple methods of data collection, is helpful. Interviews with policymakers and other key stakeholders, focus groups with community members, participant observation at public hearings and other venues, and documents review, including coverage by local and regional media, all are helpful sources of information and together can help improve a partnership's assessment of its contribution to changing a

PolicyLink

> *We have had successes because at city council meetings they see that a lot of us from the community get together…we put our t-shirt on, there is certain pressure from the community on the city council members—they have never seen this level of participation…It is important for them to know that people are present and listening to what is happening."* ***—Community Member***

policy or the policy environment. Where possible, having an **outside evaluator** engaged in this data gathering can be useful in helping increase the rigor and real and perceived validity of the assessment being undertaken. But whether by an outsider or a partnership member or subcommittee, and whatever questions are asked regarding policy-related outcomes, it is critical to think not in terms of *attribution*, but rather *contribution and connection*. In other words, in what ways did the work of the CBPR partnership help contribute to efforts to change a policy, or the broader policy environment in relation to an outcome of interest. The evaluation section of the **Community Tool Box** (http://ctb.ku.edu) and the PolicyLink **Getting Equity Advocacy Results** (GEAR) project mentioned earlier (http://www.policylink.org/gear) are useful resources for helping partnerships think about their results in this way.

VI. Additional Resources by Topic

Here are some helpful journal articles, reports, and websites relevant to topics and case studies addressed in this resource guide. They are grouped by topic, and hopefully many of the references cited will lead the reader to other sources and tools.

Introduction to CBPR and Its Use as a Strategy for Helping Move Policy

Gebbie, K., Rosenstock, L. and Hernandez, L. et al. eds. (2003) *Who Will Keep the Public Healthy: Educating Public Health Professionals for the 21st Century.* Washington, DC: National Academies Press.

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Minkler, M., Brechwich Vásquez, V., Chang, C., Miller, J., Rubin, V., Blackwell, A., Thompson, M., Flournoy, R. and Bell, J. (2008). *Promoting Healthy Public Policy through Community-Based Participatory Research: Ten Case Studies.* Oakland, CA: PolicyLink. (www.policylink.org).

Minkler, M. and Wallerstein, N. eds. (2008). *Community-Based Participatory Research for Health: From Process to Outcomes* (2nd edition). San Francisco, CA: Jossey-Bass. (See especially four chapters on using CBPR to help promote policy change and appendixes.)

Morgan, M.A. and Lifshay, J. (2006). *Community Engagement in Public Health.* Martinez: Contra Costa Department of Health Services, Public Health Division. http://www.barhii.org/resources/downloads/community_engagement.pdf.

Reason, P. and Bradbury, H. (2006). "Introduction." In Reason, P., Bradbury, H., eds. *The Handbook of Action Research: Participative Inquiry and Practice,* (Concise Edition). Thousand Oaks, CA.: Sage.

Ritas, C. (2003). *Speaking Truth, Creating Power: A Guide to Policy Work for Community-Based Participatory Research Practitioners.* http://depts.washington.edu/ccph/pdf_files/ritas.pdf.

Tervalon, M., & Murray-Garcia, J. (1998). "Cultural Humility versus Cultural Competence: A Critical Distinction in Defining Physician Training Outcomes in Multicultural Education." http://info.kp.org/communitybenefit/assets/pdf/our_work/global/Cultural_Humility_article.pdf.

Themba-Nixon, M. (2003). *Making Policy Making Change: How Communities Are Taking Law into Their Own Hands.* San Francisco, CA: Jossey Bass.

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Communities, CBPR, and the Fight Against Health Disparities

Bell, J. and Lee, M.M. (2011) *Why Place and Race Matter: Impacting Health through a Focus on Race and Place.* Oakland, CA: PolicyLink.

Bell, J. & Standish, M. (2005). "Communities and Health Policy: A Pathway for Change." *Health Affairs*, Volume 24, Number 2.

Collins, J. (2006). "Addressing Racial and Ethnic Disparities: Lessons from the REACH 2010 Communities." *Journal of Health Care for the Poor and Underserved* Volume 17, Numbers 1-5.

Iton, T. (2006). "Tackling the Root Causes of Health Disparities through Community Capacity Building." In Hofrichter, R. ed. *Tackling Health Inequities Through Public Health Practice: A Handbook for Action.* Washington, DC: The National Association of County and City Health Officials (115-136).

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Kawachi, I., Subramanian, S.V. and Kim, D. (2008). *Social Capital and Health.* New York, NY: Springer Science and Business Media, LLC.

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Wallerstein, N. and Duran, B. (2006). "Using Community-Based Participatory Research to Address Health Disparities." *Health Promotion Practice* 7 (3): 312-323.

CBPR and Policy Change

Cacari-Stone, L., Garcia, A.P., Wallerstein, N. and Minkler, M. (in preparation). *Promoting Place-Based Local Health Policy through Community-Based Participatory Research: A Conceptual Model and Case Study Analysis.* (Contact: nwallerstein@salud.unm.edu for more information.)

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Building and Maintaining Effective CBPR Partnerships

Community-Campus Partnerships for Health. Principles of Good Community-Campus Partnerships (www.ccph.info/).

Community Tool Box. Creating and Maintaining Coalitions and Partnerships. http://ctb.ku.edu/en/dothework/tools_tk_1.htm.

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Using Asset Mapping and Problem Identification to Build on Community Strengths

Brown, M.P. (2008). "Risk Mapping as a Tool for CBPR and Organizing." In Minkler, M. and Wallerstein, N. eds. *Community-Based Participatory Research for Health: From Process to Outcomes* (2nd edition). San Francisco, CA: Jossey-Bass.

California WALKS. *Walkability Check List.* http://www.cawalktoschool.com/checklists.html.

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Kretzmann, J.P., and McKnight, J.L. (1993). *Building Communities from the Inside Out.* Center for Urban Affairs and Policy Research. Evanston, IL: Northwestern University.

Using Approaches and Processes That Reflect Local Community Culture and Ways of Doing Things

Chávez, V., Duran, B., Baker, Q.E., Avila, M.M., and Wallerstein, N. (2008). "The Dance of Race and Privilege in CBPR." In Minkler, M. and Wallerstein, N. eds. *Community-Based Participatory Research for Health: From Process to Outcomes* (2nd edition). San Francisco, CA: Jossey-Bass. Cultural Competence in a Multicultural World. In the Community Tool Box. http://ctb.ku.edu/en/tablecontents/chapter_1027.htm.

Erzinger, S. (1994). "Empowerment in Spanish: Words Can Get in the Way." *Health Education Quarterly* 21, 417-419.

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Appendix: Summary of Helpful Websites and Other Resources

Advocating for Change (http://www.policylink.org/AdvocatingforChange)

An online source developed by PolicyLink that may be helpful in providing a variety of resources for partnerships interested in exploring a range of policy options as well as sample tools for pursuing the appropriate advocacy strategies.

Berkeley Media Studies Group (www.bmsg.org)

A wonderful resource for those specifically interested in media advocacy, or the strategic use of the mass media to help frame and present issues from a healthy communities' perspective.

Community-Campus Partnerships for Health (CCPH) (www.ccph.info/)

A comprehensive resource to help build and maintain partnerships between communities and academic institutions, the CCPH website is filled with resources on many aspects of CBPR, including the "how to's" of getting started, tools for building partnerships and assessing partnership strengths, using CBPR to help promote policy change, along with information on conferences, funding opportunities, and evaluations of projects that can serve as examples of "best practices" in the field.

California Center for Physical Activity (http://www.caactivecommunities.org)

This online site includes a wide range of tools which can guide both the asset and problem identification process. The tools, including the popular walkability check list tool, can assist community residents in studying and improving accessibility and safety conditions of their neighborhood.

Community Action Model (CAM) (www.sfdph.org/dph/comupg/oprograms/CHPP/CAM/default.asp)

An excellent resource for helping youth develop critical thinking and the tools necessary for effective participation in community building and CBPR toward the end of promoting sustainable change on the policy and systems level.

Community Tool Box (http://ctb.ku.edu/en/tablecontents/chapter_1027.htm)

Over 6,000 pages in length, the tool box is a global resource focused on building healthy communities by assisting and connecting partners interested in identifying local resources, tools, and challenges, and taking action. Includes excellent resources relevant to CBPR and the evaluation of its impacts on problems, policies, and practices, in part through empowerment evaluation approaches.

Getting Equity Advocacy Results (GEAR) (http://www.policylink.org/gear)

PolicyLink is creating a new set of tools (GEAR) through which practitioners can better assess the progress and impacts of their policy change efforts.

Photovoice (http://www.photovoice.org)

A visual methodology, photovoice is a collaborative approach to photography and subsequent critical dialogue and action plans that may be particularly useful with youth, low literacy groups, and other marginalized populations to promote change on the individual, community, and/or policy levels. This website includes links to many photovoice projects and publications, as well as other useful resources.

The Praxis Project (www.thepraxisproject.org)

A national nonprofit organization that builds partnerships with local community groups to influence policymaking by building local community power to effect change and address

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social and political /structural problems. The Praxis Project and its website offer technical assistance, capacity building, research and training, and useful tools and publications for partnerships.

Promoting Healthy Public Policy through Community-Based Participatory Research: Ten Case Studies (www.policylink.org/atf/cf/%7B97C6D565-BB43-406D-A6D5-ECA3BBF35AF0%7D/CBPR_PromotingHealthyPublicPolicy_final.pdf)

This document explores diverse community-based participatory research (CBPR) partnerships around the United States that have in common a commitment to fostering healthy public policy. These case studies offer a window into the world of community, health department, and academic partnerships throughout the nation that are working to change policy to improve community health, reduce disparities, and foster equity. The report draws on data from dozens of in-depth interviews with partnership members, community focus groups, and policymakers.

Speaking Truth, Creating Power: **A Guide to Policy Work for CBPR Practitioners**

This user-friendly work book, available on the University of Washington website (http://depts.washington.edu/ccph/pdf_files/ritas.pdf), helps community and other stakeholders better understand the policymaking process, and contains helpful tools for teaching and communicating this information.

"**White Privilege**" **Checklist** by Peggy McIntosh (http://www.fpg.unc.edu/~scpp/pdfs/whiteprivilegechecklist.pdf)

This exercise can be used to facilitate a discussion of what unearned privilege means, and how that may affect working relationships with diverse cultures in CBPR and other cross-cultural undertakings.

Working Upstream: Skills for Social Change (http://bmsg.org/sites/default/files/bmsg_handbook_working_upstream.pdf)

This detailed and user-friendly resource from the Berkeley Media Studies Group (BMSG), with support from The California Endowment, presents a curriculum and resource guide for advocates and others interested in learning the art of working to address the social determinants of health through advocacy and related approaches. Available in print copy as well as online from BMSG.

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3 warehouses in works on N. Indian Canyon bring economic promise, environmental concerns





Erin Rode
Palm Springs Desert Sun

The transformation of North Indian Canyon Drive near Interstate 10 from a windy, mostly undeveloped corridor dotted with windmills to a logistics hub is officially underway, with three warehouses planned or proposed for the area.

Elsewhere in the region warehouses have proliferated — especially throughout the western portions of San Bernardino and Riverside counties — bringing jobs as well as concerns over air pollution and truck traffic.

But some warehouse-saturated Inland Empire communities are pushing back against new projects, and developers have started turning to the San Gorgonio Pass and Coachella Valley because demand for warehouse space remains high.

With the fresh economic potential for Desert Hot Springs and Palm Springs comes some well-known concerns, some of which have prompted other cities in the Inland Empire to take measures to mitigate the negative environmental impacts.

The question remains whether the Coachella Valley cities can reap the financial benefits while avoiding the same fate.

On the Desert Hot Springs side of North Indian Canyon Drive, Amazon recently purchased a site approved for a 3.4-million-square-foot warehouse. It's the first approved logistics warehouse in the Coachella Valley.

Construction on the Desert Hot Springs Amazon facility could begin as soon as this summer, with the project expected to be operational in the fourth quarter of 2023.

The project site is near Coachillin' Business Park and the Mission Springs Water District's new wastewater treatment facility, which recently broke ground.

On the other side of North Indian Canyon Drive, the City of Palm Springs has received two pre-applications for large warehouses in the past few months.

The Palm Springs Logistics Center would be a 1,468,160-square-foot warehouse on a 74-acre swath of undeveloped property at the northwest corner of Indian Canyon Drive and 18th Avenue. A neighboring proposal for the Palm Springs Fulfillment Center would build a 751,000-square-foot industrial building with 711,000 square feet of warehouse space and 40,000 square feet of office space at the northwest corner of Indian Canyon Drive and 19th Avenue.

City staff have held pre-submittal conferences with the applicants for both warehouse facilities, but have yet to receive the formal applications, according to Deputy City Manager Flinn Fagg.

It is unclear who the eventual tenants of the warehouses might be. Snider Interests LLC, the applicant for the Palm Springs Fulfillment Center, did not respond to The Desert Sun's request for more information.

Seefried Industrial Properties, the applicant for the Palm Springs Logistics Center, also did not respond to The Desert Sun's request for comment, but the company has been closely linked to Amazon in the past. Seefried Industrial Properties initially proposed the Desert Hot Springs warehouse, with Amazon purchasing the land sited for the warehouse after it was approved.

All three applications came after the two cities made zoning changes in January to better accommodate large warehouses by allowing taller building heights in industrial and manufacturing zones primarily located north of I-10 along North Indian Canyon Drive.

Leaders in both cities cited a desire to capitalize on potential tax revenue from the Inland Empire's ever-expanding logistics industry as demand for warehouse space surges alongside growth in online shopping.

Commercial real estate firm CBRE estimates that the U.S will need 330 million square feet of additional distribution space by 2025 just to meet the projected increase in online ordering during the next few years. This doesn't account for potential demand from other industries that use warehouses, such as grocery companies.

Over 4,000 warehouses in Riverside, San Bernardino counties

Driven by cheap and available land, as well as close proximity to major freeways and the Port of Los Angeles and Port of Long Beach, the warehouse boom in Southern California has resulted in over 1 billion square feet of Inland Empire land occupied by warehouses.

The number of warehouses in Riverside and San Bernardino counties has grown from 162 in 1975 to 4,299 in 2021, according to a recent mapping project from the Robert Redford Conservancy for Southern California Sustainability at Pitzer College. Much of the growth began in the late 1990s, continuing at an exponential pace over the past two

decades. There were 970 warehouses by 2000, a number that grew to 1,574 in 2005, then 2,089 in 2010 and to 2,757 in 2015. From 2020 to 2021, the number rose again from 3,727 to 4,299.

But many of the cities in this region are now pushing back with moratoriums on new warehouse development, citing the adverse effects of air pollution from heavy-duty diesel truck traffic on the predominately low-income communities of color.

According to the South Coast Air Quality Management District, sources associated with warehouses are responsible for nitrogen oxide emissions comparable to all of the refineries, power plants, and other stationary pollution sources in the South Coast Air Basin combined.

Those living within a half mile of warehouses are more likely to include communities of color, who experience health impacts such as higher rates of asthma and heart attacks.

“It’s an astronomical figure. And if you start to factor in the carbon emissions, the number of truck trips per day, the diesel particulate matter, it's just an overwhelming footprint,” said Susan Phillips, a professor of environmental analysis and director of the Robert Redford Conservancy for Southern California Sustainability at Pitzer College.



Most recently, Redlands enacted a 45-day moratorium on new warehouses in June, and Pomona is also considering a 45-day pause on new warehouse developments. Redlands had 64 warehouses as of 2021, totaling approximately 19,402,136 square feet of space, and Pomona had 217 warehouses totaling 27,007,673 square feet of space.

According to the analysis by the Redford Conservancy and Radical Research, LLC, Pomona's warehouses result in approximately 18,095 daily truck trips, which in turn produces about 24.5 pounds of diesel particulate matter, 2,844 pounds of nitrogen oxides, and 1,529,421 pounds of carbon dioxide, all on a daily basis.

The latest moratoriums follow previous pauses on new warehouse development in Riverside, Chino, and Colton, which recently extended its moratorium for another year.

"One of the reasons why developers are moving to the desert and high desert areas is because they're running out of land here in the core of the Inland Empire. But some of those cities (in the Inland Empire) have also been calling for moratoriums on warehouses. So (developers) are also moving to those other areas because they see that the community there hasn't mobilized around this issue yet," said Ana Gonzalez, Executive Director of the Inland Empire-based Center for Community Action and Environmental Justice.

Environmental groups push for mitigation, benefits

Project Viento, the warehouse proposal approved for land recently purchased by Amazon, is estimated to generate an average of 670 average daily truck trips, with trucks arriving and departing the facility primarily between 7 p.m. and 1 a.m. Those trucks are estimated to emit an estimated 165.17 pounds of nitrogen oxide each day, above the South Coast Air Quality Management District's significance threshold of 66 pounds per day for pollution from all sources.



After two local environmental groups appealed the project's approval, Desert Hot Springs settled with the two groups in June by adding new conditions on the project. Under the settlement agreement, the project must include "maximally sized" rooftop solar, at least 20% of light-duty delivery vehicles serving the project must be zero-emission, trucks cannot idle for more than three minutes, and all on-site cargo handling equipment must be powered by electricity. The settlement also requires the developer to install 100 electric vehicle charging stations at the site.

"I think it was a fair settlement. The area is zoned for logistics and warehouses are very likely to happen there. This is an area that already has cannabis warehouses, windmills, gas plants, solar plants... You're putting an industrial use in an industrial area," said Joan Taylor, chair of the local Tahquitz Group chapter of the Sierra Club, which appealed the project's approval alongside the Oswit Land Trust. She added that

she hopes the settlement will serve as a precedent for future warehouses in the Coachella Valley.

Taylor said the Project Viento site, which is about a mile away from the nearest homes, is preferable to where warehouses are built in communities like Fontana, where they often abut residential neighborhoods. As for the potential local air quality impacts of Project Viento, the settlement agreement will require the developer to make a $200,000 payment to the city that will help fund a Coachella Valley Regional Truck Impact and Mitigation Study by the Coachella Valley Association of Governments.

“Everybody wants to order online, but nobody wants the warehouses... It seems like they're a fact of life. There are real mitigations that can make these things a lot better. And that's what we strove for, and I think we insured with this particular project,” Taylor said.



The settlement in Desert Hot Springs comes after a string of recent settlements with environmental groups in the Inland Empire. Gonzalez points to the settlement between CCAEJ and other environmental groups and the developer of the proposed World Logistics Center in Moreno Valley as one example of a settlement agreement that includes adequate mitigation measures as well as community benefits.

That settlement requires the developer of the 40.6 million-square-foot project to pay for air filtration systems for nearby homes, install more than 1,000 electric vehicle chargers on-site, and provide grants for Moreno Valley residents to purchase electric vehicles, along with several other requirements.

In the absence of the ability to stop a warehouse project altogether, CCAEJ focuses on securing community benefits, such as a commitment to hire local residents or to provide good wages and benefits, as well as mitigation efforts, like requiring the developer to use air filters or electric equipment.

“A lot of times developers say that the environmental justice groups just want solar and electrification. But it’s more than that. We want good paying jobs, we want them to contribute toward the General Fund for that city, to help with things like maintenance because trucks are going to ruin the roads…, Gonzalez said. "You don’t get to just come and build this massive warehouse in our community and go back to your fancy home in Beverly Hills, you have to make sure you’re addressing the needs of the community if you want to do business in the community.”

'Nobody talks about the cumulative impacts'

While the proposed and approved warehouses along North Indian Canyon aren't directly adjacent to homes, some worry they could still have negative impacts on the overall air pollution in the region.

"Yes, these are away from sensitive receptors like homes or schools. But nobody talks about the cumulative impacts. The freeways are already overburdened with traffic, the pollution levels are already super high," said Gonzalez.



Phillips views warehouse development as "death by 1,000 cuts," with each individual city considering each warehouse proposal without necessarily considering the broader cumulative impacts.

"(Cities) never see the project as the full force of the decisions that have been made in the past, the decisions that are being made in the

present, and the decisions that are being made in the future," said Phillips.

Efforts are currently underway to improve the way cities consider the cumulative impacts of a proposed warehouse project. South Coast Air Quality Management District is in the process of revising its California Environmental Quality Act guidance for how cities evaluate the cumulative air quality impacts of existing projects, proposed projects, and probable future projects under the California Environmental Quality Act. The new guidance would consider existing air toxics from nearby pollution sources and in some cases quantify the cumulative air quality impacts of projects in an area for the first time.

South Coast AQMD aims to adopt the policy toward the end of this year or early next year, but the guidelines would only serve as recommendations, which cities could decide whether they want to implement as requirements, according to spokesperson Nahal Mogharabi.

These efforts are related to a recent lawsuit filed by Attorney General Rob Bonta against the city of Fontana for its approval of a 205,000 square-foot warehouse that shares a border with a public high school, in an area already home to several dozen warehouses totaling approximately 16 million square feet.

In the lawsuit, Bonta challenged the city's use of the air district's existing guidelines, arguing that Fontana violated CEQA by failing to disclose the existence of dozens of other warehouses in the area and

other approved future warehouses, and didn't account for the cumulative air quality impacts of those projects.

That lawsuit was settled in April, resulting in additional mitigation measures for the warehouse in question and a new city ordinance with more stringent environmental standards for future warehouses.

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Increasing impacts of climate change upon ecosystems with increasing global mean temperature rise

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Abstract In a meta-analysis we integrate peer-reviewed studies that provide quantified estimates of future projected ecosystem changes related to quantified projected local or global climate changes. In an advance on previous analyses, we reference all studies to a common pre-industrial base-line for temperature, employing up-scaling techniques where necessary, detailing how impacts have been projected on every continent, in the oceans, and for the globe, for a wide range of ecosystem types and taxa. Dramatic and substantive projected increases of climate change impacts upon ecosystems are revealed with increasing annual global mean temperature rise above the pre-industrial mean (ΔT_g). Substantial negative impacts are commonly projected as ΔT_g reaches and exceeds 2°C, especially in biodiversity hotspots. Compliance with the ultimate objective of the United Nations Framework Convention

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on Climate Change (Article 2) requires that greenhouse gas concentrations be stabilized within a time frame "sufficient to allow ecosystems to adapt naturally to climate change". Unless ΔT_g is constrained to below 2°C at most, results here imply that it will be difficult to achieve compliance. This underscores the need to limit greenhouse gas emissions by accelerating mitigation efforts and by protecting existing ecosystems from greenhouse-gas producing land use change processes such as deforestation.

1 Introduction

Effects of climate change are already being observed on a wide range of ecosystems and species in all regions of the world (Rosenzweig et al. 2007), in response to the 0.74°C rise (ΔT_g) in global mean temperature (GMT) that has been experienced since pre-industrial times (Solomon et al. 2007). Such responses include changes in phenology and shifts in species ranges (e.g. Walther et al. 2002; Root et al. 2003), whilst the first extinctions which are likely to be attributable to climate change—acting synergistically with disease—have already occurred in amphibians (Pounds et al. 2006; Bosch et al. 2006). Coral reef bleaching is expected to increase strongly with rising sea surface temperatures (Hughes et al. 2003). At the same time, the ocean has already acidified by 0.1 pH units since pre-industrial times (Solomon et al. 2007) due to the direct effects of increasing atmospheric concentrations of carbon dioxide from the pre-industrial level of 280 ppm to the 2005 level of 379 ppm CO_2 (Solomon et al. 2007).

The literature contains a growing number of studies that project for the future increasingly severe impacts that further anthropogenic climate change would have on ecosystems and species around the world (see the 71 studies referenced in Tables 2, 3, 4 and 5). Such studies typically identify the onset of some positive, but predominantly negative, impacts upon a species or ecosystem as the climate changes. However, these studies have largely been carried out independently from each other and have used a wide range of future climate scenarios. This makes it difficult to compare results and obtain a clear and aggregated picture of how impacts accrue with increasing global mean temperature rise. Such an aggregated picture is important for two reasons: firstly it addresses climate change at the appropriate scale, i.e. as a global phenomenon; and secondly it enables the evaluation of major policy recommendations, such as the much discussed 2°C limit suggested by the EU as both a "safe" and achievable level of global temperature increase. Existing reviews (Houghton et al. 2001; Thomas et al. 2004a; Hare 2006; Warren 2006) have not included the full range of recent literature and have not estimated uncertainties. Similarly to the summary given in Fischlin et al. (2007), this paper integrates the dispersed and fragmented literature on ecosystem impacts of projected climate change, often expressed at a regional level, into a set of tables of projected impacts for different levels of global mean temperature rise with respect to pre-industrial times, ΔT_g, providing an estimate of uncertainty in these levels. The tables report the main findings in terms of: range losses for species, habitats or entire ecosystems; extinction risks; and other biodiversity impacts caused by ecosystem degradations or declines in key populations due to anticipated climate changes.

2 Materials and methods

2.1 Literature search

A literature search was made to assess pertinent impacts of climate change on both terrestrial and marine ecosystems across the globe (Fischlin et al. 2007). Search engines were first used to identify references in the peer reviewed literature, and further references were then derived from information provided within these. Existing reviews (Gitay et al. 2001; Thomas et al. 2004a; Hare 2006; Warren 2006) were particularly useful in identifying additional references. All references were then reviewed for specific information about thresholds in local or global temperature change/sea level rise above which adverse consequences could be expected, and also for quantified projections of ecosystem or species changes associated with quantified local or global climate changes, taking note of the climate scenario and any general circulation model (GCM) used, and the treatment of dispersal and migration. Thus studies that contained insufficient detail about the climate scenario used, or that did not provide quantitative estimates of the resultant ecosystem or species changes, could not be included in the analysis. In particular, studies which reported only the general direction of trends in response to changing temperature or precipitation were deliberately excluded. In cases where more than one study addressed similar species or ecosystems, each study was included separately in the summary table, since it may be projecting different sensitivities due to the use of other climate change scenarios and/or assessing other kinds of impact responses.

2.2 Converting to a pre-industrial reference point for global mean temperature change

Information on the climate change scenario simulated by each original study was converted to a common pre-industrial reference point for temperature. Studies often refer to baselines of pre-industrial (<1850), 1960–1990 mean, 1990, or "present day" (e.g. 1980–1999). In this study the temperature rise between pre-industrial and the 1960–1990 mean is taken as 0.3°C and the temperature rise between pre-industrial and 1990 is taken as 0.6°C (Houghton et al. 2001); whilst that from the mid 1970s to 1990 is taken as 0.2°C (Houghton et al. 2001). Where studies report impacts as caused by a particular GCM simulation using the HadCM3 model, Table 7 of Arnell et al. (2004) was used to convert the temperatures to a common pre-industrial baseline.

While some of the literature relates impacts directly to global mean temperature increases, many studies refer only to local temperature rise, and hence upscaling from a local to a global scale is required. Upscaling was carried out as detailed below for the different classes of studies identified (Table 1) and also provided an opportunity to estimate the uncertainties arising from the use of different GCMs in climate projection. Whenever possible it was also considered whether the impact had been estimated based only on temperature change, or also on associated precipitation change.

When studies gave minimal detail about GCM scenarios, such as referring to them only as "CO_2 doubling scenarios", the original literature publishing that scenario was traced, and/or the model authors were contacted, in order to verify the global mean

Table 1 Detail of the upscaling methodology used to derive global mean temperature (GMT) change (ΔT_g) for the eight study classes a–h

Class	Description of study	Derivation of central estimate of GMT change ΔT_g	Derivation of range of GMT change
a	Relates global impacts directly to ΔT_g	ΔT_g by definition already provided: harmonised if necessary to pre-industrial	Not derived unless provided in original study
b	Relates local impact (e.g. x% species at risk of extinction) to regional temperature change without using GCM output	ΔT_g is the mean of values derived via upscaling procedure, using the cited regional temperature change	Range of values derived via upscaling procedure using the cited regional temperature change
c	Relates a local impact (e.g. y% species at risk of extinction) to regional temperature change while using the output of specific GCM(s)[2]	As not all studies provide the regional temperature change this may need to be derived by first downscaling for the appropriate timeslice (e.g. Gyalistras and Fischlin 1999). ΔT_g is then the mean of values derived via a subsequent upscaling of the downscaled regional temperature change	Range of values derived via upscaling procedure, using the downscaled regional temperature change
d	As b but regional precipitation change also used	As b	As b
e	As c but study uses also GCM simulated precipitation as well as temperature	Upscaling is not applicable, as procedure is based on temperature only. ΔT_g is derived from published values simulated by the used GCM(s)	Not derivable
f	Cases where upscaling is not possible because regional temperature changes are out of range of the GCM patterns available	Estimated from maps in Meehl et al. (2007) relating local and global temperature change	Not derivable
g	As c or e but GCM output comes from 3 or more different GCM models	Mean of values as simulated by the used GCM(s)	Range derived from published values simulated by the used GCM(s)
h	Cases where the key variable is sea surface temperature	Estimated from maps in Meehl et al. (2007) relating local surface air temperature over the sea to ΔT_g, since maps of SST were not readily available, and increases in surface air temperature over the ocean were assumed to approximate increases in SST	Not derivable

temperature increase corresponding to CO_2 doubling, taking into account the control CO_2 concentration as necessary.

2.3 Dynamics

Many reviewed studies do not consider a temporal dimension. There are two issues here (1) whether the climate scenario a study considers relates to transient or equilibrium climate change and (2) whether the projected ecological response is considered a steady state. Studies in class b project impacts without distinguishing between transient and equilibrium temperature change. However, most studies use models, which project the future long-term ecological response to a changed climate (i.e. a new steady state) while the climate scenario is a transient one: studies in classes c and e are typically based on transient climate change scenarios produced by GCMs, although there are a few which also include equilibrium temperature change scenarios. Hence, the ecological projections are *not* mere snapshots of a transient climate change and its concomitant response, rather do these studies artificially hold the transient climate constant and assume the ecosystem response to equilibrate, regardless of the time the system may need to actually reach such an equilibrium. Thus an important question is the time lag between the forcing temperature change, be it transient or equilibrium, and the ecosystem response (see Section 4). The upscaling procedure described below is based on transient GCM scenario outputs throughout.

2.4 Upscaling procedure

The upscaling procedure involved the use of 0.5 × 0.5° resolution outputs produced from original 5 × 5° resolution outputs of five GCM models HadCM3, ECHAM4, CSIRO2, PCM, and CGCM2, by using pattern scaling and downscaling methods (Christensen et al. 2007). These climate projections based on transient GCM outputs were available for the entire global land area at a resolution of 0.5 × 0.5°. They were produced from up to four IPCC SRES emission scenarios (Nakicenovic et al. 2000) providing 13 different GCM patterns on which to base the upscaling (available at http://ipcc-ddc.cru.uea.ac.uk). In each 0.5 × 0.5° grid cell, 13 alternative twenty-first century time series of regional annual (or if required seasonal) temperature were thus available, each one expressed as the running 30-year mean temperature increase since 1961–1990 mean climate, to smooth inter-annual variability.

For each study in Table 1 of type b or c, the location was then related to a grid cell or to grid cells depending on how large an area the study covered. For each grid cell, all 13 upscaling calculations were carried out, to encompass the full range of inter-GCM and inter-scenario pattern variability as an uncertainty surrogate. The upscaling calculation was simply performed by examining any one of the 13 time series for a grid cell. A computer program calculated the date at which the regional temperature reached the temperature threshold which is referred to in the study of type b or c and therein associated with some particular impact on an ecological system. The program then used this derived date to identify the associated global temperature rise ΔT_g in the transient GCM runs, matching this same date, using if available the global temperature time series from the exact same GCM scenario as

Table 2 Projected impacts of climate change on various ecological systems and species as reported in the literature for different levels of global mean annual temperature rise ΔT_g, relative to pre-industrial climate (mean and range), showing also regional temperature change ΔT_{reg} relative to 1990 if provided by the literature: range losses for species, habitats or whole ecosystems

No.	ΔT_g above pre-ind °C	ΔT_g (range)	ΔT_{reg} above 1990 °C (range)	Impacts to unique or widespread ecosystems or population systems	Region	Taxa	Source
1	1.3	1.1–1.6	1	8% loss freshwater fish habitat, 15% loss in Rocky Mountains, 9% loss of salmon	N America	Fish	13
2	1.6			Bioclimatic envelopes eventually exceeded leading to 10% transformation of global ecosystems; loss of 47% wooded tundra, 23% cool conifer forest, 21% scrubland, 15% grassland/steppe, 14% savannah, 13% tundra and 12% temperate deciduous forest. Ecosystems variously lose 2–47% areal extent	Globe		6
3	1.6	1.1–2.1	1	Suitable climates for 25% of eucalypts exceeded	Australia	Plants	12
4	1.7	1.3–2.4	2	16% freshwater fish habitat loss, 28% loss in Rocky Mountains, 18% loss of salmon	N America	Fish	13
5	1.8			Mean latitude of range of *Aloe dichotoma* shifts S by 1.1° of latitude causing range loss	Namibia	Plants	68
6	<1.9	<1.6–2.4	<1	Range loss begins for Golden Bowerbird	Australia	Birds	4
7	1.9	1.6–2.4	1	Range loss of 40–60% for Golden Bowerbird	Australia	Birds	4
8	2.1			Without dispersal 17 common European deciduous trees variously lose 1–100% of their range (2 sp. lose 100%); whilst full dispersal could reduce this to 11 losing between 1–99% (2 sp. lose 99%) and 6 increasing their range by 42–303%	Europe	Plants	67
9	2.3	1.6–3.2	3	24% loss freshwater fish habitat, 40% loss in Rocky Mountains, 27% loss of salmon	N America	Fish	13
10	2.4			63 of 165 rivers studied lose >10% of their fish species	Globe	Fish	19
11	2.5	1.9–4.3		42% of UK land area with bioclimate unlike any currently found there; in Hampshire, declines in climate suitability space for curlew and hawfinch and gain for yellow-necked mouse; loss of montane habitat in Scotland; potential bracken invasion of Snowdonia montane areas	UK, Europe	Birds, mammals, plants	57
12	2.5			20–70% loss (mean 44%) of coastal bird habitat at 4 sites	USA	Birds	29

13	2.5	1.9–3.5		20% loss of coastal migratory bird habitat	Delaware, USA	Birds	36	
14	2.7			32–70% of 111 European mammals studied lose >30% of current distribution whilst 24–35% undergo range expansions	Europe	Mammals	71	
15	2.7			Bioclimatic envelopes exceeded leading to eventual transformation of 16% of global ecosystems: loss of 58% wooded tundra, 31% cool conifer forest, 25% scrubland, 20% grassland/steppe, 21% tundra, 21% temperate deciduous forest, 19% savanna. Ecosystems variously lose 5–66% of their areal extent	Globe		6	
16	2.8	2.3–4.6	2.1–2.5	Cloud forest regions lose hundreds of metres of elevational extent, potential extinctions ΔT_{reg} 2.1°C for C America and ΔT_{reg} 2.5°C for Africa	C. America, Tropical Africa, Indonesia		17	
17	2.8	2.1–3.1	3	Eventual loss of 9–62% of the mammal species from Great Basin montane areas	USA	Mammals	32	
18	2.8			Most European bird distributions are reduced in area by 81% and displaced from 38–53% of their present location; 25% have ranges reduced by > = 90%. Avian species richness reduced by 9–60% depending on dispersal assumptions	Europe	Birds	65	
19	2.8	1.9–3.8	3	38–54% loss of waterfowl habitat in prairie pothole region	USA	Birds	37, 38	
20	2.9		3.2–6.6	50% loss existing tundra offset by only 5% eventual gain; millions of Arctic nesting shorebirds species variously lose up to 5–57% of breeding area; high Arctic species most at risk; geese species variously lose 5–56% of breeding area	Arctic	Birds	14	
21	2.9			Lat. of N forest limits shifts N by 0.5° latitude in W Europe, 1.5° in Alaska, 2.5° in Chukotka and 4° in Greenland	Arctic	Plants	40	
22	2.9			Substantial loss of boreal forest	China	Plants	15	
23	3.0			66 of 165 rivers studied lose >10% of their fish species	Globe	Fish	19	

Table 2 (continued)

No.	ΔT_g above pre-ind °C	ΔT_g (range)	ΔT_{reg} above 1990 °C (range)	Impacts to unique or widespread ecosystems or population systems	Region	Taxa	Source
24	2.4–4.0			431 bird species lose on average 76–89% of their present range, with new potential ranges overlapping original ones by 31–47% so that species richness declines locally by a mean of 9–56% depending on dispersal assumptions	Europe	Birds	73
25	3.3	2.3–3.9	2.6–2.9	Substantial loss of alpine zone, and its assoc. flora and fauna (e.g., alpine sky lily, and mountain pygmy possum)	Australia	Plants, marsupials	45
26	3.4			6–22% loss of coastal wetlands; large loss migratory bird habitat particularly in USA, Baltic and Mediterranean	Globe	Birds	35, 36
27	3.5	2.3–4.1	2.5–3.5	Loss of temperate forest wintering habitat of Monarch butterfly	Mexico	Insects	28
28	3.6	2.6–4.3	3	Bioclimatic limits of 50% of eucalypts exceeded	Australia	Plants	12
29	3.6	3.0–3.9		Parts of the USA lose 30–57% neotropical migratory bird species richness	USA	Birds	43
30	3.7			Bioclimatic envelopes exceeded leading to eventual transformation of 22% of global ecosystems; loss of 68% wooded tundra, 44% cool conifer forest, 34% scrubland, 28% grassland/steppe, 27% savannah, 38% tundra and 26% temperate deciduous forest. Ecosystems variously lose 7–74% areal extent	Globe		6
31	3.7	2.6–4.8	3	Up to 60% loss in upland stream macro-invertebrate abundance; local extinction of 4 taxa; 25% of mean species richness at risk of local extinction	UK	Invertebrates	62

32	4.0		3.3	47–78% of 111 European mammals studied lose >30% of current distribution whilst 13–33% undergo range expansions	Europe	Mammals	71
33	>>4.0		5	Bioclimatic limits of 73% of eucalypts exceeded	Australia	Plants	12
34	4.9			Without dispersal 17 common European deciduous tree species variously lose 15–100% of their range; full instantaneous dispersal could reduce this to 11 losing between 13% and 100% and 6 increasing their range by 3–320%	Europe	Plants	67
35	5.0			92–97% of 100 *Banksia* species studied experience range contraction, 9% expand	W Australia	Plants	74
36	5.2			62–100% loss of bird habitat at 4 major coastal sites	USA	Birds	29

A novel climate is a climate which is significantly different from the present climate whilst a disappearing climate is a climate that disappears from a given area, for example on a mountaintop or a coastline where geography prevents a species from tracking the changing climate. For further details see Williams et al. (2007)
Sources: 1—Thomas et al. (2004a), 2—Hoegh-Guldberg (1999), 4—Hilbert et al. (2004), 5—Rutherford et al. (2000), 6—Leemans and Eickhout (2004), 7—Williams et al. (2003), 8—Theurillat and Guisan (2001), 9—Sheppard (2003), 10—Eliot et al. (1999), 11—Symon et al. (2005), 12—Hughes et al. (1996), 13—Preston (2006), 14—Zöckler and Lysenko (2000), 15—Ni (2001), 16—Bakkenes et al. (2002), 17—Still et al. (1999), 18—Benning et al. (2002), 19—Xenopoulos et al. (2005), 20—European Climate Forum (2004), 21—Cox et al. (2004), 22—Thuiller et al. (2005), 23—Thuiller et al. (2006), 24—Midgley et al. (2002), 25—Hannah et al. (2002), 26—Peterson et al. (2002), 27—Erasmus et al. (2002), 28—Villers-Ruiz and Trejo-Vazquez (1998), 29—Galbraith et al. (2002), 30—Beaumont and Hughes (2002), 31—Kerr and Packer (1998), 32—McDonald and Brown (1992), 33—Halloy and Mark (2003), 34—Moriondo et al. (2006), 35—Nicholls et al. (1999), 36—Najjar (2000), 37—Sorenson et al. (1998), 38—Johnson et al. (2005), 39—Broennimann et al. (2006), 40—Kaplan et al. (2003), 41—Theurillat et al. (1998), 42—Forcada et al. (2006), 43—Price and Root (2005), 44—Siqueira and Peterson (2003), 45—Pickering et al. (2004), 46—Scholze et al. (2006), 47—Raven et al. (2005), 48—Cox et al. (2000), 49—Orr et al. (2005), 50—Malcolm et al. (2006), 51—Peck et al. (2004), 52—Pounds et al. (2006), 53—Arzel et al. (2006), 54—Bosch et al. (2006), 57—Berry et al. (2005), 58—Lucht et al. (2006), 59—Schaphoff et al. (2006), 60—McClean et al. (2005), 61—Williams et al. (2007), 62—Durance and Ormerod (2007), 63—Hawkes et al. (2007), 64—van Vuuren et al. (2006), 65—Huntley et al. (2006), 66—Lensing and Wise (2007), 67—Ohlemüller et al. (2006), 68—Foden et al. (2007), 69—Cramer et al. (2001), 70—Sekercioglu et al. (2008), 71—Levinsky et al. (2007), 72—Memmott et al. (2007), 73—Huntley et al. (2008), 74—Fitzpatrick et al. (2008)

Table 3 Projected impacts of climate change on various ecological systems and species as reported in the literature for different levels of global mean annual temperature rise ΔT_g, relative to pre-industrial climate (mean and range), showing also regional temperature change ΔT_{reg} relative to 1990 if provided by the literature: extinction risks

No.	ΔT_g above pre-ind °C	ΔT_g above pre-ind °C (range)	ΔT_{reg} above 1990 °C (range)	Impacts to unique or widespread ecosystems or population systems	Region	Taxa	Source
37	0.6			Amphibian extinctions/extinction risks on mountains due to climate-change induced disease outbreaks	Costa Rica, Spain, Australia	Amphibians	52, 54
38	1.6	1.2–2.0	0.7–1.5	9–31% (mean 18%) of species committed to extinction	Globe (20% terrestrial surface)	Plants, vertebrates and insects	1
39[a]	1.6			23–25% of bird species at risk of extinction, and 1–2% projected extinct	Western Hemisphere	Birds	70
40	1.7	1.2–2.6		38–45% of the plants in the Cerrado committed to extinction	Brazil	Plants	1, 44
41	1.7	1.3–3		2–18% of the mammals, 2–8% of the birds and 1–11% of the butterflies committed to extinction	Mexico	Mammals, birds, insects	1, 26
42	1.75	1.5–2.0		2–4% loss of global vascular plant diversity	Globe	Plants	64
43	1.9	1.6–2.4	1	7–14% of reptiles, 8–18% of frogs, 7–10% of birds, and 10–15% of mammals committed to extinction as 47% of appropriate habitat in Queensland lost	Australia	Reptiles, amphibians, birds, mammals	1, 7
44	2.1			41–51% loss in plant endemic species richness	S Africa, Namibia	Plants	39
45	2.1		1.4–2.6	13–23% of butterflies committed to extinction	Australia	Insects	1, 30
46	2.1	1.4–2.6		Bioclimatic envelopes of 2–10% plants exceeded leading to endangerment or extinction; mean species turnover of 48% (spatial range 17–75%); mean species loss of 27% (spatial range 1–68%)	Europe	Plants	22

				3–16% of plants committed to extinction	Europe	Plants	1	
48	2.2		1.6–1.8	15–37% (mean 24%) of species committed to extinction	Globe (20% terrestrial surface)	Plants, vertebrates and insects	1	
49	2.2	1.7–3.2		8–12% of 277 medium/large mammals in 141 national parks critically endangered or extinct; 22–25% endangered	Africa	Mammals	23	
50	2.3	1.5–2.7	2°C SST	Loss of Antarctic bivalves and limpets	Southern Ocean	Molluscs	51	
51	2.3	1.5–2.7	2.5–3.0	Extinctions (100% potential range loss) of 10% endemics; 51–65% loss of Fynbos; including 21–40% of *Proteaceae* committed to extinction; Succulent Karoo area reduced by 80%, threatening 2800 plant species with extinction; 5 parks lose >40% of plant species	S Africa	Plants	1, 5, 24, 25	
52	2.3	2.3–4.0	2.5–3.0	24–59% of mammals, 28–40% of birds, 13–70% of butterflies, 18–80% of other invertebrates, 21–45% of reptiles committed to extinction; 66% of animal species potentially lost from Kruger National Park	S Africa	Mammals, birds, reptiles, insects, other invertebrates	1, 27	
53	2.3	2.2–4.0		2–20% of mammals, 3–8% of birds and 3–15% of butterflies committed to extinction	Mexico	Mammals, birds, insects	1, 26	
54	2.3	1.6–3.2		48–57% of Cerrado plants committed to extinction	Brazil	Plants	1	
55[a]	2.3			27–28% of bird species at risk of extinction, and 2–3% projected extinct	Western Hemisphere	Birds	70	
56	2.3			Changes in ecosystem composition, 32% of plants move from 44% of area with potential extinction of endemics	Europe		16	

Table 3 (continued)

No.	ΔT_g above pre-ind °C	ΔT_g above pre-ind °C (range)	ΔT_{reg} above 1990 °C (range)	Impacts to unique or widespread ecosystems or population systems	Region	Taxa	Source
57	2.4			Bioclimatic range of 25–57% (full dispersal) or 34–76% (no dispersal) of 5,197 plant species exceeded leading to extinction risks	Subsaharan Africa		60
58	2.5		2°C SST	Functional extinction of coral reef ecosystems (overgrown by algae)	Indian Ocean	Corals, fish	9
59	2.6			4–21% of plants committed to extinction	Europe	Plants	1
60	2.7			1–6 rodent species (1–5% of 111 mammals studied) committed to extinction	Europe	Mammals	71
61	2.8	2.5–3.0		Multimodel mean 62% (range 40–100%) loss Arctic summer ice extent, high risk of extinction of polar bears, walrus, seals; Arctic ecosystem stressed	Arctic	Mammals	11, 53
62	2.8			65 species at increased risk of extinction with high risk for endemic Scottish Crossbill, Imperial Eagle and Marmora's warbler	Europe	Birds	65
63	2.9		2.1–3.9	21–36% of butterflies committed to extinction; >50% range loss for 83% of 24 lat. restricted species	Australia	Insects	1, 30
64	2.9	2.6–3.3	2.1–2.8	21–52% (mean 35%) of species committed to extinction	Globe (20% terrestrial surface)	Plants, vertebrates and insects	1
65	3.1	2.3–3.7	2°C SST	Functional extinction of remaining coral reef ecosystems (overgrown by algae)	Globe	Corals, fish	2
66	3.1	2.5–4.0	2	High risk of extinction of Golden Bowerbird as habitat reduced by 90%	Australia	Birds	4

67	3.1	1.8–4.2	3–4	Risk of extinction of Alpine species	Europe	Plants	41	
68	2.4–4.0			Of 40 endemic/near endemic species studied, 5–8 are threatened with extinction losing 90–100% of their original range	Europe	Birds	73	
69	3.3	2.8–3.8	2	Risk of extinction of Hawaiian honeycreepers as suitable habitat reduced by 62–89%	Hawaii	Birds	18	
70	3.3		3.7	4–38% of birds committed to extinction	Europe	Birds	1	
71[a]	3.3			32–34% of bird species at risk of extinction, and 6–8% projected extinct	Western Hemisphere	Birds	70	
72	3.5	2.0–5.5		Projected extinction of 15–40% endemic species in global biodiversity hotspots (narrow specificity)	Globe		50	
73	3.6	2.6–3.7		30–40% of 277 mammals in 141 parks critically endangered/extinct; 15–20% endangered	Africa	Mammals	23	
74	3.9			4–24% plants critically endangered/extinct; mean species turnover of 63% (spatial range 22–90%); mean species loss of 42% (spatial range 2.5–86%)	Europe	Plants	22	
75	4.0	3.0–5.1	3	Likely extinctions of 200–300 species (32–63%) of alpine flora	New Zealand	Plants	33	
76	4.0			1–10 species (1–9.% of 111 mammals studied) committed to extinction	Europe	Mammals	71	
77	>4.0		3.5	38–67% of frogs, 48–80% of mammals, 43–64% of reptiles and 49–72% of birds committed to extinction in Queensland as 85–90% of suitable habitat lost	Australia	Reptiles, amphibians, birds, mammals	1, 7	
78[a]	4.5			39–42% of bird species at risk of extinction, and 10–15% projected extinct	Western Hemisphere	Birds	70	
79	>>4.0		5	57 endemic frogs/mammals eventually extinct, 8 endangered	Australia	Amphibians, mammals	7	

Table 3 (continued)

No.	ΔT_g above pre-ind °C	ΔT_g above pre-ind °C (range)	ΔT_{reg} above 1990 °C (range)	Impacts to unique or widespread ecosystems or population systems	Region	Taxa	Source
80	>=4.0		7	Eventual total extinction of all endemic species of Queensland rainforest	Australia	Reptiles, amphibians, birds, mammals	7
81	5.0			22–24% of 100 *Banksia* species studied projected extinct	W. Australia	Plants	74
82[a]	6.9			50–57% of bird species at risk of extinction, and 19–30% projected extinct	Western Hemisphere	Birds	70

A novel climate is a climate which is significantly different from the present climate whilst a disappearing climate is a climate that disappears from a given area, for example on a mountaintop or a coastline where geography prevents a species from tracking the changing climate. For further details see Williams et al. (2007)

Sources: 1—Thomas et al. (2004a), 2—Hoegh-Guldberg (1999), 4—Hilbert et al. (2004), 5—Rutherford et al. (2000), 6—Leemans and Eickhout (2004), 7—Williams et al. (2003), 8—Theurillat and Guisan (2001), 9—Sheppard (2003), 10—Eliot et al. (1999), 11—Symon et al. (2005), 12—Hughes et al. (1996), 13—Preston (2006), 14—Zöckler and Lysenko (2000), 15—Ni (2001), 16—Bakkenes et al. (2002), 17—Still et al. (1999), 18—Benning et al. (2002), 19—Xenopoulos et al. (2005), 20—European Climate Forum (2004), 21—Cox et al. (2004), 22—Thuiller et al. (2005), 23—Thuiller et al. (2006), 24—Midgley et al. (2002), 25—Hannah et al. (2002), 26—Peterson et al. (2002), 27—Erasmus et al. (2002), 28—Villers-Ruiz and Trejo-Vazquez (1998), 29—Galbraith et al. (2002), 30—Beaumont and Hughes (2002), 31—Kerr and Packer (1998), 32—McDonald and Brown (1992), 33—Halloy and Mark (2003), 34—Moriondo et al. (2006), 35—Nicholls et al. (1999), 36—Najjar (2000), 37—Sorenson et al. (1998), 38—Johnson et al. (2005), 39—Broennimann et al. (2006), 40—Kaplan et al. (2003), 41—Theurillat et al. (1998), 42—Forcada et al. (2006), 43—Price and Root (2005), 44—Siqueira and Peterson (2003), 45—Pickering et al. (2004), 46—Scholze et al. (2006), 47—Raven et al. (2005), 48—Cox et al. (2000), 49—Orr et al. (2005), 50—Malcolm et al. (2006), 51—Peck et al. (2004), 52—Pounds et al. (2006), 53—Arzel et al. (2006), 54—Bosch et al. (2006), 57—Berry et al. (2005), 58—Lucht et al. (2006), 59—Schaphoff et al. (2006), 60—McClean et al. (2005), 61—Williams et al. (2007), 62—Durance and Ormerod (2007), 63—Hawkes et al. (2007), 64—van Vuuren et al. (2006), 65—Huntley et al. (2006), 66—Lensing and Wise (2007), 67—Ohlemüller et al. (2006), 68—Foden et al. (2007), 69—Cramer et al. (2001), 70—Sekercioglu et al. (2008), 71—Levinsky et al. (2007), 72—Memmott et al. (2007), 73—Huntley et al. (2008), 74—Fitzpatrick et al. (2008)

[a]Uniquely in this table, these five entries originate from a study which considers impacts by 2100 through a combination of climate change and land use change

Table 4 Projected impacts of climate change on various ecological systems and species as reported in the literature for different levels of global mean annual temperature rise ΔT_g, relative to pre-industrial climate (mean and range), showing also regional temperature change ΔT_{reg} relative to 1990 if provided by the literature: large-scale ecosystem collapse

No.	ΔT_g above pre-ind °C	ΔT_g above pre-ind °C (range)	ΔT_{reg} above 1990 °C (range)	Impacts to unique or widespread ecosystems or population systems	Region	Taxa	Source
83	2.5		2°C SST	Functional extinction of coral reef ecosystems (overgrown by algae)	Indian Ocean	Corals, fish	9
84	2.5	2.0–3.0		Major loss of Amazon rainforest with large losses of biodiversity	S America, Globe		21, 46
85	>2.5			Sink service of terrestrial biosphere saturates and begins turning into a net carbon source	Globe	Land ecosystems	58, 59
86	3.1	2.3–3.7	2°C SST	Functional extinction of remaining coral reef ecosystems (overgrown by algae)	Globe	Corals, fish	2
87	3.7			Few ecosystems can adapt	Globe		6
88	3.7			50% of nature reserves cannot fulfil conservation objectives	Globe		6

A novel climate is a climate which is significantly different from the present climate whilst a disappearing climate is a climate that disappears from a given area, for example on a mountaintop or a coastline where geography prevents a species from tracking the changing climate. For further details see Williams et al. (2007)
Sources: 1—Thomas et al. (2004a), 2—Hoegh-Guldberg (1999), 4—Hilbert et al. (2004), 5—Rutherford et al. (2000), 6—Leemans and Eickhout (2004), 7—Williams et al. (2003), 8—Theurillat and Guisan (2001), 9—Sheppard (2003), 10—Eliot et al. (1999), 11—Symon et al. (2005), 12—Hughes et al. (1996), 13—Preston (2006), 14—Zöckler and Lysenko (2000), 15—Ni (2001), 16—Bakkenes et al. (2002), 17—Still et al. (1999), 18—Benning et al. (2002), 19—Xenopoulos et al. (2005), 20—European Climate Forum (2004), 21—Cox et al. (2004), 22—Thuiller et al. (2005), 23—Thuiller et al. (2006), 24—Midgley et al. (2002), 25—Hannah et al. (2002), 26—Peterson et al. (2002), 27—Erasmus et al. (2002), 28—Villers-Ruiz and Trejo-Vazquez (1998), 29—Galbraith et al. (2002), 30—Beaumont and Hughes (2002), 31—Kerr and Packer (1998), 32—McDonald and Brown (1992), 33—Halloy and Mark (2003), 34—Moriondo et al. (2006), 35—Nicholls et al. (1999), 36—Najjar (2000), 37—Sorenson et al. (1998), 38—Johnson et al. (2005), 39—Broennimann et al. (2006), 40—Kaplan et al. (2003), 41—Theurillat et al. (1998), 42—Forcada et al. (2006), 43—Price and Root (2005), 44—Siqueira and Peterson (2003), 45—Pickering et al. (2004), 46—Scholze et al. (2006), 47—Raven et al. (2005), 48—Cox et al. (2000), 49—Orr et al. (2005), 50—Malcolm et al. (2006), 51—Peck et al. (2004), 52—Pounds et al. (2006), 53—Arzel et al. (2006), 54—Bosch et al. (2006), 57—Berry et al. (2005), 58—Lucht et al. (2006), 59—Schaphoff et al. (2006), 60—McClean et al. (2005), 61—Williams et al. (2007), 62—Durance and Ormerod (2007), 63—Hawkes et al. (2007), 64—van Vuuren et al. (2006), 65—Huntley et al. (2006), 66—Lensing and Wise (2007), 67—Ohlemüller et al. (2006), 68—Foden et al. (2007), 69—Cramer et al. (2001), 70—Sekercioglu et al. (2008), 71—Levinsky et al. (2007), 72—Memmott et al. (2007), 73—Huntley et al. (2008), 74—Fitzpatrick et al. (2008)

Table 5 Projected impacts of climate change on various ecological systems and species as reported in the literature for different levels of global mean annual temperature rise ΔT_g, relative to pre-industrial climate (mean and range), showing also regional temperature change ΔT_{reg} relative to 1990 if provided by the literature: miscellaneous impacts

No.	ΔT_g above pre-ind °C	ΔT_g above pre-ind °C (range)	ΔT_{reg} above 1990 °C (range)	Impacts to unique or widespread ecosystems or population systems	Region	Taxa	Source
89	0.6			Increased coral bleaching	Caribbean, Indian Ocean, Great Barrier Reef	Corals	2
90	<1			Marine ecosystems affected by continued reductions in krill possibly impacting Adelie and chinstrap penguin populations; Arctic ecosystems increasingly damaged	Antarctica, Arctic	Crustaceans	42, 11, 14
91	1.7	1–2.3	1°C SST	All coral reefs bleached	Great Barrier Reef, SE Asia, Caribbean	Corals	2
92	1.9	1.0–2.8		Most areas experience 8–20% increase in number ≥7 day periods with Forest Fire Weather Index > 45: increased fire frequency converts forest and Macquis to scrub, leads to more pest outbreaks	Mediterranean		34
93	2.0	1.3–2.3	1	21% decline in spring macro-invertebrate abundance in upland streams	UK	Invertebrates	62
94	2.1	1.0–3.2	1–2	Alpine systems in Alps can tolerate local temperature rise of 1–2°C, tolerance likely negated by land use change	Europe		8
95	2.2	–		Net primary production rises from 45–60 (pre-industrial) to 60–75 Pg C/year; net ecosystem production from zero (pre-industrial) to 2.5–7.5 Pg C/year	Globe		69
96	2.3	2.0–2.5		Fish populations decline, wetland ecosystems dry and disappear	Malawi (Africa), Great Lakes	Fish	20
97	2.4	2.0–3.5		4–20% of the earth's terrestrial surface experiences novel climate; 4–20% experiences disappearing climate	Globe		61
98	2.4	1.8–3.2	3	Extreme levels of mortality in loggerhead sea turtle	Southern US	Reptiles	63
99	2.6	1.6–3.5		Most areas experience 20–34% increase in number ≥7 day periods with Forest Fire Weather Index > 45: increased fire frequency converts forest and Macquis to scrub, causes more pest outbreaks	Mediterranean		34

100	2.8	1.2–4.5	1–3	Extensive loss/conversion of habitat in Kakadu wetland due to sea level rise and saltwater intrusion	Australia		10
101	2.8	2.5–3.0		Multimodel mean 62% (range 40–100%) loss Arctic summer ice extent, high risk of extinction of polar bears, walrus, seals; Arctic ecosystem stressed	Arctic	Mammals	11, 53
102	2.9	1.6–4.1		Threat of marine ecosystem disruption through loss of aragonitic pteropods	S Ocean	Crustaceans	49
103	2.9	1.6–4.1		70% reduction in deep-sea cold-water aragonitic corals	Ocean Basins	Corals	48
104	3.0			In a study of 1420 pollinator species feeding on 429 plant species, 17–50% experience disruption in food supply	Illinois, USA	Plants, insects	72
105	3.1	1.9–4.1	3–4	Alpine systems in Alps degraded	Europe		8
106	3.2	–		Net primary production rises from 45–60 (pre-industrial) to 72–93 Pg C/year; net ecosystem production from zero (pre-industrial) to 0–7 Pg C/year	Globe		69
107	3.3	2.0–4.5		Reduced growth in warm water aragonitic corals by 20–60%; 5% decrease in global phytoplankton productivity	Globe	Corals	2, 47, 48
108	4.0	2.5–4.5		12–39% earth's surface experiencing novel climate; 10–48% disappearing climate	Globe		61

A novel climate is a climate which is significantly different from the present climate whilst a disappearing climate is a climate that disappears from a given area, for example on a mountaintop or a coastline where geography prevents a species from tracking the changing climate. For further details see Williams et al. (2007)
Sources: 1—Thomas et al. (2004a), 2—Hoegh-Guldberg (1999), 4—Hilbert et al. (2004), 5—Rutherford et al. (2000), 6—Leemans and Eickhout (2004), 7—Williams et al. (2003), 8—Theurillat and Guisan (2001), 9—Sheppard (2003), 10—Eliot et al. (1999), 11—Symon et al. (2005), 12—Hughes et al. (1996), 13—Preston (2006), 14—Zöckler and Lysenko (2000), 15—Ni (2001), 16—Bakkenes et al. (2002), 17—Still et al. (1999), 18—Benning et al. (2002), 19—Xenopoulos et al. (2005), 20—European Climate Forum (2004), 21—Cox et al. (2004), 22—Thuiller et al. (2005), 23—Thuiller et al. (2006), 24—Midgley et al. (2002), 25—Hannah et al. (2002), 26—Peterson et al. (2002), 27—Erasmus et al. (2002), 28—Villers-Ruiz and Trejo-Vazquez (1998), 29—Galbraith et al. (2002), 30—Beaumont and Hughes (2002), 31—Kerr and Packer (1998), 32—McDonald and Brown (1992), 33—Halloy and Mark (2003), 34—Moriondo et al. (2006), 35—Nicholls et al. (1999), 36—Najjar (2000), 37—Sorenson et al. (1998), 38—Johnson et al. (2005), 39—Broennimann et al. (2006), 40—Kaplan et al. (2003), 41—Theurillat et al. (1998), 42—Forcada et al. (2006), 43—Price and Root (2005), 44—Siqueira and Peterson (2003), 45—Pickering et al. (2004), 46—Scholze et al. (2006), 47—Raven et al. (2005), 48—Cox et al. (2000), 49—Orr et al. (2005), 50—Malcolm et al. (2006), 51—Peck et al. (2004), 52—Pounds et al. (2006), 53—Arzel et al. (2006), 54—Bosch et al. (2006), 57—Berry et al. (2005), 58—Lucht et al. (2006), 59—Schaphoff et al. (2006), 60—McClean et al. (2005), 61—Williams et al. (2007), 62—Durance and Ormerod (2007), 63—Hawkes et al. (2007), 64—van Vuuren et al. (2006), 65—Huntley et al. (2006), 66—Lensing and Wise (2007), 67—Ohlemüller et al. (2006), 68—Foden et al. (2007), 69—Cramer et al. (2001), 70—Sekercioglu et al. (2008), 71—Levinsky et al. (2007), 72—Memmott et al. (2007), 73—Huntley et al. (2008), 74—Fitzpatrick et al. (2008)

used originally by the study to assess the impact. The process was repeated (1) for the other 12 GCM/emission scenarios and (2) for eight surrounding adjacent grid cells to test the sensitivity of the results in terms of spatial coherence when using a group of grid cells versus a single grid cell. For each GCM scenario, the average ΔT for the nine (central plus eight adjacent) grid cells was computed. The resultant collection of up to 13 global ΔT values gave the range of global annual mean temperature rise as listed in Tables 2, 3, 4 and 5. In cases where a study has referred to an area larger than a group of nine grid cells, either a cluster of disjunct groups or contiguous orographic features, such as a mountain range or a plain, were aggregated into several clusters of grid cell groups across the region. The entries in the tables reflect also the average and range of outputs over the appropriate clusters of groups of grid cells.

Large local temperature increases can lie outside the range of the outputs of the GCMs held in the database. If this was the case, the study was not included in the upscaling calculations. GCMs with temperature changes that were too low to reach the study value(s) were excluded. Table 6 in the Appendix details which GCMs were used in the upscaling. If more than two GCMs were thus out of range, we assumed case f (Table 1) to avoid underestimating ΔT_g. Note that the GCM time series for ΔT_g are provided with respect to an observed mean over the period 1961–1990, ensuring that correct temperature reference points were maintained in all upscaling.

3 Results

Tables 2, 3, 4 and 5 provide the resultant summary of key impacts on various ecological systems, ranging from the global level to that of individual, endemic species. The supplementary information in Table 6 in the Appendix provides for each entry from Table 2a–d information on the GCM runs used in upscaling, the climate variables considered by the impact study, and the category of the upscaling method we applied (a–h, see Table 1). 71 studies were found to provide sufficient quantitative climatic and ecological information for inclusion in Table 2a–d. Projected impacts were found for all major world regions, but only one study focused on Asia. Most studies were on terrestrial systems, whilst relatively few covered changes in the marine environment. Range losses and extinctions (Tables 2 and 3) were projected for many important taxa with vascular plants, birds, and mammals being particularly well represented. A significant number of studies also projected impacts on amphibians, reptiles, fish, butterflies, and freshwater or marine invertebrates. Table 2 also shows many projections for major losses of regional ecosystems as climate changes. Table 4 shows projections for large scale collapse in ecosystems, i.e. thresholds at which major components of the world's ecosystems become irreversibly damaged, positive feedbacks emerge, or their functioning, collapse. As global temperatures rise, many of these thresholds start to be crossed at around $\Delta T_g = 2.5°C$ above the pre-industrial level.

A key finding is that some significant negative impacts for range losses and extinctions (Tables 2 and 3), and also damages to marine ecosystems (Table 4), were projected to occur for values of ΔT_g below 2°C, especially in some biodiversity hotspots, and also globally for the diversity rich coral reef ecosystems ($\Delta T_g = 1.7°C$). However, it is also noticeable that, given the analyzed literature, projected impacts

increase in magnitude, numbers and geographic spread once a 2°C rise in global mean temperature is reached. Beyond this temperature rise the level of impacts and the transformation of the Earth's ecosystems become steadily more severe, with the potential collapse of some entire ecosystems, and extinction risks accelerating and becoming widespread. Additional positive feed-backs emerge causing land ecosystems to transition from their current status as a net carbon sink to a net carbon source.

4 Discussion

4.1 General

A large body of literature exists discussing the potential future impacts of climate change upon ecosystems, as reviewed in Fischlin et al. (2007). Much of this literature does contain only qualitative or no directly comparable quantitative projections of change or does not relate any quantitative estimates of change to quantitative changes in global climate. Previous integrating summaries of climate change impacts on wild species and ecosystems have suggested substantial ecosystem disruption with projected anthropogenic climate changes, and particularly the increased risk of species extinction (e.g. Thomas et al. 2004a, b). Such findings have been criticised partly because they did not reference the projected impacts to a consistent measure of climate change. In order to provide robust findings in a policy relevant manner, it is critical to reduce the uncertainty created by this lack of a common reference. Hence Warren (2006) and Hare (2006) both took steps to do so. The results reported here, through use of a common temperature reference point, confirm the likelihood of significant negative impacts of climate change first mooted in studies such as Thomas et al. (2004a, b), but provide a far clearer picture of the likely increase in scale of impacts with increasing levels of climate change, together with an indication of uncertainty associated with ΔT_g.

With our common referencing system, we can also address the question as to what extent the literature has sampled the range of climate change forcings of the next few centuries adequately for the observations made by this study to be valid. The likely range of temperature increase in 2100 is 1.1°C to 6.4°C above the 1980–1999 average (i.e. 1.6°C to 6.9°C above the pre-industrial level), showing that the literature currently does not sample the upper end of this range, with most studies considering only the range between 1.5°C and 4°C above pre-industrial). Within these limits however, a broad range of global annual mean temperature rises is sampled, owing to the many different scenarios and GCMs used. This is the case for those studies that are based on GCM scenario outputs as well as the many other regional scenarios based only upon potential local, non-GCM-scenario based climate changes. A small subset of the studies considers the effects of doubling CO_2 concentrations, whilst another subset is based on transient climate change simulations. Because different GCMs are used in these subsets, the resultant global mean temperature, and concomitantly precipitation, values vary considerably among climate models, in particular in cases where regional scenarios of climate change were derived. We believe the small subset of table entries referring only to CO_2 concentration doubling has not introduced a bias. Owing to a sampling of a relatively comprehensive temperature

range similar to that covered by many scenarios (0.3–6.4°C, IPCC 2007), the overall interpretation of the results is not biased by any artificial clustering of data around a particular global mean temperature rise.

The majority of the impacts found in the literature are negative, with the exception of those projecting increases in primary production. Whilst a higher productivity may indeed increase vegetation growth, this in itself can disrupt species assemblages and thereby degrade ecosystems. For example, in tropical forests increased concentrations of CO_2 are stimulating rapid growth by vines (Granados and Körner 2002), which can strangle large trees (Phillips et al. 2002); and increasing growth rate and turnover of trees could even result in lower carbon storage rates, thus reducing the forest's service as a carbon sink (Feeley et al. 2007). Hence, with the exception of enhanced growth at moderate climate change we have rarely identified definitively positive impacts of climate change upon ecosystems. Whilst some authors consider transitions from desert to grassland or grassland to forest as "positive" in terms of gains in net primary production, this often neglects the issue of transient dynamics between previous and new equilibrium, and threats to endemic and specialist organisms of the replaced environments. Some studies indicate transitionally an even lower productivity (e.g., Fischlin and Gyalistras 1997).

4.2 Uncertainties in the analysis

This study has considered the role of uncertainty only in a limited manner, as it is difficult to quantify. The uncertainty analysis carried out is limited by its dependency on downscaling and upscaling of pattern-scaled transient temperature outputs of GCMs, and thus is contingent on the assumptions of pattern regularity as assumed in most down-scaling procedures (e.g., Gyalistras et al. 1994), in particular that the patterns are constant over a particular temperature range. It is also assumed that the patterns are independent of the history of greenhouse gas forcing, whereas in actuality an equilibrium climate change pattern may differ from transient ones. Equilibrium patterns were not available for this analysis, but would be more suitable for use with studies of type b, or studies of type c or d which actually use outputs of equilibrium runs of GCMs. The uncertainty analysis also reflects only the different relationships between global and local temperature displayed by various GCMs, and not the relationship between global temperature and local precipitation changes. In some cases where impacts are strongly driven by precipitation and models differ widely for the location in question, for example entry 41, the loss of forest cover in the Amazon basin (Cox et al. 2004), this could be important.

Much of the literature reviewed here is based on a biogeographical or bioclimatic approach. Whilst this approach has been criticised for its shortcomings in largely ignoring some mechanisms such as physiological responses, the treatment of species–species interactions, the limited accounting for population processes or migration (Pearson and Dawson 2003; Pearson 2006), or the common assumption that current species distributions are in equilibrium with current climate, the approach has nevertheless proved capable of simulating known species range shifts in the distant and the recent past (Martinez-Meyer et al. 2004, Araujo et al. 2005), and furthermore, is generally corroborated by the observed responses of many species to recent climatic changes (e.g. Walther et al. 2002; Root et al. 2003; Rosenzweig et al. 2007) and climate-change induced changes in geographical species ranges, which are starting to

be reported (Thomas et al. 2006; Foden et al. 2007). However the approach remains nevertheless to be comprehensively and explicitly tested against the observational record (Midgley and Thuiller 2005), an opportunity that should be taken as soon as possible. Most of the studies reported in Tables 2 and 3 result from detailed analysis of well-studied species and ecosystems in a given locality. In the case of the global extinction rate estimates (Thomas et al. 2004a) there has been a debate as to the validity of the particular species–area relationship used to estimate extinction rates (Thuiller et al. 2004; Thomas et al. 2004b; Buckley and Roughgarden 2004; Harte et al. 2004; Lewis 2006). Whilst these estimates are based on extrapolation of studies of endemics, Thomas et al. (2004b) argue that this creates only a small bias because such a large percentage of global species are in fact endemics. The study of Malcolm et al. (2006) provides an overall estimate of extinctions of endemics in biodiversity hotspots that does not rely on bioclimatic modelling of individual species, and generally supports the findings of Thomas et al. (2004a), though the use of endemic–area relationships rather than simple species–area relationships indicates some reduced impacts.

Responses of species to changing climate will also be affected by biotic interactions, which affect the levels of space occupancy and dispersal; e.g. in alpine plant communities, mutualists are expected to be able to tolerate greater climate change than competitors at slow rates of climate change, whereas at faster rates they may be excluded by competitors if these can easily disperse into newly climatically suitable areas (Brooker et al. 2007).

4.3 Factors omitted or partly considered in this study and the underlying literature

4.3.1 Direct effects from raising atmospheric CO_2 concentrations

In Tables 2, 3, 4 and 5, the temperature column is essentially used as a proxy for the accompanying other changes, which will occur concurrently, such as precipitation change or elevated CO_2 concentrations. However, only a limited number of studies that project climate change impacts upon ecosystems consider concurrent changes such as the direct effects of elevated ambient CO_2 concentrations associated with local or global scenarios of temperature rise. This is particularly true of studies based on bioclimatic modeling, or niche-based modelling techniques that simulate species geographic range shifts. Despite increasing evidence that CO_2 fertilization effects on crop species have been somewhat overestimated in the past (Fischlin et al. 2007), those on wild plant species and particularly trees are corroborated by strong evidence (e.g., Ainsworth and Long 2005). This may remain a significant omission in the modeling of some ecosystem types. For example, CO_2 fertilization may differentially affect woody and herbaceous species, affecting the dynamics of forest–savanna–grassland conversions with major implications for biodiversity (Bond et al. 2003). Whilst a small number of entries in the tables derive from consideration of ocean acidification, the literature in this area is in its infancy. As oceans continue to acidify as atmospheric CO_2 concentrations rise concurrently with warming, there is significant potential for changes in marine food webs and hence the valuable ecosystem services that the oceans provide for humankind (Orr et al. 2005; Haugan et al. 2006).

4.3.2 Indirect effects of climate change

Tables 2, 3, 4 and 5, and the literature upon which they are based, largely document only the projected impacts on ecological systems resulting directly from climate changes such as changes in temperature and precipitation, the most commonly considered variables. However, there are a number of other impacts on ecosystems to be expected, that result from non climatic causes or indirectly via climatic changes. For example (1) wildfires and certain defoliating insects are projected to increase with warming (for example in boreal forests and the Mediterranean, e.g., Fischlin et al. 2007; Kurz et al. 2008), and decomposition rates will change by large percentages as rainfall changes (for example in deciduous forests in the USA, e.g. Lensing and Wise 2007) both of which is likely to have further impacts on forest and grassland ecosystems as well as causing substantive biotic feedbacks to the climate system; (2) secondary succession may last several centuries (Fischlin and Gyalistras 1997), thus delaying actual impacts and causing additional effects in other communities; (3) surprising ecological changes may also occur in marine and terrestrial communities with climate change if predators and prey become decoupled, or newly engage with each other, which could occur if they have differing phenological, geographical, and/or physiological responses to climate change (Price 2002; Burkett et al. 2005); (4) indirect impacts from sea ice melting, for example reductions in sea ice in the Antarctic are likely to have contributed to the dramatic 80% declines in krill observed since 1970 (Atkinson et al. 2004) with penguin populations already affected, and particularly if climate change shifts the Antarctic Circumpolar Current, krill could suffer further and the ecosystem could be severely impacted; (5) climate change is also projected to cause deglaciations, e.g. of the Himalayan region, which would adversely affect the hydrology of the downstream regions, e.g. of the Indian region including its ecosystems; (6) increases in the magnitude and/frequency of (intra-annual) extreme weather events are projected with climate change as climate variability increases (e.g. Schär et al. 2004; Meehl et al. 2007), all of which have a significant potential to affect ecosystems further (e.g. Fuhrer et al. 2006). Many impact models consider such effects only in a limited manner, e.g. because of a too coarse temporal resolution; (7) climate change may affect major modes of inter-annual cyclic variability such as El Nino, the North Atlantic Oscillation, or the Pacific Decadal Oscillation. GCMs do not capture such changes to a realistic extent and many impact models have only captured such climate variability effects to a limited extent if at all. Changes to these cycles are likely to affect ecosystems through for example, changed rainfall patterns and/or drought and fire incidence (e.g. Holmgren et al. 2001).

4.3.3 Land-use change

This meta-analysis focuses on the impacts of climate change and does not account for the effects of land-use change. More realistic impacts, notably those of species extinctions in 2100 and beyond, are likely to be greater than Tables 2, 3, 4 and 5 indicate, since land-use change is included in only one study (Sekercioglu et al. 2008), and is known to negatively impact biodiversity. These additional negative impacts from land-use change would only be avoided if effective stringent policies would soon be put into place that avoid further conversion of natural and semi-natural ecosystems to agriculture, landscape fragmentation, and/or other degradations within a

given type of land use as for instance also caused by intensification of agricultural practices. Owing to the development of human systems and their adaptation to climate change, including the potential use of biofuels as a mitigation measure, both of which may force new areas into cultivation, and the projected increases in global human populations, there are in fact rather to be expected increased pressures on extant land uses than the reverse. Some scenarios of future land uses have been developed for and reviewed in the Millennium Ecosystem Assessment (2005) and evince this overall trend.

Since land-use change is well known to be of critical relevance for biodiversity conservation, Lewis (2006) raised the concern that recent literature on potential extinctions due to climate change could distract conservationist's efforts in preventing land-use change in existing ecosystems, in particular with respect to avoiding deforestation. Jetz et al. (2008) projects losses of current ranges for 21–26% of the world's approximately 8,750 bird species by 2050, and for 29–35% by 2100, due to the combination of climate change scenarios from Solomon et al. (2007) and land-use change scenarios from the Millennium Ecosystem Assessment (MEA 2005). The need to provide for species to disperse successfully to reach areas that become newly climatically suitable increases the need for protecting existing ecosystems from land-use change. These findings suggest that avoided deforestation policies offer a crucial double benefit of reducing both climate change and land-use change impacts upon biodiversity. Thus, for these reasons we consider evidence that climate change can have severe impacts on biodiversity as presented in this analysis rather to provide an additional strong incentive for preserving existing ecosystems, including their protection from land-use changes, than an invitation to neglect conservation policies.

4.3.4 Dynamics

There are very few studies in the literature, which take into account the effect that the rate of climate change exerts upon ecosystems. This is also likely to be a key factor, since the slower the rate of change the greater is the potential for adaptation by dispersal or through natural selection for physical or behavioural characteristics better suited to a changed climate (for a recent review see Fischlin et al. 2007, notably Section 4.4.5). For very small amounts of warming there may be benefits in terms of increased productivity in ecosystems which are below their thermal optimum, for example in boreal forests. However, as temperature increases further the thermal optimum is passed, and the ecosystem begins to decline. It is the passing of such thresholds or "tipping points", the onset of negative impacts, which are the focus of the literature underlying this paper.

Some such "tipping points" are breached when a certain magnitude of climate change is reached. Regional features of the earth's climate system might also be disrupted, with concurrent un-quantified impacts upon ecosystems. For example, the Indian Monsoon might be disrupted (Zickfield et al. 2005). At the Earth system scale, as temperature continues to rise, additional positive feedback mechanisms may be activated. Examples are the saturation of the net carbon sink land ecosystems currently provide, the transition to a net source (Fischlin et al. 2007, Fig. 4.2), or the risk for the potential release of methane from tundra yedoma and permafrost (Fischlin et al. 2007) and perhaps beyond 2100 even clathrates from shallow seas. The weakening of the land sink, let alone the turning into a source, as well as a

release of substantive amounts of methane would cause a strong amplification of the greenhouse effect, greatly exacerbating the ongoing climate change.

Some such "tipping points" are breached when a certain rate of climate change surpasses the rate by which ecosystems can adapt naturally. During past phases of large climate changes, species have typically responded by shifting range rather than by evolving in situ (Davis and Shaw 2001). Ecosystems have been estimated to be able to withstand a temperature increase of only 0.05–0.1°C/decade (van Vliet and Leemans 2006), much slower than the current rate of 0.13°C/decade (Solomon et al. 2007) and hugely slower than the current rate near the poles of 0.46°C/decade, considered sufficient to cause serious ecosystem disruption. Foden et al. (2007) show how the currently observed migration rate of *Aloe dichotoma* (quiver tree), a Namib desert plant, in response to observed climate change, would be insufficient to keep pace with a moderate climate change scenario for 2050. Based on a comprehensive review of these issues Fischlin et al. (2007) concluded that "The resilience of many ecosystems is likely to be exceeded this century" for business-as-usual emissions scenarios (e.g. IS92a, A1FI, A2). Resilience is here understood as the capacity of ecosystems to adapt naturally and sufficiently fast to their changing environment without altering their mode of operation entirely.

This meta-analysis is based on impact studies that assume in many cases a new hypothetical equilibrium between the projected climate change and the impacted ecosystems. Typically the forcing climate change is then assumed to have remained constant indefinitely at the ΔT_g for which the impact was assessed and that the ecosystems are given sufficient time to adapt till the new estimated equilibrium has been reached. Most of the literature used in this analysis does not explicitly discuss the time dimension, but it can nevertheless be assumed in most cases that the ecosystem impacts in Table 5 might also occur if the temperature thresholds are breached transiently (i.e. local or regional temperature "overshoots") as simulated in various studies of the dynamics of climate change (O'Neill and Oppenheimer 2004).

Den Elzen and Meinshausen (2006) show that transient probabilities of exceeding various temperature thresholds might either be higher, or lower, than the equilibrium probabilities of exceedance of that threshold. Similarly Mastrandrea and Schneider (2006) show how probability of exceedance of temperature thresholds in stabilisation scenarios is a strong function of the pathway to stabilisation. Thus, one may argue that our assessment may indeed be questioned as the evolution of temperature and other concomitant climate change variables differ. However, the advantage of our approach is that the ranking of the impacts relative to the temperature increase as an indicator of climate change is unlikely to be affected even if the absolute values might have to be corrected as our understanding of these relationships progresses. In this respect our results can be viewed as being quite robust and conservative.

The question remains whether the impact models used have realistic sensitivities. Otherwise overestimations or underestimations of the impacts would have to be expected. The majority of the impact models we used here have considered changes in temperature as well as precipitation and many have also considered the beneficial effects from CO_2 fertilisation, in particular at the global level. This makes the models more likely to exhibit realistic responses to climate change than this was the case for many earlier studies, which followed less integrative approaches.

Nevertheless, the particular approach that many current state-of-the-art impact models follow may lead to biases. First in cases where the climate change was assumed to remain constant after having reached ΔT_g, the impact models that have

not yet reached the new equilibrium tend to underestimate the impacts. Secondly, if the magnitude of climate change exceeds rapidly certain tolerances, i.e. the fundamental niches, of impacted species, even long-lived species such as trees are likely to suffer mortalities before they are replaced by newly arriving, other species for which the new, climatic situations are more benevolent. Thus, in general the more rapid climate change, the more likely such transient ecosystem degradations become. Indeed, the modelling approaches generally followed do incompletely mimic such effects and for these reasons tend to rather underestimate than overestimate impacts. Finally, for other processes such as coral bleaching and local extinction of sensitive species, which can occur within a relatively short time span of a few years, transient temperature peaks might be very critical. If emissions are reduced in a manner such that there is transient overshooting of the final equilibrium temperature, impacts may then be considerably greater than indicated in Tables 2, 3, 4 and 5.

Therefore we consider the results from our meta-analysis to be in general rather conservative and it appears to be unlikely that they are biased towards overestimating the severity of the consequences of climate change for ecosystems. However, critical uncertainties remain, in particular because most impact models depend to a large extent on knowledge about the realized niches only. Should fundamental niches be significantly larger than the realized ones, overestimations of climate change impacts are bound to result. Indeed, the difficulties to assess the true fundamental niches of most species remain a relevant source of uncertainty (Kirschbaum and Fischlin 1996), a fact that still significantly constrains the ability of most currently used kinds of ecological models to assess climate change impacts.

5 Conclusions

A literature-based integrated assessment of the effects of climate change upon a wide range of ecological systems has shown that the negative impacts accrue as annual global mean temperature rise as little as 1.6°C (low end of the likely range of IPCC scenarios,[1] IPCC 2007) above the pre-industrial level, already with several examples of projected severe damages, range losses, and extinctions. As global temperatures reach and exceed 2°C above pre-industrial levels, negative impacts rapidly increase. This includes increases in range losses and extinctions and increasing damage to some critical ecosystem structure and functioning. As global temperatures increase further beyond 2°C above pre-industrial, the literature and models increasingly project impacts accruing to entire systems and becoming more widespread across a range of different species groups and regions. Several critical aspects of ecosystem functioning are projected to begin to collapse at a temperature of 2.5°C (Table 4). These represent either the potential collapse of entire ecosystems e.g. wide-spread impoverishment of coral reefs, or comprise impacts, which are in our judgement dangerous, because they likely imply irreversible damages, such as extinctions of key species, or the onset of positive feedbacks, such as CO_2 emissions, accelerating climate change. In our judgement, risking the widespread collapse of multiple global

[1]This value considers the multi-model projected lower end of the likely range of the IPCC SRES B1 scenario (IPCC 2007, Table SPM.3) of +1.1°C warming by 2100 relative to 1980–1999 and adding +0.5°C already realized global warming for period 1980–1999 relative to preindustrial climate.

ecosystems (Table 4) represents "dangerous anthropogenic interference" and would comprise a breach of compliance with Article 2 of the United Nations Framework Convention on Climate Change.

This meta-analysis confirms and expands upon the results of other assessments (Houghton et al. 2001; Hare 2006; Warren 2006; Fischlin et al. 2007), which have shown that climate change is a threat to ecosystems and species worldwide, with coral reef, Arctic, Mediterranean, and mountain ecosystems including many biodiversity hotspots being particularly at risk. Hare (2006) also identified substantial increases in risks to ecosystems and species beyond the EU 2°C target using "burning ember" diagrams. We consider that our study, with a more extensive literature review, using a tabular approach and including some uncertainty analysis, provides further strong justification for policies constraining annual global mean temperature change relative to preindustrial climate to no more than 2°C—at least from an ecosystem preservation point of view. This temperature would avoid the projected breaching of the aforementioned large-scale ecosystem collapses, as well as a large proportion of the onset of many of the projected negative impacts such as range losses, extinctions, ecosystem damages including disruptions of their structure and functioning. Since we identified some significant impacts in biodiversity hotspots such as amphibian extinctions in tropical forests and wide spread coral bleaching in reefs below a 2°C warming, protection of the majority of ecosystems would however require a more stringent target, as argued by Rosentrater (2005) for the Arctic.

Many of the impacts tabulated here appear to be clearly in conflict with Article 2 of the United Nations Framework Convention on Climate Change in not allowing ecosystems to adapt naturally. Minimising the rate of climate change is expected to also reduce the risks of climate change for ecosystems, although this aspect can not yet be well analysed with current techniques available to assess impacts. According to the precautionary principle it appears that a reduction in current and future land use change will give ecosystems and species the best chance to adapt to the climate changes that are projected to occur in the twenty-first century even under stringent mitigation policy. In particular, avoided deforestation is a policy which meets both these goals, although alone this policy is of course not sufficient to constrain climate change to 2°C above pre-industrial levels. Further analyses of many of the findings from this study made in an even broader context of climate change impacts on ecosystems can be found in Fischlin et al. (2007).

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Appendix

The Table 6 below contains detailed information concerning the underlying studies used in each entry of Tables 2–5, where column 1 is identical to column 1 of Tables 2–5, and the following abbreviations are used: **E** indicates an empirical derivation, **M** indicates a modelling study, a **number** refers to how many GCMs were used in the original literature. Other codes indicate if model projections included precipitation (**P**), ocean acidification (**pH**), sea ice (**SI**), sea level rise (**SLR**), sea

surface temperature (**SST**) or anthropogenic water use (**W**); dispersal assumptions from the literature. **D**—estimate assumes dispersal; **ND**—estimate assumes no dispersal; **NR**—not relevant since species/ecosystem has nowhere to disperse to in order to escape warming (e.g. habitat is at top of isolated mountain or at southern extremity of austral landmass). **IMAGE**, **BIOME4**, **LPJ**, **MAPSS** refer to specific models as used in the study, to assess climate change impacts, e.g. LPJ denotes the Lund–Potsdam–Jena dynamic global vegetation model (Sitch et al. 2003). **DVGM** refers to dynamic global vegetation model. GCM abbreviations used here: **H2**—HadCM2, **H3**—HadCM3, **GF**—GFDL, **EC**—ECHAM4, **CS**—CSIRO, **CG**—CG, **PCM**—NCAR PCM. Lower case a–h refers to how the literature was addressed in terms of up/downscaling and these are defined in Table 1. The GCM outputs used in the upscaling calculations are those used in the IPCC Third Assessment Report (TAR IPCC 2001) and are at 5° resolution: HadCM3 A1FI, A2, B1, B2 where A2 is an ensemble of 3 runs and B2 is an ensemble of 2 runs; ECHAM4 A2 and B2 (not ensemble runs); CSIRO mark 2 A2, B1, B2; NCAR PCM A2 B2; CGCM2 A2 B2 (each an ensemble of 2 runs). Where GCM scenario names only were provided further details were taken from: HadCM2/3 (Mitchell et al. 1995; Hulme et al. 1999; Arnell et al. 2004), http://ipcc-ddc.cru.uea.ac.uk.

Table 6 Supplementary to Tables 2, 3, 4 and 5: the table below contains detailed information on models and how the upscaling and downscaling were performed for each entry in Tables 2, 3, 4 and 5 and uses the same numbering scheme

Table no.	Entry no.	Details on type of study, models, model results, and methods used to derive the sensitivities as tabulated in Tables 2–5 for each table entry
2	1, 4, 9	M, 5, ND, c; ref. quotes 13.8% loss in Rocky Mountains for each 1°C rise in JJA temperature, upscaled with CS, PCM, CG
2	2, 15	M, 5, IMAGE, a; authors confirmed temperature baseline is year 2000 which is 0.1°C warmer than 1990
2	3	M, D, b; no GCM used in ref.; upscaled with H3, EC, CS, PCM, CG
2	14, 32	M, P, GDD, D&ND, a; ref uses B1 and A2 of H3 with ΔT rise of 2.4°C and 3.7°C respectively compared to the 1961–1990 mean
2	6, 7	M, P, NR, e; upscaled at several sites using H3, EC, CS, PCM, CG
2	5	M, H3, E4, P, D&ND, a; GFDL based estimates omitted due to lack of access to global temperature time series
2	10	M, H3, W, a; ref. uses B2 of H3 in 2070 that has a ΔT rise of 2.1°C with respect to the 1961–1990 mean
2	11	M, P, D, d; UKCIP02 high emission scenario used as central value; upscaled for Hampshire from UKCIP02 (Hulme et al. 2002) regional maps using H3, EC, CS
2	12	M, SLR, a; analysis based on transient 50% probability of sea level rise using the US EPA scenarios for ΔT of 2°C above 1990 baseline

Table 6 (continued)

Table no.	Entry no.	Details on type of study, models, model results, and methods used to derive the sensitivities as tabulated in Tables 2–5 for each table entry
2	13	M, H3, SLR, a; IS92a median ΔT 2.0°C above 1990 (Kattenberg et al. 1996, Fig. 6.20) and range 1.4–3.0°C
2	16	M, GE, P, NR, d; GENESIS GCM with 2.5°C rise for CO_2 doubling from 345 to 690ppm, 345 ppm corresponds quite closely to the 1961–1990 mean; upscaling then gives the range; across locations variously used H3, EC, CS, CG
2	17	M, NR, b; upscaled with H3, EC, CS, and CG
2	18	M, P, D, HadCM3, ECHAM4, GFDL, a; Huntley et al. (2006) give 2.5°C relative to 1961–1990 mean
2	19	M, 2, P, d, g; range is due to importance of ΔP, GFDL CO_2 doubling is from 300 ppm which is close to 1900 climate sensitivity in ref of 3.7; UKMO in 2050 is 1.6°C above 1961–1990 mean, 1.9°C above preindustrial
2	20, 21	M, H2, BIOME4, P, NR, c; A1 scenario of H2GS has ΔT of 2.6°C relative to 1961–1990 mean
2	22	M, BIOME3, P, d, f; H2 2080s has global ΔT of 2.6°C above 1961–1990 mean
2	23	M, H3, W, a; ref. uses A2 of H3 in 2070 that has a ΔT of 2.7°C with respect to the 1961–1990 mean and hence 2.5°C with respect to 1990
2	24	M, H3, GF, EC, P, D&ND, a
2	25	M, CS, P, d; upscaled with H3, EC, CS, CG
2	26	M, H2, SLR, NR, a; H2 2080s without aerosols has global ΔT of 3.4°C above pre-industrial (Hulme et al. 1999)
2	27	M, 2, P, D, d; study used CO_2 doubling scenarios—CCC ΔT at doubling is 3.5°C relative to 1900 whilst GFDL R30 is 3.3°C relative to 1900; upscaling gives range H3, EC, CG
2	28	M, D, b; upscaled with H3, EC, CS
2	29	M, CCC, P, D, d; CO_2 equilibrium doubling scenario has ΔT of 3.5°C relative to 1900; downscaled with CGCM and upscaled with H3, EC, CS, CG
2	30	M, 5, IMAGE, P,a; authors confirmed temperature baseline is year 2000 which is 0.1°C warmer than 1990
2	31	M, P, D (based on empirical calibration), d; upscaled with H3, EC, CS, PCM, CG
2	33	M, D, f; Meehl et al. (2007), Fig. 10.3.5 shows this occurs for ΔT ≥3.5°C above 1990
2	12, 34	M, D&ND, P, HadCM3, a; Ohlemüller et al. (2006) use HadCM3 projections quoted as '2.0, 4.8°C above 1931–1960 mean for entries 12, 34 respectively, add 0.1°C to convert to pre-industrial

Table 6 (continued)

Table no.	Entry no.	Details on type of study, models, model results, and methods used to derive the sensitivities as tabulated in Tables 2–5 for each table entry
2	35	M, 3, P, a
2	36	M, SLR, a; US EPA scenario of 4.7°C above 1990.
3	37	E
3	38	M, D&ND, a; 18% matches minimum expected climate change scenarios which Table 3 of Thomas et al. (2004a) lists as ΔT of 0.9°–1.7°C (mean 1.3°C) above 1961–1990 mean; 8 of 9 sub-studies used H2
3	39, 55, 71, 78, 82	M, D, a;
3	40	M, H2, P, ND, d; table 3 of Thomas et al. (2004a) gives global ΔT of 1.35°C above 1961–1990; HHGSDX of H3; downscaled with H3 then upscaled with H3, EC, CS, PCM, CG
3	41	M, H2, P, D&ND, d; Beaumont and Hughes (2002) give global mean temperature rise of 1.8°C relative to the 1961–1990 mean
3	42	M, D, P, a
3	43	M, D, b; upscaled using H3, EC, CS, PCM, CG
3	44	M, H3, P, D, d; H3 2050 SRES mean
3	45	M, H2, P, D, d, g; table 3 of Thomas et al. (2004a) gives global ΔT of 1.35°C above 1961–1990; upscaled with H3, EC, CS, PCM, CG; uses a local ΔT range across Australia
3	46	M, H3, P, D&ND, d; ref. uses B1 of H3 in 2050 with a ΔT of 1.8°C above the 1961–1990 baseline; downscaled with H3 and then upscaled with H3, EC, CG
3	47	M, H2, P, D&ND, d; studies used global annual mean ΔT of 1.7–2.0°C above 1961–1990 mean
3	48	M, P, D&ND, a; table 3 of Thomas et al. (2004a) mid-range climate scenarios have a mean ΔT of 1.9°C above 1961–1990
3	49	M, H2, P, D&ND, d; ref. refers to A2 of H3 in 2050 that has a ΔT of gives as 1.9°C above 1961–1990 (Arnell et al. 2004); downscaled with H3 then upscaled with H3, EC, CS, PCM, CG
3	50	H; upscaled using maps from WGI, chapter 10
3	51	M, 2, P, NR, d; scenarios on CRU website used with ΔT of 2.0°C above 1961–1990, agrees with Table 3 of Thomas et al. (2004a) which gives ΔT of 2.0°C above 1961–1990 mean; downscaled with H3 then upscaled with H3, EC, CS, PCM, CG
3	52	M, H2, P, D, d; the 66% is from a suite of 179 representative species, table 3 of Thomas et al. (2004a) lists global ΔT of 2.0°C above 1961–1990 mean, upscaled with H3, EC, CS, CG
3	53	M, H2, P, D&ND, d; table 3 of Thomas et al. (2004a) which gives ΔT of 2.0°C above 1961–1990 mean using HHGGAX; downscaled with H3 then upscaled with H3, EC, CS, PCM, CG

Table 6 (continued)

Table no.	Entry no.	Details on type of study, models, model results, and methods used to derive the sensitivities as tabulated in Tables 2–5 for each table entry
3	54	M, H2, P, ND, d; table 3 of Thomas et al. (2004a) which gives ΔT of 2.0°C above 1961–1990 mean using HHGGAX; downscaled with H3 then upscaled with H3, EC, CS, PCM, CG
3	56	M, IMAGE, P, D&ND; Bakkenes et al. (2002) gives the global temperature change relative to 1990
3	57	M, P, D&ND; ref. uses B1 in H3 in 2080s from (Arnell et al. 2004)
3	58	M, SST, h
3	59	M, H2, D&ND, d; ref. uses global ΔT of 2.3°C above 1961–1990 mean; downscaled with H3 and upscaled with H3, EC, CG
3	60, 76	M, P, D & ND, a
3	61	M, 15, SI, a; Arzel et al. (2006) uses 15 GCMs with A1B for 2080s, ΔT A1B 2080s multi-model from WGI, chapter 10, Fig. 10.3.2 is 2.5°C above 1990; ACIA uses 4 GCMs with B2, multi-model ΔT is 2.2°C over 1961–1990 or 2.0°C above 1990
3	62	M, P, D, HadCM3, ECHAM4, GFDL, a; Huntley et al. (2006) give 2.5°C relative to 1961–1990 mean
3	63	M, 10, P, D, d, g; Beaumont and Hughes (2002) give global mean temperature rise of 2.6°C relative to the 1961–1990 mean
3	64	M, P, D, ND, a; Table 3 of Thomas et al. (2004a) maximum climate scenarios have a mean ΔT of 2.6°C above 1961–1990 or 2.3°C above 1990
3	65	M, SST, h
3	66	M, P, NR, e; upscaled for several sites taken from maps in ref., using H3, EC, CS, CG
3	67	M, NR
3	68	M, 3, a, P, cloudiness, D & ND
3	69	M, NR, b; % derived from Table 1 in Benning et al. (2002) for all forest areas combined on the 3 islands studied; upscaling considers changes averaged over 3 islands and uses H3, EC, CS, CG
3	70	M, H3, P, D&ND, d, f; table 3 of Benning et al. (2002) lists global ΔT of 3°C above 1961–1990 mean
3	72	M, 7, BIOME3, MAPSS, P, D&ND, a; uses CO_2 doubling scenarios from Neilson and Drapek (1998) Table 2; control concentrations were obtained directly from modellers; thus deduced mean global mean ΔT for this study
3	73	M, H3, P, D&ND, d; ref. uses A2 in H3 in 2080 that has a ΔT of 3.3°C above 1961–1990 (Arnell et al. 2004)
3	74	M, H3, P, D, d, f; ref. lists ΔT of 3.6°C for A1 in H3 in 2080 relative to 1961–1990, downscaled with H3 and upscaled with H3, EC, CG

Table 6 (continued)

Table no.	Entry no.	Details on type of study, models, model results, and methods used to derive the sensitivities as tabulated in Tables 2–5 for each table entry
3	75	M, NR, b; upscaled with H3, EC, CG
3	77	M, NR, b, f; Meehl et al. (2007), Figs. 10.3.5 and 10.3.2 suggest global ΔT of 3.5°C relative to 1990
3	79	M, NR, b, f; Meehl et al. (2007), Fig. 10.3.5 shows this occurs for ΔT ≥3.5°C above 1990
3	80	M, NR, b, f
3	81	M, 3, P, a
4	83	M, SST, h
4	84	M, a
4	85	M, 2, P, LPJ; upscaled with H3, EC5
4	86	M, SST, h
4	87, 88	M, 5, IMAGE, a; authors confirmed temperature baseline is year 2000 which is 0.1°C warmer than 1990
5	89	M, 4, SST
5	90	E, SI
5	91	M, SST, h
5	92	M, P, NR, d; HadRM3PA2 in 2050, Fig. 13 in Moriondo et al. (2006) shows ΔT matching B2 of H3 of 1.6°C above 1961–1990 mean; downscaled with H3 and upscaled with H3, EC, CS, PCM, CG
5	93	M, P, D (based on empirical calibration), d, upscaled with H3, EC, CS, PCM, CG
5	94	E, P, D, b; upscaled using H3, EC, CS, PCM, CG
5	95	M, H2 with aerosols in 2050, a, 6 DVGMs, global temperature taken from Raper et al. (2001).
5	96	E, P, NR, a
5	97	M, a; Williams et al. (2007) use the B1 scenario from a mean of 9 GCM simulations used in IPCC (2007) which have a global temperature increase of 1–2.5°C averaging approximately 1.9°C above 1990 (hence 2.4 above pre-industrial)
5	98	M, d; upscaled using H3, EC, CS, PCM, CG
5	99	M, P, NR, d; HadRM3PA2 in 2050, taken from Fig. 13 of Moriondo et al. (2006)
5	100	M, CS, b; upscaled with H3, EC, CS, PCM, CG
5	101	M, 15, SI, a; Arzel et al. (2006) uses 15 GCMs with A1B for 2080s, ΔT A1B 2080s multi-model from WGI, chapter 10, Fig. 10.3.2 is 2.5°C above 1990; ACIA uses 4 GCMs with B2, multi-model ΔT is 2.2°C over 1961–1990 or 2.0°C above 1990
5	102, 103	pH, g; IS92a in 2100 has 788 ppm CO_2 and ΔT of 1.1–3.6°C above 1990
5	104	M, a;
5	105	E, P, D, e; upscaled with H3, EC, CS
5	106	M, H2 with aerosols in 2100, a, 6 DVGMs, global temperature taken from Raper et al. (2001)

Table 6 (continued)

Table no.	Entry no.	Details on type of study, models, model results, and methods used to derive the sensitivities as tabulated in Tables 2–5 for each table entry
5	107	pH, a; impact is at CO_2 doubling, T range given by IPCC (2007) for equilibrium climate sensitivity
5	108	M, a; Williams et al. (2007) use the A2 scenario from a mean of 9 GCM simulations used in IPCC (2007) which have a global temperature increase of 2–4°C averaging approximately 3.5°C above 1990 (hence 4°C above pre-industrial)

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Response to Comment Letter O11 – Center for Biological Diversity and Sierra Club

O11-1 Introductory comments are noted for the record. The commenter provides a general introduction and states a general concern regarding individual and cumulative impacts to air quality, greenhouse gas emissions, sensitive receptors, land use and noise. All attachments to the comment letter have been received. As the attachments are intended to support specific comments in the letter, responses to the letter also fully respond to the attachments.

O11-2 General information related to the purposes of the Center for Biological Diversity and the Sierra Club is noted for the record. However, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O11-3 The commenter's summary of the Project is noted for the record. The County disagrees with the commenter's assertion that the Project would double warehouse space in the "region." According to the SCAQMD's Second Draft Staff Report for Rules 2305 and 316, there are approximately 45,000 industrial buildings of any size located in the SCAQMD region, totaling about 1.6 billion square feet. The proposed Project represents 0.4 percent of the warehouse space in the region. Therefore, the Project would not double the warehouse space in the region. It should be noted that the cumulative project list is not a summary of the warehouse space in the region. The cumulative projects list only includes past projects under construction and reasonably foreseeable discretionary projects within an area where a cumulative impact could occur.

O11-4 The comment erroneously makes general assertions that the Project's impacts related to air quality, greenhouse gas emission, sensitive receptors, land use and noise have not been considered and mitigated but includes no basis for this claim. All feasible mitigation has been included within the Draft EIR. Responses regarding the commenter's claims on these topics are addressed in responses to specific comments below. The commenter has not raised any issues which would necessitate recirculation pursuant to State CEQA Guidelines Section 15088.5. Therefore, no further action is required at this time.

O11-5 A Heath Risk Assessment (HRA) for the Project was prepared to evaluate impacts to sensitive receptors in accordance with the SCAQMD Guidance: *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis* (August 2003) and SCAQMD Modeling Guidance for AERMOD (https://www.aqmd.gov/home/air-quality/meteorological-data/modeling-guidance) and is located in Draft EIR *Appendix C*. The commenter states that trucks would be routed through residential neighborhoods. However, Project Objective 4 includes limiting truck traffic disruption to sensitive receptors within the surrounding region. Furthermore, the City of Fontana has designated Cherry Avenue, Arrow Route, and San Bernardino Avenue as truck routes[9] and the County of San Bernardino designates these roadways as Major Divided Highways[10]. Project truck traffic would primarily use

[9] City of Fontana, Local Truck Routes, February 6, 2004.
[10] See Draft EIR Appendix L, Figure 4a.

these designated roadways and Project truck traffic would not occur within the sensitive receptor neighborhoods. The HRA evaluated truck exhaust emissions from both tailpipes and transport refrigeration units (TRUs) and analyzed pollutant concentrations at the closest sensitive receptors to the project site, which included residences and Redwood Elementary School which is 1,370 feet from the Project site. As discussed in the Draft EIR and HRA, impacts would be less than significant with mitigation incorporated. (see Draft EIR at pages 4.3-43 to 4.3-53). It should be noted that Live Oak Elementary School, Beech Avenue Elementary School and Almond Elementary School mentioned in the comment are further away than Redwood Elementary School (and all range from approximately 4,800 to 5,400 feet away). As pollutant concentrations decline further away from the Project site, impacts at these locations would be lower than what was identified in the Draft EIR. The Draft EIR also determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46).

The comment also notes that the Project is adjacent to census tracts that are designated as SB 535 Disadvantaged Communities. It should be noted that SB 535 does not include project specific requirements or prohibit developments in proximity to the designated communities. SB 535 directs 25 percent of the proceeds from the Greenhouse Gas Reduction Fund (i.e., funds from the AB 32 cap-and-trade program) to go to projects that provide a benefit to disadvantaged communities (as identified by the OEHHA mapping).

O11-6 The comment generally discusses regional air quality and public health concerns, which was discussed within *Section 4.3.2, Environmental Setting*, of the Draft EIR. The comment does not raise a specific issue with the adequacy of the Draft EIR or raise any other CEQA issue. Master Response 2 explains that the Draft EIR analyzed and disclosed Project regional and localized air quality impacts as well as health risk impacts and identified all feasible mitigation to reduce those impacts. Regarding impacts to sensitive receptors (including young children), the health risk assessment was prepared in accordance with SCAQMD and OEHHA guidance and included age sensitivity factors to account for the most sensitive populations. As described in Draft EIR *Section 4.3*, health risk impacts would be less than significant with implementation of MM AQ-1 and MM AQ-9. Furthermore, it should be noted that the Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.3 53), which indicates that the regional increases shown in Draft EIR *Tables 4.313* through *4.3-17* would not necessarily cause an exceedance of the ambient air quality standards. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O11-7 The comment generally discusses regional trends in warehouse development and goods movement. The comment does not raise a specific issue with the adequacy of the Draft EIR or raise any other CEQA issue. As noted in Master Response 2, the Draft EIR analyzed and mitigated the Project's air quality, health risk, and GHG emissions in accordance with the State CEQA

Guidelines. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O11-8 (This response also responds to Exhibit 1) See Responses O3-13 and O11-5. The commenter refers to conflicts between warehouses, schools and homes in the Project's vicinity and states that the community is experiencing transformation from primarily open, residential area to logistics. The Project site is located in the County's Policy Plan Commercial (C) Land Use Category and in the Special Development - Commercial (SD-COM) Zoning Designation. Neither a General Plan Amendment nor a Zone Change is required to allow or authorize the uses permitted in the Specific Plan area. Although the Project site currently contains a commercial land use designation, the underlying special development zoning allows for combination of residential, commercial, industrial, agricultural, open space and recreation uses, and similar and compatible uses. A text and map amendment to the Development Code and General Plan will be made to identify the Specific Plan designation on the official map. Additionally, the HRA prepared for the Draft EIR evaluated pollutant concentrations at the closest sensitive receptors to the project site, which included residences and Redwood Elementary School. As discussed in the Draft EIR and HRA, impacts would be less than significant with mitigation incorporated. (see Draft EIR pages 4.3-43 to 4.3-53). It should be noted that Live Oak Elementary School, Beech Avenue Elementary School and Almond Elementary School mentioned in the comment are further away than Redwood Elementary School. As noted in Response O11-5, Redwood Elementary School is approximately 1,370 feet away and Live Oak Elementary School, Beech Avenue Elementary School and Almond Elementary School (and all range from approximately 4,800 to 5,400 feet away). As pollutant concentrations decline further away from the Project site, impacts at these locations would be lower than what was identified in the Draft EIR. The Draft EIR also determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46).

Furthermore, it should be noted that the proposed Project would be located within an area that is already developed and associated with the existing Speedway and is surrounded by industrial and Speedway related uses. The closest sensitive receptors, which include a single-family residence is located approximately 410 feet away and the majority of sensitive receptors are located more than 1,000 feet away. Therefore, as the Project would be adjacent to existing warehouse and related uses, it would not result in a patchwork of conflicting land uses. Therefore, no further response is required.

O11-9 The comment states that the community is impacted by pollution per the California Communities Environmental Health Screening Tool (CalEnviroScreen) and lists three census tracts in the area as being the most polluted in the state. CalEnviroScreen has been developed by the Office of Environmental Health Hazard Assessment (OEHHA) and California Environmental Protection Agency (CalEPA). While CalEnviroScreen can assist CalEPA in prioritizing resources and helping promote greater compliance with environmental laws, it is important to note some of its

limitations. The tool's output provides a relative ranking of communities based on a selected group of available datasets, through the use of a summary score. Unlike the Health Risk Assessment (HRA) prepared for the Project, the CalEnviroScreen score is not an expression of health risk and does not provide quantitative information on increases in cumulative impacts for specific sites or projects. Further, as a comparative screening tool, the results do not provide a basis for determining when differences between scores are significant in relation to public health or the environment. Accordingly, CalEnviroScreen is not intended to be used as a health or ecological risk assessment for a specific area or site. Also refer to Master Response 2.

The Project HRA discusses the CalEnviroScreen rankings (refer to Draft EIR *Appendix C*). According to CalEnviroScreen, the Project site and the nearest residences to the northeast are located within Census Tract 6071002204, which is within the 93rd percentile overall for the CalEnviroScreen Score, which considers pollution burden (average of exposure and environmental effects) and population characteristics (average of sensitive populations and socioeconomic factors). The County does not dispute the data from CalEPA's CalEnviroScreen. These results are presented for comparative purposes and cannot be used (and are not intended to be used) to determine a whether a project will result in a significant impact for purposes of CEQA. The fact that the Project is located in an area that CalEnviroScreen identifies as in the 93rd percentile for pollution burden is not indicative of a CEQA impact. However, the Project's cumulatively significant air quality impact is acknowledged and discussed at pages 4.3-54 to 4.3-55 of the Draft EIR.

The comment summarizes the demographic makeup of the census tract and asserts that the community may have a lower high school graduation rate and income level than the Fontana average. However, as noted above and in the Draft EIR, the Project would not result in significant health effects. Additionally, whether individuals within a community may or may not graduate from high school and therefore have a lower income level is not an environmental issue required to be considered under CEQA. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O11-10 The commenter provides a summary of CARB requirements and general discussion of industrial buffering distance guidelines. The Project is consistent with the General Plan and existing zoning and proposes uses that are allowed by the Development Code. It should be noted that the CARB Air Quality and Land Use Handbook recommendation of a 1,000-foot buffer from distribution centers is for general planning purposes to determine when a site-specific health risk assessment may be required. Page ES-3 specifically notes that "these guidelines are not regulatory or binding on local agencies, we took a more qualitative approach in developing the distance-based recommendations." Furthermore, page ES-3 also notes: "[t]hese recommendations are advisory and should not be interpreted as defined 'buffer zones.' We recognize the opportunity for more detailed site-specific analyses always exists, and that there is no 'one size fits all' solution to land use planning". As noted above and in Master Response 2, an HRA was prepared for the Draft EIR, which evaluated pollutant concentrations at the closest sensitive receptors to the Project site. As

discussed in the Draft EIR and HRA, impacts would be less than significant with mitigation incorporated. (see Draft EIR pages 4.3-43 to 4.3-53). While the Project's air quality and greenhouse gas effects were found to be significant and unavoidable, mitigation was included within the Draft EIR to reduce these impacts to the maximum extent feasible.

O11-11 The comment generally summarizes climate change. The comment does not raise a specific issue with the adequacy of the Draft EIR or raise any other CEQA issue. As discussed in Master Response 2, the Project is subject to the County's GHG Reduction Plan. Draft EIR Table 4.8-4 demonstrates that the Project would comply with the County's GHG Reduction Measures and would be consistent with the GHG Reduction Plan. MM GHG-1 requires the Project to apply reduction measures identified in the County's GHG Screening Tables so that each building would achieve a minimum of 100 points.

The County's 2021 GHG Emissions Reduction Plan Update states that any project that adopts at least 100 points of GHG performance standards listed in the proposed 2021 Screening Tables, would be consistent with the County's GHG Emissions Reduction Plan to reduce emissions to 40 percent below 2007 levels. Meeting this reduction would be consistent with the State's long-term goal to achieve statewide carbon neutrality (zero net emissions) by 2045, and therefore, would result in a less than significant impact related to GHG emissions. Nonetheless, the Draft EIR conservatively concludes that impacts would remain significant and unavoidable due to the size of the Project and its corresponding GHG emissions.

O11-12 Refer to Response O11-11 and Master Response 2. As noted above, the comment generally summarizes climate change and State GHG regulations and policy. The comment does not raise a specific issue with the adequacy of the Draft EIR or raise any other CEQA issue. However, as noted above, the Project would be consistent with the GHG Reduction Plan, which would ensure that the County would be consistent with the State's long-term goal to achieve statewide carbon neutrality by 2045.

O11-13 Refer to Response O11-11 and Master Response 2. As noted above, the comment generally discusses the cumulative nature of GHG impacts. The comment does not raise a specific issue with the adequacy of the Draft EIR or raise any other CEQA issue. However, as noted above, the Project would be consistent with the GHG Reduction Plan, which would ensure that the County would be consistent with the State's long-term goal to achieve statewide carbon neutrality by 2045. Additionally, the Draft EIR discloses, analyzes, and mitigates the Project's GHG emissions in *Section 4.8*.

O11-14 Refer to Response O11-11 and Master Response 2. The comment incorrectly states that the Draft EIR does not fully disclose, analyze, mitigate, or consider alternatives to reduce the Project's climate change effects. The Draft EIR discloses, analyzes, and mitigates the Project's GHG emissions in *Section 4.8*. Project alternatives are evaluated in Draft EIR *Section 6.0*. As discussed in Master Response 2, the Project is subject to the County's GHG Reduction Plan. Draft EIR *Table 4.8-4: San Bernardino County GHG Reduction Measures Screening Table* demonstrates that the Project would comply with the County's GHG Reduction Measures and would be consistent

with the GHG Reduction Plan. MM GHG-1 requires the Project to apply reduction measures identified in the County's GHG Screening Tables so that each building would achieve a minimum of 100 points, which would be consistent with the State's GHG reduction goals. Achieving 100 points on the County's GHG Screening Tables requires the implementation of numerous measures. For example, the tables require various measures to improve building energy efficiency such as installing upgraded building insulation, windows, cool roofs, air filtration, indoor space efficiencies, space heating, water cooling, daylighting, efficient lighting, building placement, and shading. The tables also require various water efficiency measures to reduce energy related GHG emissions. To reduce mobile source emissions and encourage the use of ZEVs, the Screening Tables require electric vehicle chargers and bike and pedestrian amenities. To reduce GHG emissions from solid waste, the Screening Tables require increased recycling.

The Draft EIR also requires the project to implement solar energy generation (MM GHG-2), requires energy efficient buildings that exceed the building code standards (MM GHG-3), requires the solid waste diversion (MM GHG-4), and requires the use of 100 percent electrically powered landscape equipment (MM GHG-5).

State regulations requiring the implementation of near zero or zero emission trucks are expected to substantially reduce the Project's GHG emissions over time, although such reductions are not factored into the Draft EIR's quantification of GHG emissions.

Additionally, mitigation in the Draft EIR Air Quality section (*Section 4.3*) includes numerous measures that would also reduce GHG emissions. Applicable air quality mitigation measures include a TDM Program to reduce vehicle trips/miles (MM AQ-3), constructing EV infrastructure (MM AQ-4), conduit for Transport Refrigeration plugins (MM AQ-5), idle limits (MM AQ-6), energy efficient vendor trucks (MM AQ-7), EV charging stations and carpool parking (MM AQ-8), electric/zero emission cargo handling equipment (MM AQ-9), and compliance with SCAQMD Rule 2305 (MM AQ-10) which is a program to incentivize the purchase of cleaner trucks and charging/fueling infrastructure for the project and in the nearby community. Therefore, the Draft EIR GHG mitigation measures comply with State CEQA Guidelines Section 15041 and go above and beyond to meet the essential nexus and rough proportionality standards.

O11-15 The comment incorrectly states that the Project failed to fully evaluate the Project's significant environmental impacts or adequately describes the project in detail. The Project is consistent with the General Plan and existing zoning and proposes uses that are allowed by the Development Code. While the Project's air quality and greenhouse gas effects were found to be significant and unavoidable, mitigation was proposed to reduce these impacts to the maximum extent feasible. Furthermore, Draft EIR *Section 4.8, Greenhouse Gas Emission*, *Table 4.8-4*, demonstrates that the Project would comply with the County's GHG Reduction Measures and would be consistent with the GHG Reduction Plan. Nonetheless, the Draft EIR conservatively concludes that impacts would remain significant and unavoidable due to the size of the Project and resulting emissions. The Project's significant and unavoidable impacts and its consistency with the Countywide goals and policies and the SCAG RTP/SCS goals are documented in *Section 4.11, Land Use and Planning*, of the Draft EIR. The Project Description, found in Draft EIR *Section 3.0, Project Description* is

accurate and stable and provides adequate detail to evaluate Project impacts. Under CEQA, the EIR must contain a general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals, if any, and supporting public service facilities. (CEQA Guidelines, Section 15124(c)). CEQA also states that the project description should not supply extensive detail beyond that needed for evaluation and review of the proposed project's potentially significant environmental impacts. (CEQA Guidelines, Section 15124). See Master Response 1.

O11-16 See Response O11-15 above.

O11-17 The trip generation rate for e-commerce uses was based on actual counts for both passenger cars and trucks at local e-commerce facilities, which is the best indicator of the projected trip generation of the Project. In addition, ITE rates for High-Cube Warehouse, Warehousing and High-Cube Cold Storage Warehouse were used to validate our estimate of trip generation from the project; please refer to Response O3-7. The trip generation rates must closely align with the projected trip generation of the Project. A split of 60 percent E-commerce uses and 40 percent warehouse, high-cube warehouse, cold-storage warehouse uses is a conservative estimate of trips anticipated to be generated by the project as E-commerce land use has higher trips per building square footage compared to high-cube warehouse. The level of detail provided in the Draft EIR is appropriate for analysis of a Specific Plan. Specific data regarding the number of loading docks, trailer stalls or parking spaces is not known at this time. However, future individual development projects that are constructed pursuant to the Specific Plan, *Section 6, Implementation*, will be required to submit documentation to the County of San Bernardino to verify that the projected trips generated by the proposed uses are within the overall Specific Plan trip budget, as analyzed in the EIR technical studies. A trip generation budget will be created based on the LOS study and as each parcel develops, a consistency memo will be provided to the County to measure the trips generated by specific uses developed against the total trip budget.

O11-18 (This response also responds to Exhibit 2). The Project involves the development of speculative warehouse buildings and truck parking lots, and the end users are currently unknown. As such, the origins and destinations of the vehicle trips (including trucks) are unknown. Average truck trip lengths used for modeling purposes are based on substantial evidence within the CARB study, *Estimation Methodology for On-Road Diesel-Fueled Heavy-Duty Drayage Trucks at California Ports and Intermodal Rail Yards* (2007). The data within the CARB study is the basis for substantial evidence of a reasonably foreseeable average truck trip length. The truck trip length represents average distances in the South Coast Air Basin, where the Project is located. These are average trip lengths, meaning that some trips would be longer and some would be shorter.

A technical difficulty inherent in calculating mobile source emissions associated with any project is related to the estimation of trip length and vehicle miles traveled (VMT). VMT for a given project is calculated by the total number of vehicle trips to and from the project site multiplied by the average trip length. This method of estimating VMT for use in calculating vehicle emissions likely results in the overestimation and double-counting of emissions because, for high-cube logistics and e-commerce uses such as the Project, the land use is likely to attract (divert) existing vehicle

trips that are already on the circulation system as opposed to generating new trips. In this regard, the project would, to a large extent, redistribute existing mobile-source GHG emissions rather than generate new and additional mobile source emissions. As such, the estimation of the project's vehicular-source emissions is likely overstated in that no credit for, or reduction in, emissions is assumed based on diversion of existing trips.

The commenter incorrectly states that the County plans for all truck trips to only travel to and from the Port. As noted above, the Project involves speculative warehouses, and the end users are currently unknown. The comment asserts that all of the Project's trucks would only travel to or from the Ports of Los Angeles and Long Beach and not include other trip origins or destinations without providing any evidence to support this claim . According to research conducted by the National Cooperative Highway Research Program, average heavy truck trip lengths in the Los Angeles metropolitan planning organization are 24.1 miles, while average medium truck trip lengths are 13.1 miles, and average light truck trip lengths are 5.9 miles.[11] Depending on the Project's end users, the warehouses could be used to make local deliveries to other nearby warehouses. Additionally, truck trips could originate or end at other various locations within the region, such as the Ontario International Airport approximately 7 miles away, the Union Pacific Intermodal Facility approximately 6 miles away, or the BNSF San Bernardino Intermodal Facility approximately 14 miles away, among other locations. Furthermore, the Project includes 98 acres of truck and trailer storage, and every trip associated with these uses is also assumed to use the same average trip length, whereas, in reality, trucks and trailers from this facility would most likely serve the adjacent proposed buildings and surrounding area. It would be speculative to assume that the Project's trucks will only travel to or from the Ports and not include other trip origins or destinations. The estimated truck trip length in the Draft EIR likely results in a significant overestimation of the truck vehicle miles resulting from the project because it assumes that all truck trips to and from the project are "new" within the context of the air basin, rather than redistributed truck trips in the basin. Since the truck trip lengths are based on reasonable information (i.e., data provided by CARB), as presented in the Draft EIR, providing some greater unsubstantiated trip length that extends beyond what is evaluated in the Draft EIR would be speculative .

O11-19 The commenter provides a general summary of a legal case and State CEQA Guidelines regarding cumulative impact analysis and mitigation but does not provide any information to dispute the analysis provided in the Draft EIR. The Project's cumulative air quality impacts are discussed on pages 4.3-54 to 4.3-55 of the Draft EIR, and sensitive air quality receptors are identified on Draft EIR page 4.3-5. No additional response is necessary.

O11-20 The commenter states that the Draft EIR's HRA and mitigation measures fails to provide substantial evidence of the effectiveness of mitigation to reduce impacts. Any mitigation which is determined to be feasible and capable of avoiding or minimizing significant impacts will be included in the Project MMRP and *Section 3.0*, *Errata* of this Final EIR. The Draft EIR Air Quality

[11] J. Richard Kuzmyak, *Forecasting Metropolitan Commercial and Freight Travel,* 2008.

Section (*Section 4.3*) includes numerous construction and operational mitigation measures to reduce emissions. Construction mitigation measures include use of the cleanest equipment available and dust control (MM AQ-1) and low VOC paints (MM AQ-2). Additionally, operational mitigation includes a TDM Program to reduce vehicle trips/miles (MM AQ-3), constructing EV infrastructure (MM AQ-4), conduit for Transport Refrigeration plugins (MM AQ-5), idle limits (MM AQ-6), energy efficient vendor trucks (MM AQ-7), EV charging stations and carpool parking (MM AQ-8), electric/zero emission cargo handling equipment (MM AQ-9), and compliance with SCAQMD Rule 2305 (MM AQ-10) which is a program to incentivize the purchase of cleaner trucks and charging/fueling infrastructure for the project and in the nearby community. Therefore, the Draft EIR GHG mitigation measures comply with State CEQA Guidelines Section 15041 and go above and beyond what is required to meet the essential nexus and rough proportionality standards.

The Draft EIR's Health Risk Assessment and *Section 4.3* include a lengthy discussion regarding Diesel Particulate Matter (DPM). Draft EIR *Table 4.3-21: Carcinogenic Risk Assessment* shows the unmitigated and mitigated DPM health risk for the combined construction and operations of the Project for residential receptors, worker receptors, and student receptors. MM AQ-1 would reduce construction related DPM by requiring Tier 4 equipment and MM AQ-9 would reduce operational DPM by requiring zero emissions cargo handling equipment. Specifically, as shown in Draft EIR *Tables 4.3-9* through *4.3-12*, MM AQ-1 would reduce construction PM_{10} emissions by 60.89 pounds per day for Phase 1a, 49.37 pounds per day for Phase 1b, 50.52 pounds per day for Phase 2, and 13.06 pounds per day for the commercial phase. Additionally, as shown in Draft EIR Appendix C model outputs, MM AQ-1 would reduce on-site PM_{10} exhaust emissions (used as a proxy for DPM in the Health Risk Assessment) by approximately 1.08 tons per year (5.92 pounds per day for Phase 1a, approximately 0.72 tons per year (3.92 pounds per day for Phase 1b, approximately 0.58 tons per year (3.18 pounds per day for Phase 2, and approximately 0.06 tons per year (0.32 pounds per day for the commercial phase, for a total equipment exhaust reduction of 2.44 tons from MM AQ-1. Additionally, MM AQ-9 would require zero emissions operational cargo handling equipment, which would reduce operational DPM exhaust emissions by approximately 1.68 tons per year (9.19 pounds per day). The analysis found that implementation of MM AQ-1 and MM AQ-9 would reduce cancer risk from Project construction and operations to below the SCAQMD's 10 in one million threshold for all types of receptors. As such, impacts related to DPM would be less than significant with the implementation of MM AQ-1 and MM AQ-9. This conclusion is supported by modeling contained in Draft EIR *Appendix C*.

The comment incorrectly states that MM AQ-1 and MM AQ-9 do not commit to quantifiable emissions reductions. In fact, these reductions are quantified and shown in Draft EIR *Tables 4.3-9* through *4.3-17* and *Table 4.3-21*. Specifically, MM AQ-1 requires construction equipment to meet CARB Tier 4 emissions standards, which can reduce NO_X and particulate matter emissions by approximately 16 and 39 percent, respectively. Additionally, MM AQ-9 requires all on-site operational cargo handling equipment to be zero emission, which specifically eliminates an on-site source of DPM.

Despite the differing opinion offered by the commenter, the existence of disagreement among experts concerning the conclusions of an EIR or the propriety of the analytical methods employed in an EIR are not indicative of any deficiency. The County, as CEQA lead agency, is entitled to choose among conflicting expert opinions so long as the opinion relied upon by the County is supported by substantial evidence, which it is here. (*Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal. 3d 376, 409; *Greenbaum v. City of Los Angeles* (1984) 153 Cal.App.3d at 412, 413; (*Browning-Ferris v. City Council* (1986) 181 Cal.App.3d 852 at 863).

O11-21 See Master Response 2 and refer to Response O11-20. The comment incorrectly states that the proposed mitigation measures do nothing to address cancer risk from diesel particulate matter. The effectiveness of the mitigation reducing diesel particulate matter is specifically shown in Draft EIR *Table 4.3-21*, which shows the reduction of cancer risk due to the proposed mitigation (i.e., reducing impacts to below the 10 in one million threshold). As noted in Response O11-20, MM AQ-1 would reduce construction related DPM by requiring Tier 4 equipment that would reduce equipment exhaust a total of 2.44 tons. MM AQ-9 would require zero emissions cargo handling equipment that would reduce operational DPM exhaust emissions by approximately 1.68 tons per year. This conclusion is supported by modeling contained in Draft EIR *Appendix C*. Furthermore, it should be noted that the Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR *Tables 4.3-13* through *4.3-17* would not necessarily cause an exceedance of the ambient air quality standards. The Fontana General Plan mitigation measure referenced in the comment is inapplicable to the Project, including because the cancer risks are less than 10 per one million after mitigation.

O11-22 As noted in Master Response 2, the Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant based on the current Project design (refer to Draft EIR pages 4.3-51 through 4.3-53). Project truck traffic would be directed to truck routes and away from residential neighborhoods as described under PDF AQ-21.

The comment fails to demonstrate that sensitive receptors would be impacted. The Project is located within an industrial area and buffered from sensitive receptors by distance. The closest sensitive receptors are located approximately 410 feet away and the majority of sensitive receptors are located more than 1,000 feet away. Draft EIR pages 4.13-17 and 4.13-19, referenced in the comment, are in the context of noise and the distances for the sensitive receptor are reported for the purpose of conservatively evaluating noise impacts. As noted in Draft EIR *Section 4.13*, *Noise*, the closest dock high doors are approximately 700 feet from the nearest sensitive receptors. This distance is used to calculate the loading dock noise levels. It should be noted that the City of Fontana has designated Cherry Avenue, Arrow Route, and San Bernardino Avenue as truck routes[12] and the County of San Bernardino designates these roadways as Major

[12] City of Fontana, Local Truck Routes, February 6, 2004.

Divided Highways[13]. Project truck traffic would primarily use on these designated roadways and Project truck traffic would not occur within the sensitive receptor neighborhoods. Additionally, the Draft EIR includes mitigation measures to reduce impacts to nearby sensitive receptors. As noted in Response O11-20, MM AQ-1 would reduce construction related DPM by requiring Tier 4 equipment that would reduce equipment exhaust a total of 2.44 tons. MM AQ-9 would require zero emissions cargo handling equipment that would reduce operational DPM exhaust emissions by approximately 1.68 tons per year. These mitigation measures would reduce health risk impacts to less than significant levels.

The Project's entry and exit driveways would not locate trucks adjacent to sensitive receptors. The primary truck access for buildings would be located off of internal streets and not near sensitive receptors.

O11-23 The comment references the California Attorney General's settlement agreement with the City of Fontana and SCAQMD's Policy Development for Cumulative Impacts. The Attorney General's settlement agreement with the City of Fontana is inapplicable to the Project for the reasons explained in Response O11-25. Additionally, the comment incorrectly states that the SCAQMD has proposed an approach for new guidance that would consider existing air pollution burdens. The SCAQMD has only initiated a working group and is currently in the information gathering and scoping stage. The SCAQMD has not developed any new guidance or draft guidance for the evaluation of cumulative air quality impacts. The SCAQMD web page cited in the comment includes the SCAQMD's current cumulative guidance (Potential Control Strategies to Address Cumulative Impacts from Air Pollution White Paper [2003]), which is what was used in the Draft EIR (refer to Draft EIR page 4.3-54 through 4.3-55). As noted in Master Response 2, the SCAQMD has not established separate cumulative thresholds and does not require combining impacts from cumulative projects. The SCAQMD considers projects that do not exceed the project-specific thresholds to generally not be cumulatively significant. Therefore, impacts related to air quality-related health risk from the Project would be less than significant. Refer to Appendix C of the Draft EIR for additional information.

Additionally, as discussed on Draft EIR page 4.3-36, the Project would be required to comply with SCAQMD Rule 2305 (Warehouse Indirect Source Rule), which requires the Project operator to directly reduce NO_X and particulate matter emissions or to otherwise facilitate emission and exposure reductions of these pollutants in nearby communities. Alternatively, warehouse operators can choose to pay a mitigation fee. Funds from the mitigation fee will be used to incentivize the purchase of cleaner trucks and charging/fueling infrastructure in communities nearby. Warehouse owners and operators are required to earn WAIRE Points each year. WAIRE points are a menu-based system earned by emission reduction measures. Warehouse operators are required to submit an annual WAIRE Report which includes truck trip data and emission reduction measures. WAIRE points can be earned by completing actions from a menu that can include acquiring and using natural gas, Near-Zero Emissions and/or Zero-Emissions on-road

[13] See Draft EIR Appendix L, Figure 4a.

trucks, zero-emission cargo handling equipment, solar panels or zero-emission charging and fueling infrastructure, or other options. As noted in the Draft EIR, a preliminary WAIRE calculation indicates that the project would more than fulfill its Warehouse Points Compliance Obligation (WPCO). Compliance with SCAQMD Rule 2305 is also required per MM AQ-10. SCAQMD Rule 2305 applies to existing and proposed warehouses. Therefore, compliance with Rule 2305 would cumulatively reduce emissions.

O11-24 This comment provides a general overview of the CEQA Guidelines and the Draft EIR's conclusions regarding land use impacts but does not provide any information to dispute the analysis provided in the Draft EIR. No additional response is necessary.

O11-25 The Project is within the Fontana Sphere of Influence and therefore the Fontana General Plan was used to evaluate elements of the project related to traffic, trail connections, and other relevant polices in the Draft EIR. The preface of Ordinance No. 1891, adopted following Fontana's settlement with the Attorney General, specifically states that it is: "An ordinance of the City Council of the City of Fontana, California amending Chapter 9 of the Fontana Municipal Code to revise Article V for modifications and clarification to buffering and screening requirements, methods to improve traffic circulation, requirements for alternative energy, and improvements to construction requirements as it relates to industrial commerce centers throughout the City."

The Fontana Forward General Plan Update 2015 – 2035 Draft EIR expressly states "The Fontana Forward General Plan, will continue to serve as the blueprint for the City by setting forth goals, policies, and programs that will guide the long-term physical development and quality of life in the community."

The Project is not located within the City of Fontana but is located within unincorporated San Bernardino County. While the Project site neighbors the City of Fontana, it is not required to incorporate measures required by the Fontana General Plan Update or Fontana Ordinance No. 1891. Nor is the Project required to adhere to the City of Fontana Municipal Code or the mitigation measures outlined the City's General Plan EIR. Hence, the EIR is not required to analyze the Project's consistency with these City of Fontana documents.

The comment asserts that the EIR does not include analysis relevant to environmental justice issues in the City of Fontana's General Plan. SB 1000 contains requirements for cities and counties which contain disadvantaged communities to develop an environmental justice element, or related goals, policies, and objectives, and the County has fulfilled those requirements by adhering to the applicable environmental justice policies in the Countywide Plan. SB 1000 does not create obligations directly applicable to an individual project or Specific Plan. However, two environmental justice outreach workshops were held for the Project (*see* Draft EIR at 2-6 to 2-7). The Specific Plan's consistency with the applicable County Environmental Justice goals and policies is established in the Land Use section of the Draft EIR (see discussion of Policy TM-5.6 at Draft EIR p. 4.11-19 and Goal HZ-3: Environmental Justice and related policies at Draft EIR p. 4.11_25). SB 1000 functions separately from the Draft EIR process. Furthermore, the EIR isn't required to include analysis of potential environmental justice issues (aside from the consistency

analysis that was conducted), as Environmental Justice is not listed amongst the "Environmental Factors Potentially Affected" in Appendix G, Environmental Checklist Form, to the State CEQA Guidelines.[14] The County analyzed the Project's consistency with the Countywide goals and policies and incorporated elements of the findings from this analysis and the public outreach meetings to support the Countywide goals through additional programs, facilities and community benefits in the Specific Plan and in the analysis of the Draft EIR including enhancements of open space, mitigation measures to reduce pollution exposure, and more.

O11-26 See Responses O11-23 and O11-25. Mitigation Measure AQ-6 for the Project requires that idling restrictions be posted in accordance with State law. Likewise, MM AQ-9 requires that all outdoor cargo handling equipment be zero-emission. The Draft EIR also requires the Project to implement solar energy generation (MM GHG-2). The Project's Development Agreement also includes provisions for Transportation Demand Management (TDM) measures, on-site solar generation, as well as an electric truck and grant program.

O11-27 See Response O11-25. The Draft EIR requires energy efficient buildings that exceed the state's current building code standards (MM GHG-3). The Development Agreement also requires all buildings to be designed to meet Leadership in Energy and Environmental Design (LEED) standards, which will ensure that buildings are energy efficient. MM AQ-9 requires that all outdoor cargo handling equipment be zero-emission. Additionally, the project would comply with CalGreen (Title 24, Part 11, Section 5.106.5.3.3) (July 2021 supplement), which requires 10 percent EV spaces for sites with 201 parking spaces or more and Section 5.106.5.2 requires at least eight percent of the total parking spaces to be designated for low-emitting, fuel efficient, and carpool/vanpool vehicles. MM AQ-3 and the Development Agreement require a Transportation Demand Management (TDM) Program to reduce vehicle trips, which could also include requirements for additional carpool/vanpool parking designations.

Additionally, PDF AQ-9 requires that all heavy-duty trucks shall be zero emissions beginning in 2030 if such trucks are widely available and economically feasible and PDF AQ-10 requires the use of zero emissions light- and medium-duty trucks as part of business operations, if such trucks are widely available and economically feasible. PDF AQ-9 and PDF AQ-10 are included to promote the use of alternative fuels and clean fleets and facilitate future installation of electric vehicle supply equipment. Furthermore, the Development Agreement requires the Master Developer to implement an Electric Truck and Car Grant Program. The Electric Truck and Car Grant Program requires the Master Developer to provide funding for the purchase of Class 8 heavy duty electric trucks, Class 4 through Class 7 medium duty trucks, light-duty (Class 1, 2, and 3) delivery vehicles, and local community and passenger vehicle grants. These grants provided by the Project Master Developer would also facilitate the adoption of zero emissions vehicles in the area and provide a clear set of standards for implementing these grants.

O11-28 The loading dock noise levels quantified in the Draft EIR account for the nearest location loading dock activities would occur in relation to the closest residential receptors. The nearest residential

[14] Title 14. Natural Resources. (2018). Retrieved from: http://files.resources.ca.gov/ceqa/docs/2018_CEQA_FINAL_TEXT_122818.pdf.

receptor would be located east of the loading docks at Building 3, across Cherry Avenue. Due to the position and orientation of Building 3 and the expansive distance to other warehouse buildings on-site (over 1,700 feet from the nearest residential receptors), as well as the existing topography/elevation of the Cherry Avenue overcrossing and an approximately 25-foot tall warehouse building at the northeast corner of the Cherry Avenue and Merrill Avenue intersection, loading dock noise emanating from the northeastern-most portion of Building 3 was determined to be the most representative source/location to evaluate noise impacts at the nearest sensitive uses. In addition, the precise number of loading docks with loading/unloading activities for any particular day/hour is unknown at this time; therefore, the measured reference noise level obtained by Kimley-Horn and Associates from the La Palma Walmart loading dock area was used to calculate loading dock noise levels at the nearest sensitive receptor that would emanate from Building 3. Based on desktop research for large industrial warehouses, truck loading reference level noise measurements are similar (or lower)[15] than the reference level identified in the Draft EIR (64.4 dBA at 50 feet, see Draft EIR page 4.13-20). Therefore, utilizing a reference noise level for loading dock activities from a large industrial warehouse facility would not change the significance findings of the Draft EIR. As indicated in the Draft EIR, loading dock noise would be well below the County's most stringent nighttime noise standard of 45 dBA L_{eq}.

O11-29 As discussed in the Draft EIR, potential mitigation measures to reduce the Project's traffic noise impacted segments were determined to be infeasible due to a lack of County jurisdiction over the impacted roadways; physical/safety constraints to construct sound walls or barriers; disproportionate cost of sound walls/rubberized asphalt to mitigate a barely perceptible traffic noise increase along two roadway segments; no guarantee of approval of sound walls or upgraded windows[16] by impacted residences; and environmental and logistical issues of a variety of asphalt types for the County to maintain. Section 21061.1 defines feasible mitigation as "…capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors." Given the limiting factors identified for potential mitigation above, no feasible mitigation was identified in the Draft EIR to reduce the Project's traffic noise impacts. The commenter suggests diverting truck traffic from Randall Avenue to other roadways in the Project vicinity as mitigation. However, re-routing truck traffic would still likely result in traffic noise impacts at different roadway segments. Therefore, diverting Project-generated traffic would not reduce the identified impact and would not be feasible in accordance with CEQA Guidelines Section 21061.1.

O11-30 The commenter provides a general summary of case law and CEQA Guidelines related to the analysis of cumulative impacts and claims that cumulative impacts would not be lessened by other cumulative projects' CEQA compliance. Other nearby projects are also required to comply with CEQA and implement mitigation; however, this discussion did not influence the Draft EIR's conclusions of significance. Cumulative air quality impacts are addressed in Draft EIR *Section 4.3.6*;

[15] Truck loading reference noise levels utilized in the *Moreno Valley Trade Center Warehouse Noise Impact Analysis*, (Urban Crossroads, January 10, 2021) range from 62.8 dBA (dry goods loading dock activity) to 65.7 dBA (cold storage loading dock activity) at 50 feet.

[16] As noted in the Draft EIR, interior noise levels from mobile traffic does not exceed the County's 45 dBA CNEL interior noise standard with windows and doors closed. As such, upgraded windows are not necessary and there is no nexus to require upgraded windows as mitigation.

cumulative GHG impacts are addressed in Draft EIR *Section 4.8.6*, and cumulative noise impacts are discussed in Draft EIR *Section 4.13.6*. The Draft EIR discloses that cumulative air quality, GHG and cumulative off-site traffic noise impacts will be significant and unavoidable.

O11-31 Refer to Master Response 2 and Response to Comment O11-30, above. As summarized in Master Response 2, the Draft EIR includes numerous mitigation measures to reduce emissions. The comment does not raise a specific issue with the adequacy of the Draft EIR or raise any other CEQA issue. No further response is required.

O11-32 See Master Response 3 which provides information on Project alternatives. This comment summarizes CEQA requirements related to the provision of a reasonable range of alternatives to the proposed Project which would avoid or substantially lessen any of the significant effects of the Project. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary. However, the State CEQA Guidelines do not require a specific number of alternatives beyond those clearly stated in its requirements. An alternative site alternative may be forgone if the relocation of a project would be infeasible. In the case of the proposed Project, an alternative site alternative which fits the parameters required for the Project would not be feasible or identifiable. Additionally, it would be infeasible to develop the site with a project that reduces all of the significant unavoidable impacts to less than significant levels and still fully meet the Project objectives. The Project objectives are reasonably related to meeting regional logistics and e-commerce demand and have not been artificially narrowed to limit the scope of acceptable alternatives, as is claimed by the commenter.

O11-33 The commenter recites several of the Project objectives and claims that they are directed toward placement of a large warehouse at the Project site. The objectives listed for the Project are reasonably related to meeting regional logistics and e-commerce demand and have not been artificially narrowed to limit the scope of acceptable alternatives, as is claimed by the commenter. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

O11-34 A reasonable range of alternatives to the Project was considered for their ability to reduce environmental impacts and meet Project objectives. See Master Response 3 regarding alternatives. Refer also to Response O10-7. Alternatives assessed for the Project were based on State CEQA Guidelines and their potential feasibility. Furthermore, the Project was assessed for additional alternatives with none found to be feasible and warranting of additional discussion. The Project's objectives are not narrowly defined but are concrete statements which describe what the Project is trying to achieve and underly the Project purpose. Alternative 2 would generally meet the Project Objectives, to a lesser degree as compared to the Project, but would require a larger number of smaller facilities throughout the region to meet the demand for

industrial space[17], therefore increasing truck trips and traffic impacts since smaller warehouse space at the Project site would increase vehicle trips due to warehouse space being spread out throughout the County.

O11-35 The comment provides a general description of the CEQA Guidelines and case law. The comment makes generalized statements, reiterating previous assertions regarding alleged inadequacies of the Draft EIR. As noted in Master Response 2, the Draft EIR identifies all feasible mitigation measures to minimize Project emissions. Also refer to Responses O11-15 and O11-20 for a summary of Draft EIR air quality mitigation measures and Response O11-14 for a summary of GHG mitigation measures. Refer to the responses below that addresses specific comments.

O11-36 Refer to Master Response 2 and Response O11-11, regarding GHG emissions and mitigation. As noted in master Response 2, although GHG emissions would exceed the numerical threshold identified in the Draft EIR, the Project is subject to the County's GHG Reduction Plan. Draft EIR *Table 4.8-4: San Bernardino County GHG Reduction Measures Screening Table* demonstrates that the Project would comply with the County's GHG Reduction Measures and would be consistent with the GHG Reduction Plan. MM GHG-1 requires the Project to apply reduction measures identified in the County's GHG Screening Tables so that each building would achieve a minimum of 100 points.

The County's 2021 GHG Emissions Reduction Plan Update states that any project that adopts at least 100 points of GHG performance standards listed in the proposed 2021 Screening Tables, would be consistent with the County's GHG Emissions Reduction Plan to reduce emissions to 40 percent below 2007 levels. Meeting this reduction would be consistent with the State's long-term goal to achieve statewide carbon neutrality (zero net emissions) by 2045, and therefore, would result in a less than significant impact related to GHG emissions. Nonetheless, the Draft EIR conservatively concludes that impacts would remain significant and unavoidable due to the size of the Project and its corresponding GHG emissions.

O11-37 Refer to Master Response 2, Response O11-11, and Response O11-14 regarding GHG emissions and mitigation. The Project's significant and unavoidable GHG impact is driven primarily by mobile source emissions. The commenter is incorrect that emissions from vehicles and emissions from construction are the same in terms of feasible mitigation; vehicle emissions standards are regulated by the State and federal government, over which the County has no authority. However, as noted in Response O11-27, PDF AQ-9 and PDF AQ-10 have been included to promote the use of alternative fuels and clean fleets and facilitate future installation of electric vehicle supply equipment. The Development Agreement requires the Master Developer to implement an Electric Truck and Car Grant Program. The Electric Truck and Car Grant Program requires the Master Developer to provide funding for the purchase of Class 8 heavy duty electric trucks, Class 4 through Class 7 medium duty trucks, light-duty (Class 1, 2, and 3) delivery vehicles, and local community and passenger vehicle grants. These grants provided by the Project Master Developer would also facilitate the adoption of zero emissions vehicles in the area and provide a clear set of

[17] According to a Quarter 2 (Q2) 2022 report from CBRE, Inc.

standards for implementing these grants. While the County has no authority over vehicle emission standards, as described above the Project includes design measures and development agreement that will result in a reduction of vehicle emissions.

As discussed in Response O11-36, the Project is subject to the County's GHG Reduction Plan. The Project would comply with the County's GHG Reduction Measures and would be consistent with the GHG Reduction Plan. which would be consistent with the State's GHG reduction goals. Achieving 100 points on the County's GHG Screening Tables requires the implementation of numerous measures. For example, the tables require various measures to improve building energy efficiency such as installing upgraded building insulation, windows, cool roofs, air filtration, indoor space efficiencies, space heating, water cooling, daylighting, efficient lighting, building placement, and shading. The tables also require various water efficiency measures to reduce energy related GHG emissions. To reduce mobile source emissions and encourage the use of ZEVs, the Screening Tables require electric vehicle chargers and bike and pedestrian amenities. To reduce GHG emissions from solid waste, the Screening Tables require increased recycling.

The Draft EIR also requires the Project to implement solar energy generation (MM GHG-2), requires energy efficient buildings that exceed the building code standards (MM GHG-3), requires the solid waste diversion (MM GHG-4), and requires the use of 100 percent electrically powered landscape equipment (MM GHG-5).

O11-38 Refer to Response R2-3 regarding the definition of "commercially available." The comment incorrectly asserts that the Draft EIR includes mitigation that is improperly deferred and lacks defined performance standards. The Draft EIR provides as much specific information as possible and does not defer mitigation and has not deprived the public from commenting on the adequacy of the mitigation.

CEQA defines "feasible" as capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors (refer to CEQA Section 21061.1 and CEQA Guidelines Section 15364). As discussed in Response R2-3, ZE vehicle technology is not commercially available and therefore, not feasible as CEQA mitigation. It should be noted that the comment quotes the terms when "feasible" and "as applicable" from the Project Design Features (PDFs) and not the mitigation measures. PDFs are specific design and/or operational characteristics proposed by the Master Developer that are incorporated into the Project and part of the Project description and Specific Plan. Because PDFs are incorporated into the Project, they do not constitute mitigation measures. It should be noted that these PDFs facilitate compliance with regulations and latest best practices. Additionally, the PDFs are supported by the Development Agreement, which requires the Master Developer to implement an Electric Truck and Car Grant Program. The Electric Truck and Car Grant Program requires the Master Developer to provide funding for the purchase of Class 8 heavy duty electric trucks, Class 4 through Class 7 medium duty trucks, light-duty (Class 1, 2, and 3) delivery vehicles, and local community and passenger vehicle grants. These grants provided by the Project Master Developer would also facilitate the adoption of zero emissions vehicles in the area and provide a clear set of standards for implementing these grants.

Establishing mitigation timing at tenant occupancy is necessary because the Project proposes speculative buildings where the Master Developer would only construct the building shell. The tenant would then conduct tenant improvements so that the building meets their needs. For example, MM AQ-3 requires the tenant to prepare/implement a Transportation Demand Management (TDM) Program. This is necessary in order for the tenant to implement TDM measures that are specific to their employees and operations. All measures are tied to County issuance of permits and are therefore fully enforceable. The comment fails to provide specific information on how the mitigation is deferred.

O11-39 The comment provides general statements about the commenter's view about feasible mitigation and the Draft EIR. As noted in Master Response 2, the Draft EIR identifies all feasible mitigation measures to minimize Project emissions, as required under Section 15126.4. Refer to Responses O11-40 to O11-45 for responses to specific comments.

O11-40 Refer to Response O11-25. The Lead Agency is the County of San Bernardino, and the Project is not located in the City of Fontana and is not subject to the City's ordinances.

It should be noted that Section 9-71 of Fontana Ordinance No. 1891 pertains to site design. The Project would be subject to the County's site design and review process. However, the Project would be consistent with the majority of the measures required in Sections 9-72 through 9-74 of Fontana Ordinance No. 1891.

Section 9-72 includes requirements restricting idling and truck routes. Draft EIR MM AQ-1 requires all construction equipment and delivery vehicles shall be turned off when not in use, or limit on-site idling for no more than 5 minutes in any 1 hour to achieve this measure. San Bernardino County Code Section 83.01.040 Air Quality and PDF AQ-1 require that on-site electrical power connections shall be provided for electric construction tools to eliminate the need for diesel-powered electric generators, where feasible.

The Project would comply with the 5-minute limit per CARB regulation/state law. Implementation of this measure is not quantifiable because CalEEMod does not allow for the adjustment of idle times. The Project includes MM AQ-6, which requires signage stating that drivers turn off engines when not in use, identifying the State's 5-minute idling limit (California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Section 2485 [Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling]), and including telephone numbers of the building facilities manager and CARB to report violations.

PDF AQ-11 requires facility operators to train managers and employees on efficient scheduling and load management to eliminate unnecessary queuing and idling of trucks. PDF AQ-14 requires facility operators to ensure that site enforcement staff in charge of keeping the daily log and monitoring for excess idling will be trained/certified in diesel health effects and technologies, for example, by requiring attendance at California Air Resources Board-approved courses (such as the free, one-day Course #512)

Fontana Ordinance No. 1891 Section 9-73 includes requirements for alternative energy and EV charging. The Project includes numerous measures that would comply with these standards. For example, MM AQ-3, requires a TDM program to reduce vehicle trips and encourage alternative modes of transportation and provide associated amenities. MM AQ-4 accommodates the future installation of EV truck charging stations for when this technology becomes commercially available, and the buildings are being served by trucks with electric-powered engines. MM AQ-5 requires plug-in capable TRUs and electrical hookups at loading docks for tenants that require cold storage. MM AQ-8 requires the Project to include electric vehicle (passenger car) charging stations and a minimum of 12 percent carpool parking spaces at each building for employees and the public to use. MM AQ-9 requires all outdoor cargo handling equipment (including yard trucks, hostlers, yard goats, pallet jacks, and forklifts) to be powered by electricity (i.e., zero emission). MM AQ-11 requires Project compliance with SCAQMD Rule 2305 to facilitate the use of ZE and NZE trucks. The Draft EIR also requires the Project to implement solar energy generation (MM GHG-2), requires energy efficient buildings that exceed the building code standards (MM GHG-3).

Fontana Ordinance No. 1891 Section 9-74 includes measures related to construction and operations. The Project includes numerous measures that would comply with these standards as well. For example, MM AQ-1 includes using cleanest equipment available (i.e., Tier 4 or Level 3 particulate filters) and PDF-1 requires electric tools, electric equipment during construction. MM AQ-2 includes low-VOC requirements during construction. MM AQ-4 require electrical rooms to be sized to hold additional panels to accommodate future EV charging. MM AQ-7 requires information about the Carl Moyer Program and PDF AQ-19 requires SmartWay. MM GHG-4 requires recycling/diverting 75 percent solid waste.

O11-41 Refer to Response O11-23. As discussed above and on Draft EIR page 4.3-36, the Project would be required to comply with SCAQMD to directly reduce emissions. Alternatively, warehouse operators can choose to pay a mitigation fee. As noted in the Draft EIR, a preliminary WAIRE calculation indicates that the Project would more than fulfill its Warehouse Points Compliance Obligation (WPCO). Compliance with SCAQMD Rule 2305 is also required per MM AQ-10.

Additionally, PDF AQ-9 and PDF AQ-10 have been included to promote the use of alternative fuels and clean fleets and facilitate future installation of electric vehicle supply equipment. Furthermore, the Development Agreement requires the Master Developer to implement an Electric Truck and Car Grant Program. The Electric Truck and Car Grant Program requires the Master Developer to provide funding for the purchase of Class 8 heavy duty electric trucks, Class 4 through Class 7 medium duty trucks, light-duty (Class 1, 2, and 3) delivery vehicles, and local community and passenger vehicle grants. These grants provided by the Project Master Developer would also facilitate the adoption of zero emissions vehicles in the area and provide a clear set of standards for implementing these grants.

O11-42 This comment summarizes the California Attorney General document entitled Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act, which provides example mitigation measures. These mitigation measures were considered during Project design and have been included as design features or mitigation

measures if feasible for the Project. The following table identifies the recommended best practices listed in the Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act and addresses how the Project complies with each of the items noted in the comment.

Attorney General Measure	**Method of Project Incorporation**
Placing facility entry and exit points from the public street away from sensitive receptors, e.g., placing these points on the north side of the facility if sensitive receptors are adjacent to the south side of the facility.	The Project is not immediately adjacent to sensitive receptors. The closest sensitive receptors are located approximately 410 feet away and the closest loading docks are approximately 760 feet away from this receptor. However, the majority of sensitive receptors are located more than 1,000 feet away. Therefore, facility entry and exit points would not locate trucks adjacent to sensitive receptors. Additionally, the primary truck access for buildings would be located off of internal streets and not near sensitive receptors. As noted in Response O11-20, MM AQ-1 and MM AQ-9 would reduce localized emissions to reduce health risk impacts to sensitive receptors. MM AQ-1 would reduce construction related DPM by requiring Tier 4 equipment that would reduce equipment exhaust a total of 2.44 tons. MM AQ-9 would require zero emissions cargo handling equipment that would reduce operational DPM exhaust emissions by approximately 1.68 tons per year.
Locating warehouse dock doors and other onsite areas with significant truck traffic and noise away from sensitive receptors, e.g., placing these dock doors on the north side of the facility if sensitive receptors are adjacent to the south side of the facility.	As noted above, the Project is not adjacent to sensitive receptors and the dock doors would not be facing sensitive receptors. The majority of sensitive receptors are buffered from the project site by existing roadways as well as a railroad and detention basin to the north, and commercial uses to the east, west, and south.
Screening dock doors and onsite areas with significant truck traffic with physical, structural, and/or vegetative barriers that adequately prevent or substantially reduce pollutant dispersal from the facility towards sensitive receptors.	As noted above, sensitive receptors are not adjacent to dock doors and screening is not necessary.
Posting signs indicating that all parking and maintenance of trucks must be conducted within designated on-site areas and not within the surrounding community or public streets.	The Project would provide 98 acres of truck parking as well as additional onsite truck and employee parking for each building to eliminate the need for off-site parking. All parking and any maintenance activities would occur onsite.

Attorney General Measure	Method of Project Incorporation
Fully analyzing impacts from truck trips. CEQA requires full public disclosure of a project's anticipated truck trips, which entails calculating truck trip length based on likely truck trip destinations, rather than the distance from the facility to the edge of the air basin. Emissions beyond the air basin are not speculative, and, because air pollution is not static, may contribute to air basin pollution. Moreover, any contributions to air pollution outside the local air basin should be quantified and their significance should be considered.	Refer to Response O11-18. The Draft EIR fully analyzes impacts from truck trips. Specifically, refer to *Sections 4.3 Air Quality, 4.8 Greenhouse Gas Emissions, 4.13 Noise,* and *4.17 Transportation*.

O11-43 This comment summarizes mitigation measures recommended in the Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act. These mitigation measures were considered during Project design and have been included as design features or mitigation measures if feasible for the Project. The following table identifies the recommended mitigation measures listed in the Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act and addresses how the Project complies with each measure.

Attorney General Measure	Method of Project Incorporation
Prohibiting off-road diesel-powered equipment from being in the "on" position for more than 10 hours per day.	Draft EIR MM AQ-1 requires all construction equipment and delivery vehicles shall be turned off when not in use, or limit on-site idling for no more than 5 minutes in any 1 hour to achieve this measure.
Providing electrical hook ups to the power grid, rather than use of diesel-fueled generators, for electric construction tools, such as saws, drills, and compressors, and using electric tools whenever feasible.	San Bernardino County Code Section 83.01.040 Air Quality and PDF AQ-1 require that on-site electrical power connections shall be provided for electric construction tools to eliminate the need for diesel-powered electric generators, where feasible.
Limiting the amount of daily grading disturbance area.	The Project would be required to comply with SCAQMD Rule 403, which limits daily grading disturbance area to minimize fugitive dust (see SC AQ-1 on Draft EIR page 4.3-37 and MM AQ-1 on Draft EIR page 4.3-39).
Prohibiting grading on days with an Air Quality Index forecast of greater than one hundred for particulates or ozone for the project area.	The emissions analysis for the Project determined that localized construction emissions would not exceed SCAQMD thresholds (see Draft EIR pages 4.3-43 through 4.3-46). Therefore, the Project would not have the potential to influence localized

Attorney General Measure	Method of Project Incorporation
	pollutant concentrations and implementation of this measure is not necessary.
Forbidding idling of heavy equipment for more than two minutes.	The Project would comply with the 5-minute limit per CARB regulation/state law. The Project includes MM AQ-6 requires signage stating that drivers turn off engines when not in use, identifying the State's 5-minute idling limit (California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Section 2485 [Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling]), and including telephone numbers of the building facilities manager and CARB to report violations. Additionally, the Project includes design features to minimize idling. For example, PDF AQ-11 requires facility operators to train managers and employees on efficient scheduling and load management to eliminate unnecessary queuing and idling of trucks. PDF AQ-14 requires facility operators to ensure that site enforcement staff in charge of keeping the daily log and monitoring for excess idling will be trained/certified in diesel health effects and technologies, for example, by requiring attendance at California Air Resources Board-approved courses (such as the free, one-day Course #512).
Keeping onsite and furnishing to the lead agency or other regulators upon request, all equipment maintenance records and data sheets, including design specifications and emission control tier classifications.	MM AQ-1 (Draft EIR page 4.3-38) requires a copy of each unit's Best Available Control Technology (BACT) documentation (certified tier specification or model year specification), and CARB or SCAQMD operating permit (if applicable) to be provided to the County at the time of mobilization of each applicable unit of equipment. PDF AQ-12 (Draft EIR page 4.3-22) requires tenants train staff to keep vehicle records in diesel technologies and comply with CARB regulations. PDF AQ-13 (Draft EIR page 4.3-22) requires tenants to maintain records on its fleet equipment and vehicle engine maintenance to ensure that equipment and vehicles serving the warehouses within the Project are in good condition, and in

Attorney General Measure	Method of Project Incorporation
	proper tune pursuant to manufacturer's specifications.
Conducting an on-site inspection to verify compliance with construction mitigation and to identify other opportunities to further reduce construction impacts.	See PDF AQ-3 which requires construction contractors to keep all equipment maintenance records and data sheets, including design specifications and emission control tier classifications, on-site or at the contractor's office and shall furnish documents to the Lead Agency or other regulators, upon request. As noted above, compliance with SCAQMD rules are required as standard condition and would be enforced by SCAQMD inspection. Additionally, the emissions analysis for the Project determined that localized construction emissions would not exceed SCAQMD localized thresholds (see Draft EIR pages 4.3-43 through 4.3-46). CARB's In-Use Off-Road Diesel Vehicle Regulation ensures equipment meets standards.
Using paints, architectural coatings, and industrial maintenance coatings that have volatile organic compound levels of less than 10 g/L.	MM AQ-2 (Draft EIR pages 4.3-39 to 4.3-40) requires the Project to use "Super-Compliant" low volatile organic compound (VOC) paints (i.e., a VOC content of 10 g/L or less).
Requiring that all facility-owned and operated fleet equipment with a gross vehicle weight rating greater than 14,000 pounds accessing the site meet or exceed 2010 model-year emissions equivalent engine standards as currently defined in California Code of Regulations Title 13, Division 3, Chapter 1, Article 4.5, Section 2025. Facility operators shall maintain records on-site demonstrating compliance with this requirement and shall make records available for inspection by the local jurisdiction, air district, and state upon request.	Refer to PDF AQ-7 (Draft EIR page 4.3-22). which requires the tenant/facility operator to post both interior and exterior facing signs, including signs directed at all dock and delivery areas, identifying idling restrictions and contact information to report violations to CARB, SCAQMD, and the building manager. Additionally, CARB's Truck and Bus Regulation requires heavy vehicles to meet this standard by January 1, 2023.
Requiring tenants to use zero-emission light- and medium-duty vehicles as part of business operations.	The Project includes PDF's and mitigation that would facilitate the use of ZE and NZE vehicles consistent with CARB and SCAQMD programs (e.g., Advanced Clean Truck Regulation, Sustainable Freight Action Plan, SCAQMD Rule 2305, etc.). MM AQ-11 requires Project compliance with SCAQMD Rule 2305 to facilitate the use of ZE and NZE trucks. Additionally, MM AQ-9 requires all

Attorney General Measure	Method of Project Incorporation
	outdoor cargo handling equipment (including yard trucks, hostlers, yard goats, pallet jacks, and forklifts) to be powered by electricity (i.e., zero emission). To promote the use of alternative fuels and clean fleets and facilitate future installation of electric vehicle supply equipment, PDF AQ-9 requires that all heavy-duty trucks shall be zero emissions beginning in 2030 if such trucks are widely available and economically feasible and PDF AQ-10 requires the use of zero emissions light- and medium-duty trucks as part of business operations, if such trucks are widely available and economically feasible. Furthermore, the Development Agreement requires the Master Developer to implement an Electric Truck and Car Grant Program. The Electric Truck and Car Grant Program requires the Master Developer to provide funding for the purchase of Class 8 heavy duty electric trucks, Class 4 through Class 7 medium duty trucks, light-duty (Class 1, 2, and 3) delivery vehicles, and local community and passenger vehicle grants. These grants provided by the Project Master Developer would also facilitate the adoption of zero emissions vehicles in the area and provide a clear set of standards for implementing these grants.
Forbidding trucks from idling for more than two minutes and requiring operators to turn off engines when not in use.	The Project would comply with the 5-minute limit per CARB regulation/state law. The Project includes MM AQ-6 requires signage stating that drivers turn off engines when not in use, identifying the State's 5-minute idling limit (California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Section 2485 [Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling]), and including telephone numbers of the building facilities manager and CARB to report violations. PDF AQ-11 requires facility operators to train managers and employees on efficient scheduling and load management to eliminate unnecessary queuing and idling of trucks.

Attorney General Measure	Method of Project Incorporation
	PDF AQ-14 requires facility operators to ensure that site enforcement staff in charge of keeping the daily log and monitoring for excess idling will be trained/certified in diesel health effects and technologies, for example, by requiring attendance at California Air Resources Board-approved courses (such as the free, one-day Course #512)
Posting both interior- and exterior-facing signs, including signs directed at all dock and delivery areas, identifying idling restrictions and contact information to report violations to CARB, the air district, and the building manager.	See MM AQ-6 which requires signage stating that drivers turn off engines when not in use, identifying the State's 5-minute idling limit (California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Section 2485 [Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling]), and including telephone numbers of the building facilities manager and CARB to report violations on Draft EIR pages 4.3-41 to 4.3-43.
Installing and maintaining, at the manufacturer's recommended maintenance intervals, air filtration systems at sensitive receptors within a certain radius of facility for the life of the project.	A Project specific Health Risk Assessment was prepared for the Project and determined that with the implementation of MM AQ-1 (Tier 4 construction equipment) and MM AQ-9 (zero-emission cargo handling equipment), health risks would be reduced to less than significant levels. Therefore, mitigation requiring air filtration systems such as MERV 13 filters would not be required.
Installing and maintaining, at the manufacturer's recommended maintenance intervals, an air monitoring station proximate to sensitive receptors and the facility for the life of the project and making the resulting data publicly available in real time. While air monitoring does not mitigate the air quality or greenhouse gas impacts of a facility, it nonetheless benefits the affected community by providing information that can be used to improve air quality or avoid exposure to unhealthy air.	CARB currently operates the Fontana-Arrow Highway Monitoring Station located approximately 0.76 miles northeast of the Project site. This data is publicly available on CARB's website.
Constructing electric truck charging stations proportional to the number of dock doors at the project.	MM AQ-4 (Draft EIR page 4.3-41) accommodates the future installation of EV truck charging stations for when this technology becomes commercially available and the buildings are being served by trucks with electric-powered engines.

Attorney General Measure	Method of Project Incorporation
	MM AQ-10 requires compliance with SCAQMD Rule 2305. Rule 2305 requires the Project operator to directly reduce NO_X and particulate matter emissions or to otherwise facilitate emission and exposure reductions of these pollutants in nearby communities. Alternatively, warehouse operators can choose to pay a mitigation fee. Funds from the mitigation fee will be used to incentivize the purchase of cleaner trucks and charging/fueling infrastructure in communities nearby.
Installing solar photovoltaic systems on the project site of a specified electrical generation capacity, such as equal to the building's projected energy needs.	MM GHG-2 (Draft EIR page 4.8-32 to 4.8-33) requires the Project to provide at least 50 percent of the building load and the plug-load with on-site renewable energy (i.e., photovoltaic panels).
Requiring all stand-by emergency generators to be powered by a non-diesel fuel.	As the end users of the Project have not been identified, it is not known if backup generators would be needed for any of the potential buildings. If necessary, backup generators would only be used in the event of a power failure and would not be part of the Project's normal daily operations. If backup generators are required, the end user would be required to obtain a permit from the SCAQMD prior to installation. Emergency backup generators must meet SCAQMD's Best Available Control Technology (BACT) requirements and comply with SCAQMD Rule 1470 (Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines), which would minimize emissions. As the end users and future tenants of the proposed Project are unknown, the need for emergency backup generators is speculative. Under CEQA Guidelines Section 15384, argument, speculation, unsubstantiated opinion or narrative, evidence that is not credible, and evidence of social and economic impacts does not constitute substantial evidence. As the proposed Project involves speculative warehouse buildings and the end users are unknown, prohibiting specific fuels for backup generators is not feasible, because it is unknown what the specific needs of an end user would be.
Requiring facility operators to train managers and employees on efficient scheduling and load	PDF AQ-11 (Draft EIR page 4.3-22) requires facility operators to train managers and employees on

Attorney General Measure	Method of Project Incorporation
management to eliminate unnecessary queuing and idling of trucks.	efficient scheduling and load management to eliminate unnecessary queuing and idling of trucks. PDF AQ-12 (Draft EIR page 4.3-22) requires tenants train staff to keep vehicle records in diesel technologies and comply with CARB regulations.
Requiring operators to establish and promote a rideshare program that discourages single-occupancy vehicle trips and provides financial incentives for alternate modes of transportation, including carpooling, public transit, and biking.	MM AQ-3 (Draft EIR page 4.3-40) requires the implementation of a Transportation Demand Management (TDM) Program that would require operators to promote and support carpool/vanpool/rideshare use through parking incentives and administrative support, such as ride-matching service, among various other trip reduction measures.
Posting signs at every truck exit driveway providing directional information to the truck route.	PDF AQ-21 on Draft EIR page 4.3-23 requires site developers to install signs at each exit driveway, providing directional information to the County's truck route.
Improving and maintaining vegetation and tree canopy for residents in and around the project area.	The Project would be subject to the County's landscape requirements, which would be verified as part of the County's, design review, and plan approval process.
Requiring tenants to enroll in the United States Environmental Protection Agency's SmartWay program and requiring tenants to use carriers that are SmartWay carriers.	PDF AQ-19 (Draft EIR page 4.3-23) requires tenants/facility operators to enroll in the U.S. EPA's SmartWay program and for tenants to use carriers that are SmartWay carriers
Plant trees and vegetation near structures to shade buildings and reduce energy requirements for heating/cooling.	Shading of structures is required as part of the San Bernardino County GHG Reduction Measures Screening Table; refer to Draft EIR page 4.8-27.
Constructing physical, structural, or vegetative noise barriers on and/or off the project site.	Refer to Responses to Comments O11-28 and O11-29.
Preserve or replace onsite trees (that are removed due to development) as a means of providing carbon storage.	The Project would comply with County Code Chapter 88.01 (Plant Protection and Management) regarding tree removal and replacement. The Project is located in an industrial area that is already disturbed. The Project would be required to Provide landscaping, including trees, in accordance with County requirements (see Draft EIR page 4.4-22).
Locating or parking all stationary construction equipment as far from sensitive receptors as possible and directing emitted noise away from sensitive receptors.	As discussed on Draft EIR pages 4.13-13 through 4.13-18, the Project would not result in significant construction noise impacts; therefore, compliance with this measure is not required.
Verifying that construction equipment has properly operating and maintained mufflers	SC NOI-1 (Draft EIR page 4.13-24) would ensure that all construction equipment is equipped with

Attorney General Measure	Method of Project Incorporation
	properly operating and maintained mufflers and other State required noise attenuation devices, signs are posted near residences with contact information and dates of construction activities, construction notices are sent to adjacent residences, construction haul routes avoid sensitive uses where possible, and designating a noise disturbance coordinator to minimize and manage construction noise, among others.
Requiring all combustion-powered construction equipment to be surrounded by a noise protection barrier	As discussed on Draft EIR pages 4.13-13 through 4.13-18, the Project would not result in significant construction noise impacts; therefore, compliance with this measure is not required.
Limiting operation hours to daytime hours on weekdays.	See above. No construction noise impacts are anticipated. Construction of the Project would be limited to the daytime hours of construction permitted (between the hours of 7:00 a.m. to 7:00 p.m. and would not occur on Sundays or Federal holidays as stated in the County Building Code Standards (§ 150.003 Construction: Hours of Construction) (unless otherwise approved by the County), and nighttime lighting would only be required seasonally (see Draft EIR pages 4.13-10 and 4.13-14).
Paving roads where truck traffic is anticipated with low noise asphalt.	Refer to Responses to Comments O11-28 and O11-29.
Orienting any public address systems onsite away from sensitive receptors and setting system volume at a level not readily audible past the property line.	Operational noise impacts are discussed on Draft EIR pages 4.13-18 through 4.13-22 and on-site impacts would be less than significant.
Retrofit municipal water and wastewater systems with energy efficient motors, pumps, and other equipment, and recover wastewater treatment methane for energy production.	The Project does not propose the retrofit of municipal systems. However, the Project would be subject to applicable development impact fees that would contribute to these improvements. The Draft EIR requires the Project to comply with the County's GHG reduction measures, which include various energy efficiency and water efficiency measures.
Designing, clearly marking, and enforcing truck routes that keep trucks out of residential neighborhoods and away from other sensitive receptors.	See PDF AQ-21 Draft EIR page 4.3-23 which requires developers to install signs at each exit driveway, providing directional information to the County's truck route.
Installing signs in residential areas noting that truck and employee parking is prohibited.	The Project would provide 98 acres of truck parking as well as additional onsite truck and employee

Attorney General Measure	Method of Project Incorporation
	parking for each building to eliminate the need for off-site parking.
Constructing new or improved transit stops, sidewalks, bicycle lanes, and crosswalks, with special attention to ensuring safe routes to schools.	Refer to MM AQ-3, (Draft EIR page 4.3-40) which requires a TDM program to reduce vehicle trips and encourage alternative modes of transportation and provide associated amenities.
Consulting with the local public transit agency and securing increased public transit service to the project area.	As noted above, MM AQ-3, requires a TDM program to reduce vehicle trips and encourage transit.
Designating areas for employee pickup and drop-off.	Site design would be subject to the County's design review process. Additionally, designated employee pickup and drop-off areas may be determined applicable as part of the TDM program required by MM AQ-3.
Placing facility entry and exit points on major streets that do not have adjacent sensitive receptors.	The Project entry and exit points along Cherry Avenue and Napa Street which are not proximate to sensitive receptors. Additionally, the primary truck access for buildings would be located off of internal streets and not near sensitive receptors.
Restricting the turns trucks can make entering and exiting the facility to route trucks away from sensitive receptors.	See PDF AQ-21 (Draft EIR page 4.3-23) which requires_ developers to install signs at each exit driveway, providing directional information to the County's truck route
Preparing a construction traffic control plan prior to grading, detailing the locations of equipment staging areas, material stockpiles, proposed road closures, and hours of construction operations, and designing the plan to minimize impacts to roads frequented by passenger cars, pedestrians, bicyclists, and other non-truck traffic.	Construction traffic control is required in County Code Section 83.01.040 Air Quality. The Project would prepare a construction traffic control plan prior to any construction activities, per the County's requirements.
Appointing a compliance officer who is responsible for implementing all mitigation measures and providing contact information for the compliance officer to the lead agency, to be updated annually.	Mitigation measures would be enforced by the County through implementation of the Mitigation Monitoring and Reporting Program.
Creating a fund to mitigate impacts on affected residents, schools, places of worship, and other community institutions by retrofitting their property. For example, retaining a contractor to retrofit/install HVAC and/or air filtration systems, doors, dual-paned windows, and sound- and vibration-deadening insulation and curtains.	This would not be relevant to the project as a mitigation fund would be the responsibility of a jurisdiction (i.e., the County) and not a project. Additionally, as discussed in the Draft EIR and HRA, health risk impacts would be less than significant with mitigation incorporated. (see Draft EIR at 4.3-43 to 4.3-53). Therefore, there is no nexus for implementation of this measure. However, the Project would also be subject to SCQAQMD Rule

Attorney General Measure	Method of Project Incorporation
	2305, which requires warehouse operators, among other things, to acquire of Zero Emissions or Near Zero Emissions trucks, requires Zero Emission/Near Zero Emission truck visits, requires Zero Emission yard trucks, and install on-site Zero Emission charging/fueling infrastructure, or pay a mitigation fee to SCAQMD to be used to incentivize the purchase of Zero Emission/Near Zero Emission trucks and charging/fueling infrastructure in communities nearby or implement HVAC filtration systems in impacted communities.
Using cool pavement to reduce heat island effects.	The Project would redevelop an already urbanized area that consists of asphalt paved areas. The Project would be required to comply with the County's GHG Reduction Measures (refer to MM GHG-1), which includes requirements for enhanced cool roofs that would actually reduce the heat island effect. The Project would replace existing asphalt (i.e., black top) with new buildings that would be required to meet the latest building codes and County requirements for light-colored solar reflective roofs that reduce the heat island effect.
Installing climate control in the warehouse facility to promote worker well-being.	The Project would be subject to the California Building Code and the Green Building Standards Code, which includes requirements for insulation, shading, mechanical ventilation, and heating, ventilation, and air conditioning.
Installing air filtration in the warehouse facility to promote worker well-being.	Refer to the response above. The Project would be subject to the California Building Code and the Green Building Standards Code, which includes requirements for insulation, shading, mechanical ventilation, and heating, ventilation, and air conditioning.

O11-44 This comment summarizes the CARB's Recommended Air Pollution Emission Reduction Measures for Warehouses and Distribution relevant to construction. These construction mitigation measures were considered during Project design and have been included as design features or mitigation measures if feasible for the Project as described below.

CARB Measure	Method of Project Incorporation
Ensure the cleanest possible construction practices and equipment are used. This includes	MM AQ-1 requires construction equipment to meet CARB Tier 4 (cleanest available) emissions

CARB Measure	Method of Project Incorporation
eliminating the idling of diesel-powered equipment, and providing the necessary infrastructure (e.g., electrical hookups) to support zero and near-zero equipment and tools.	standards. Additionally, MM AQ-9 requires zero emission handling equipment.
Implement, and plan accordingly for, the necessary infrastructure to support the zero and near-zero emission technology vehicles and equipment that will be operating onsite. This includes the physical (e.g., needed footprint), energy, and fueling infrastructure for construction equipment, onsite vehicles and equipment, and medium-heavy and heavy-heavy duty trucks.	Mitigation in the Draft EIR Air Quality section (*Section 4.3*) includes numerous measures that would facilitate zero and near zero emissions technology. Applicable air quality mitigation includes constructing EV infrastructure (MM AQ-4), conduit for Transport Refrigeration plugins (MM AQ-5), energy efficient vendor trucks (MM AQ-7), EV charging stations and carpool parking (MM AQ-8), electric/zero emission cargo handling equipment (MM AQ-9), and compliance with SCAQMD Rule 2305 (MM AQ-10) which is a program to incentivize the purchase of cleaner trucks and charging/fueling infrastructure for the Project and in the nearby community.
In construction contracts, include language that requires all off-road equipment with a power rating below 19 kilowatts (e.g., plate compactors, pressure washers, etc.) used during project construction be battery powered.	PDF AQ-1 requires electric hookups for generators and electric tools where available. Also refer to Response to Comment R2-3. The Project Applicant, in consultation with their construction contractor, identified the list of equipment necessary for construction of the Project, including which equipment may be alternatively fueled. The construction contractor reviewed the existing equipment in their fleet that would be used for the Project and contacted their subcontractors to determine the available equipment and trucks that would be used. Commercially available battery powered electric construction equipment have limited capacity and capabilities when viewed in the context of a major construction project like the proposed Project. The vast majority of earth moving activities at the Project site would require heavy-duty capabilities beyond those of the battery powered equipment identified in the comment.
In construction contracts, include language that requires all heavy-duty trucks entering the construction site, during either the grading or building construction phases be model year 2014 or later. Starting in the year 2022, all heavy-duty haul trucks should also meet CARB's lowest optional low-NOx standard,	PDF AQ-7 (Draft EIR page 4.3-22) requires heavy-duty trucks to meet model year 2010 standards in accordance with CARB's Truck and Bus Regulation, which requires heavy vehicles to meet this standard by January 1, 2023. Additionally, the California Attorney General's 2021 guidance Warehouse Projects: Best Practices and Mitigation Measures to

CARB Measure	Method of Project Incorporation
	Comply with the California Environmental Quality Act, also recommends 2010 model year trucks (see https://oag.ca.gov/system/files/media/warehouse-best-practices.pdf, page 7).
In construction contracts, include language that requires all construction equipment and fleets to be in compliance with all current air quality regulations. CARB staff is available to provide assistance in implementing this recommendation.	As noted above, MM AQ-1 requires construction equipment to meet CARB Tier 4 (cleanest available) emissions standards.

O11-45 This comment summarizes the CARB's Recommended Air Pollution Emission Reduction Measures for Warehouses and Distribution. These operational mitigation measures were considered during Project design and have been included as design features or mitigation measures if feasible for the Project.

CARB Measure	Method of Project Incorporation
Include contractual language in tenant lease agreements that require tenants to use the cleanest technologies available, and to provide the necessary infrastructure to support zero-emission vehicles and equipment that will be operating onsite.	MM AQ-9 requires zero emission handling equipment.
Include contractual language in tenant lease agreements that requires all service equipment (e.g., yard hostlers, yard equipment, forklifts, and pallet jacks) used within the site to be electric or powered by compressed natural gas.	See above. MM AQ-9 requires zero emission handling equipment.
Include contractual language in tenant lease agreements that requires the tenant be in, and monitor compliance with, all current air quality regulations for on-road trucks including CARB's Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation, Periodic Smoke Inspection Program (PSIP), and the Statewide Truck and Bus Regulation.	Operators and manufacturers are required to comply with CARB regulations. CARB's Tractor-Trailer Greenhouse Gas Regulation reduces greenhouse gas emissions by improving the aerodynamic performance and reducing the rolling resistance of tractor-trailers. CARB's Advanced Clean Trucks regulation is a manufacturer's ZEV sales requirement and a one-time reporting requirement for large entities and fleets. The Periodic Smoke Inspection Program (PSIP) is CARB's heavy-duty vehicle inspection program for in-use trucks and buses that includes roadside testing by CARB. The Statewide Truck and Bus Regulation requires fleets to upgrade to 2010 or newer model year engines by January 1, 2023. The suggested additional mitigation measures are already State regulation (i.e., mandatory). As such these

CARB Measure	Method of Project Incorporation
	measures are essentially part of the Project; and therefore, are not mitigation under CEQA. Additionally, the California Attorney General's 2021 guidance Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act, also recommends 2010 model year trucks (see https://oag.ca.gov/system/files/media/warehouse-best-practices.pdf, page 7).
Include contractual language in tenant lease agreements that requires all heavy-duty trucks entering the project site to be model year 2014 or later.	Refer to response O3-20. CARB is addressing emissions from heavy duty vehicles through various regulatory programs including lower emission standards, restrictions on idling, the use of post-combustion filter and catalyst equipment, and retrofits for diesel truck fleets. These programs are expected to result in significant reductions in NO_X, ROG, PM_{10}, $PM_{2.5}$, and CO emissions as they are fully implemented by 2023. Federal and State agencies regulate and enforce vehicle emission standards. It is not feasible for San Bernardino County to effectively enforce a prohibition on trucks from entering the property that are otherwise permitted to operate in California and access other properties in the County, region, and State. Based on data from CARB, most heavy-duty trucks entering the Project site will meet or exceed 2010 model year emission standards by 2023. Specifically, according to CARB EMFAC inventories, approximately 50 percent of all instate heavy-heavy duty trucks met the 2010 engine standard in 2019, 59 percent in 2020, 62 percent in 2021. Additionally, 65 percent and 90 percent of trucks were projected to meet the 2010 engine standard in 2022 and 2023 respectively.
Include contractual language in tenant lease agreements that limits onsite TRU diesel engine runtime to no longer than 15 minutes. If no cold storage operations are planned, include contractual language and permit conditions that prohibit cold storage operations unless a health risk assessment is conducted, and the health impacts mitigated.	The Project would comply with the 5-minute limit per CARB regulation/state law. Implementation of this measure is not quantifiable because CalEEMod does not allow for the adjustment of idle times. The Project includes MM AQ-6 requires signage stating that drivers turn off engines when not in use, identifying the State's 5-minute idling limit (California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Section 2485 [Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial

CARB Measure	Method of Project Incorporation
	Motor Vehicle Idling]), and including telephone numbers of the building facilities manager and CARB to report violations. Additionally, the Project includes design features to minimize idling. For example, PDF AQ-11 requires facility operators to train managers and employees on efficient scheduling and load management to eliminate unnecessary queuing and idling of trucks. PDF AQ-14 requires facility operators to ensure that site enforcement staff in charge of keeping the daily log and monitoring for excess idling will be trained/certified in diesel health effects and technologies, for example, by requiring attendance at California Air Resources Board-approved courses (such as the free, one-day Course #512).
Include contractual language in tenant lease agreements that requires all trucks entering the project site to meet CARB's lowest optional low-NOx standard.	The Project includes Project design features and mitigation that would facilitate the use of ZE and NZE vehicles consistent with CARB and SCAQMD programs (e.g., Advanced Clean Truck Regulation, Sustainable Freight Action Plan, SCAQMD Rule 2305, etc.). MM AQ-11 requires Project compliance with SCAQMD Rule 2305 to facilitate the use of ZE and NZE trucks. Additionally, MM AQ-9 requires all outdoor cargo handling equipment (including yard trucks, hostlers, yard goats, pallet jacks, and forklifts) to be powered by electricity (i.e., zero emission). To promote the use of alternative fuels and clean fleets and facilitate future installation of electric vehicle supply equipment, PDF AQ-9 requires that all heavy-duty trucks shall be zero emissions beginning in 2030 if such trucks are widely available and economically feasible and PDF AQ-10 requires the use of zero emissions light- and medium-duty trucks as part of business operations, if such trucks are widely available and economically feasible. Additionally, PDF AQ-9 and PDF AQ-10 have been included to promote the use of alternative fuels and clean fleets and facilitate future installation of

CARB Measure	Method of Project Incorporation
	electric vehicle supply equipment. Furthermore, the Development Agreement requires the Master Developer to implement an Electric Truck and Car Grant Program. The Electric Truck and Car Grant Program requires the Master Developer to provide funding for the purchase of Class 8 heavy duty electric trucks, Class 4 through Class 7 medium duty trucks, light-duty (Class 1, 2, and 3) delivery vehicles, and local community and passenger vehicle grants. These grants provided by the Project Master Developer would also facilitate the adoption of zero emissions vehicles in the area and provide a clear set of standards for implementing these grants.
Install rooftop solar panels, with a capacity that matches the maximum allowed for distributed solar connections to the grid.	MM GHG-2 (Draft EIR page 4.8-32 to 4.8-33) requires the Project to provide at least 50 percent of the building load and the plug-load with on-site renewable energy (i.e., photovoltaic panels).

O11-46 As discussed in Master Response 2, the Project is subject to the County's GHG Reduction Plan. Draft EIR Table 4.8-4 demonstrates that the Project would comply with the County's GHG Reduction Measures and would be consistent with the GHG Reduction Plan. MM GHG-1 requires the Project to apply reduction measures identified in the County's GHG Screening Tables so that each building would achieve a minimum of 100 points.

The County's 2021 GHG Emissions Reduction Plan Update states that any project that adopts at least 100 points of GHG performance standards listed in the proposed 2021 Screening Tables, would be consistent with the County's GHG Emissions Reduction Plan to reduce emissions to 40 percent below 2007 levels. Meeting this reduction would be consistent with the State's long-term goal to achieve statewide carbon neutrality (zero net emissions) by 2045, and therefore, would result in a less than significant impact related to GHG emissions. Nonetheless, the Draft EIR conservatively concludes that impacts would remain significant and unavoidable due to the size of the Project and its corresponding GHG emissions.

It is acknowledged that the use of carbon offsets may be allowable as CEQA mitigation, if the purchased offset credits are genuine, quantifiable, additional, and verifiable. Even offset credits purchased from CARB-approved offset project registries have been determined in certain circumstances to not adequately assure that purchased offset credits accurately and reliably represent actual emissions reductions, or to not guarantee that such reductions already required by law. Other kinds of investments to make GHG reductions, such as the purchases of renewable energy credits, usually do not meet the criteria for effective carbon offset claims. Currently, there are no universal standards, and no single certification body has emerged to serve this market in the United States. Instead, several organizations offer certification, so the buyer must carefully

research a seller's claims for carbon reduction. In addition, the County of San Bernardino, the lead agency for the Project and the entity responsible for enforcing any mitigation measures incorporated into the Project to potentially reduce impacts, has no enforcement authority over offset credits that fund carbon reduction projects outside of the County. Many offset credits "sell" reductions in emissions generated outside of California and the United States, which may not be genuine or verifiable. Therefore, as a conservative measure, the use of carbon offsets has not been considered for the Project.

O11-47 The commenter's request for the Draft EIR's recirculation is noted for the record. However, the commenter has raised no substantial or substantiated criticisms of the Draft EIR which would necessitate recirculation pursuant to Section 15088.5 of the State CEQA Guidelines.

O11-48 The comment is noted for the record. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

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Adam Salcido (G1)

From: A S <asalcido.07@gmail.com>
Sent: Friday, July 22, 2022 9:36 AM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Cc: Unknown <jbourg2271@aol.com>; jbourgeois029@gmail.com; Terrance Lucio <t.lucio57@gmail.com>; PATRICK HANINGER <phaninger1@gmail.com>
Subject: Speedway Commerce Center II Specific Plan Project

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Good Morning Mr. Valdez,

Please provide any updates to the above mentioned project.
I am requesting under Public Resource Code Section 21092.2 to add the email addresses and mailing address below to the notification list, regarding any subsequent environmental documents, public notices, public hearings, and notices of determination for this project.

t.lucio57@gmail.com

phaninger1@gmail.com

jbourg2271@aol.com

jbourgeois029@gmail.com

asalcido.07@gmail.com

Mailing Address:

P.O. Box 79222

Corona, CA 92877

Please confirm receipt of this email.

Thank You,

Adam Salcido

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Response to Comment Letter G1 – Adam Salcido

G1-1 The comment requests to be added to the notification list. When appropriate, noticing will be provided for the Project including public hearings or any future updates to the environmental documentation. The commenter's provided contacts are noted for the record and will be added to the notification list.

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Amparo Miramontes (G2)

ALL ARE WELCOME TO PROVIDE INPUT!

LEAVE A COMMENT FOR THE SPEEDWAY COMMERCE CENTER II ENVIRONMENTAL IMPACT REPORT

NAME: Amparo Miramontes

DATE: 07/09/2022

EMAIL: the.real.amparo@gmail.com

PHONE: (909)632-5208

This project is nothing short of a complete ~~discussion~~ disaster
Green House Gas Comments: The project fails to properly mitigate GHG. All warehouses should have 80% solar panels installed and ready to support 100% of the warehouse energy demands (Not Solar Ready that is a joke) All employee parking should be covered parking with solar panels. The solar panels should create a micro grid for the community to benefit from There needs to be bus stops that reflect the circulation plan so all employees can get to work easily All truck routes should be painted on the streets to ensure that all trucks remain on the correct paths & reduce idling & damage to residential communities. The truck routes should be Poke Yoked to dock doors to prevent idling. All Grass should by Eliminated from landscaping to reduce water usage & replaced the grass with Native Plants Cypress trees, Pine trees, & other PM2.5 filtering trees should be planted in MATURE FORM, no less than 15ft.

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Additional information can be found at:
http://cms.sbcounty.gov/lus/Planning/Environmental/Valley.aspx
https://maps.kimley-horn.com/portal/apps/storymaps/stories/3f77c5d346a941dca99ab276d799d095
Or, us the QR code to access the Project website!

There should be better walking & bike paths all around the Community. Walking paths all around the warehouses. Break areas outdoors under shade providing solar panels to allow for charging. 4

Traffic Plan: This EIR fails to account for Speedway days, community traffic, & truck traffic. The Study needs to include true traffic. Mitigation does not include improved bus routes. The safety of cross walks is not considered. All Crosswalks should have a 6" raised cross walk with lights for safe ~~as~~ access for all roadway users. All bike routes need drastic improvement complete w/ a raised coned in boundry to protect bike riders. Improved lighting and solar covering at bus stops. 5

Water Mitigation: This is on septic all of it should be on main sewers and anyone in Fontana County should have a latteral hook up fee waiver as a community benefit for this project. Businesses get waivers all the time to hook to sewer, this project Should benefit from. This water ~~usage~~ does not reflect current water ~~usage~~ drawn ~~it~~ ~~us~~ levels & so is a ~~fact~~ misleading This project should pay for the wells it pulls from to have 100ft lower water pull level. No water use for conveyance Should be allowed. No water usage without being non-potable except for office drinking water. 6

Parks & Recreation: This project fails to address the need for 1 community center that has community spaces. This project Should include to ensure the community has a place to go during Black outs & Bad Air Quality. Once a month food Pantry. 7

Community: All businesses in this project Should have to have taxes in Fontana / San Bernardino County only.

Response to Comment Letter G2 – Amparo Miramontes

G2-1 The commenter provides introductory comments and states that the Project fails to properly mitigate greenhouse gas (GHG) emissions. The Draft EIR considered all feasible mitigation to minimize GHG emissions associated with Project implementation. These mitigation measures include the provision of photovoltaic panels or other sources of renewable energy generation on-site or require future building occupants to otherwise acquire energy from the local utility that has been generated by renewable sources, that would provide at least 50 percent of the expected energy for the total building load. This would be required within two years of building occupancy.

Draft EIR *Section 4.8, Greenhouse Gas Emission*, *Table 4.8-4: San Bernardino County GHG Reduction Measures Screening Table*, demonstrates that the Project would comply with the County's GHG Reduction Measures and would be consistent with the GHG Reduction Plan. To address the Project's GHGs, MM GHG-1 requires the Project to apply reduction measures identified in the County's GHG Reduction Plan Update Screening Tables so that each building would achieve a minimum of 100 points.

The County's 2021 GHG Emissions Reduction Plan Update states that any project that adopts at least 100 points of GHG performance standards listed in the proposed 2021 Screening Tables, would be consistent with the County's GHG Emissions Reduction Plan to reduce emissions to 40 percent below 2007 levels. Meeting this reduction would be consistent with the state's long-term goal to achieve statewide carbon neutrality (zero net emissions) by 2045. Compliance with the mitigation measures and the County's GHG Emissions Reduction Plan would result in a less than significant impact related to GHG emissions.

In addition to the mitigation requiring compliance with all of the County's GHG reduction measures (MM GHG-1), the Draft EIR also requires the Project to implement solar energy generation (MM GHG-2), requires energy efficient buildings that exceed the building code standards (MM GHG-3), requires solid waste diversion (MM GHG-4), and requires the use of 100 percent electrical powered landscape equipment (MM GHG-5). Additionally, various other measures are included in the Draft EIR Air Quality Section (*Section 4.3*) such as a TDM Program to reduce vehicle trips/miles (MM AQ-3), constructing electric vehicle (EV) infrastructure (MM AQ-4), provide electrical conduits for Transport Refrigeration plugins (MM AQ-5), impose idle limits for trucks (MM AQ-6), require energy efficient vendor trucks (MM AQ-7), include EV charging stations and carpool parking (MM AQ-8), require electric/zero emission cargo handling equipment (MM AQ-9), and compliance with SCAQMD Rule 2305 (MM AQ-10) which is a program to incentivize the purchase of cleaner trucks and charging/fueling infrastructure for the Project in the nearby community. Therefore, the Draft EIR's suite of air quality and GHG mitigation measures comply with State CEQA Guidelines Section 15041 and go above and beyond to meet the essential nexus and rough proportionality standards.

The Project's Development Agreement also includes provisions for TDM measures, on-site solar generation, as well as an electric truck and grant program. Nonetheless, the Draft EIR conservatively concludes that impacts would remain significant and unavoidable due to the size of the Project and corresponding emissions. See Master Response 2.

G2-2 Omnitrans is a public transit agency in the County providing bus service throughout the San Bernardino Valley. There are no existing Omnitrans public transit routes or stops providing regular service adjacent to the Project site. The closest Omnitrans Transit System routes are Route 66 along W. Foothill Boulevard and Route 61 along San Bernardino Avenue. As the Project develops, Omnitrans may assess the Transit System for a potential increase in demand for these facilities and may establish new or extended routes in the area in the future. Coordination with Omnitrans has begun and will be ongoing as the Project builds out to determine the need for future bus service to the Project site.

In accordance with project design feature (PDF) AQ-21, signs at each exit driveway shall be installed, providing directional information to the County's truck route. Text on the sign shall read "To Truck Route" with a directional arrow. Truck routes shall be clearly marked pursuant to County Municipal Code.

G2-3 The plant palette for the Specific Plan is comprised of a variety of plant material, including street and accent trees, shrubs, grasses, succulents, and groundcovers. Plants included within the preliminary plant list were selected for the unique aesthetic qualities which complement the architectural design themes throughout the Specific Plan area as well as their drought-tolerant nature.

G2-4 The Project includes a proposed 10-foot-wide multi-use path along Street "A" of the Specific Plan area. Additionally, sidewalks are provided on all streets within the Specific Plan area. Further, the Project includes opportunities for enhanced pedestrian walkway connections between the parking lots/drop lots and the Next Gen motorsports facility, with enhanced landscaping, signage or art installation, and pedestrian walkways. The Project also includes an opportunity for a wellness walk which includes walking paths that connect amenity areas throughout the Specific Plan.

G2-5 The commenter asserts that the Draft EIR fails to evaluate ACS traffic and truck traffic from the Project. As discussed in *Section 4.17, Transportation*, under Cumulative Impacts, traffic is anticipated to increate with the Project and during major race and ancillary events held at the Next Gen motorsports facility. In accordance with MM TRANS-1 and MM TRANS-2, a Transportation Management Association and Traffic Management Plan would be required to be prepared to address large events to ensure all intersections during race-related or ancillary events would function at level of service (LOS) E or better at midday and in the p.m. peak hour on Friday as well as all day Saturday and Sunday. See Master Response 2 for further discussion of the application of development impact fees and congestion management.

As discussed under Response G2-4, the Project includes opportunities for enhanced pedestrian walkway connections, wayfinding signage, and pedestrian walkways. This is to encourage and provide for safe crossings, access and routes during race events, concerts and other uses at the ACS. Further, Street "A," would be improved with a 10-foot multi-use path for internal connectivity. This multi-use path provides a Class I bicycle lane with a landscaped parkway area providing separation between cyclists and on-street vehicles. The multi-use path runs the full east/west length of the Specific Plan area from Cherry Avenue to the connection point at Napa

Street. The multi-use path also connects with both Public Street "B" and Public Street "C" to allow riders greater accessibility throughout the Specific Plan area.

G2-6 The commenter asserts that the Project is on septic and that the Project should be on sewer. As discussed in Draft EIR *Section 4.7, Geology and Soils*, the Project does not propose the use of septic tanks. The Project would connect to the public sewer mains and rely upon Inland Empire Utilities Agency (IEUA) for wastewater services. Water and wastewater systems and demand for water and wastewater conveyance and treatment are further discussed in Draft EIR *Section 4.19, Utilities and Service Systems*. Connection fee waivers for other projects are not a relevant consideration under CEQA.

The analysis in the Draft EIR was based on current water use standards presented in Fontana Water Company 2020 UWMP, which incorporates drought-conditions into its calculations. Additionally, a Water Supply Assessment (WSA) was prepared by FWC for the Project which outlined water service needs based on current water service availability. For information regarding availability of groundwater, please refer to Draft EIR page 4.19-3. The Project does not propose or require additional groundwater wells. Potable and recycled water (if available) would be conveyed throughout the Project site via water lines beneath Streets "A," "B," "C," and "D." The Project would also utilize existing water pipelines which run across Street "A" and along Cherry Avenue. New sewer and storm drainage facilities are proposed below Streets "A," "B," "C" and "D" with additional storm drainage placed along the western boundary of the Project site. Sewer facilities are also proposed along the eastern side of Parcels 7 and 21. Existing storm and sewer infrastructure would remain below Street "D" with connections immediately east of the intersection of Streets "B" and "D."

There is an existing recycled waterline located in Napa Street, west of the Specific Plan area. This recycled waterline was installed by IEUA with service provided by FWC. Recycled water supply is delivered at a lower cost than potable water, and is not interrupted during drought restriction periods, making it ideal for irrigation uses. As an alternative to using potable water for irrigation uses, new recycled water facilities may be installed in the backbone streets (Streets "A," "B," "C," and "D") to provide irrigation water for the Specific Plan area. Recycled water for irrigation may also be used along Cherry Avenue, VIP Access Road and San Bernardino Avenue.

G2-7 The comment requests the Project provide a community center and other community benefits. Although no specific concerns were raised regarding the adequacy of the Draft EIR, the Project would provide community benefits including a multi-use trail with exercise stations, public art, wayfinding signage, electric truck and car grant programs, employee wellness program (tenant based), publicly-accessible open space, and a job training partnership with local trade colleges. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary. Please see also Master Response 1 Project Scope and Description.

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Ari Miramontes (G3)

ALL ARE WELCOME TO PROVIDE INPUT!

LEAVE A COMMENT FOR THE SPEEDWAY COMMERCE CENTER II ENVIRONMENTAL IMPACT REPORT

NAME: Ari Miramontes 13years old

DATE: 7/9/22

EMAIL: ariana rmiramontes@gmail.com

PHONE: (909) 644-2995

This project is an insut to our community and shows people ~~that~~ how much we are valued. It shows us how big business benifit move ~~more~~ From our work than we do, and how they benifit on our downfall. I think that we should have trade centers so that kids like me could learn trades such as, electrical, mechanical, and automation, and everyone should be given free wifi so they can have move acess to infor-mation 1

SCAN ME

Additional information can be found at:
http://cms.sbcounty.gov/lus/Planning/Environmental/Valley.aspx
https://maps.kimley-horn.com/portal/apps/storymaps/stories/3f77c5d346a941dca99ab276d799d095
Or, us the QR code to access the Project website!

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Response to Comment Letter G3 – Ari Miramontes

G3-1 Comment noted. The commenter provides their opinion of the Project. The County appreciates and values these comments during the EIR participation process. However, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

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Ben (G4)

ALL ARE WELCOME TO PROVIDE INPUT!

LEAVE A COMMENT FOR THE SPEEDWAY COMMERCE CENTER II ENVIRONMENTAL IMPACT REPORT

NAME: Ben

DATE: 7/9/22

EMAIL: Benze@live.com

PHONE:

This project is crazy irresponsible for the community. It will impact not enough is being done and public CUT reach out to Be Heard

1

Additional information can be found at:
http://cms.sbcounty.gov/lus/Planning/Environmental/Valley.aspx
https://maps.kimley-horn.com/portal/apps/storymaps/stories/3f77c5d346a941dca99ab276d799d095
Or, us the QR code to access the Project website!

SCAN ME

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Response to Comment G4 – Ben

G4-1 Comment noted. The commenter provides their opinion of the Project. The County appreciates and values these comments during the EIR participation process. However, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

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Carolina Verduzco (G5) [English version available as comment letter G6]

Estimado Sr. Valdez

Mi nombre es Carolina Verduzco y le escribo para responder al Borrador del Informe de Impacto Ambiental del Plan Específico del Speedway Commerce Center II. Creo que este proyecto será malo para la comunidad. La región del interior ya está saturada de usos logísticos. En los últimos años, se han seguido construyendo más almacenes y más grandes en el radio de Fontana, Ontario, Rancho Cucamonga y el bolsillo del condado donde se ubicaría este Proyecto, lo que ha provocado un aumento drástico del tráfico de camiones y la consiguiente contaminación atmosférica que conllevan. 1

Este proyecto traería casi 10.000 viajes más de camiones por día para envenenar nuestro aire sin medidas de mitigación eficaces. Tal y como está, el proyecto ya está situado en una zona que es una de las más afectadas del estado según CalEnviroScreen, situándose en el percentil 93 en general, en el percentil 95 para el ozono, en el percentil 94 para las PM2,5 y en el percentil 90 para las partículas diésel. Sin embargo, el proyecto propone bombear cantidades asombrosas de estos mismos contaminantes en la comunidad a niveles que son hasta más de 13 veces los límites permitidos. Es incomprensible que esto se considere una situación aceptable y exijo que el condado rechace este proyecto.

Además, nos preocupa el impacto que la gran afluencia de tráfico para este proyecto tendría en la capacidad de la comunidad para desplazarse. Con casi 10.000 viajes de camiones y más de 25.500 viajes de coches al día, el proyecto amenaza con saturar las carreteras locales con atascos y, aunque se presentaron algunas opciones de mitigación, los planes no van lo suficientemente lejos como para reducir realmente el azote del tráfico: la simple ampliación de las carreteras no es un beneficio para la comunidad, sino que crea calles que son menos seguras y más hostiles para el uso y la actividad humana. Dado que el transporte es también la razón principal de que las emisiones de calidad del aire y de gases de efecto invernadero del proyecto superen los umbrales, incluso después de incluir medidas de mitigación, está claro que no se puede permitir la construcción del proyecto a menos que se haga algo más, no sólo para mitigar el aumento, sino para evitarlo activamente. 2

En lugar del proyecto propuesto, nos gustaría que el condado persiguiera un desarrollo más acorde con los usos comerciales de la zonificación existente. Esta es una oportunidad para que el Condado aporte más atractivo a la región del IE con nuevos desarrollos como salas de conciertos, plazas comerciales, centros comerciales, jardines, etc. Este proyecto propuesto se opone a la visión que la comunidad tiene de una zona simbólica como el Speedway. Las reuniones celebradas no fueron suficientes para garantizar la participación de la comunidad, lo que se demuestra en última instancia por la falta de beneficios para la comunidad de este proyecto.

Gracias por tomarse el tiempo de recibir esta carta y abordar las preocupaciones que plantea. Esperamos que nuestros comentarios contribuyan a dar forma al futuro de este desarrollo. 3

Name: Carolina Verduzco

Address: 9878 Bloomington Ave
Bloomington CA 92316

Date: 7/16/22

Contact: 909-246-9507

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Response to Comment Letter G5 – Carolina Verduzco

G5-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics/e-commerce use and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G5-2 The Draft EIR determined that the Project would not exceed the Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G5-3 Project alternatives evaluated for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Corilyn Rodrick Meyer (G6)

Dear Mr. Valdez:

My name is CRM and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring *nearly **10,000** more truck trips per day* to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for $PM_{2.5}$, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to *more than 13 times the allowed limits*. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project.

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development. 3

Name: Corilyn Rodrick Meyer Address: 27600 Atlantic Ave Highland CA 92346

Date: 07/16/2022 Contact: /

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Response to Comment Letter G6 – Corilyn Rodrick Meyer

G6-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G6-2 The Draft EIR determined that the Project would not exceed the Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G6-3 Alternatives evaluated for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Eddie Lopez (G7)

From: Eddie Lopez <elopezihf@gmail.com>
Sent: Sunday, July 17, 2022 5:17 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Speedway Commerce Center II Specific Plan

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Contact: Steven Valdez

County of San Bernardino

Senior Planner

Steven.Valdez@lus.sbcounty.gov

Name: Eddie Lopez

Date: July 17, 2022

Dear Mr. Valdez:

My name is Eddie Lopez and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project. 3

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.

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Response to Comment Letter G7 – Eddie Lopez

G7-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G7-2 The Draft EIR determined that the Project would not exceed the Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G7-3 Alternatives evaluated for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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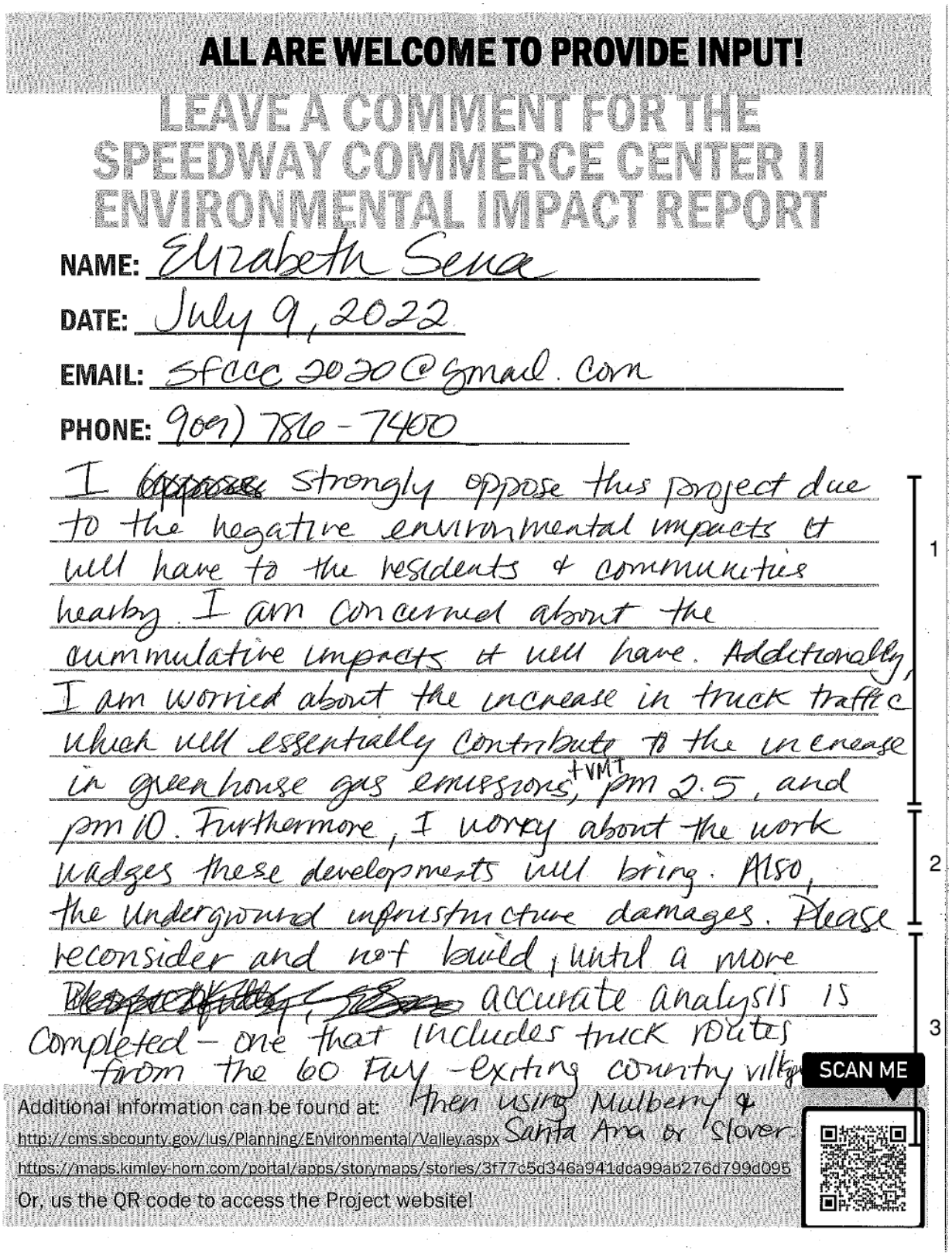
Elizabeth Sena (G8)



ALL ARE WELCOME TO PROVIDE INPUT!

LEAVE A COMMENT FOR THE SPEEDWAY COMMERCE CENTER II ENVIRONMENTAL IMPACT REPORT

NAME: Elizabeth Sena

DATE: July 9, 2022

EMAIL: sfccc2020@gmail.com

PHONE: (909) 786-7400

I ~~oppose~~ strongly oppose this project due to the negative environmental impacts it will have to the residents & communities nearby. I am concerned about the cummulative impacts it will have. Additionally, I am worried about the increase in truck traffic which will essentially contribute to the increase in greenhouse gas emissions, +VMT, pm 2.5, and pm 10. Furthermore, I worry about the work wages these developments will bring. Also, the underground infrastructure damages. Please reconsider and not build, until a more ~~Please reconsider~~ accurate analysis is completed – one that includes truck routes from the 60 Fwy - exiting country villa then using Mulberry & Santa Ana or Slover

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SCAN ME

Additional information can be found at:
http://cms.sbcounty.gov/lus/Planning/Environmental/Valley.aspx
https://maps.kimley-horn.com/portal/apps/storymaps/stories/3f77c5d346a941dca99ab276d799d095
Or, us the QR code to access the Project website!

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Response to Comment Letter G8– Elizabeth Sena

G8-1 Due to the Project emissions and the fact that 86 percent of the emissions are from mobile sources, the Project's GHG emissions would be cumulatively considerable. Mobile source and warehouse emissions due to the Project are addressed in the Draft EIR and within parameters set by applicable agencies, including various CARB and SCAQMD regulations. Mitigation measures have been proposed to reduce Project emissions to the maximum extent feasible. However, despite Project Design Features, Standard Conditions of Approval, Mitigation Measures, and CARB and SCAQMD efforts to reduce mobile source emissions, the Project would result in a potentially significant cumulative GHG impact. Specifically, the Draft EIR proposes MM GHG-1, which requires the Project to apply reduction measures identified in the County's GHG Screening Tables so that each building would achieve a minimum of 100 points. According to the County's 2021 GHG Emissions Reduction Plan Update, any project that adopts at least 100 points of GHG performance standards listed in the proposed 2021 Screening Tables, would be consistent with the County's GHG Emissions Reduction Plan to reduce emissions to 40 percent below 2007 levels. Meeting this reduction would be consistent with the state's long-term goal to achieve statewide carbon neutrality (zero net emissions) by 2045, and therefore, would result in a less than significant impact related to GHG emissions. Nonetheless, the Draft EIR conservatively concludes GHG impacts would remain significant and unavoidable due to the size of the Project.

However, Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also see Master Response 2.

G8-2 The Project applicant does not have authority over the wages set by state, federal, or tenant standards. Moreover, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary. The commenter does not identify any specific concerns related to underground infrastructure that may occur as a result of the Project. The Project proposes new utility and roadway infrastructure *improvements*, and the Draft EIR evaluates impacts associated with Project construction, including underground infrastructure.

G8-3 The Project's roadway analysis is based on likely affected roadways and truck routes established for the area. The commenter has failed to present a substantiated claim against the veracity of the Draft EIR. No further response is necessary.

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Erma Gardner (G9)

From: President Ontario <lulacdeontario3296@gmail.com>
Sent: Monday, July 18, 2022 1:10 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan

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Dear Mr. Valdez:

My name is Erma Gardner and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring.

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project. 1

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project. 3

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.

Erma Gardner
Ontario, CA 91762
909-851-7755

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Response to Comment Letter G9 – Erma Gardner

G9-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G9-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G9-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

Estela G. Ballon (G10)

From: Estela Ballon <egballon2@gmail.com>
Sent: Monday, July 18, 2022 12:29 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Speedway commerce center II impact

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Date: 7/18/2022

Dear Mr. Valdez:

My name is Estela G Ballón and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project.

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development. 3

Estela G Ballón

Response to Comment Letter G10 – Estela G. Ballon

G10-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G10-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G10-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Glennie Ferry (G11)

From: Glenn Ferry <g.ferry001@gmail.com>
Sent: Thursday, July 14, 2022 8:18 PM
To: Burnett, Candyce <Candyce.Burnett@kimley-horn.com>; steven.valdez@lus.sbcounty.gov
Subject: The Fontana Speedway is being turned into 6.6 million square feet of warehouses

> You don't often get email from g.ferry001@gmail.com. Learn why this is important

Hello,

As a homeowner of Rancho Cucamonga, we really enjoy going to the speedway!

Please turn this into a family friendly destination.

That's just my take.

Thank you,
Glennie Ferry

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Response to Comment Letter G11 – Glennie Ferry

G11-1 The commenter indicates support for the Project. The comment is noted for the record. However, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary. The comment is noted and forwarded to the decision makers for their consideration.

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Hannah Ivey (G12)

From: Hannah Ivey <hannahivey94@gmail.com>
Sent: Friday, July 15, 2022 1:46 AM
To: Burnett, Candyce <Candyce.Burnett@kimley-horn.com>
Subject: Please advise

> You don't often get email from hannahivey94@gmail.com. Learn why this is important

Hello candyce,

I am a lifetime member of the city of fontana and as I am seeing the new plans for the speedway to be transitioned into the block of warehouses I have to say I'm somewhat shocked.

The city is starting to turn into a business district with some homes and small shopping centers near by. Cherry is already over run with traffic and the amount of warehouses we have in the city city is, at the very least, concerning.

If this is the direction the city is headed in im not sure this is what myself and alot other homeowners in the city want to continue to call home.

Sincerely
Hannah Ivey

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Response to Comment Letter G12 – Hannah Ivey

G12-1 The comment includes general observations. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

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Janet Bernabe (G13)

From: Janet Bernabe <janet.b@ccaej.org>
Sent: Monday, July 18, 2022 3:27 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Public Comment: Draft EIR for the Speedway Commerce Center II Specific Plan

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Good afternoon, Mr. Valdez

My name is Janet Bernabe and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring *nearly **10,000** more truck trips per day* to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for $PM_{2.5}$, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to *more than 13 times the allowed limits*. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project. 3

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.

1

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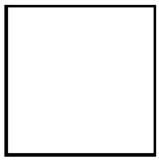
Thank you,

Janet Bernabe
Organizing Director
Center for Community Action and Environmental Justice
Centro de Acción Comunitaria y Justicia Ambiental
P: (951) 543-1754
E: janet.b@ccaej.org | W: www.ccaej.org
Address: PO Box 33124 Riverside, CA 92519



"Every moment is an organizing opportunity, every person a potential activist, every minute a chance to change the world." **~ Dolores Huerta**

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Response to Comment Letter G13 – Janet Bernabe

G13-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G13-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G13-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Jasmine Cunningham (G14)

ALL ARE WELCOME TO PROVIDE INPUT!

LEAVE A COMMENT FOR THE SPEEDWAY COMMERCE CENTER II ENVIRONMENTAL IMPACT REPORT

NAME: Jasmine Cunningham

DATE: July 9, 2022

EMAIL: Jasminescunningham@gmail.com

PHONE: (909)200-8922

- How will you address and eliminate excess GHG of the truck traffic created from this Project? 1

- How will you protect the City residents from the large particulates? 2

- How are you planning to provide Net Zero emissions from the warehouses 3

- What measures will be taken to encarage EV Trucks? 4

SCAN ME

Additional information can be found at:
http://cms.sbcounty.gov/lus/Planning/Environmental/Valley.aspx
https://maps.kimley-horn.com/portal/apps/storymaps/stories/3f77c5d346a941dca99ab276d799d095
Or, us the QR code to access the Project website!

ALL ARE WELCOME TO PROVIDE INPUT!

LEAVE A COMMENT FOR THE SPEEDWAY COMMERCE CENTER II ENVIRONMENTAL IMPACT REPORT

NAME: Jasmine Cunningham

DATE: 7-9-2022

EMAIL: Jasmine.Scunningham@gmail.com

PHONE: 909 200-8922

-How does the EIR Consider Truck traffic coming from interstate 60 & plan mitigate the emissions? 5

-How does the EIR Consider the traffic impacts of the Racetrack events and plan to mitigate it 6

SCAN ME

Additional information can be found at:
http://cms.sbcounty.gov/lus/Planning/Environmental/Valley.aspx
https://maps.kimley-horn.com/portal/apps/storymaps/stories/3f77c5d346a941dca99ab276d799d095
Or, us the QR code to access the Project website!

Response to Comment Letter G14 – Jasmine Cunningham

G14-1 The Draft EIR proposed over 10 mitigation measures aimed at alleviating potential air quality and greenhouse gas impacts. While the effects were still found to be significant and unavoidable, mitigation was still proposed to reduce these impacts to the maximum extent feasible. Please see *Section 4.8, Greenhouse Gas Emissions Sub-Section 4.8.5, Impacts and Mitigation Measures* located in the Draft EIR.

G14-2 The Project would comply with applicable regulations such as SCAQMD Rule 403 which limits fugitive dust particulates. The Project would also comply with SCAQMD Rule 2305, which requires warehouse operators, among other things, to acquire Zero Emissions or Near Zero Emissions trucks, require Zero Emission/Near Zero Emission truck visits, requires Zero Emission yard trucks, and install on-site Zero Emission charging/fueling infrastructure, or pay a mitigation fee to SCAQMD to be used to incentivize the purchase of Zero Emission/Near Zero Emission trucks and charging/fueling infrastructure in communities nearby. Additionally, the Project would implement MM AQ-9, which requires electric outdoor cargo handling equipment (i.e., forklifts and yard trucks), which would reduce particulate exhaust from on-site equipment.

G14-3 The Project proposes mitigation which would be aimed at minimizing Project-related emissions. This includes MM GHG-2 which requires the Project to supply a minimum of 50 percent of the energy demand on-site from a renewable source (e.g., solar photovoltaic (PV) panels, etc.). This includes the Project's total Title 24 demand and the plug-load. Additionally, MM GHG-3 requires the Project to meet or exceed CALGreen Tier 2 standards (which exceeds code requirements). The Draft EIR also includes MM GHG-1, which requires the Project to apply reduction measures identified in the County's GHG Screening Tables so that each building would achieve a minimum of 100 points. According to the County's 2021 GHG Emissions Reduction Plan Update, any project that adopts at least 100 points of GHG performance standards listed in the proposed 2021 Screening Tables, would be consistent with the County's GHG Emissions Reduction Plan to reduce emissions to 40 percent below 2007 levels. Meeting this reduction would be consistent with the state's long-term goal to achieve statewide carbon neutrality (zero net emissions) by 2045, and therefore, would result in a less than significant impact related to GHG emissions. See Response to G14-2 for additional information specific to what the Project is proposing to achieve net zero emissions.

G14-4 State regulation has created deadlines and requirements for the use of electric vehicles and zero emission vehicles. Also, PDF AQ-9 and PDF AQ-10 (see Draft EIR page 4.3-22) have been included to promote the use of alternative fuels and clean fleets and facilitate future installation of electric vehicle supply equipment. Furthermore, the Project's Development Agreement requires the Master Developer to implement an Electric Truck and Car Grant Program. (also described in more detail in Response R2-4)

G14-5 See Response G14-1 above regarding emission mitigation. Further, traffic from SR-60 was studied and is available in *Appendix L* of the Draft EIR.

G14-6 The Draft EIR acknowledged that race day traffic would exacerbate surrounding roadways when combined with the proposed Project. The Draft EIR determined that increased traffic during raceway events were found to generate potentially significant cumulative effects regarding emergency access. Therefore, mitigation MM TRANS-2 requires the development of a traffic management plan (TMP). The TMP would be reviewed and approved by the County Engineer with input from the Highway Patrol and neighboring cities. A traffic management plan would be developed after the Project's end-users have been identified and a specific development plan approved. The TMP will be event-specific and is required to be submitted to the County Engineer a minimum of 30 days prior to each race event. This measure is fully enforceable by the County.

Jesus M. Zuno (G15)

From: Marty Zuno <zunome@gmail.com>
Sent: Sunday, July 17, 2022 5:33 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Cc: sfccc2020@gmail.com; admin@ccaej.org
Subject: Speedway Commerce Center II Specific Plan

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

County of San Bernardino
Address 385 N. Arrowhead Avenue, First Floor San Bernardino, CA 92415-0187
Phone: (909) 387-4421

July 16, 2022

Dear Mr. Valdez,

My name is Jesus. I am a resident of Fontana.
I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe this Project is a poor decision and will be bad for the community at large. The Inland region is already overrun with logistics uses. In recent years larger warehouses have continued to be constructed in the radius of Fontana directly affecting residents as well as the safety of the general public as well as congestion in Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project. 3

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.
Respectfully,
Jesus M. Zuno

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Response to Comment Letter G15 – Jesus M. Zuno

G15-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G15-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G15-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Jo Ann Bollen (G16)

From: Jo Ann Bollen <votemorongobasin@gmail.com>
Sent: Sunday, July 17, 2022 6:19 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Speedway Commerce Center

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Mr. Steven Valdez
County of San Bernardino
Senior Planner
7/18/2022

Dear Mr. Valdez:

My name is Jo Ann Bollen and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project.

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.

3

Jo Ann Bollen (she/her/hers)
Founder, Vote Morongo Basin
President, Democrats of the Morongo Basin
Field Director, Field Team 6/CA-23
Chair, Voter Registration Committee for SB County Dem. Central Committee
(760)702-0639

Register to vote at https://voterizer.org/

DEIR documents: https://ceqanet.opr.ca.gov/2021120259/2

Response to Comment Letter G16 – Jo Ann Bollen

G16-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G16-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G16-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Kelly Chase (G17)

From: kellychase012 <kellychase012@gmail.com>
Sent: Friday, July 15, 2022 5:16 AM
To: steven.valdez@lus.sbcounty.gov; Burnett, Candyce <Candyce.Burnett@kimley-horn.com>
Subject: FOR YOU TOO! FW: Get your greedy ass out of fontana

> You don't often get email from kellychase012@gmail.com. Learn why this is important

Be disappointed in yourself and your position held for allowing and supporting such a gross act to our city. You are a disgrace to the well being of this city in supporting this and will effect generations to come and history that has been left.

Your support of this project is a highlight to your lack community you hold in your position and shows true colors that money is your only motive. Not the city.

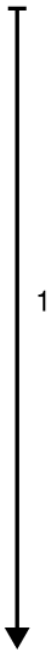
Your support of this project is ABSOLUTELY HORRIFIC

The Fontana Speedway is being turned into 6.6 million square feet of warehouses.
This is a San Bernardino County Project!!!!!
Kimley-Horn is killing our community.
The track will be a tiny version more like kart racing! I don't understand why we don't deserve a place for entertainment! Great Cities have a place to spend your money, why do we only deserve warehouses. We could increase revenue to San Bernardino county by setting the speedway as the hub of entertainment!!! When we asked the developer questions they literally gave us misinformation!!
No more RV camping, history culture gone!

Kimley-Horn build us an entertainment center!

Please send in comments to:
Candyce.burnett@kimley-horn.com
San Bernardino County Planner
—and—-
Steven Valdez, Senior Planner
909-387-4421
County of San Bernardino
Land Use Services Department - Planning Division 385 North Arrowhead Avenue, First Floor
San Bernardino, CA 92415-0187
steven.valdez@lus.sbcounty.gov
https://maps.kimley-horn.com/portal/apps/storymaps/stories/3f77c5d346a941dca99ab276d799d095

Sent from my Verizon, Samsung Galaxy smartphone



-------- Original message --------
From: kellychase012 <kellychase012@gmail.com>
Date: 7/15/22 5:08 AM (GMT-08:00)
To: Candyce.burnett@kimley-horn.com
Subject: Get your greedy ass out of fontana

WE DO NOT NEED MORE WAREHOUSES YOU BLIND CONTRACTING MONEY HUNGRY POS OF A COMPANY!

Be ashamed and disgusted with the position you hold

Sent from my Verizon, Samsung Galaxy smartphone

1

Response to Comment Letter G17 – Kelly Chase

G17-1 The commenter is expressing their opposition to the Project. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary. The comment is noted and forwarded to the decision makers for their consideration.

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Lizette Mendoza (G18)

From: Lizette Mendoza <lm.mendoza0508@gmail.com>
Sent: Monday, July 18, 2022 4:10 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Public Comment Draft FIR for the Speedway Commerce Center || Specific Plan

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Dear Mr. Valdez:

My name is Lizette Mendoza and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project. 3

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.

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Response to Comment Letter G18 – Lizette Mendoza

G18-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G18-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G18-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Louis Mendoza (G19)

From: Louis Mendoza <louis2563@icloud.com>
Sent: Monday, July 18, 2022 3:24 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Public Comment Draft FIR for the Speedway Commerce Center || Specific Plan

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Dear Mr. Valdez:
My name is Louis Mendoza and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring *nearly **10,000** more truck trips per day* to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for $PM_{2.5}$, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to *more than 13 times the allowed limits*. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.
Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2
Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project.
Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development. 3

1

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Response to Comment Letter G19 – Louis Mendoza

G19-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G19-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G19-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Luis Garcia (G20)

From: luis garcia <xoluisgarcia@gmail.com>
Sent: Friday, July 15, 2022 7:15 PM
To: Burnett, Candyce <Candyce.Burnett@kimley-horn.com>
Subject: Fontana Speedway Development

[You don't often get email from xoluisgarcia@gmail.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

Hello,

My name is Luis Garcia and I am a resident of San Bernardino County. The Fontana Speedway is a place a lot of us residents cherish and have memories at.

Why must you people in office slowly agree to kill your residents with the approval of warehouse spaces such as these? Why are you in office if it isn't to help those under your care?

1

These types of developments bring dead end jobs to the residents. Not only that, but the toxins from the diesel trucks that will be coming through the area even more now, will lead to more cases of asthma, cancer, and even death for residents. Are you completely unaware that the Inland Empire has been voted worst air in the nation? Or are you purposely ignoring that fact in an effort to benefit yourselves?

The County of San Bernardino should be ashamed to continuously let their residents down.

2

LUIS GARCIA.
Resident of San Bernardino County for over 15 years.

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Response to Comment Letter G20 – Luis Garcia

G20-1 The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

G20-2 The Draft EIR proposed mitigation in order to minimize potential air quality effects associated with future development and operations. Furthermore, the Project is subject to State regulated emissions standards established for onsite vehicles and equipment.

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Margaret Vollmer (G21)

From: Margaret Vollmer <margaretv99@gmail.com>
Sent: Saturday, July 16, 2022 6:16 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Cc: sfccc2020@gmail.com; admin@ccaej.org
Subject: Speedway Commerce Center II specific plan

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Att: Steven Valdez, Senior Planner

County of San Bernardino
Address 385 N. Arrowhead Avenue, First Floor San Bernardino, CA 92415-0187
Phone: (909) 387-4421

July 16, 2022

Dear Mr. Valdez,

My name is Margaret Vollmer. I am a resident of Fontana.
I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project. 3

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.

Respectfully,
Margaret Vollmer

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Response to Comment Letter G21 – Margaret Vollmer

G21-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G21-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G21-3 Alternatives assessed were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Maria Enciso (G22)

From: mariatenciso6@gmail.com <mariatenciso6@gmail.com>
Sent: Saturday, July 16, 2022 7:47 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Speedway Commerce Center II Specific Plan

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Att: Steven Valdez, Senior Planner

County of San Bernardino
Address 385 N. Arrowhead Avenue, First Floor San Bernardino, CA 92415-0187
Phone: (909) 387-4421

July 16, 2022

Dear Mr. Valdez,

My name is Maria Enciso. I am a resident of Fontana.

I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project. 3

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Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.

Respectfully,

Maria Enciso

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Response to Comment Letter G22 – Maria Enciso

G22-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G22-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G22-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Maria Mendoza (G23)

From: Maria Mendoza <mm5890541@gmail.com>
Sent: Monday, July 18, 2022 4:04 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Public Comment Draft FIR for the Speedway Commerce Center || Specific Plan

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Dear Mr. Valdez:

My name is Maria Mendoza and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project. 3

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.

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Response to Comment Letter G23 – Maria Mendoza

G23-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G23-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G23-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Maria Navarro (G24) [English version available as comment letter25]

Estimado Sr. Valdez

Mi nombre es _____ y le escribo para responder al Borrador del Informe de Impacto Ambiental del Plan Específico del Speedway Commerce Center II. Creo que este proyecto será malo para la comunidad. La región del interior ya está saturada de usos logísticos. En los últimos años, se han seguido construyendo más almacenes y más grandes en el radio de Fontana, Ontario, Rancho Cucamonga y el bolsillo del condado donde se ubicaría este Proyecto, lo que ha provocado un aumento drástico del tráfico de camiones y la consiguiente contaminación atmosférica que conllevan. 1

Este proyecto traería casi 10.000 viajes más de camiones por día para envenenar nuestro aire sin medidas de mitigación eficaces. Tal y como está, el proyecto ya está situado en una zona que es una de las más afectadas del estado según CalEnviroScreen, situándose en el percentil 93 en general, en el percentil 95 para el ozono, en el percentil 94 para las PM2,5 y en el percentil 90 para las partículas diésel. Sin embargo, el proyecto propone bombear cantidades asombrosas de estos mismos contaminantes en la comunidad a niveles que son hasta más de 13 veces los límites permitidos. Es incomprensible que esto se considere una situación aceptable y exijo que el condado rechace este proyecto.

Además, nos preocupa el impacto que la gran afluencia de tráfico para este proyecto tendría en la capacidad de la comunidad para desplazarse. Con casi 10.000 viajes de camiones y más de 25.500 viajes de coches al día, el proyecto amenaza con saturar las carreteras locales con atascos y, aunque se presentaron algunas opciones de mitigación, los planes no van lo suficientemente lejos como para reducir realmente el azote del tráfico: la simple ampliación de las carreteras no es un beneficio para la comunidad, sino que crea calles que son menos seguras y más hostiles para el uso y la actividad humana. Dado que el transporte es también la razón principal de que las emisiones de calidad del aire y de gases de efecto invernadero del proyecto superen los umbrales, incluso después de incluir medidas de mitigación, está claro que no se puede permitir la construcción del proyecto a menos que se haga algo más, no sólo para mitigar el aumento, sino para evitarlo activamente. 2

En lugar del proyecto propuesto, nos gustaría que el condado persiguiera un desarrollo más acorde con los usos comerciales de la zonificación existente. Esta es una oportunidad para que el Condado aporte más atractivo a la región del IE con nuevos desarrollos como salas de conciertos, plazas comerciales, centros comerciales, jardines, etc. Este proyecto propuesto se opone a la visión que la comunidad tiene de una zona simbólica como el Speedway. Las reuniones celebradas no fueron suficientes para garantizar la participación de la comunidad, lo que se demuestra en última instancia por la falta de beneficios para la comunidad de este proyecto.

Gracias por tomarse el tiempo de recibir esta carta y abordar las preocupaciones que plantea. Esperamos que nuestros comentarios contribuyan a dar forma al futuro de este desarrollo. 3

Name: Maria Navarro Address: 18917 Arabian Ct Bloomington CA

Date: 7-16-2022 Contact: 951-733-7082

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Response to Comment Letter G24 – Maria Navarro

G24-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G24-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G24-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Martha Aragon (G25)

From: President Ontario <lulacdeontario3296@gmail.com>
Sent: Monday, July 18, 2022 1:10 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan

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Dear Mr. Valdez:

My name is Martha Aragon and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project.

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development. 3

Martha Aragon
Ontario, CA 91762
909-919-6358

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Response to Comment Letter G25 – Martha Aragon

G25-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G25-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G25-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Martin Navarro (G26)

Estimado Sr. Valdez

Mi nombre es _____ y le escribo para responder al Borrador del Informe de Impacto Ambiental del Plan Específico del Speedway Commerce Center II. Creo que este proyecto será malo para la comunidad. La región del interior ya está saturada de usos logísticos. En los últimos años, se han seguido construyendo más almacenes y más grandes en el radio de Fontana, Ontario, Rancho Cucamonga y el bolsillo del condado donde se ubicaría este Proyecto, lo que ha provocado un aumento drástico del tráfico de camiones y la consiguiente contaminación atmosférica que conllevan. 1

Este proyecto traería casi 10.000 viajes más de camiones por día para envenenar nuestro aire sin medidas de mitigación eficaces. Tal y como está, el proyecto ya está situado en una zona que es una de las más afectadas del estado según CalEnviroScreen, situándose en el percentil 93 en general, en el percentil 95 para el ozono, en el percentil 94 para las PM2,5 y en el percentil 90 para las partículas diésel. Sin embargo, el proyecto propone bombear cantidades asombrosas de estos mismos contaminantes en la comunidad a niveles que son hasta más de 13 veces los límites permitidos. Es incomprensible que esto se considere una situación aceptable y exijo que el condado rechace este proyecto.

Además, nos preocupa el impacto que la gran afluencia de tráfico para este proyecto tendría en la capacidad de la comunidad para desplazarse. Con casi 10.000 viajes de camiones y más de 25.500 viajes de coches al día, el proyecto amenaza con saturar las carreteras locales con atascos y, aunque se presentaron algunas opciones de mitigación, los planes no van lo suficientemente lejos como para reducir realmente el azote del tráfico: la simple ampliación de las carreteras no es un beneficio para la comunidad, sino que crea calles que son menos seguras y más hostiles para el uso y la actividad humana. Dado que el transporte es también la razón principal de que las emisiones de calidad del aire y de gases de efecto invernadero del proyecto superen los umbrales, incluso después de incluir medidas de mitigación, está claro que no se puede permitir la construcción del proyecto a menos que se haga algo más, no sólo para mitigar el aumento, sino para evitarlo activamente. 2

En lugar del proyecto propuesto, nos gustaría que el condado persiguiera un desarrollo más acorde con los usos comerciales de la zonificación existente. Esta es una oportunidad para que el Condado aporte más atractivo a la región del IE con nuevos desarrollos como salas de conciertos, plazas comerciales, centros comerciales, jardines, etc. Este proyecto propuesto se opone a la visión que la comunidad tiene de una zona simbólica como el Speedway. Las reuniones celebradas no fueron suficientes para garantizar la participación de la comunidad, lo que se demuestra en última instancia por la falta de beneficios para la comunidad de este proyecto.

Gracias por tomarse el tiempo de recibir esta carta y abordar las preocupaciones que plantea. Esperamos que nuestros comentarios contribuyan a dar forma al futuro de este desarrollo. 3

Name: MARTIN NAVARRO Address: 1891 7 ARRAGANCE
BLOOMINGTON CA

Date: 7-16-2022 Contact: 951-733 7082

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Response to Comment Letter G26 – Martin Navarro

G26-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G26-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G26-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Maxine Bowden (G27)

From: Maxine Bowden <mmccleerybowden@roadrunner.com>
Sent: Sunday, July 17, 2022 5:32 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Warehouses

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DEIR documents:
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Contact: Steven Valdez
County of San Bernardino
Senior Planner
Steven.Valdez@lus.sbcounty.gov

Name: _____Maxine Bowden _____
Date: ____7/18/22_____

Dear Mr. Valdez:

My name is ___Maxine Bowden___ and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project. 3

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development. Thank you, Maxine Bowden

Sent from my iPhone

3

2

Response to Comment Letter G27 – Maxine Bowden

G27-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G27-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G27-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Melissa May (G28)

From: Melissa May <melissa.m@ccaej.org>
Sent: Monday, July 18, 2022 12:54 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Dear Mr. Valdez:

My name is Melissa May and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring *nearly **10,000** more truck trips per day* to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for $PM_{2.5}$, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to *more than 13 times the allowed limits*. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project. 2

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all.

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project. 3

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.

Name: Melissa May

Date: July 18th, 2022

Address: Ontario, CA 91762

Contact: 909-519-7544

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Response to Comment Letter G28 – Melissa May

G28-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G28-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G28-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Miramontes Family (G29)

7/18/2022

Miramontes Family
6643 Blanchard Ave
Fontana, CA 92336

Attention San Bernardino County Planning Department and Kimley-Horn

Our family resides in Fontana California and is composed of Dr. Kevin Miramontes, Amparo Munoz Miramontes, Ari Rene Miramontes (13), and LucasOrion Miramontes (9). We are involved in our community because of our children's health impacts as a direct result of PM2.5 impacts during my pregnancy, and in the time before we knew the cost of breathing deeply outside. We understand that the community is always presented the false choice of jobs over health, when it is clear CEQA, EPA, CARB, and California Statute requires that we use technology and innovation to brings clean jobs and mitigate the negative impacts to the community. 1

After reviewing the EIR Report, and after going to the public Environmental Justice Meeting, our family is strongly opposed to this developmental plan. First and foremost, this project fails to rise to the needs of the community for places of entertainment, shopping, and night life. The Speedway has limitless opportunities for revenue generation to the County of San Bernardino but installing 6.6 million square feet of warehouses has Environmental Impacts to our community that are not even being mitigated in the Kimley-Horn EIR Draft. Such detrimental impacts will cause exponential increases in community costs regarding, time to travel, gas prices, road destruction, underground infrastructure damage, increase childcare costs, as travel time increases, increase in food costs, and most importantly increase in health care as this developer destroys our communities air quality. 2

During the EJ Meeting that Kimley-Horn conducted with the community we found that Kimley-Horn lead a disinformation campaign and violated the spirit of the California Code Section 65302(h)(1) amended by SB1000. We have attached to articles, one is the power point presentation, and the other is scripted misinformation that the Kimely-Horn strategically provided to the community. As you can see this is in violation of the spirit of SB1000
(h)(1)An environmental justice element, or related goals, policies, and objectives integrated in other elements, that identifies **disadvantaged** communities within the area covered by the general plan of the city, county, or city and county, if the city, county, or city and county has a **disadvantaged** community. The environmental justice element, or related environmental justice goals, policies, and objectives integrated in other elements, shall do all of the following:
(A) Identify objectives and policies to reduce the unique or ***compounded health risks*** in **disadvantaged** communities by means that include, but are not limited to, the reduction of pollution exposure, including the improvement of air quality, and the promotion of public facilities, food access, safe and sanitary homes, and physical activity.
(B) Identify objectives and policies to promote civic engagement in the public decision-making process.
(C) Identify objectives and policies that prioritize improvements and programs that address the needs of **disadvantaged** communities. 3

(2) A city, county, or city and county subject to this subdivision shall adopt or review the environmental justice element, or the environmental justice goals, policies, and objectives in other elements, upon the adoption or next revision of two or more elements concurrently on or after January 1, 2018. 3

Green House Gas Mitigation: This project fails to properly mitigate GHG and instead is basing all its mitigation on the current CARB Draft plan. By stating that the project is mitigating GHG by putting in a few electric vehicle charging stations does not tip the scale for the millions of truck trips it will bring to our community a year. The community expects to see all 6.6 million square feet be covered in solar panels, thus REQUIRING the project to be 100% self-powered. Regarding SB 1000, the community demands that cumulative impacts are considered. To mitigate this, we propose all parking to be covered in Solar Panels, creating a micro grid for the community to have a source of shared power to the Fontana County Residents. This would show excellent partnership in the community and increase the community's confidence that we can partner with this developer. To mitigate VMT, the community is proposing that partnership with Transportation should include easy within the "Circulation Plan" to allow employees to be motivated to use public transportation to get to work, and that all EMPLOYERS on the property incentivize public transportation by offering it to their EMPLOYEES at no charge! 4

Traffic Mitigation: The EIR fails to account for the massive amount of truck traffic on Cherry, both off the 10 Freeway, off the 210, and the 15 Freeway Exit. There are no realistic mitigations that would provide a drivable pathway for both the project and the community. This project in its Draft EIR is in violation of California Code Section 65302 amended by SB1000 section (2)(A). Upon any substantive revision of the circulation element, the legislative body shall modify the circulation element to plan for a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways for safe and convenient travel in a manner that is suitable to the rural, suburban, or urban context of the general plan.
(B) For purposes of this paragraph, "users of streets, roads, and highways" mean bicyclists, children, persons with disabilities, motorists, movers of commercial goods, pedestrians, users of public transportation, and seniors.
The community is demanding a more complete analysis that includes truck traffic both on and off the 10, 210, and 15 freeway. This project will need a DEDICATED truck exit, that is only for truck traffic. The community asks that this truck exit by subterranean to allow for pollutants to settle into a filtered trench, to protect the community. It is unrealistic to expect that trucks will not be idling as they try to exit the 10, 210, and 15 freeway especially as they traffic to and from the major streets of Cherry, San Bernardino, Napa, and Hickory. A subterraneous pathway is ideal, to allow residents access to streets at bridge points over the subterranean truck traffic trenches. 5

To increase compliance to California Code 65302, we ask that all truck routes be painted on the main streets of traffic. All truck routes should be painted and Poka-Yoke (mistake proofing with clear visual aids) to be able to clearly tell the Truck Driver what lanes they should enter to get to the specific dock doors. The community is asking that each dock door have a plan for entry from

the Freeway and as it transitions City to City along the streets surrounding the project. This will reduce idling time, and drivers from entering our communities and putting our community at risk of deadly truck accidents. The project should include a pathway once in the project to allow for the conveyance of trucks to the dock door through electric automation, to eliminate idling of any kind once on the project site. The project should include a location for drivers to use the bathroom and eat at a local restaurant to prevent the following:
The epidemic of **PISS BOTTLES** that litter our streets.
This is a biological hazard to our entire community.
This increases costs to our communities by Public Works having to exponentially increase services rather than hold the project accountable to properly plan for this.
The epidemic of trash littering our streets
Truck parking in the middle of the streets to be able to get a bite to eat.
Trucks being parked in residential communities.
Trucks being parked in parking lots designed for Class C driver.

5

When traffic concerns were brought to Kimley-Horn during our Environmental Justice Meeting the response was the project complied with the minimum requirements. Community asked questions regarding the impact to traffic on Speedway race days, they stated they did not have to address that in the EIR. The community asked for the true impact the project would have in addition to race day traffic, truck, and community traffic. Kimley-Horn stated they had met the minimum requirement. The community reminded them that SB1000 requires that roadways are accessible to multimodal traffic, and in its current state the traffic in the project did not meet that standard. Especially regarding safe walkways for students. This was their response:

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Tran

Q: What intersections and roads were studied in the Traffic Study?

Frequently Asked Questions

A: A total of 72 intersections were studied in collaboration with San Bernardino County Staff, throughout Fontana, Rancho Cucamonga, and San Bernardino County. Some of these intersections, in the immediate vicinity of the Project, are shown in the circulation map.

Q: What are the truck routes? Are they near schools or homes?

A: Randall Avenue would be maintained as a truck route for the Project, avoiding congestion near homes and schools. Furthermore, the Project would adhere to Policy TM-5.6, which establishes local truck routes in unincorporated areas to efficiently funnel truck traffic to freeways while minimizing impacts on residents. Routes will be established where trucks are prohibited in unincorporated environmental justice focus areas and to avoid overlaps or conflicts with safe routes to schools. In addition, as indicated in MM TRANS-2, manual traffic control shall also be employed as determined by the County of San Bernardino in consultation with the California Highway Patrol; Cities of Fontana, Rancho Cucamonga, and Ontario; and the Fontana Unified School District, where needed, to safely move traffic through intersections affected by traffic.

Health Impacts: In the Environmental Justice element the project is required to consider the cumulative impacts and mitigate them. This Draft EIR presents no solution when there are considerable steps that can be taken. 6

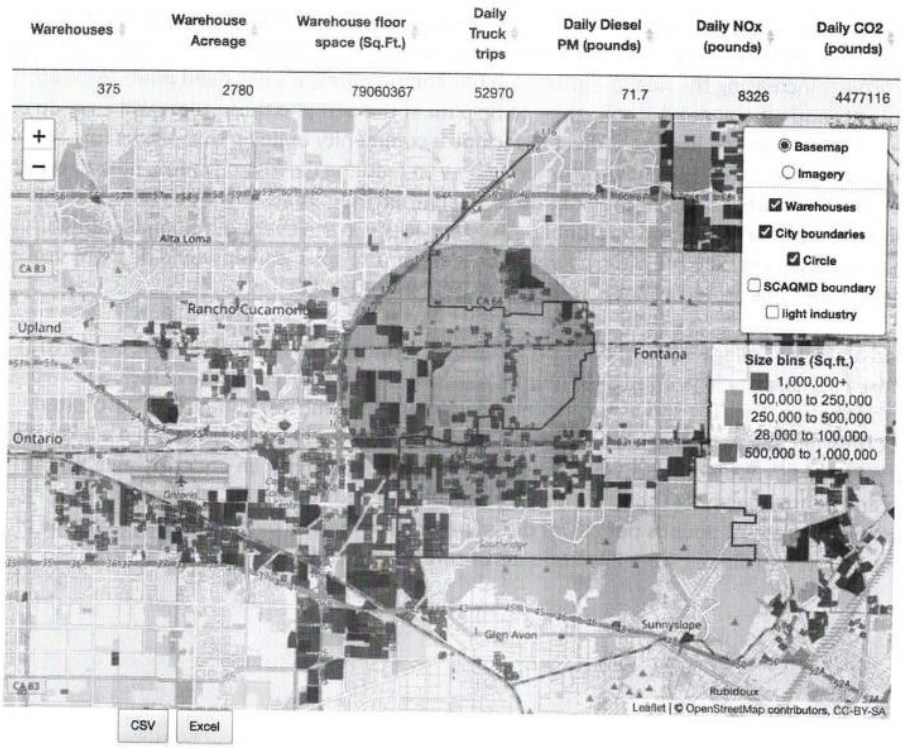
Landscaping: There should be no grass on this project site. The project should instead have all native plants to encourage wildlife to create a habitat in native species. The community proposes having Cypress Trees encircle the entire project. Cypress Trees and Pine Trees are excellent PM2.5 filters, and specifically Cypress Trees will reduce the noise of this project (another failed element for mitigation). All plants should be planted as MATURE, with a minimum height of 15-20 feet based on species. This project does not take time to pollute our community, so we do not have time to wait for mature trees to start doing their job. 7

Health Impacts
Industrial development, such as the proposed Project, can result in high daily volumes of heavy-duty diesel truck traffic and operation of on-site equipment (e.g., forklifts and yard tractors) that emit toxic diesel emissions, and contribute to regional air pollution and global climate change. The Project will expose our communities to elevated levels of air pollution. Residences are located north and west of the Project with the closest residences located within 1,550 feet from the Project's western boundary. In addition to residences, Live Oak Elementary School, Beech Avenue Elementary School, Redwood Elementary School, and Almond Elementary School are located within one mile of the Project. According to the California Communities Environmental Health Screening Tool Version 3.0/4.0 (CalEnviroScreen). This Draft EIR is also in violation of San Bernardino County General Plan, as this warehouse size far exceeds the size that is permissible to be located close to the sensitive receptors of schools. 8

Our community and children are already burdened by multiple sources of air pollution, and I am constantly changing pillowcases from bloody noses in my children's sleep. We are concerned with the potential cumulative health impacts associated with the construction and operation of the Project. In reviewing the data regarding NOP, our community is concerned about the air pollution and health risk impacts that would result from the proposed Project. This project is going to this community who is already in the 98-99% of Pollution Burden including our Air, Water, and overall, Health impacts according to Cal Enviro 3.0/4.0, to a higher burden level (Is that 100%). This project will decrease the life expectancy in our community and will increase the need for parents to take sick days. On average in the Inland Empire, parents take seven sick days per year to care for children negatively impacted by our pollution for things like: migraines, asthma attacks, respiratory issues, diabetes, and neurological disorders. All these medical issues according to the World Health Organization, the American Heart Association, the American Lung Association, and the American Pediatric Association have directly linked to diesel pollutants. This project would exponentially increase this burden. 9

and the community, as trades will be in high demand for this project's longevity, and trades provide excellent union careers that increase our community's disposable income. Regarding this project increasing the health burdens on our communities, we will need more respiratory therapists and we will need scholarships to help meet the demand this project will have on our community. We would like the project to include a community building that allows for educational clinics that teach the community how to read the CalEnviro Screen, how to take care of their health, and what they can do to strengthen their lungs. We would also like this building to be able to be used as a public space especially in the event of rolling blackouts, and or natural disasters. This building, powered by 100% onsite solar power would be a physical reminder that this project is not just about PROFITS, but PEOPLE! 10

Based on Pitzer College's Warehouse CITY Cumulative Impact Tool, numbers associated with this area are already high enough to merit a rejection of the project. We have included two graphics below. The first shows the estimated warehouse numbers, numbers of associated truck trips per day as well as associated emissions of carbon, PMs, and NOx within a 5 km radius of the Speedway Project. Even while these numbers are most likely an underestimation, the area and nearby neighborhoods are dealing with almost 53 thousand truck trips per day, emissions of over 70 pounds per day of diesel particulate matter, over 8 thousand pounds of NOx per day, and almost 4.5 million pounds of carbon emitted per day. 11



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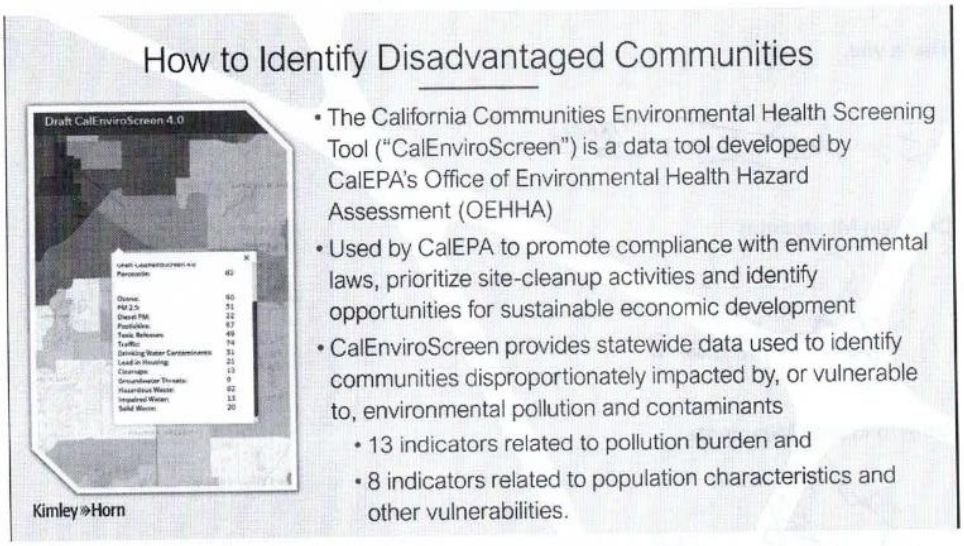
Kimley-Horn lead EIR Process Strategically Violated SB1000, CEQA, and the San Bernardino County General Plan Requirements:

It is important to note the Kimley-Horn strategical mislead the community during their Environmental Justice meeting by showing an image of CalEnviro to the community that was green and did not show the actual pollution of the community that the Draft EIR was reviewing. This is an absolute violation of SB 1000 and we would like to see Kimley-Horn taken to task, for strategically misleading the public when they should have shown the actual data in the Draft EIR. The entire objective of the meeting that they staged, was to properly show the community the outcomes of the Draft EIR. The Draft EIR was not onsite, and when the community asked about mitigations, Kimley-Horn stated that they did not have to talk about the EIR, but rather allow us to hand write our concerns. The community would like to address Kimley-Horn's violation of California Code Section 65302 that adopts the definition of "Disadvantaged Communities" from the California EPA Section 39711 Health and Safety Code:

"**Disadvantaged Communities**" means an area identified by the California Environmental Protection Agency pursuant to Section 39711 of the Health and Safety Code or an area that is a

12

low-income area that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation. Kimley-Horn, instead chose to misrepresent the actual environmental pollutions and other hazards pursuant to the forementioned statute. The below represents the slide presented to the community. When Kimley-Horn was called out for misrepresentation, they said they complied with the minimum requirements by holding the meeting. The community would like further action to be taken, and we will be elevating our concerns to Attorney General Bonta.



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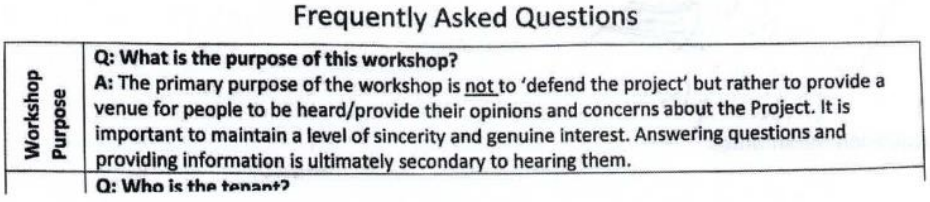
In addition, Kimley Horn literally documented that they were not here to answer questions, in compliance with the forementioned requirements, but rather to "hear them."



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We have attached the script being read to us by Kimley-Horn, and the power point presentation that they presented to the community.

In conclusion, the community asks for an Environmental Justice meeting that meets the requirements of SB1000 and presents the actual health impacts to this community. We ask that you meet or exceed all the mitigation outlined in this letter. We would also ask that you consider a different project in place of these warehouses.

Once again, the Miramontes Family opposes this project.

Thank you,

7/18/22

Dr. Kevin Miramontes

7/18/2022

Amparo Munoz Miramontes

7/18/22

Ari Rene Miramontes

LucasOrion Miramontes

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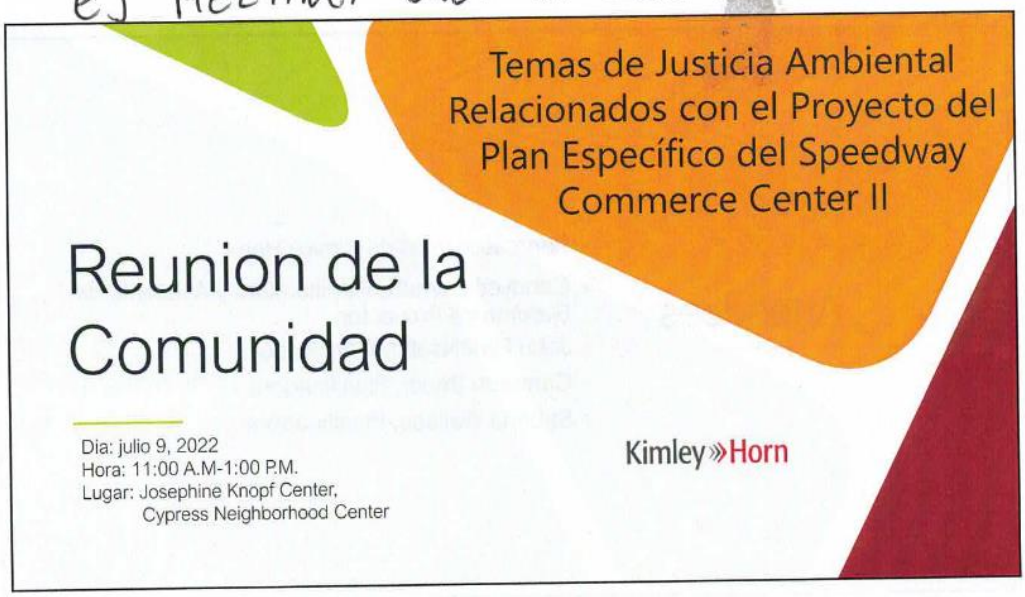
7/8/2022

EJ MEETING: ONLY HAD PRESENTATION IN SPANISH



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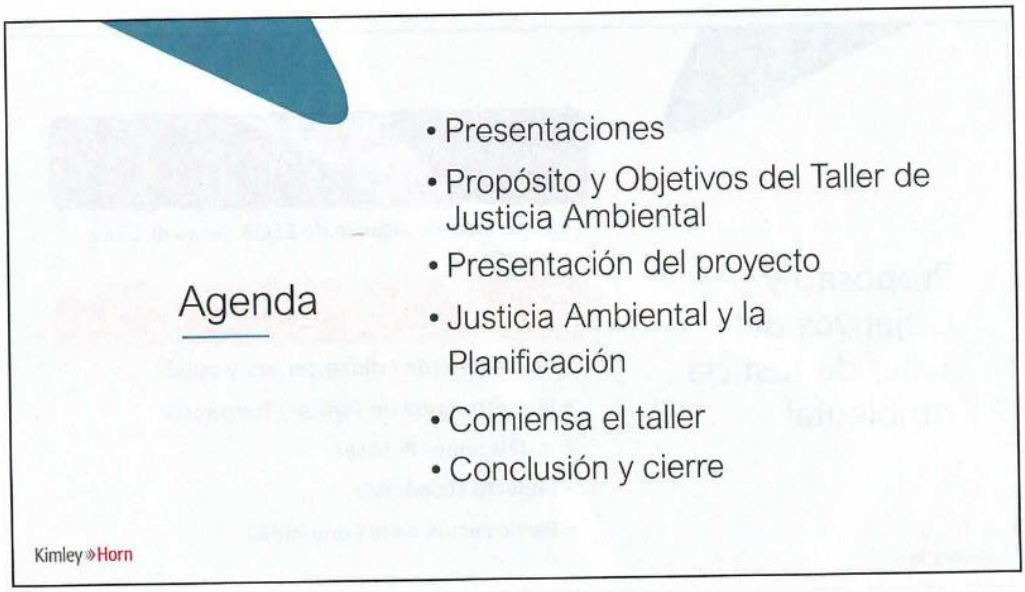

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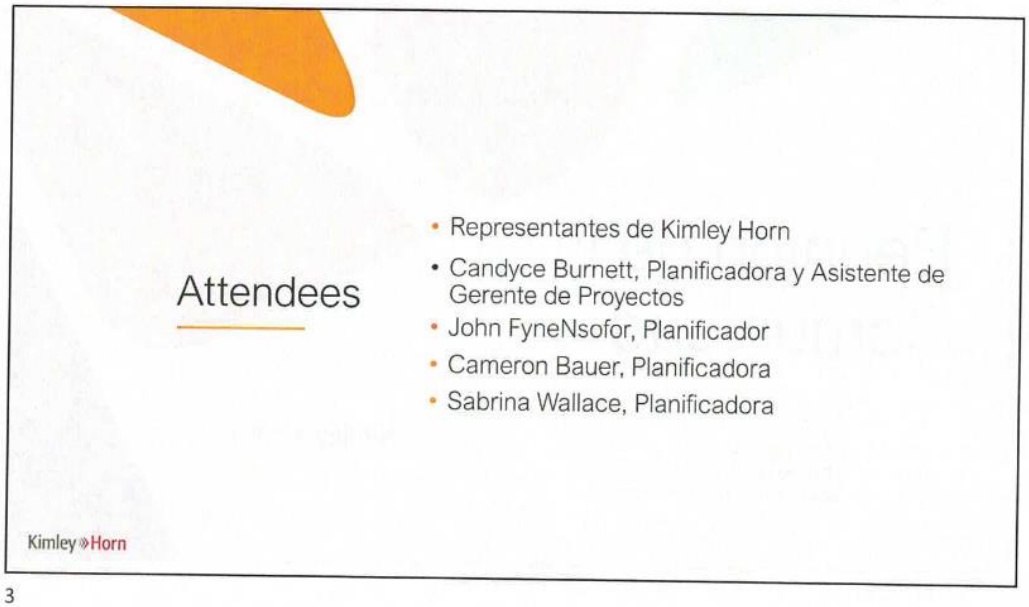
7/8/2022


Attendees
• Representantes de Kimley Horn
• Candyce Burnett, Planificadora y Asistente de Gerente de Proyectos
• John FyneNsofor, Planificador
• Cameron Bauer, Planificadora
• Sabrina Wallace, Planificadora
Kimley»Horn

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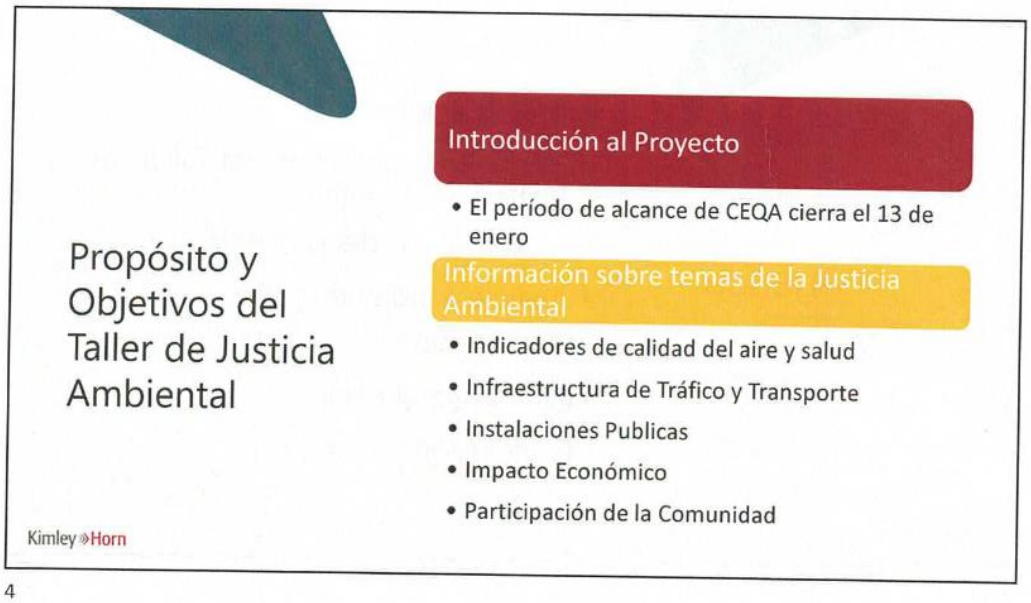
Propósito y Objetivos del Taller de Justicia Ambiental
Introducción al Proyecto
• El período de alcance de CEQA cierra el 13 de enero
Información sobre temas de la Justicia Ambiental
• Indicadores de calidad del aire y salud
• Infraestructura de Tráfico y Transporte
• Instalaciones Publicas
• Impacto Económico
• Participación de la Comunidad
Kimley»Horn

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7/8/2022

Resumen del Taller Anterior de Justicia Ambiental

- Se llevo acabo el 12 de enero en el Cypress Neighborhood Center
- Recibimos comentarios y preguntas sobre tráfico y transporte
- Infraestructura, instalaciones públicas, impacto económico y participación de la comunidad

Kimley»Horn

5

Informe del Reporte del Impacto Ambiental



Kimley»Horn

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7/8/2022

Sitio Del Proyecto



- El sitio del proyecto se encuentra en un área no incorporada del suroeste del condado de San Bernardino.
- El Proyecto SCCIISP facilitaría la reurbanización de aproximadamente 433 acres del sitio de 522 acres del Auto Club Speedway existente.
- Se retendrán aproximadamente 90 acres para el desarrollo y la operación de las instalaciones de deportes de motor "Next Gen In California" de NASCAR, aprobadas por el Condado de San Bernardino en junio de 2021 (la instalación de deportes de motor de 90 acres "no es parte" de este SCCIISP).

Kimley»Horn

7

Descripción General del Proyecto

- El SCCIISP consta de seis áreas de planificación (AP) incluyendo:
  - Hasta 6,600,000 pies cuadrados de usos logísticos y de comercio electrónico de alto cubo,
  - Aproximadamente 261,000 pies cuadrados de usos comerciales accesorios,
  - 98 acres de áreas de estacionamiento / lote de caída de vehículos y espacios abiertos asociados y vías públicas internas, y
  - Mejoras de infraestructura
  - El Proyecto SCCII está buscando aprobaciones del Condado, incluyendo la adopción del Reporte del Impacto Ambiental
  - Aviso De Preparacion publicado diciembre 13, 2021
  - Aviso De Preparacion and periodo de estudio se cierra enero 13, 2022

Kimley»Horn

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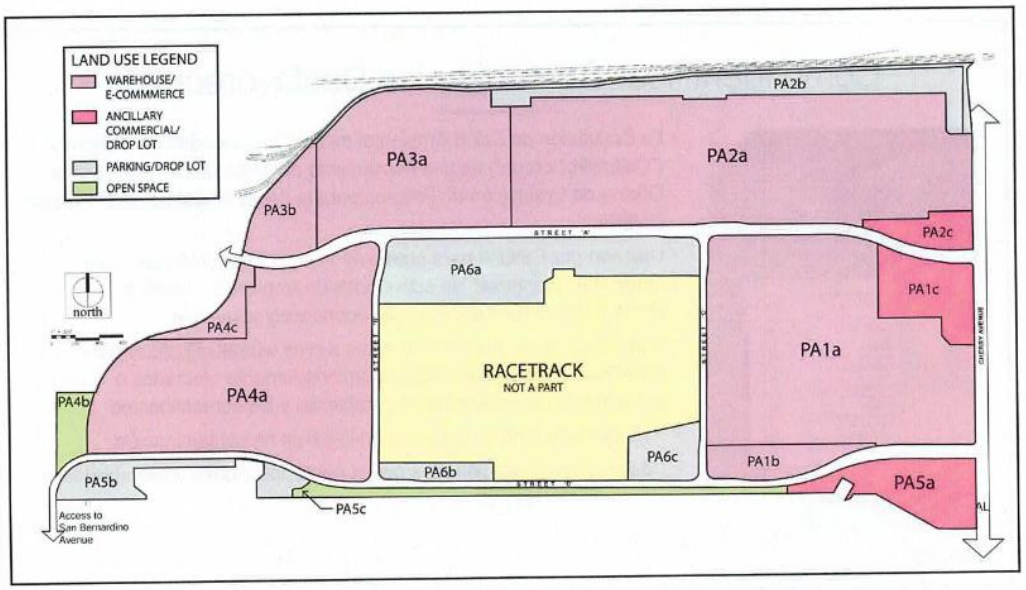
7/8/2022



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Planificación de Justicia Ambiental

- El Proyecto de Ley del Senado 1000 (2016) estableció los requisitos de Justicia Ambiental para los planes generales bajo la Sección 65302 (h) del Código de Gobierno
  - Para abordar los "riesgos de salud únicos o compuestos" en las comunidades desfavorecidas mediante la disminución de la exposición a la contaminación y la mejora de la salud en general.

Kimley»Horn

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7/8/2022

Cómo Identificar Comunidades Desfavorecidas



- La Evaluación de Salud Ambiental de las Comunidades de California ("CalEnviroScreen") es una herramienta de datos desarrollada por la Oficina de Evaluación de Peligros para la Salud Ambiental (OEHHA) de CalEPA.
- Utilizado por CalEPA para promover el cumplimiento de las leyes ambientales, priorizar las actividades de limpieza Y identificar oportunidades para el desarrollo económico sostenible
- CalEnviroScreen proporciona datos a nivel estatal utilizados para identificar comunidades desproporcionadamente afectadas o vulnerables a la contaminación ambiental y los contaminantes
- 13 indicadores relacionados con la carga de contaminación
- 8 indicadores relacionados con la población y otras vulnerabilidades.

Kimley»Horn

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Acciones del Condado

- Como parte del Plan de todo el Condado, el Condado de San Bernardino identificó áreas de enfoque de Justicia Ambiental que incluyen el sitio de este proyecto
  - La parte occidental de Fontana esta en el la parte superior del factores de contaminación de acuerdo con CalEnviroScreen
  - Los factores de contaminación incluyen la calidad del aire, las emisiones tóxicas de la industria y los sitios de desechos peligrosos y sólidos
  - Los problemas de salud incluyen altos casos de asma y enfermedades auditivas, bajo nivel de educación, la pobreza y desempleo.

Kimley»Horn

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7/8/2022

Normas de Justicia Ambiental

- El Condado prioriza las siguientes normas para a mejorar la salud, la recreación y las instalaciones públicas a través de:
  - Reducir de la exposición a la contaminación y mejorar de la calidad del aire
  - Promover instalaciones públicas, incluyendo la infraestructura y los servicios comunitarios
  - Promover el cuidado de salud
  - Promover el acceso a alimentos
  - Promover viviendas seguras y sanitarias
  - Promover la actividad física

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Justicia Ambiental Participación de la Comunidad

- El Condado requiere que el solicitante organice reuniones comunitarias enfocadas en la Justicia Ambiental
- Proveer información:
  - Este es el segundo de los dos talleres previstos
  - Folletos enviados por correo el 6 de julio
  - El Sitio de Web : https://maps.kimley-horn.com/portal/apps/storymaps/stories/3f77c5d346a941dca99ab276d799d095

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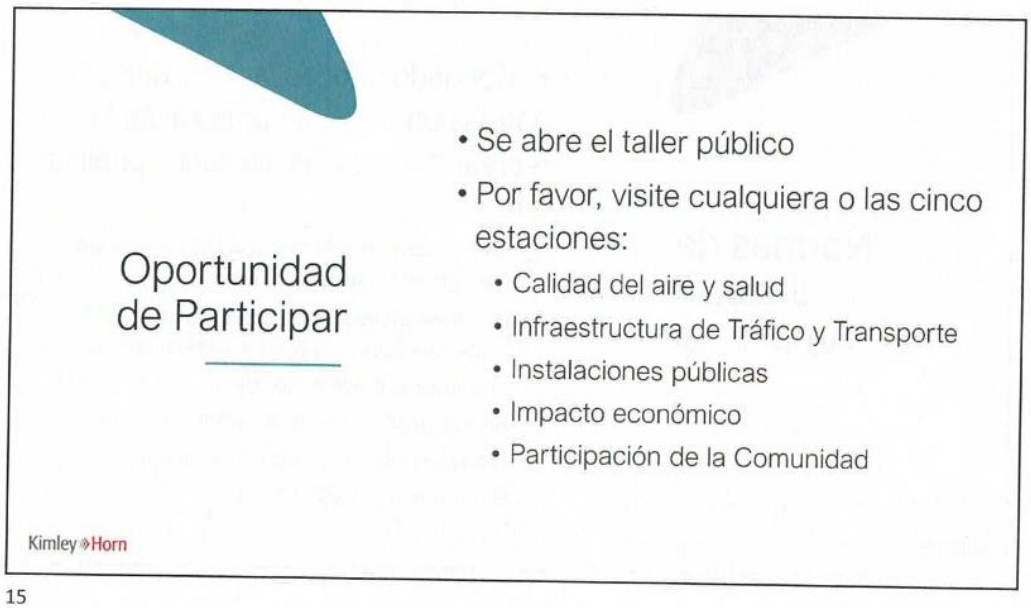
7/8/2022



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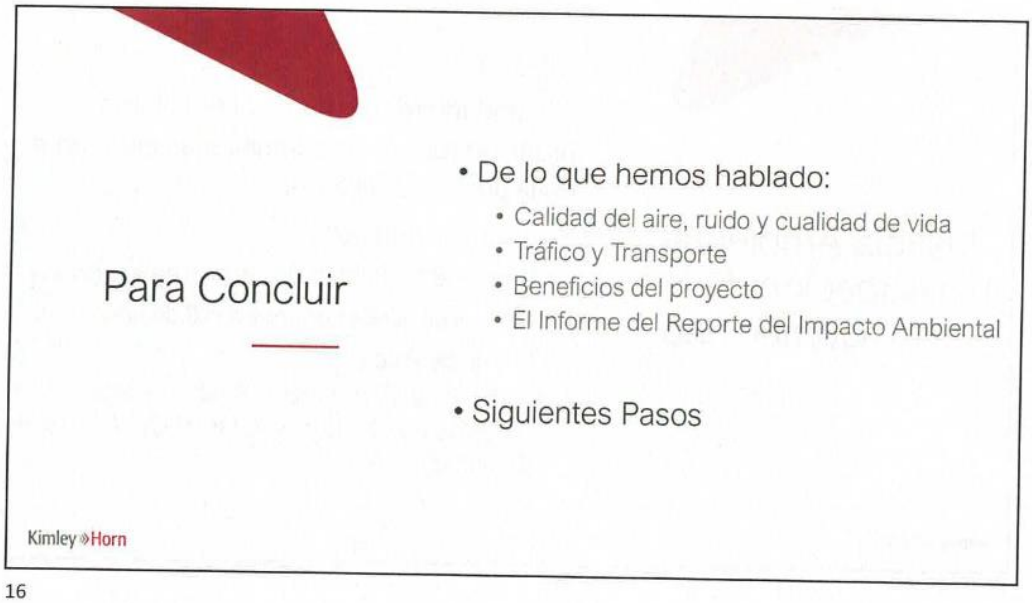

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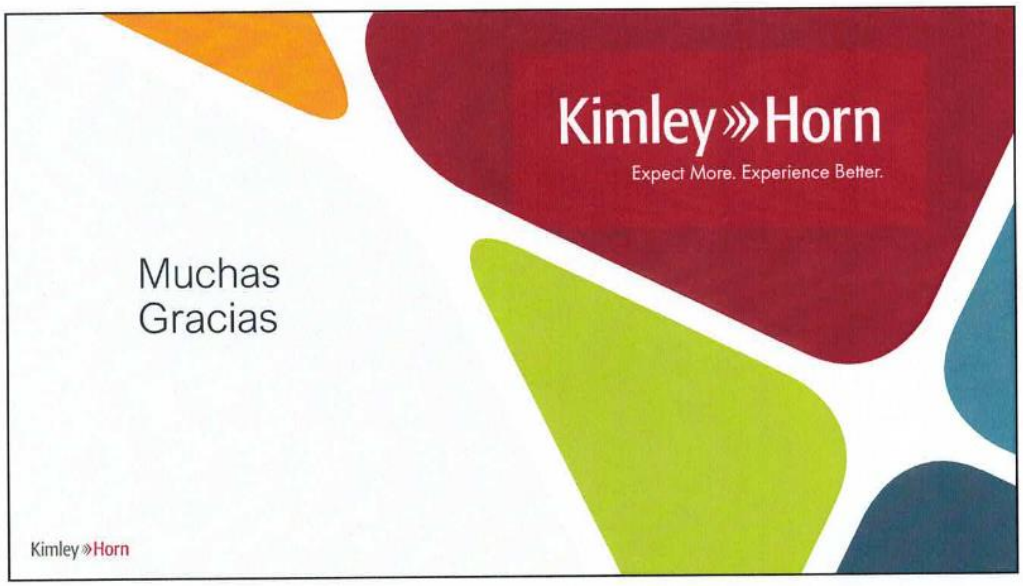
7/8/2022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Expect More. Experience Better.
Muchas
Gracias
Kimley»Horn

17

9

Frequently Asked Questions

Workshop Purpose	**Q: What is the purpose of this workshop?** **A:** The primary purpose of the workshop is <u>not</u> to 'defend the project' but rather to provide a venue for people to be heard/provide their opinions and concerns about the Project. It is important to maintain a level of sincerity and genuine interest. Answering questions and providing information is ultimately secondary to hearing them.
Project Description	**Q: Who is the tenant?** **A:** The future tenant(s) are unknown and not subject to speculation. The EIR evaluates the 'worst case scenario' with highest allowable intensities of the proposes e-commerce logistics uses.
	Q: How long is construction going to take? **A:** Construction will occur intermittently through the next 5 to 10 years, though no residences would be exposed to significant levels of noise.
	Q: What are the hours of operation? Would it operate 24 hours? **A:** The Project could take deliveries late at night though there would be no noise impacts above 45 decibels – meaning noise from overnight activities would not impact homes.
	Q: Is the Project site publicly accessible? **A:** Yes, the Project would be publicly accessible – and would not be fenced off. Additionally, the public could reasonably access on-site electric charging stations and parking.
	Q: How will the Project benefit the community? **A:** Open space and electric charging stations would be accessible to the public. The Project will also contribute to infrastructure improvements (including signalization and signage), build underground utilities, and implement a Speedway-themed artwalk. Additionally, the Project will bring commercial activity where those uses are currently lacking.
	Q: Will Auto Club Speedway camping still happen? **A:** RV Camping related to the Auto Club Speedway would no longer occur with the Project.
Local Business	**Q: Will the Project displace small businesses? Particularly those that rely on the existing Speedway?** **A:** There are a couple of small businesses that exist on the existing Auto Club Speedway site – the Speedway owns the site and would negotiate with the small businesses however, we are not privy to that. We are unable to speculate on whether or not these small businesses will be compensated, as future redevelopment of the Speedway is not part of this Project.
	Q: Would the Project partner with small businesses? **A:** See above – we are not privy to any negotiations or partnerships the Speedway has with small businesses that are located within the ACS site.
	Q: Was there any analysis as to how the Project would affect businesses? **A:** *Not our Project*
	Q: I don't like how this Project is going to change/get rid of the ACS: **A:** The redesign of the ACS is already approved and was done by the owners. Its not going away, but they just don't need the parking lots. That's what's facilitating the redesign of the parking lots for our project, however, they are ultimately separate and independent Projects.
Transportation and Traffic	**Q: Will there be adequate parking to prevent overflow onto residential streets?** **A:** The Project will include approximately 98 acres of vehicle parking field/drop lots areas throughout each Planning Area, to accommodate ongoing Next Gen motorsport facility events on designated days as well as parking for permitted land uses. The Project site would also provide pedestrian sidewalks along street sections within the Project site including opportunities for enhanced pedestrian connections between parking fields/drop lots. Additionally, on street parking will be provided on the following streets: Beech Avenue, Whittram Avenue, and Merrill Avenue.
	Q: What intersections and roads were studied in the Traffic Study?

Frequently Asked Questions

	A: A total of 72 intersections were studied in collaboration with San Bernardino County Staff, throughout Fontana, Rancho Cucamonga, and San Bernardino County. Some of these intersections, in the immediate vicinity of the Project, are shown in the circulation map.
	Q: What are the truck routes? Are they near schools or homes? **A:** Randall Avenue would be maintained as a truck route for the Project, avoiding congestion near homes and schools. Furthermore, the Project would adhere to **Policy TM-5.6**, which establishes local truck routes in unincorporated areas to efficiently funnel truck traffic to freeways while minimizing impacts on residents. Routes will be established where trucks are prohibited in unincorporated environmental justice focus areas and to avoid overlaps or conflicts with safe routes to schools. In addition, as indicated in **MM TRANS-2**, manual traffic control shall also be employed as determined by the County of San Bernardino in consultation with the California Highway Patrol; Cities of Fontana, Rancho Cucamonga, and Ontario; and the Fontana Unified School District, where needed, to safely move traffic through intersections affected by traffic.
	Q: How will the Project affect traffic on Cherry Avenue? **A:** Cherry Avenue is the Project site's eastern boundary. Widening of Cherry Avenue along the Project frontage would be done to improve traffic movements at the intersections of Street "A"/Cherry Avenue and Street "D"/Cherry Avenue. The Project proposes improvements that would include future construction of pedestrian connections from Cherry Avenue to the parking field/drop lots, Rancho Vista, Napa Street, and the existing private VIP Access Road into the Project area and within the new right of way improvements that connect to each Planning Area and to the Next Gen motorsports facility. Additionally, a multi-use trail connection is proposed along Street "A" that would connect Cherry Avenue to Napa Street and support future local trail systems.
	Q: Will trucks be allowed on the site overnight? **A:** No, parking fields/drop lots would not accommodate overnight parking for trucking activity. This provision would reduce the need for overnight security as well as eliminate noise and lighting nuisances.
Noise and Hazards	**Q: How will the Project affect noise in the area?** **A:** While the Project is far enough away from sensitive uses such as residences and schools that it won't pose noise impacts, the Project structures would buffer noise from existing Speedway uses and proposed entertainment events that could take place at the Speedway in the future. It is important to note that significant noise impacts will still occur even without the Project. Significant noise impacts (above applicable County noise standards) would occur along Randall Avenue (from Cherry Avenue to Citrus Avenue) due to increased traffic noise.
	Q: Will Project noise be heard at residences or schools? **A:** The existing site is a flat parking lot, so building the project and adding landscape will actually reduce noise created on site – the only significant noise is from off-site traffic, particularly along Randall Avenue.
	Q: Will Project noise affect businesses? Was noise impacts on nearby businesses analyzed? **A:** An Acoustical Assessment was conducted for the Project – noise was measured at seven points surrounding the Project site in residential areas as well as the surrounding industrial. Significant impacts relating to noise where identified on Randall due to increase in truck traffic. While mitigation for this significant and unavoidable impact is not feasible, no other significant noise impacts were identified.
	Q: What will the Project do to mitigate noise? **A:** Significant noise impacts are anticipated to result from off-site truck traffic. Due to a lack of jurisdiction over affected roadways, no feasible mitigation is identified to address these

Frequently Asked Questions

	impacts. For all else, noise impacts are less than significant and below County thresholds for noise.
	Q: Is there adequate consideration to the prior industrial uses? To what standard was the soil cleaned? **A:** The Project site was previously used as a Kaiser Steel Mill (from 1942 to 1983) that generated various wastes that were disposed of on-site. The entire property was assessed and subject to subsequent investigations. While the majority of the site requires no further action, there are three sites that will undergo additional material removal or investigation and remediation. Groundwater monitoring has continued as a result.
	Q: Will there be private security? **A:** Private security would be present during construction, and more than likely each individual tenant will have gated truckyards and on-site security.
	Q: Where's the nearest police station or who would respond in the event of an emergency? **A:** The nearest San Bernardino County Sheriff's Department station that would respond in event of an emergency is the Fontana Station located at 17780 Arrow Boulevard, Fontana, CA 92335, approximately 4.6 miles to the east.
Environmental Impact Report (EIR)	**Q: What is an Environmental Impact Report (EIR)?** **A:** An Environmental Impact Report is a requirement of the California Environmental Quality Act (CEQA) to identify and disclose environmental impacts – including air quality, noise, and traffic – to decision makers tasked with approval of a given Project. The EIR is based on various technical studies and proposes measures to reduce identified impacts.
	Q: Will my comments during the Environmental Justice Workshop be recorded and sent to decision-makers? **A: No**, the purpose of this Environmental Justice Workshop is to provide community members with the opportunity to share concerns or opinions on the Project as well as an opportunity to learn more about the Project is a relaxed, family-friendly setting. While your concerns will be informally noted, this is not a method for providing official comment on the Project.
	Q: How do I provide official comment on the Project? **A:** Official comments on the Project and its EIR that will be made available to decision makers will take the form of emails or mailed letters. A mail-in form you can use to make official comments is provided at the "Environmental Impact Report" Table.
	Q: Where can I find more information on the Project EIR? **A:** More information can be found via the QR code on the flyer (will be provided day-of event) as well as via the County of SB planning website (URL on the flyer)
	Q: Has the Project been approved by the County yet? **A: No**, after the current public review period, final EIR certification and Specific Plan adoption will be at the discretion of County officials, who will be provided all official comments submitted for the EIR.
	Q: What is a Specific Plan and how does that play in to the EIR? **A:** The Specific Plan guides future development within the Project site through detailed development standards and implementation measures in a way that is consistent with the existing General Plan. The Specific Plan EIR, once approved, would cover worst-case environmental impacts resulting from future, planned development provided they are what's described in the Specific Plan without significant modification.

Frequently Asked Questions

Environmental Justice	**Q: How does the recent Fontana Attorney General settlement – protecting vulnerable communities from pollution by – affect the Project?** **A:** The April settlement required a Fontana warehouse project to adopt substantial mitigation measures to minimize impacts on the surrounding community. More broadly, the City of Fontana adopted an ordinance, as required by the settlement, setting stringent environmental standards for all future warehouse development in Fontana. This Project is in the unin
	Q: What makes our community an 'Environmental Justice' community? **A:** The general area occupied by the Project site (see DUC map) is designated as a Disadvantaged Unincorporated Community. This metric is a combination of various demographic data (such as income, ability to speak English, and minority population) as well as environmental factors (Calenviroscreen: a community more affected by poor air quality, hazards, poor water quality, etc.). Not everyone is at the workshop may be a part of this DUC, but the historically disadvantaged community may be larger than thought. It may be effective to ask what they feel most affected by, and what does Environmental Justice/Disadvantaged community mean to them?

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Response to Comment Letter G29 – Miramontes Family Response

G29-1 The commenter's comments are noted for the record. However, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

G29-2 The Project does not propose modifications to state wage regulations or those of its future tenants. Further, Project alternatives were analyzed for their validity within the Draft EIR. The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.3 53). All feasible mitigation has been applied to mitigate all environmental impacts, including air quality and GHG emissions impacts. Development of land within the County is dependent on the will of the property owner, who in turn is subject to land use and zoning standards established by the County. Lastly, the comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

G29-3 In compliance with the County's General Plan policies two publicly noticed environmental justice outreach meetings were conducted as the Project is located within an Unincorporated Environmental Justice Focus Area. The outreach provided an opportunity for community engagement and additional analysis. As a result of these meetings and community input additional community benefits and facilities were added to the Project.

The comment states that materials developed for the environmental justice meeting, including a printed copy of the powerpoint presentation and a set of Frequently Asked Questions included as attachments to the comment letter, violated the spirit of SB 1000; however, no specific claims are presented. SB 1000 contains requirements for cities and counties which contain disadvantaged communities to develop an environmental justice element, or related goals, policies, and objectives, to be included in an adopted General Plan and the County fulfilled those requirements. The County's General Plan includes goals and policies that identify disadvantaged communities and address concerns associated with the health risks in these communities in the Hazards Element. SB 1000 does not create obligations directly applicable to a project or Specific Plan. The Specific Plan's consistency with the applicable County Environmental Justice goals and policies is established in the Land Use section of the Draft EIR.

G29-4 The Draft EIR *Section 4.8* (Greenhouse Gas Emission) evaluates GHG impacts, and as shown in *Table 4.8-4: San Bernardino County GHG Reduction Measures Screening Table*, the Project would comply with the County's GHG Reduction Measures and would be consistent with the County's GHG Reduction Plan. Specifically, MM GHG-2 requires the Project to supply a minimum of 50 percent of the energy demand on-site from a renewable source (e.g., solar photovoltaic (PV) panels, etc.). This includes the Project's total Title 24 demand and the electrical plug-load. Additionally, MM GHG-3 requires the Project to meet or exceed CALGreen Tier 2 standards (which exceeds current County code requirements). The Draft EIR also includes MM GHG-1, which

requires the Project to apply reduction measures identified in the County's GHG Screening Tables so each building would achieve a minimum of 100 points. According to the County's 2021 GHG Emissions Reduction Plan Update, any project that adopts at least 100 points of GHG performance standards listed in the 2021 Screening Tables, would be consistent with the County's GHG Emissions Reduction Plan to reduce emissions to 40 percent below 2007 levels. Meeting this reduction would be consistent with the state's long-term goal to achieve statewide carbon neutrality (zero net emissions) by 2045, resulting in a less-than-significant impact related to GHG emissions. The Draft EIR identifies numerous Standard Conditions, Project design features, and mitigation measures to minimize emissions to the maximum extent feasible (refer to Draft EIR pages 4.3-21 through 4.3-23, 4.3-38 through 4.3-42, and 4.8-31 through 4.8-33). Nonetheless, the Draft EIR conservatively concludes that impacts to GHG would remain significant and unavoidable due to the size of the Project and its corresponding emissions. The Draft EIR mitigation measures were developed in compliance with State CEQA Guidelines Section 15041 and the essential nexus and rough proportionality standards.

On-site solar generation is also required by the proposed Development Agreement that would be considered for approval by the County. The Development Agreement requires all buildings be designed to meet Leadership in Energy and Environmental Design (LEED) standards, which would ensure that buildings are energy efficient. The Project Development Agreement also requires the Master Developer to implement a Transportation Demand Management (TDM) program to reduce vehicle miles traveled (VMT) by reducing single occupant vehicle trips and encourage transit (also required by MM AQ-3).

Furthermore, the Development Agreement requires the Master Developer to implement an Electric Truck and Car Grant Program. The Electric Truck and Car Grant Program requires the Master Developer to provide funding for the purchase of Class 8 heavy duty electric trucks, Class 4 through Class 7 medium duty trucks, light-duty (Class 1, 2, and 3) delivery vehicles, and local community and passenger vehicle grants. These grants provided by the Project Master Developer would also facilitate the adoption of zero emissions vehicles in the area and provide a clear set of standards for implementing these grants which would further reduce GHG emissions.

G29-5 The traffic analysis was prepared in conformance with San Bernardino County VMT/Traffic guidelines and all feasible mitigation is being applied. The comment does not affect the adequacy of the EIR's analysis of CEQA-related analysis, impacts or mitigation measures. Further, the analysis is consistent with Countywide policy TM-5.6 as the Project evaluated all truck routes to reduce impacts within the Environmental Justice Focus Area (EJFA) area.

G29-6 The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

The health effects of the Project were evaluated in a Health Risk Assessment (HRA, see Draft EIR *Appendix C*). The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs)

would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53).

G29-7 The Project complies with all applicable landscaping standards adopted by the County, including local tree ordinances.

G29-8 As discussed above under Response G29-6, Project-related health risks were evaluated in a HRA (refer to Draft EIR *Appendix C*) and discussed on Draft EIR pages 4.3-51 through 4.3-53. It should be noted that the HRA also quantifies emissions from yard trucks and on-site equipment and identifies Mitigation Measure AQ-9, which requires zero emissions cargo handling equipment (e.g., forklifts, yard trucks, hostlers, etc.) to reduce on-site emissions. The HRA evaluated pollutant concentrations at the closest sensitive receptors to the Project site, which included residences and Redwood Elementary School. As discussed in the Draft EIR health risk impacts would be less than significant with mitigation incorporated. It should be noted that Live Oak Elementary School and Beech Avenue Elementary School mentioned in the comment are located farther away than Redwood Elementary School. As pollutant concentrations decline further away from the Project site, impacts at these locations would be lower than what was identified in the Draft EIR. Additionally, regarding the warehouse size per the San Bernardino County General Plan, Countywide Plan Policy LU-6.4 states that the County may allow for industrial amendments to the size of industrial projects through specific plans.

G29-9 Refer to Master Response 2 regarding CalEnviroScreen and rankings and cumulative impacts. Regarding localized impacts, the Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G29-10 The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

G29-11 Refer to Response O9-3 regarding Pitzer College's Warehouse CITY Cumulative Impact Tool. Additionally, cumulative impacts are addressed in Master Response 2.

G29-12 See Response G29-3. SB 1000 functions separately from the Draft EIR process. Additionally, the Draft EIR was made available for review online on the County's website, where it is still available for view. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

G29-13 The comment refers to frequently asked questions that were provided at the Environmental Justice workshops and requests the County hold another Environmental Justice meeting to

address health impacts to the community and consider a different project in lieu of warehouse development. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

Nancy Raya (G30)

From: Nancy Raya <tateship@gmail.com>
Sent: Thursday, July 14, 2022 4:41 PM
To: Burnett, Candyce <Candyce.Burnett@kimley-horn.com>
Subject: Fontana Speedway

You don't often get email from tateship@gmail.com. Learn why this is important

Why do we only deserve warehouses? 1

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Response to Comment Letter G30 – Nancy Raya

G30-1 The comment asks if another warehouse is needed. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

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Nayri Tapia (G31)

From: Nayri Tapia <eliza4393@gmail.com>
Sent: Monday, July 18, 2022 12:23 PM
To: Burnett, Candyce <Candyce.Burnett@kimley-horn.com>
Subject: SPEEDWAY

[You don't often get email from eliza4393@gmail.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

I have lived in Fontana my whole life and it is devastating watching you turn it into a warehouse. Because that all Fontana is now! We are just warehouses and the people that work there. Let's also mention how much more likely it is for people living around warehouses to get sick. You are ruining our city for money? Money that doesn't even go to helping our city. We have homeless that need help, we have no shelter for all the abandoned strays, and what help have we received from the city amidst a pandemic? NONE. If you tear down the speedway, may I add iconic speedway that has held multiple Hard Summers, races, and other events, you yould have finished killing Fontana! Why even build new houses? Invite more people to stay in the city if it's just going to be warehouses. Not to mention once people realize what you are trying to do with our speedway I doubt people will continue to move here. Our city is growing, it is becoming suburban paradise for some and you are ruining that by introducing warehouses! And lets also talk about how most, if not all, the warehouses are in Central and South Fontana, the lower income areas! What you are doing is disgusting! How do you even sleep at night? Is it in this city? The city you are destroying? You probably take the money from this deal and screw over your city and move somewhere else where there are no factories/ warehouses because again who would want to live near that! If you want another warehouse so badly why don't you simply build on empty lots instead of tearing down our city! 1

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Response to Comment Letter G31 – Nayri Tapia

G31-1 The commenter is expressing social and economic concerns regarding the City of Fontana as a whole and a dislike of warehouses. Please see Master Response 2 in response to the comment that it is more likely for people living around warehouses to get sick. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

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Nayri Tapia (G32)

From: Nayri Tapia <ntapia1243@panther.chaffey.edu>
Sent: Monday, July 18, 2022 12:29 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: speedway

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I have lived in Fontana my whole life and it is devastating watching you turn it into a warehouse. Because that all Fontana is now! We are just warehouses and the people that work there. Let's also mention how much more likely it is for people living around warehouses to get sick. You are ruining our city for money? Money that doesn't even go to helping our city. We have homeless that need help, we have no shelter for all the abandoned strays, and what help have we received from the city amidst a pandemic? NONE. If you tear down the speedway, may I add iconic speedway that has held multiple Hard Summers, races, and other events, you yould have finished killing Fontana! Why even build new houses? Invite more people to stay in the city if it's just going to be warehouses. Not to mention once people realize what you are trying to do with our speedway I doubt people will continue to move here. Our city is growing, it is becoming suburban paradise for some and you are ruining that by introducing warehouses! And lets also talk about how most, if not all, the warehouses are in Central and South Fontana, the lower income areas! What you are doing is disgusting! How do you even sleep at night? Is it in this city? The city you are destroying? You probably take the money from this deal and screw over your city and move somewhere else where there are no factories/ warehouses because again who would want to live near that! If you want another warehouse so badly why don't you simply build on empty lots instead of tearing down our city! 1

Sent From My iPhone

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Response to Comment Letter G32 – Nayri Tapia

G32-1 The commenter is expressing social and economic concerns regarding the City of Fontana as a whole and a dislike of warehouses. Please see Master Response 2 in response to the comment that it is more likely for people living around warehouses to get sick. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

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Relda Calhoun (G33)

From: Relda Calhoun <reldacalhoun@hotmail.com>
Sent: Tuesday, July 19, 2022 2:41 PM
To: Burnett, Candyce <Candyce.Burnett@kimley-horn.com>
Subject: No warehouses at speedway

[You don't often get email from reldacalhoun@hotmail.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

Sent from my iPhone 1

1

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Responses to Comment Letter G33 – Relda Calhoun

G33-1 The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary.

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Rosa Loredo (G34)

From: rosa loredo <rosalazymexican@hotmail.com>
Sent: Saturday, July 16, 2022 8:04 AM
To: Burnett, Candyce <Candyce.Burnett@kimley-horn.com>
Subject: Hello

You don't often get email from rosalazymexican@hotmail.com. Learn why this is important

I live adjacent to the speedway, Redwood ave. People use my street to speed thur the traffic. Now their will be more speeders. How do i get speed bumps. Many accidents have accured on my street. Resident since the 80's. Now there will be more traffic and accidents. Please help. We have no sidewalk also. Thanks Rosa Loredo

1

Sent from my Verizon, Samsung Galaxy smartphone

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Response to Comment Letter G34 – Rosa Loredo

G34-1 The commenter is concerned the Project would generate more traffic along Redwood Avenue and is requesting speed bumps and sidewalks be provided. As indicated in the Draft EIR, sidewalk improvements are proposed for the immediate area surrounding the Project site along with intersection improvements in locations which are impacted by the Project. Draft EIR *Section 4.17, Transportation*, Impact 4.17-3, evaluated the Project's potential to impact roadways, intersections, drives aisles, and other traffic features in the area and determined impacts would be less than significant. Furthermore, *Section 4.15, Public Service*, Impact 4.15-1 noted that there would be a slight increase in calls for service, but with the improved access to and around the site, police and fire services would be improved.

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Sandy Lundergan-Price (G35)

From: Sandy Lundergan-Price <Sandy.Price@pomona.edu>
Sent: Friday, July 15, 2022 8:43 AM
To: Burnett, Candyce <Candyce.Burnett@kimley-horn.com>; steven.valdez@lus.sbcounty.gov
Subject: Concerned San Bernardino Resident

> You don't often get email from sandy.price@pomona.edu. Learn why this is important

This is a disgrace. We are a family community and the raceway is for families.

The Fontana Speedway is being turned into 6.6 million square feet of warehouses.
This is a San Bernardino County Project!!!!!
Kimley-Horn is killing our community.

Will the track be a tiny version more like kart racing? We deserve a place for entertainment! Great Cities have a place to spend money, why do we only deserve warehouses? We could increase revenue to San Bernardino county by setting the speedway as the hub of entertainment!!!
No more RV camping, history culture gone!
Kimley-Horn/Valdez build us an entertainment center!!!

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Response to Comment Letter G35 – Sandy Lundergan-Price

G35-1 The comment is providing general observations and appears to be requesting an entertainment center be developed in lieu of the Project. Please see Master Response 1. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary. The comment is noted and forwarded to the decision makers for their consideration.

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Sara Teran (G36)

From: Sara Teran <st9009597@gmail.com>
Sent: Monday, July 18, 2022 3:20 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Public Comment: Draft EIR for the Speedway Commerce Center II Specific Plan

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Dear Mr. Valdez:

My name is Sara Teran and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring *nearly **10,000** more truck trips per day* to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for $PM_{2.5}$, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to *more than 13 times the allowed limits*. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.

Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project. 3

Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development.

1

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Response to Comment Letter G36 – Sara Teran

G36-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G36-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G36-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Stephen May (G37)

From: Stephen May <stephenleemay@gmail.com>
Sent: Monday, July 18, 2022 1:16 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan

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Stephen May
7/18/2022

Dear Mr. Valdez:
My name is Stephen May and I am writing to respond to the Draft Environmental Impact Report for the Speedway Commerce Center II Specific Plan. I believe that this Project will be bad for the community. The Inland region is already overrun with logistics uses. In recent years, more and bigger warehouses have continued to be constructed in the radius of Fontana, Ontario, Rancho Cucamonga, and the county pocket where this Project would be located, leading to a dramatic increase in truck traffic and the resultant air pollution that they bring. 1

This project would bring nearly 10,000 more truck trips per day to poison our air without effective mitigation measures. As it stands, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for PM2.5, and the 90th percentile for diesel particulate matter. Yet, the Project proposes to pump staggering amounts of these very same pollutants into the community at levels which are up to more than 13 times the allowed limits. It is incomprehensible that this would be seen as an acceptable state of affairs and I demand that the County reject this Project.
Additionally, we are concerned about the impact that the large influx of traffic for this Project would have on the ability for the community to get around. With nearly 10,000 truck trips and more than 25,500 car trips per day, the Project threatens to overwhelm local roads with gridlock and although some mitigation options were presented, the plans do not go far enough toward truly reducing the scourge of traffic—simply widening roads is not a community benefit but instead creates streets which are less safe and more hostile to human use and activity. Given that transportation is also the primary reason behind the Air Quality and Greenhouse Gas emissions for the Project exceeding the thresholds even after mitigation measures were included, it is clear that the Project cannot be allowed to be built unless it does more to not just mitigate the increase, but actively prevent it from happening at all. 2

Instead of the proposed Project, we would like to see the County pursue a development more in line with the commercial uses of the existing zoning. This is an opportunity for the County to bring more attraction to the region with new developments like concert halls, retail plazas, malls, gardens, etc. This proposed project opposes the vision that the community has for a symbolic area like the Speedway. The meetings held were not enough to ensure community participation which is ultimately demonstrated by the lack of community benefits from this project.
Thank you for taking the time to receive this letter and address the concerns it raises. We hope that our comments will help shape the future of this development. 3

Sincerely,
Stephen May

1

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Response to Comment Letter G37 – Stephen May

G37-1 The Project proposes a Specific Plan which would allow for the development of high-cube logistics uses and commercial uses. The future development would be consistent with the County's development standards and those proposed within the Specific Plan. Please see Master Response 2.

G37-2 The Draft EIR determined that the Project's Localized Significance Thresholds (LSTs) for air quality and impacts would be less than significant (refer to Draft EIR pages 4.3-43 through 4.3-46) and health risk impacts would also be less than significant (refer to Draft EIR pages 4.3-51 through 4.3-53), which indicates that the regional increases shown in Draft EIR Tables 4.3-13 through 4.3-17 would not necessarily cause an exceedance of the ambient air quality standards. Also refer to Master Response 2.

G37-3 Alternatives assessed for the Project were based on State CEQA Guidelines. The Project is consistent with the County's General Plan land use designations and existing zoning for the site and proposes uses allowed under the County's Development Code. A commercial alternative was included in *Section 6.0, Alternatives* of the Draft EIR and found to not meet the Project Objectives as well as the Project. Also see Master Response 3.

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Sandy Singh (G38)

-----Original Message-----
From: SANDEEP SINGH <iamasikh@aol.com>
Sent: Thursday, July 14, 2022 11:04 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Warehouses at speedway

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I strongly oppose the building of more warehouse spaces where speedway is .
Please stop this as it will cause more pollution and traffic in the already crowded area.

1

Sandy singh
(Heritage area)

Sent from my iPhone

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Response to Comment Letter 38 – Sandy Singh

G38-1 The comment expresses opposition to the Project specifically the removal of the existing racetrack. To clarify, the Project does not involve the reduction of the existing Speedway racetrack footprint. That is a part of an already approved action that is separate from the proposed Project; please see Master Response 1. The comment does not provide any specific comments on the adequacy of the Draft EIR; therefore, pursuant to State CEQA Guidelines Section 15088(a), a lead agency is only required to evaluate and respond to comments raised on environmental issues, and thus no further response is necessary. . The comment is noted and forwarded to the decision makers for their consideration.

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COMMENTS RECEIVED AFTER DRAFT EIR CIRCULATION AND DURING PLANNING COMMISSION HEARING

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Shaun Martinez, Teamsters Local 1932 (A1)

From: Valdez, Steven
To: Biggs, Lupe; Duron, Heidi - LUS; Prusch, David - LUS; Liang, Aron
Subject: FW: 20220907 - Fontana - Speedway Commerce FEIR Response
Date: Wednesday, September 7, 2022 4:14:37 PM
Attachments: 20220907 - Fontana - Speedway Commerce FEIR Response.docx
image001.png

Please see the attached comments related to the Speedway.

Steven Valdez
Senior Planner
Land Use Services Department
Phone: 909-387-4421
Cell Phone: 909-601-4743
Fax: 909-387-3223
385 N. Arrowhead Ave, First Floor
San Bernardino, CA, 92415-0187

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From: Shaun Martinez <shaunm@teamsters1932.org>
Sent: Wednesday, September 07, 2022 3:57 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: 20220907 - Fontana - Speedway Commerce FEIR Response

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Steven Valdez
Senior Planner
County of San Bernardino
Land Use Services Dept - Planning Division
385 North Arrowhead Drive, 1st Fl
San Bernardino, CA 92415
email:steven.valdez@lus.sbcounty.gov

Re: Response to County's Final EIR - Speedway Commerce Center II Specific Plan Project (PROJ - 2021 00150, SCH No. 2021120259)

Dear Mr. Valdez,

This letter is submitted on behalf of the members and families represented by Local 1932 of the International Brotherhood of Teamsters ("Local 1932"). Local 1932 and our sibling locals represent thousands of workers in the logistics industry in San Bernardino County. Teamster members not only work in this industry, but many live in the neighborhoods and communities most directly affected by this industry's physical development. For the last few years, Local 1932, along with its sibling locals across California have made a commitment to ensure that this industry which impacts both the work and community life of so many workers, their families and their neighbors meets the best standards, and limits its negative impacts.

The County's responses to comments submitted to the draft EIR ("DEIR") are not satisfactory and do not meet the statutory or substantive requirements of CEQA in numerous instances. This letter will briefly outline the ways in which the Final EIR responses ("FEIR"; "Responses") are inadequate.

1. Summary

The County should not adopt the FEIR as it was circulated to the public. As it stands, the FEIR is incomplete, full of stand-ins and blanks that omit key information that is necessary for the public and decision-makers to adequately understand the County's rationale and

substantive support for the DEIR analysis. The DEIR does not adequately address issues of air quality baselines for evaluation, VMT analysis, mitigation measures, and contains deficient project descriptions and alternatives analyses. The FEIR fails to competently, fully or adequately address these deficiencies and therefore the FEIR and the entitlements related to it should not be adopted.

2. The Responses Do Not Appear to be Complete.

A general problem with the Responses is that the County seems either to not have circulated the final version of the Responses or did not fully complete the responses. There are several dozen instances of key internal references, citations, or terms omitted either with "XXX" or with blank lines (e.g., "_____"). There are at least 45 instances of this, including a dozen just in the responses to Comment O4. This makes it difficult, if not impossible, to fully understand the County's individual responses and shifts the burden to the public and decision-makers to discern the reasoning, explanation, and evidence that is meant to support the County's claim for the adequacy of the DEIR. An appropriate, completed set of Responses needs to be recirculated so that the public and the decision-makers can make a properly informed decision regarding the document.

3. The Project Description Remains Inadequate for Purposes of CEQA

Several commenters noted that the DEIR's project description is inadequate. (See e.g., Comment O1, O4, O7). The FEIR Responses generally counter these comments by referring to "Master Response 1," which purports to explain and justify the DEIR's project description. However, Master Response does not go into detail about why the project description is adequate, given that substance of the objections.

For example, comment O3 details how the project description failed to adequately address the potential specific impacts of likely end-users that were reasonably foreseeable. This entails analyzing the impact of consumer-facing e-commerce uses, where deliveries are made to consumers' homes, for example Amazon or a similar e-commerce retailer. Given

the size and scope of the planned e-commerce facilities, there is a known range of end-users: currently, Amazon owns approximately 38% of the market-share of e-commerce retailers; Wal-Mart is second in market-share with 6%, followed by Apple and eBay at approximately 4%. Each of these e-commerce retailers have existing facilities which can be studied to predict, with more accuracy, their impacts. Amazon, which has a greater intensity of use, uses particular commercial vehicles, has a predictable number of routes and vehicles using those routes, and a standardized logistical model, has impacts distinct from, e.g., Wal-Mart or Apple, which serve different markets and have different intensity of uses. Master Response 1, upon which the FEIR Responses heavily rely, does not address at all the objection that the DEIR failed to account for the predictable and likely uses. As the FEIR Responses failed to respond to these objections adequately, the DEIR needs to be redrafted and recirculated.

4. The FEIR Responses Failed to Respond to Particularized Objections by Experts in Comment O3.

Comment O3, provided by attorneys representing CARE-CA, included several appendices which went into further detail regarding technical and legal deficiencies with the DEIR (see FEIR starting at 2.0-136). While some of the matters contained in these expanded expert reports are summarized in CARE-CA's comment letter, many of the specifics are not–for example, the mitigation measures regarding trucks to be used during construction (at 2.0-141), or the air quality baseline used for analysis (at 2.0-1401).

Similarly, the FEIR Responses does not address the July 18 report prepared by Smith Engineering and Management (at 2.0-178), which details the failure to adequately study LOS at relevant locations. (at 2.0-179).

These failures to adequately address specific objections leaves the FEIR deficient.

5. The FEIR's Responses to the Deficient Alternative Analysis is Unsatisfactory

The FEIR purports to respond to numerous commenters who raised issues with the DEIR's alternative analysis (see e.g., O8-4 at 545; O9-3 at 552-3). In at least one instances, the response is filled with blanks (Responses at 545) which leave out seemingly key information meant to explain why the alternatives analysis is adequate.

Responses O9-7 to O9-9 do not adequately address the objection that the DEIR's alternatives analysis lacks objective criteria upon which decisions were made to either reject the alternative or regarding which alternative to choose. Instead, the responses simply reiterate that the alternatives were rejected because they were not optimal, i.e., because they were not large *enough* given the infrastructure cost. (see 2.0-553). However, there is no explication of the objective criteria upon which "largeness" or differential in cost were evaluated, or the specific decline in impacts that was desirable with respect to the chosen decrease in scale.

6. Conclusion

For the foregoing reasons, we respectfully request that the FEIR Responses be adequately completed, or in the alternative, that the DEIR be recirculated after addressing the objections raised by the numerous commenters to the Project.

Sincerely,

Shaun Martinez
Teamsters Local 1932

Response to Comment Letter A1 – Shaun Martinez, Teamsters Local 1932

The comment letter was received after circulation of the Draft EIR and prior to the Planning Commission meeting. The commenter notes that the draft Final EIR circulated for public review contained draft version of the responses to comments which were incomplete. As a procedural matter, CEQA does not require any public comment period for a Final EIR. Section 15089 of the CEQA Guidelines provides that a lead agency *may* (but is not required to) provide an opportunity for public review of the Final EIR prior to approving a project. The draft version of the Final EIR provided with the staff report was provided for informational purposes only. The County will fully comply with the requirements of Public Resource Code Section 21092.5 by providing complete written responses to the comments submitted by public agencies at least 10 days prior to certification of the Final EIR.

The substantive issues raised by these comments were addressed during public comment at the Planning Commission meeting, during the applicant's response to public comments by the Project attorney and by technical experts regarding the information provided in the comment. No new information was presented that wasn't previously addressed or analyzed in the previous responses to Comment O10 and therefore no further response is necessary. The letter is provided in the Final EIR and in the Planning Commission report and has been responded to as part of the Planning Commission hearing record.

Miramontes Family (A2)

From: Valdez, Steven
To: Biggs, Lupe; Duron, Heidi - LUS; Prusch, David - LUS; Liang, Aron
Subject: FW: Miramontes Family Response to DEIR 2021120259
Date: Wednesday, September 7, 2022 5:07:02 PM
Attachments: image001.png

Hi Lupe,

Attached is another comment from the Miramontes family.

Thanks,

Steven Valdez
Senior Planner
Land Use Services Department
Phone: 909-387-4421
Cell Phone: 909-601-4743
Fax: 909-387-3223
385 N. Arrowhead Ave, First Floor
San Bernardino, CA, 92415-0187



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From: TheReal Amparo <the.real.amparo@gmail.com>
Sent: Wednesday, September 07, 2022 4:43 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>; amiles@oprusa.com
Cc: Jasmine Cunningham <jasmine.s.cunningham@gmail.com>; dr.k.miramontes@gmail.com; Starlord Plays <LOCMiramontes@gmail.com>; arianarmiramontes@gmail.com; Ana Gonzalez <Ana.g@ccaej.org>; Liz Sena <mrssena12@gmail.com>
Subject: Re: Miramontes Family Response to DEIR 2021120259

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My family and I sent this letter out for suggested mitigations.

We never received a response and we can see that none of our mitigation measures were taken into consideration based on the presentation now given to us from Anne Miles.

This is extremely disappointing and appears to once again ignore true mitigation considerations.

On Mon, Jul 18, 2022 at 9:49 PM TheReal Amparo <the.real.amparo@gmail.com> wrote:

> Greetings Steven,
>
> I am hoping that this email finds you well and that it doesn't bounce back to me. I printed all the documents and scanned them into a smaller file.
>
> I am hoping that your email is not full.
>
> The Miramontes Family

--
Sincerely,

Amparo Miramontes
(909)632-5208

There is no chance, no destiny, no fate that can circumvent, or hinder or control the firm resolve of a determined soul -- Ella Wheeler Wilcox

From: Valdez, Steven
To: Biggs, Lupe; Duron, Heidi - LUS; Liang, Avon; Prusch, David - LUS
Subject: FW: Miramontes Family Response to DEIR 2021120259
Date: Wednesday, September 7, 2022 5:03:20 PM
Attachments: image001.png
Miramontes Family Response to DEIR 2021120259.pdf

Attached is another comment.

Thanks,

Steven Valdez
Senior Planner
Land Use Services Department
Phone: 909-387-4421
Cell Phone: 909-601-4743
Fax: 909-387-3223
385 N. Arrowhead Ave, First Floor
San Bernardino, CA, 92415-0187



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From: TheReal Amparo <the.real.amparo@gmail.com>
Sent: Wednesday, September 07, 2022 5:01 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Cc: jasmine.s.cunningham@gmail.com; dr.k.miramontes@gmail.com; Starlord Plays <LOCMiramontes@gmail.com>; arianarmiramontes@gmail.com; Ana Gonzalez <Ana.g@ccaej.org>; Liz Sena <mrssena12@gmail.com>
Subject: Re: Miramontes Family Response to DEIR 2021120259

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HERE IS THE ATTACHMENT!

On Tue, Jul 19, 2022 at 8:16 AM Valdez, Steven <Steven.Valdez@lus.sbcounty.gov> wrote:

> This email has been received. Thanks again for ensuring we received your comments – they have been received.
>
> Have a great day!
>
> **Steven Valdez**

Senior Planner
Land Use Services Department
Phone: 909-387-4421
Cell Phone: 909-601-4743
Fax: 909-387-3223
385 N. Arrowhead Ave, First Floor
San Bernardino, CA, 92415-0187



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From: TheReal Amparo <the.real.amparo@gmail.com>
Sent: Monday, July 18, 2022 9:50 PM
To: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Cc: jasmine.s.cunningham@gmail.com; dr.k.miramontes@gmail.com; Starlord Plays <LOCMiramontes@gmail.com>; arianarmiramontes@gmail.com; Ana Gonzalez <Ana.g@ccaej.org>; Liz Sena <mrssena12@gmail.com>
Subject: Miramontes Family Response to DEIR 2021120259

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Greetings Steven,

I am hoping that this email finds you well and that it doesn't bounce back to me. I printed all the documents and scanned them into a smaller file.

I am hoping that your email is not full.

The Miramontes Family

7/18/2022

Miramontes Family
6643 Blanchard Ave
Fontana, CA 92336

Attention San Bernardino County Planning Department and Kimley-Horn

Our family resides in Fontana California and is composed of Dr. Kevin Miramontes, Amparo Munoz Miramontes, Ari Rene Miramontes (13), and LucasOrion Miramontes (9). We are involved in our community because of our children's health impacts as a direct result of PM2.5 impacts during my pregnancy, and in the time before we knew the cost of breathing deeply outside. We understand that the community is always presented the false choice of jobs over health, when it is clear CEQA, EPA, CARB, and California Statute requires that we use technology and innovation to brings clean jobs and mitigate the negative impacts to the community.

After reviewing the EIR Report, and after going to the public Environmental Justice Meeting, our family is strongly opposed to this developmental plan. First and foremost, this project fails to rise to the needs of the community for places of entertainment, shopping, and night life. The Speedway has limitless opportunities for revenue generation to the County of San Bernardino but installing 6.6 million square feet of warehouses has Environmental Impacts to our community that are not even being mitigated in the Kimley-Horn EIR Draft. Such detrimental impacts will cause exponential increases in community costs regarding, time to travel, gas prices, road destruction, underground infrastructure damage, increase childcare costs, as travel time increases, increase in food costs, and most importantly increase in health care as this developer destroys our communities air quality.

During the EJ Meeting that Kimley-Horn conducted with the community we found that Kimley-Horn lead a disinformation campaign and violated the spirit of the California Code Section 65302(h)(1) amended by SB1000. We have attached to articles, one is the power point presentation, and the other is scripted misinformation that the Kimely-Horn strategically provided to the community. As you can see this is in violation of the spirit of SB1000
(h)(1)An environmental justice element, or related goals, policies, and objectives integrated in other elements, that identifies **disadvantaged** communities within the area covered by the general plan of the city, county, or city and county, if the city, county, or city and county has a **disadvantaged** community. The environmental justice element, or related environmental justice goals, policies, and objectives integrated in other elements, shall do all of the following:
(A) Identify objectives and policies to reduce the unique or ***compounded health risks*** in **disadvantaged** communities by means that include, but are not limited to, the reduction of pollution exposure, including the improvement of air quality, and the promotion of public facilities, food access, safe and sanitary homes, and physical activity.
(B) Identify objectives and policies to promote civic engagement in the public decision-making process.
(C) Identify objectives and policies that prioritize improvements and programs that address the needs of **disadvantaged** communities.

(2) A city, county, or city and county subject to this subdivision shall adopt or review the environmental justice element, or the environmental justice goals, policies, and objectives in other elements, upon the adoption or next revision of two or more elements concurrently on or after January 1, 2018.

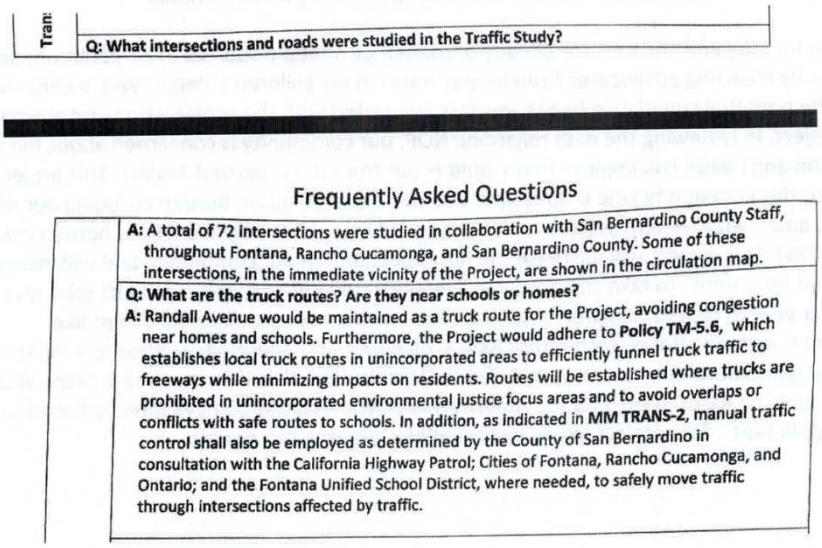
Green House Gas Mitigation: This project fails to properly mitigate GHG and instead is basing all its mitigation on the current CARB Draft plan. By stating that the project is mitigating GHG by putting in a few electric vehicle charging stations does not tip the scale for the millions of truck trips it will bring to our community a year. The community expects to see all 6.6 million square feet be covered in solar panels, thus REQUIRING the project to be 100% self-powered. Regarding SB 1000, the community demands that cumulative impacts are considered. To mitigate this, we propose all parking to be covered in Solar Panels, creating a micro grid for the community to have a source of shared power to the Fontana County Residents. This would show excellent partnership in the community and increase the community's confidence that we can partner with this developer. To mitigate VMT, the community is proposing that partnership with Transportation should include easy within the "Circulation Plan" to allow employees to be motivated to use public transportation to get to work, and that all EMPLOYERS on the property incentivize public transportation by offering it to their EMPLOYEES at no charge!

Traffic Mitigation: The EIR fails to account for the massive amount of truck traffic on Cherry, both off the 10 Freeway, off the 210, and the 15 Freeway Exit. There are no realistic mitigations that would provide a drivable pathway for both the project and the community. This project in its Draft EIR is in violation of California Code Section 65302 amended by SB1000 section (2)(A). Upon any substantive revision of the circulation element, the legislative body shall modify the circulation element to plan for a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways for safe and convenient travel in a manner that is suitable to the rural, suburban, or urban context of the general plan.
(B) For purposes of this paragraph, "users of streets, roads, and highways" mean bicyclists, children, persons with disabilities, motorists, movers of commercial goods, pedestrians, users of public transportation, and seniors.
The community is demanding a more complete analysis that includes truck traffic both on and off the 10, 210, and 15 freeway. This project will need a DEDICATED truck exit, that is only for truck traffic. The community asks that this truck exit by subterranean to allow for pollutants to settle into a filtered trench, to protect the community. It is unrealistic to expect that trucks will not be idling as they try to exit the 10, 210, and 15 freeway especially as they traffic to and from the major streets of Cherry, San Bernardino, Napa, and Hickory. A subterraneous pathway is ideal, to allow residents access to streets at bridge points over the subterranean truck traffic trenches.

To increase compliance to California Code 65302, we ask that all truck routes be painted on the main streets of traffic. All truck routes should be painted and Poka-Yoke (mistake proofing with clear visual aids) to be able to clearly tell the Truck Driver what lanes they should enter to get to the specific dock doors. The community is asking that each dock door have a plan for entry from

the Freeway and as it transitions City to City along the streets surrounding the project. This will reduce idling time, and drivers from entering our communities and putting our community at risk of deadly truck accidents. The project should include a pathway once in the project to allow for the conveyance of trucks to the dock door through electric automation, to eliminate idling of any kind once on the project site. The project should include a location for drivers to use the bathroom and eat at a local restaurant to prevent the following:
The epidemic of **PISS BOTTLES** that litter our streets.
This is a biological hazard to our entire community.
This increases costs to our communities by Public Works having to exponentially increase services rather than hold the project accountable to properly plan for this.
The epidemic of trash littering our streets
Truck parking in the middle of the streets to be able to get a bite to eat.
Trucks being parked in residential communities.
Trucks being parked in parking lots designed for Class C driver.

When traffic concerns were brought to Kimley-Horn during our Environmental Justice Meeting the response was the project complied with the minimum requirements. Community asked questions regarding the impact to traffic on Speedway race days, they stated they did not have to address that in the EIR. The community asked for the true impact the project would have in addition to race day traffic, truck, and community traffic. Kimley-Horn stated they had met the minimum requirement. The community reminded them that SB1000 requires that roadways are accessible to multimodal traffic, and in its current state the traffic in the project did not meet that standard. Especially regarding safe walkways for students. This was their response:



Tran

Q: What intersections and roads were studied in the Traffic Study?

[redacted]

Frequently Asked Questions

A: A total of 72 intersections were studied in collaboration with San Bernardino County Staff, throughout Fontana, Rancho Cucamonga, and San Bernardino County. Some of these intersections, in the immediate vicinity of the Project, are shown in the circulation map.

Q: What are the truck routes? Are they near schools or homes?

A: Randall Avenue would be maintained as a truck route for the Project, avoiding congestion near homes and schools. Furthermore, the Project would adhere to **Policy TM-5.6**, which establishes local truck routes in unincorporated areas to efficiently funnel truck traffic to freeways while minimizing impacts on residents. Routes will be established where trucks are prohibited in unincorporated environmental justice focus areas and to avoid overlaps or conflicts with safe routes to schools. In addition, as indicated in **MM TRANS-2**, manual traffic control shall also be employed as determined by the County of San Bernardino in consultation with the California Highway Patrol; Cities of Fontana, Rancho Cucamonga, and Ontario; and the Fontana Unified School District, where needed, to safely move traffic through intersections affected by traffic.

Health Impacts: In the Environmental Justice element the project is required to consider the cumulative impacts and mitigate them. This Draft EIR presents no solution when there are considerable steps that can be taken.

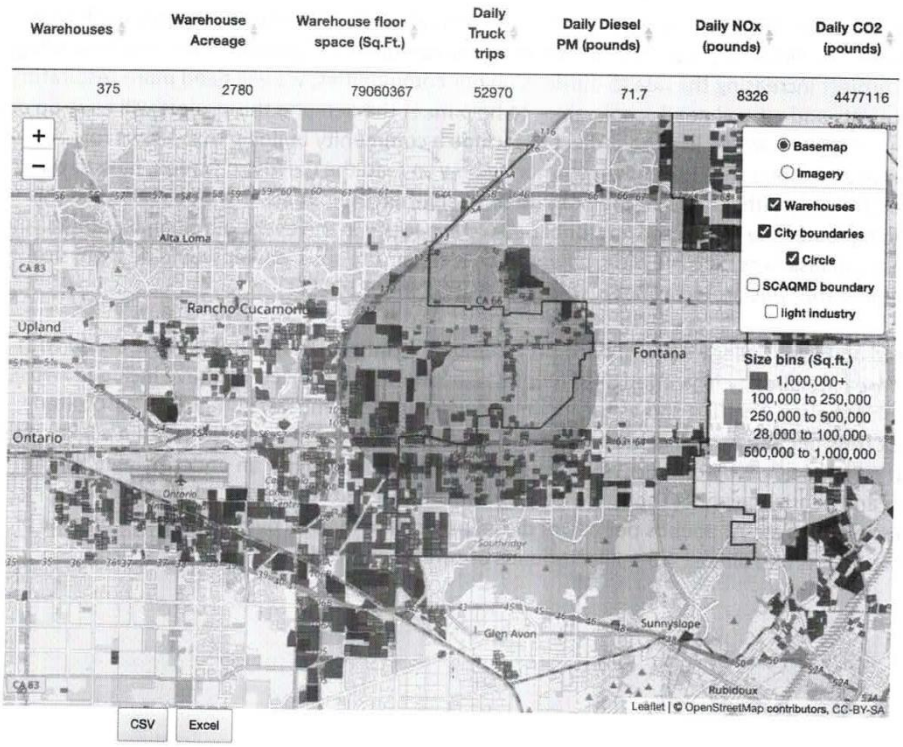
Landscaping: There should be no grass on this project site. The project should instead have all native plants to encourage wildlife to create a habitat in native species. The community proposes having Cypress Trees encircle the entire project. Cypress Trees and Pine Trees are excellent PM2.5 filters, and specifically Cypress Trees will reduce the noise of this project (another failed element for mitigation). All plants should be planted as MATURE, with a minimum height of 15-20 feet based on species. This project does not take time to pollute our community, so we do not have time to wait for mature trees to start doing their job.

Health Impacts
Industrial development, such as the proposed Project, can result in high daily volumes of heavy-duty diesel truck traffic and operation of on-site equipment (e.g., forklifts and yard tractors) that emit toxic diesel emissions, and contribute to regional air pollution and global climate change. The Project will expose our communities to elevated levels of air pollution. Residences are located north and west of the Project with the closest residences located within 1,550 feet from the Project's western boundary. In addition to residences, Live Oak Elementary School, Beech Avenue Elementary School, Redwood Elementary School, and Almond Elementary School are located within one mile of the Project. According to the California Communities Environmental Health Screening Tool Version 3.0/4.0 (CalEnviroScreen). This Draft EIR is also in violation of San Bernardino County General Plan, as this warehouse size far exceeds the size that is permissible to be located close to the sensitive receptors of schools.

Our community and children are already burdened by multiple sources of air pollution, and I am constantly changing pillowcases from bloody noses in my children's sleep. We are concerned with the potential cumulative health impacts associated with the construction and operation of the Project. In reviewing the data regarding NOP, our community is concerned about the air pollution and health risk impacts that would result from the proposed Project. This project is going to this community who is already in the 98-99% of Pollution Burden including our Air, Water, and overall, Health impacts according to Cal Enviro 3.0/4.0, to a higher burden level (Is that 100%). This project will decrease the life expectancy in our community and will increase the need for parents to take sick days. On average in the Inland Empire, parents take seven sick days per year to care for children negatively impacted by our pollution for things like: migraines, asthma attacks, respiratory issues, diabetes, and neurological disorders. All these medical issues according to the World Health Organization, the American Heart Association, the American Lung Association, and the American Pediatric Association have directly linked to diesel pollutants. This project would exponentially increase this burden.

and the community, as trades will be in high demand for this project's longevity, and trades provide excellent union careers that increase our community's disposable income. Regarding this project increasing the health burdens on our communities, we will need more respiratory therapists and we will need scholarships to help meet the demand this project will have on our community. We would like the project to include a community building that allows for educational clinics that teach the community how to read the CalEnviro Screen, how to take care of their health, and what they can do to strengthen their lungs. We would also like this building to be able to be used as a public space especially in the event of rolling blackouts, and or natural disasters. This building, powered by 100% onsite solar power would be a physical reminder that this project is not just about PROFITS, but PEOPLE!

Based on Pitzer College's Warehouse CITY Cumulative Impact Tool, numbers associated with this area are already high enough to merit a rejection of the project. We have included two graphics below. The first shows the estimated warehouse numbers, numbers of associated truck trips per day as well as associated emissions of carbon, PMs, and NOx within a 5 km radius of the Speedway Project. Even while these numbers are most likely an underestimation, the area and nearby neighborhoods are dealing with almost 53 thousand truck trips per day, emissions of over 70 pounds per day of diesel particulate matter, over 8 thousand pounds of NOx per day, and almost 4.5 million pounds of carbon emitted per day.

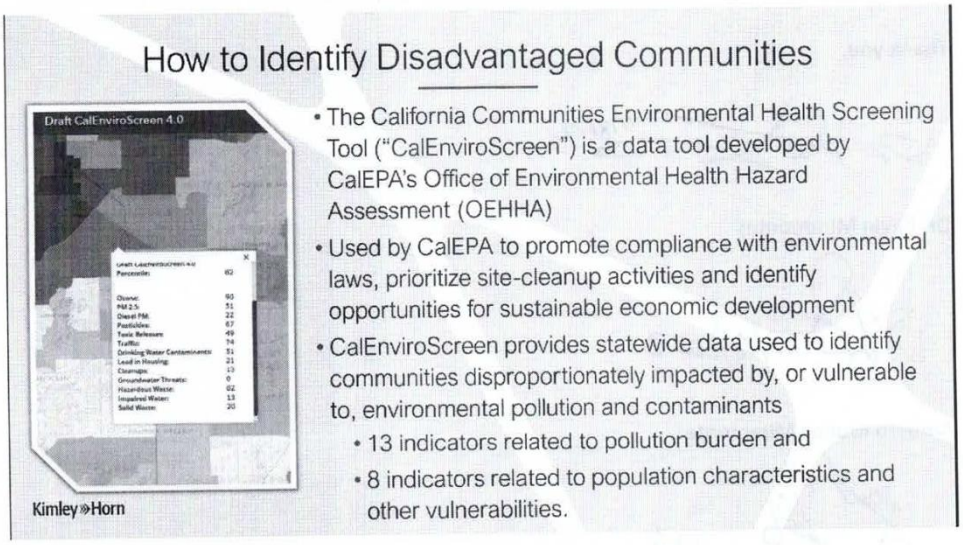


Kimley-Horn lead EIR Process Strategically Violated SB1000, CEQA, and the San Bernardino County General Plan Requirements:

It is important to note the Kimley-Horn strategical mislead the community during their Environmental Justice meeting by showing an image of CalEnviro to the community that was green and did not show the actual pollution of the community that the Draft EIR was reviewing. This is an absolute violation of SB 1000 and we would like to see Kimley-Horn taken to task, for strategically misleading the public when they should have shown the actual data in the Draft EIR. The entire objective of the meeting that they staged, was to properly show the community the outcomes of the Draft EIR. The Draft EIR was not onsite, and when the community asked about mitigations, Kimley-Horn stated that they did not have to talk about the EIR, but rather allow us to hand write our concerns. The community would like to address Kimley-Horn's violation of California Code Section 65302 that adopts the definition of "Disadvantaged Communities" from the California EPA Section 39711 Health and Safety Code:

"**Disadvantaged Communities**" means an area identified by the California Environmental Protection Agency pursuant to Section 39711 of the Health and Safety Code or an area that is a

low-income area that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation. Kimley-Horn, instead chose to misrepresent the actual environmental pollutions and other hazards pursuant to the forementioned statute. The below represents the slide presented to the community. When Kimley-Horn was called out for misrepresentation, they said they complied with the minimum requirements by holding the meeting. The community would like further action to be taken, and we will be elevating our concerns to Attorney General Bonta.



In addition, Kimley Horn literally documented that they were not here to answer questions, in compliance with the forementioned requirements, but rather to "hear them."

Frequently Asked Questions

Workshop Purpose	**Q: What is the purpose of this workshop?** **A: The primary purpose of the workshop is not to 'defend the project' but rather to provide a venue for people to be heard/provide their opinions and concerns about the Project. It is important to maintain a level of sincerity and genuine interest. Answering questions and providing information is ultimately secondary to hearing them.**
	Q: Who is the tenant?

We have attached the script being read to us by Kimley-Horn, and the power point presentation that they presented to the community.

In conclusion, the community asks for an Environmental Justice meeting that meets the requirements of SB1000 and presents the actual health impacts to this community. We ask that you meet or exceed all the mitigation outlined in this letter. We would also ask that you consider a different project in place of these warehouses.

Once again, the Miramontes Family opposes this project.

Thank you,

7/18/22

Dr. Kevin Miramontes

7/18/2022

Amparo Munoz Miramontes

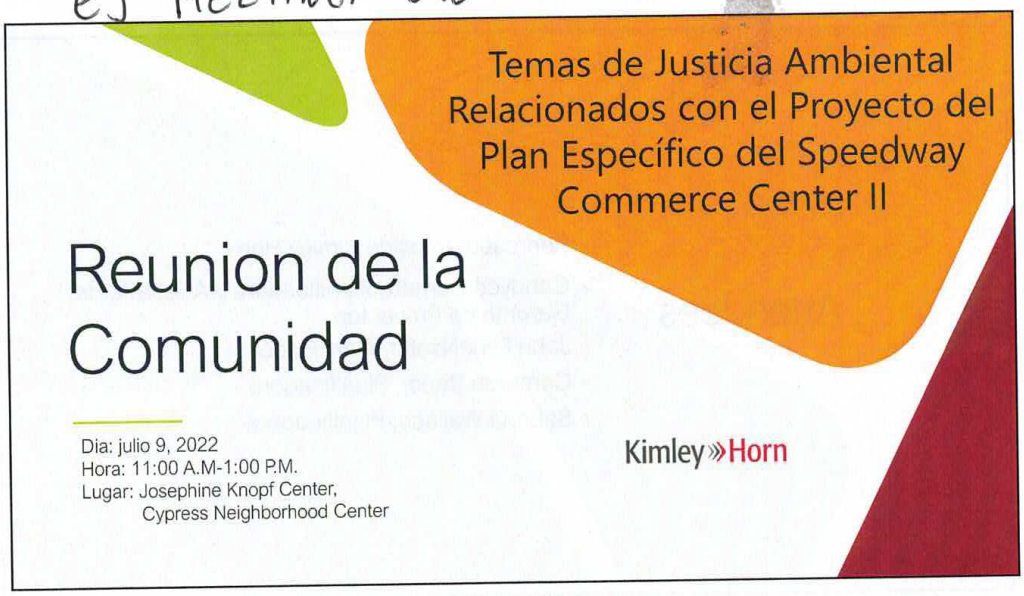
7/18/22

Ari Rene Miramontes

LucasOrion Miramontes

7/8/2022

EJ MEETING: ONLY HAD PRESENTATION IN SPANISH



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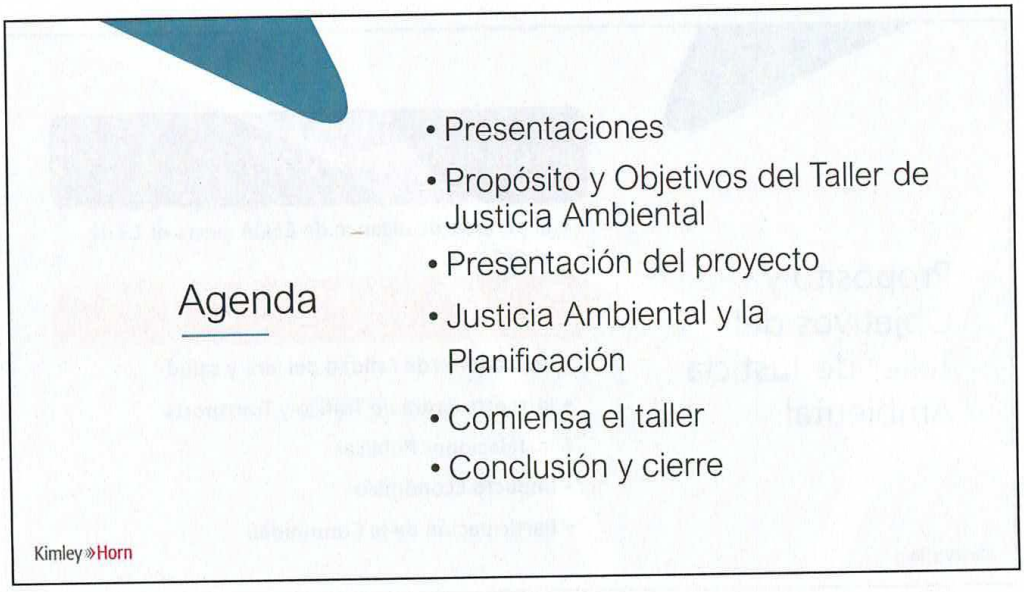

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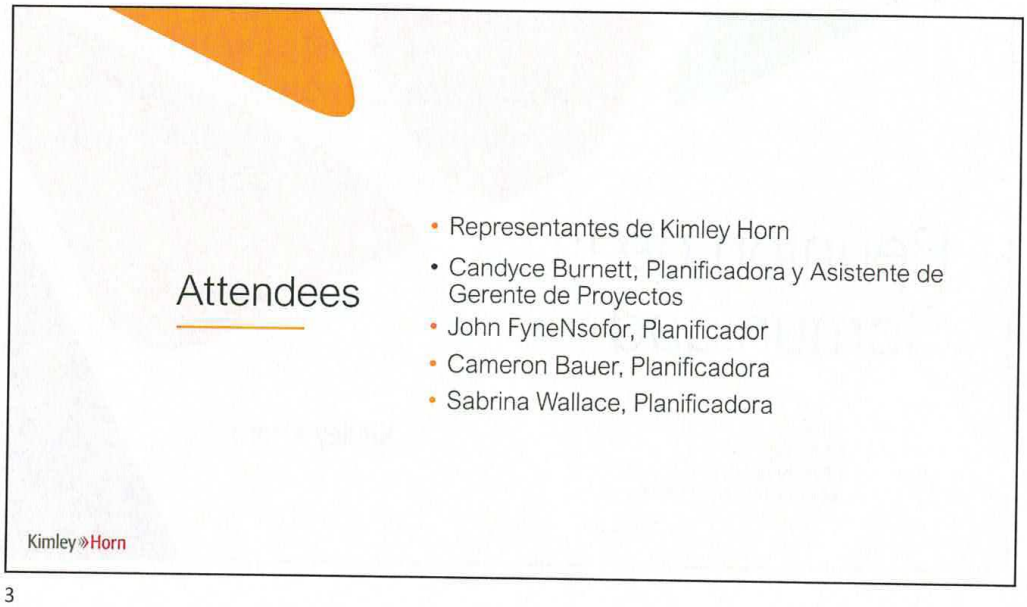
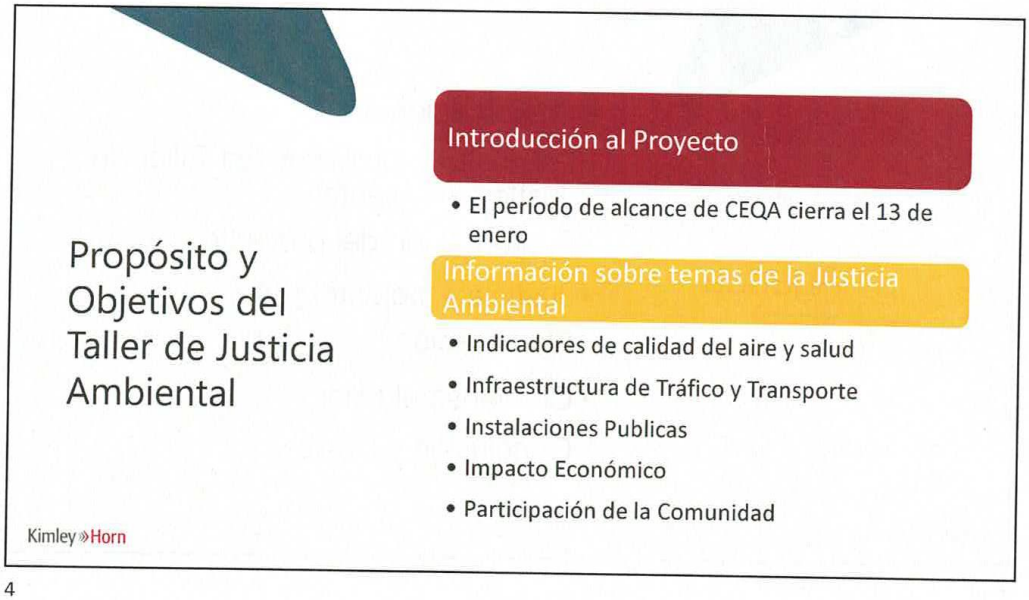

Attendees
• Representantes de Kimley Horn
• Candyce Burnett, Planificadora y Asistente de Gerente de Proyectos
• John FyneNsofor, Planificador
• Cameron Bauer, Planificadora
• Sabrina Wallace, Planificadora
Kimley»Horn

3


Propósito y Objetivos del Taller de Justicia Ambiental
Introducción al Proyecto
• El período de alcance de CEQA cierra el 13 de enero
Información sobre temas de la Justicia Ambiental
• Indicadores de calidad del aire y salud
• Infraestructura de Tráfico y Transporte
• Instalaciones Publicas
• Impacto Económico
• Participación de la Comunidad
Kimley»Horn

4

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7/8/2022

Resumen del Taller Anterior de Justicia Ambiental

- Se llevo acabo el 12 de enero en el Cypress Neighborhood Center
- Recibimos comentarios y preguntas sobre tráfico y transporte
- Infraestructura, instalaciones públicas, impacto económico y participación de la comunidad

Kimley»Horn

5

Informe del Reporte del Impacto Ambiental



Kimley»Horn

6

3

7/8/2022

Sitio Del Proyecto



- El sitio del proyecto se encuentra en un área no incorporada del suroeste del condado de San Bernardino.
- El Proyecto SCCIISP facilitaría la reurbanización de aproximadamente 433 acres del sitio de 522 acres del Auto Club Speedway existente.
- Se retendrán aproximadamente 90 acres para el desarrollo y la operación de las instalaciones de deportes de motor "Next Gen In California" de NASCAR, aprobadas por el Condado de San Bernardino en junio de 2021 (la instalación de deportes de motor de 90 acres "no es parte" de este SCCIISP).

Kimley»Horn

7

Descripción General del Proyecto

- El SCCIISP consta de seis áreas de planificación (AP) incluyendo:
  - Hasta 6,600,000 pies cuadrados de usos logísticos y de comercio electrónico de alto cubo,
  - Aproximadamente 261,000 pies cuadrados de usos comerciales accesorios,
  - 98 acres de áreas de estacionamiento / lote de caída de vehículos y espacios abiertos asociados y vías públicas internas, y
  - Mejoras de infraestructura
- El Proyecto SCCII está buscando aprobaciones del Condado, incluyendo la adopción del Reporte del Impacto Ambiental
- Aviso De Preparacion publicado diciembre 13, 2021
- Aviso De Preparacion and periodo de estudio se cierra enero 13, 2022

Kimley»Horn

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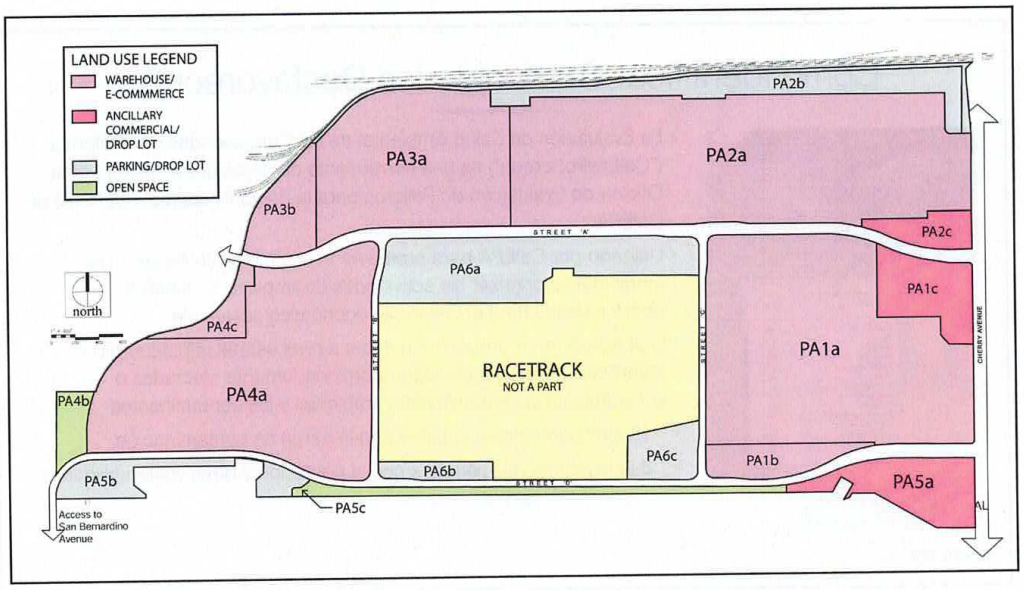
7/8/2022



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Planificación de Justicia Ambiental

- El Proyecto de Ley del Senado 1000 (2016) estableció los requisitos de Justicia Ambiental para los planes generales bajo la Sección 65302 (h) del Código de Gobierno
  - Para abordar los "riesgos de salud únicos o compuestos" en las comunidades desfavorecidas mediante la disminución de la exposición a la contaminación y la mejora de la salud en general.

Kimley»Horn

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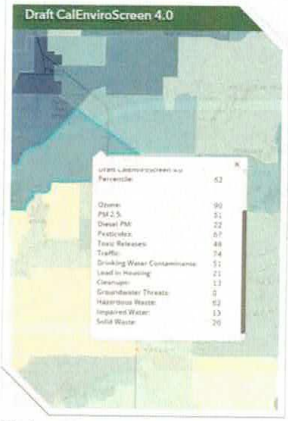
Cómo Identificar Comunidades Desfavorecidas



- La Evaluación de Salud Ambiental de las Comunidades de California ("CalEnviroScreen") es una herramienta de datos desarrollada por la Oficina de Evaluación de Peligros para la Salud Ambiental (OEHHA) de CalEPA.
- Utilizado por CalEPA para promover el cumplimiento de las leyes ambientales, priorizar las actividades de limpieza Y identificar oportunidades para el desarrollo económico sostenible
- CalEnviroScreen proporciona datos a nivel estatal utilizados para identificar comunidades desproporcionadamente afectadas o vulnerables a la contaminación ambiental y los contaminantes
- 13 indicadores relacionados con la carga de contaminación
- 8 indicadores relacionados con la población y otras vulnerabilidades.

Kimley»Horn

11

Acciones del Condado

- Como parte del Plan de todo el Condado, el Condado de San Bernardino identificó áreas de enfoque de Justicia Ambiental que incluyen el sitio de este proyecto
  - La parte occidental de Fontana esta en el la parte superior del factores de contaminación de acuerdo con CalEnviroScreen
  - Los factores de contaminación incluyen la calidad del aire, las emisiones tóxicas de la industria y los sitios de desechos peligrosos y sólidos
  - Los problemas de salud incluyen altos casos de asma y enfermedades auditivas, bajo nivel de educación, la pobreza y desempleo.

Kimley»Horn

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Normas de Justicia Ambiental

- El Condado prioriza las siguientes normas para a mejorar la salud, la recreación y las instalaciones públicas a través de:
  - Reducir de la exposición a la contaminación y mejorar de la calidad del aire
  - Promover instalaciones públicas, incluyendo la infraestructura y los servicios comunitarios
  - Promover el cuidado de salud
  - Promover el acceso a alimentos
  - Promover viviendas seguras y sanitarias
  - Promover la actividad física

Kimley»Horn

13

Justicia Ambiental Participación de la Comunidad

- El Condado requiere que el solicitante organice reuniones comunitarias enfocadas en la Justicia Ambiental
- Proveer información:
  - Este es el segundo de los dos talleres previstos
  - Folletos enviados por correo el 6 de julio
  - El Sitio de Web : https://maps.kimley-horn.com/portal/apps/storymaps/stories/3f77c5d346a941dca99ab276d799d095

Kimley»Horn

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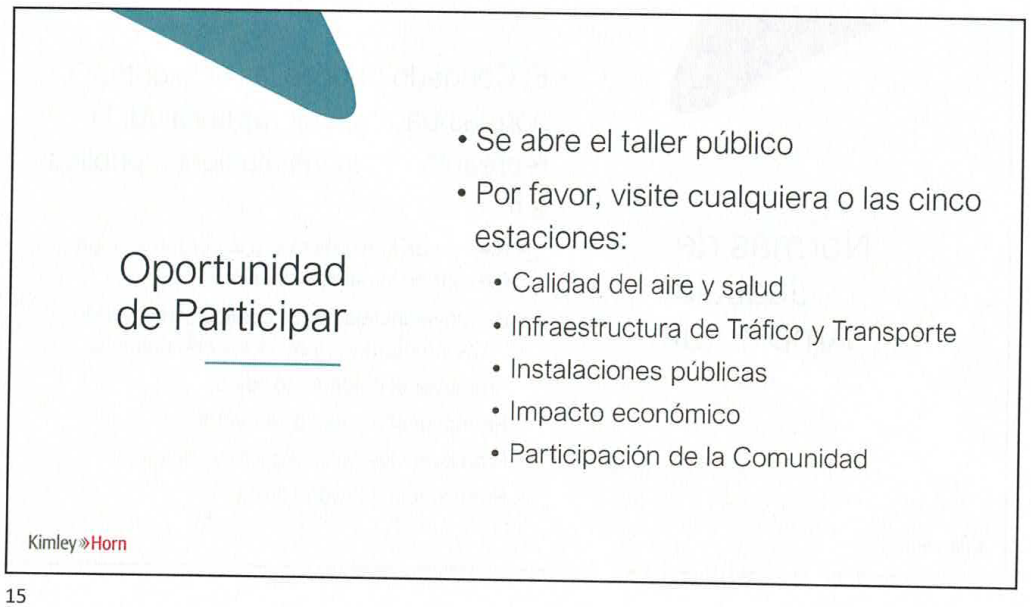
7/8/2022



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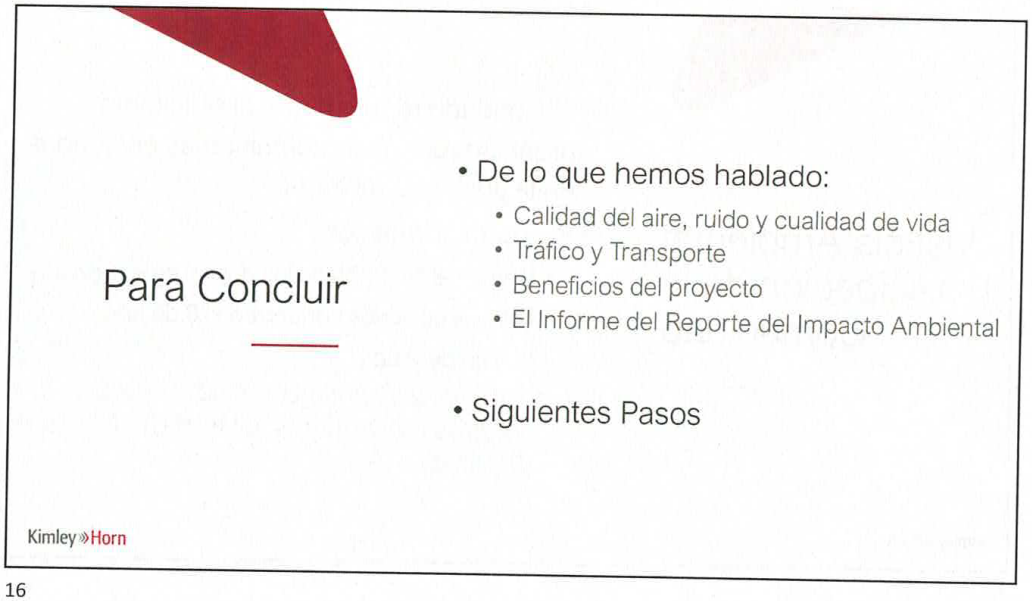

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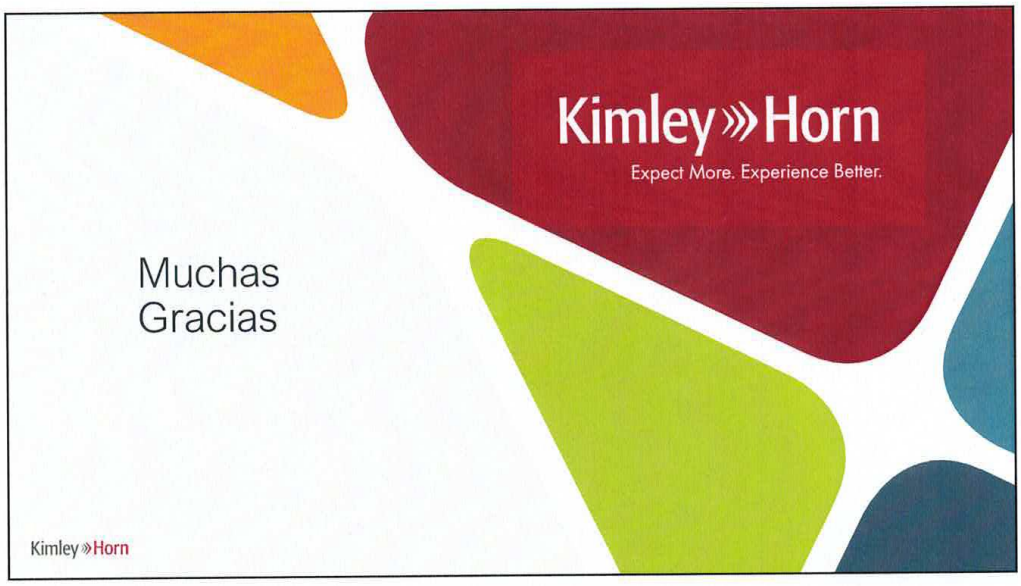
Kimley»Horn
Expect More. Experience Better.
Muchas
Gracias
Kimley»Horn

17

9

Frequently Asked Questions

Workshop Purpose	**Q: What is the purpose of this workshop?** **A:** The primary purpose of the workshop is <u>not</u> to 'defend the project' but rather to provide a venue for people to be heard/provide their opinions and concerns about the Project. It is important to maintain a level of sincerity and genuine interest. Answering questions and providing information is ultimately secondary to hearing them.
Project Description	**Q: Who is the tenant?** **A:** The future tenant(s) are unknown and not subject to speculation. The EIR evaluates the 'worst case scenario' with highest allowable intensities of the proposes e-commerce logistics uses.
	Q: How long is construction going to take? **A:** Construction will occur intermittently through the next 5 to 10 years, though no residences would be exposed to significant levels of noise.
	Q: What are the hours of operation? Would it operate 24 hours? **A:** The Project could take deliveries late at night though there would be no noise impacts above 45 decibels – meaning noise from overnight activities would not impact homes.
	Q: Is the Project site publicly accessible? **A:** Yes, the Project would be publicly accessible – and would not be fenced off. Additionally, the public could reasonably access on-site electric charging stations and parking.
	Q: How will the Project benefit the community? **A:** Open space and electric charging stations would be accessible to the public. The Project will also contribute to infrastructure improvements (including signalization and signage), build underground utilities, and implement a Speedway-themed artwalk. Additionally, the Project will bring commercial activity where those uses are currently lacking.
	Q: Will Auto Club Speedway camping still happen? **A:** RV Camping related to the Auto Club Speedway would no longer occur with the Project.
Local Business	**Q: Will the Project displace small businesses? Particularly those that rely on the existing Speedway?** **A:** There are a couple of small businesses that exist on the existing Auto Club Speedway site – the Speedway owns the site and would negotiate with the small businesses however, we are not privy to that. We are unable to speculate on whether or not these small businesses will be compensated, as future redevelopment of the Speedway is not part of this Project.
	Q: Would the Project partner with small businesses? **A:** See above – we are not privy to any negotiations or partnerships the Speedway has with small businesses that are located within the ACS site.
	Q: Was there any analysis as to how the Project would affect businesses? **A:** *Not our Project*
	Q: I don't like how this Project is going to change/get rid of the ACS: **A:** The redesign of the ACS is already approved and was done by the owners. Its not going away, but they just don't need the parking lots. That's what's facilitating the redesign of the parking lots for our project, however, they are ultimately separate and independent Projects.
Transportation and Traffic	**Q: Will there be adequate parking to prevent overflow onto residential streets?** **A:** The Project will include approximately 98 acres of vehicle parking field/drop lots areas throughout each Planning Area, to accommodate ongoing Next Gen motorsport facility events on designated days as well as parking for permitted land uses. The Project site would also provide pedestrian sidewalks along street sections within the Project site including opportunities for enhanced pedestrian connections between parking fields/drop lots. Additionally, on street parking will be provided on the following streets: Beech Avenue, Whittram Avenue, and Merrill Avenue.
	Q: What intersections and roads were studied in the Traffic Study?

Frequently Asked Questions

	A: A total of 72 intersections were studied in collaboration with San Bernardino County Staff, throughout Fontana, Rancho Cucamonga, and San Bernardino County. Some of these intersections, in the immediate vicinity of the Project, are shown in the circulation map.
	Q: What are the truck routes? Are they near schools or homes? **A:** Randall Avenue would be maintained as a truck route for the Project, avoiding congestion near homes and schools. Furthermore, the Project would adhere to **Policy TM-5.6**, which establishes local truck routes in unincorporated areas to efficiently funnel truck traffic to freeways while minimizing impacts on residents. Routes will be established where trucks are prohibited in unincorporated environmental justice focus areas and to avoid overlaps or conflicts with safe routes to schools. In addition, as indicated in **MM TRANS-2**, manual traffic control shall also be employed as determined by the County of San Bernardino in consultation with the California Highway Patrol; Cities of Fontana, Rancho Cucamonga, and Ontario; and the Fontana Unified School District, where needed, to safely move traffic through intersections affected by traffic.
	Q: How will the Project affect traffic on Cherry Avenue? **A:** Cherry Avenue is the Project site's eastern boundary. Widening of Cherry Avenue along the Project frontage would be done to improve traffic movements at the intersections of Street "A"/Cherry Avenue and Street "D"/Cherry Avenue. The Project proposes improvements that would include future construction of pedestrian connections from Cherry Avenue to the parking field/drop lots, Rancho Vista, Napa Street, and the existing private VIP Access Road into the Project area and within the new right of way improvements that connect to each Planning Area and to the Next Gen motorsports facility. Additionally, a multi-use trail connection is proposed along Street "A" that would connect Cherry Avenue to Napa Street and support future local trail systems.
	Q: Will trucks be allowed on the site overnight? **A:** No, parking fields/drop lots would not accommodate overnight parking for trucking activity. This provision would reduce the need for overnight security as well as eliminate noise and lighting nuisances.
Noise and Hazards	**Q: How will the Project affect noise in the area?** **A:** While the Project is far enough away from sensitive uses such as residences and schools that it won't pose noise impacts, the Project structures would buffer noise from existing Speedway uses and proposed entertainment events that could take place at the Speedway in the future. It is important to note that significant noise impacts will still occur even without the Project. Significant noise impacts (above applicable County noise standards) would occur along Randall Avenue (from Cherry Avenue to Citrus Avenue) due to increased traffic noise.
	Q: Will Project noise be heard at residences or schools? **A:** The existing site is a flat parking lot, so building the project and adding landscape will actually reduce noise created on site – the only significant noise is from off-site traffic, particularly along Randall Avenue.
	Q: Will Project noise affect businesses? Was noise impacts on nearby businesses analyzed? **A:** An Acoustical Assessment was conducted for the Project – noise was measured at seven points surrounding the Project site in residential areas as well as the surrounding industrial. Significant impacts relating to noise where identified on Randall due to increase in truck traffic. While mitigation for this significant and unavoidable impact is not feasible, no other significant noise impacts were identified.
	Q: What will the Project do to mitigate noise? **A:** Significant noise impacts are anticipated to result from off-site truck traffic. Due to a lack of jurisdiction over affected roadways, no feasible mitigation is identified to address these

Frequently Asked Questions

	impacts. For all else, noise impacts are less than significant and below County thresholds for noise.
	Q: Is there adequate consideration to the prior industrial uses? To what standard was the soil cleaned? **A:** The Project site was previously used as a Kaiser Steel Mill (from 1942 to 1983) that generated various wastes that were disposed of on-site. The entire property was assessed and subject to subsequent investigations. While the majority of the site requires no further action, there are three sites that will undergo additional material removal or investigation and remediation. Groundwater monitoring has continued as a result.
	Q: Will there be private security? **A:** Private security would be present during construction, and more than likely each individual tenant will have gated truckyards and on-site security.
	Q: Where's the nearest police station or who would respond in the event of an emergency? **A:** The nearest San Bernardino County Sheriff's Department station that would respond in event of an emergency is the Fontana Station located at 17780 Arrow Boulevard, Fontana, CA 92335, approximately 4.6 miles to the east.
Environmental Impact Report (EIR)	**Q: What is an Environmental Impact Report (EIR)?** **A:** An Environmental Impact Report is a requirement of the California Environmental Quality Act (CEQA) to identify and disclose environmental impacts – including air quality, noise, and traffic – to decision makers tasked with approval of a given Project. The EIR is based on various technical studies and proposes measures to reduce identified impacts.
	Q: Will my comments during the Environmental Justice Workshop be recorded and sent to decision-makers? **A: No**, the purpose of this Environmental Justice Workshop is to provide community members with the opportunity to share concerns or opinions on the Project as well as an opportunity to learn more about the Project is a relaxed, family-friendly setting. While your concerns will be informally noted, this is not a method for providing official comment on the Project.
	Q: How do I provide official comment on the Project? **A:** Official comments on the Project and its EIR that will be made available to decision makers will take the form of emails or mailed letters. A mail-in form you can use to make official comments is provided at the "Environmental Impact Report" Table.
	Q: Where can I find more information on the Project EIR? **A:** More information can be found via the QR code on the flyer (will be provided day-of event) as well as via the County of SB planning website (URL on the flyer)
	Q: Has the Project been approved by the County yet? **A: No**, after the current public review period, final EIR certification and Specific Plan adoption will be at the discretion of County officials, who will be provided all official comments submitted for the EIR.
	Q: What is a Specific Plan and how does that play in to the EIR? **A:** The Specific Plan guides future development within the Project site through detailed development standards and implementation measures in a way that is consistent with the existing General Plan. The Specific Plan EIR, once approved, would cover worst-case environmental impacts resulting from future, planned development provided they are what's described in the Specific Plan without significant modification.

Frequently Asked Questions

Environmental Justice	**Q: How does the recent Fontana Attorney General settlement – protecting vulnerable communities from pollution by – affect the Project?** **A:** The April settlement required a Fontana warehouse project to adopt substantial mitigation measures to minimize impacts on the surrounding community. More broadly, the City of Fontana adopted an ordinance, as required by the settlement, setting stringent environmental standards for all future warehouse development in Fontana. This Project is in the unin
	Q: What makes our community an 'Environmental Justice' community? **A:** The general area occupied by the Project site (see DUC map) is designated as a Disadvantaged Unincorporated Community. This metric is a combination of various demographic data (such as income, ability to speak English, and minority population) as well as environmental factors (Calenviroscreen: a community more affected by poor air quality, hazards, poor water quality, etc.). Not everyone is at the workshop may be a part of this DUC, but the historically disadvantaged community may be larger than thought. It may be effective to ask what they feel most affected by, and what does Environmental Justice/Disadvantaged community mean to them?

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Response to Comment Letter A2 –Miramontes Family

The comment letter was received after circulation of the Draft EIR and prior to the Planning Commission meeting. The comment letter references previous comments dated July 18, 2022. Additional comments were received from the commenter during the public comment period of the public hearing regarding the comments provided in the attached comment letter. Comments were addressed during the public comment period by the Project attorney and technical experts regarding information addressed during the public hearing. No new information was presented that wasn't previously addressed or analyzed in the previous responses to Comments G2, G3, and G29 and therefore no further response is necessary. The letter is provided in the Final EIR and in the Planning Commission report and has been responded to as part of the Planning Commission hearing record.

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Alisha C. Pember and Kelilah D. Federman, Adams Broadwell Joseph & Cardozo (A3)

From: Alisha C. Pember
To: Planning Commission Comments; Valdez, Steven
Cc: Christina Caro; Kelilah D. Federman
Subject: Action Item No. 2 - Speedway Commerce Center II Specific Plan (PROJ-2021-00150)
Date: Wednesday, September 7, 2022 9:52:51 PM
Attachments: 6192-006acp - Comments in Response to Staff Report Speedway Commerce and Exhibits A-B (Sept. 8 2022).pdf

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Good evening,

Please find attached **Comments re Action Item No. 2 - Speedway Commerce Center II Specific Plan (PROJ-2021-00150)** and **Exhibits A-B**.

If you have any questions, please contact Kelilah Federman.

Thank you.

Alisha Pember

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September 8, 2022

Via Email Only

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Vice Chair Michael Stoffel
Commissioner Raymond Bragg
Commissioner Tom Haughey
Commissioner Kareem Gongora
Planning Commission
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Re: Action Item No. 2 - Speedway Commerce Center II Specific Plan (PROJ-2021-00150)

Dear Honorable Chair Weldy, Vice Chair Stoffel, Commissioner Haughey, Commissioner Gongora and Mr. Valdez:

We submit these comments on behalf of Californians Allied for a Responsible Economy ("CARE CA") in response to the Staff Report ("Staff Report") prepared for the September 8, 2022 Planning Commission ("Commission") hearing on Action Item No. 2 – Project No. PROJ-2021-00150 – Speedway Commerce Center II Specific Plan Project ("Project") proposed by Candyce Burnett of Kimley Horn & Associates, Inc. ("Applicant"). These comments also include preliminary comments on the Final Environmental Impact Report ("FEIR").

The Project proposes to develop 6,600,000 square feet of a mix of high cube and e-commerce warehousing, approximately 261,369 square feet of accessory commercial uses, and approximately 98 acres of vehicle parking/drop lot areas and associated open space and internal public roadways.[1] The approximately 433-acre

[1] Speedway Commerce Center II Specific Plan Project, Draft Environmental Impact Report, State Clearinghouse No. 2021120259, Prepared for: Steven Valdez, Senior Planner, Land Use Services Department, San Bernardino County, Prepared by: Kimley-Horn and Associates, Inc. (June 2022).
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Project site is within the 522-acre site currently developed with the Auto Club Speedway ("ACS"), formerly known as the California Speedway. The Project site is located at 9300 Cherry Avenue, Fontana California 92335 between Arrow Boulevard and San Bernardino Avenue in the unincorporated portion of San Bernardino County within the City of Fontana Sphere of Influence. The Project site comprises ten Assessor Parcel Numbers (APNs) 0231-011-09, 0231-011-10, 0231-011-11, 0231-011-12, 0231-111-06, 0231-111-10, and 0231-111-17, 0231-111-18, 0231-111-19, and 0231-111-20.

On July 18, 2022, CARE CA submitted extensive written comments on the Project's Draft Environmental Impact Report ("DEIR"), including expert comments, which identified significant errors, omissions, and fatal defects in the document.

CARE CA and their experts have reviewed the Staff Report prepared for the September 8, 2022 Planning Commission hearing and have conducted a preliminary review of the FEIR. These comments address the ongoing deficiencies in the County's environmental analysis and proposed mitigation for the Project. These comments are supported by substantial evidence in the form of technical comments from qualified experts identifying significant, unmitigated air quality, health risk, GHG, and traffic, that the FEIR fails to adequately address. These comments were prepared with the assistance of air quality and hazardous resources expert James J. Clark, Ph.D., and traffic and transportation expert Daniel T. Smith, Jr., M.S.[2]

Although the County nominally responded to public comments, the Responses to Comments on the DEIR which are included in the FEIR ("Responses to Comments") are wholly inadequate under CEQA.[3] The County failed to adequately respond to CARE CA's DEIR comments, and the comments of its experts, on significant environmental issues, in violation of CEQA.[4]

The FEIR and the Staff Report do not resolve a number of issues raised in our prior comments. As a result, it is premature to recommend that the Board of Supervisors take action on the Project. We urge the Planning Commission to decline to make any recommendation to the Board of Supervisors at this time. Instead, the Commission should remand the Project to Staff to revise and recirculate a legally

[2] Dr. Clark's and Mr. Smith's technical comments and curricula vitae are attached hereto as **Exhibit A and B**, respectively.
[3] 14 CCR § 15088(a), (c); *King & Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814, 879–882; *The Flanders Foundation v. City of Carmel-by-the-Sea* (2012) 202 Cal.App.4th 603, 615.
[4] *Id.*

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adequate EIR which adequately analyzes and mitigates Project impacts and appropriately responds to public comments.

The Project must not be rescheduled for a further public hearing before the Commission until all of the issues raised in these comments, and in the comments of other members of the public, have been fully addressed. We reserve the right to supplement these comments at a later date, and at any later proceedings related to this Project.[5]

I. STATEMENT OF INTEREST

CARE CA is an unincorporated association of individuals and labor organizations that may be adversely affected by the potential public and worker health and safety hazards, and the environmental impacts of the Project. The coalition includes San Bernardino County residents Derek Brill, Nicholas Corrigan, Justin Dempsey, Anthony Diaz, the District Council of Ironworkers, Southern California Pipe Trades DC 16, along with their members, their families, and other individuals who live and work in San Bernardino County.

CARE CA advocates for protecting the environment and the health of their communities' workforces. CARE CA seeks to ensure a sustainable construction industry over the long-term by supporting projects that offer genuine economic and employment benefits, and which minimize adverse environmental and other impacts on local communities. CARE CA members live, work, recreate, and raise their families in San Bernardino County and surrounding communities. Accordingly, they would be directly affected by the Project's environmental and health and safety impacts. Individual members may also work on the Project itself. They will be first in line to be exposed to any health and safety hazards that exist onsite.

In addition, CARE CA has an interest in enforcing environmental laws that encourage sustainable development and ensure a safe working environment for its members. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for business and industry to expand in the region, and by making the area less desirable for new businesses and new residents. Indeed, continued environmental degradation can, and has, caused

[5] Gov. Code § 65009(b); PRC § 21177(a); *Bakersfield Citizens for Local Control v. Bakersfield* ("*Bakersfield*") (2004) 124 Cal. App. 4th 1184, 1199-1203; see *Galante Vineyards v. Monterey Water Dist.* (1997) 60 Cal. App. 4th 1109, 1121.

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construction moratoriums and other restrictions on growth that, in turn, reduce future employment opportunities.

II. THE PROJECT DESCRIPTION REMAINS INADEQUATE

CARE CA previously commented that the DEIR failed to include an accurate and complete Project description because the DEIR failed to identify reasonably foreseeable uses of the Project site, rendering the DEIR's impact analysis inadequate. The FEIR fails to correct this omission, and the Staff Report perpetuates it, stating that "[p]otential tenants and end users are unknown at this time; therefore, the exact square footage allocation between high-cube logistics and e-commerce uses cannot be determined at this time."[6] The failure to clarify the square footage used for high-cube logistics and e-commerce uses continues to result in a failure to adequately inform the public about the Project's basic purpose and of the nature and extent of the Project's impacts.

The County states that the Project is being developed for unknown future tenants. However, the Project is being developed for reasonably foreseeable future uses, the impacts of which were required to be fully analyzed in the FEIR, but were not. The FEIR refers to "future development of high-cube logistics and e-commerce uses within the Project site."[7] These uses, as pointed out by CARB, can result in highly significant environmental impacts: "Freight facilities, such as warehouse and distribution facilities, can result in high daily volumes of heavy-duty diesel truck traffic and operation of on-site equipment (e.g., forklifts and yard tractors) that emit toxic diesel emissions, and contribute to regional air pollution and global climate change."[8] The impacts generated by the particular operations of different users within this broad category can also result in significant impacts. The adverse impacts generated by cold storage warehouses, for example, are far more severe than those from a high-cube warehouse without cold storage.[9] Warehouses with cold storage capabilities and the ability to accommodate refrigerated trucks, or Transport Refrigeration Units ("TRUs"), require more truck trips per square foot and have higher energy demands due to the low temperatures required by the

[6] FEIR, Exhibit C, p. 2.0-25.
[7] DEIR, p. 4.3-20.
[8] CARB Comments re: Rubidoux Commerce Park Notice of Preparation of DEIR, December 17, 2020, p. 1; CARB NOP Comments regarding the Mariposa Industrial Park DEIR.
[9] *Id.*

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trucks, whose refrigeration units are most often powered by diesel internal combustion engines.[10]

Though the DEIR does not name the Project's specific end user tenants, the Project is being constructed to support warehouse, distribution, and cold storage uses. The FEIR's ongoing omission of information about the reasonably foreseeable operations at the Project site that could have significant impacts is a violation of CEQA.

CEQA requires that an EIR "set forth a project description that is sufficient to allow an adequate evaluation and review of the environmental impact."[11] An accurate project description is necessary for an intelligent evaluation of the potential environmental effects of a proposed activity.[12] "An accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR."[13] Accordingly, a lead agency may not hide behind its failure to obtain a complete and accurate project description.[14]

"Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal ... and weigh other alternatives in the balance."[15] As articulated by the court in *County of Inyo v. City of Los Angeles*, "a curtailed, enigmatic or unstable project description draws a red herring across the path of public input."[16] Without a complete project description, the environmental analysis under CEQA is impermissibly limited, thus minimizing the project's impacts and undermining meaningful public review.[17]

The purpose of an EIR is to reveal to the public "the basis on which its responsible officials either approve or reject environmentally significant action," so

[10] *See, e.g.*, CARB Transport Refrigeration Unit Regulations, http://ww2.arb.ca.gov/sites/default/files/truckstop/trus/trus.html; CARB Technology Assessment for Transport Refrigerators, August 2015, https://ww2.arb.ca.gov/sites/default/files/2020-06/TRU%20Tech%20Assessment%20Report%20ada.pdf; CARB Comments on Mariposa Industrial Park DEIR, October 8, 2021.
[11] *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 654 (citing 14 C.C.R. § 15124).
[12] McQueen v. Board of Directors (1988) 202 Cal. App. 3d 1136, 1143.
[13] *Santiago County Water Dist. v. County of Orange* 118 Cal. App. 3d 818, 829-830.
[14] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311 ("*Sundstrom*").
[15] *Santiago County Water Dist. v. County of Orange* 118 Cal. App. 3d 818, 829-830.
[16] *Id.* at 197-198.
[17] *See, e.g., Laurel Heights Improvement Assn. v. Regents of the Univ. of Cal.* (1988) 47 Cal.3d 376.

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that the public, "being duly informed, can respond accordingly to action with which it disagrees."[18] Further, "[t]o be adequate, the EIR must include sufficient detail to enable those who did not participate in its preparation to understand and 'meaningfully' consider the issues raised by the proposed project."[19] The County's failure to provide the square footage breakdown between high-cube logistics and e-commerce uses is a violation of CEQA. Without an accurate project description, the EIR fails as an informational document under CEQA. A revised EIR must be recirculated for public review.

III. THE FEIR STILL FAILS TO ADEQUATELY ANALYZE IMPACTS AND INCORPORATE ALL FEASIBLE MITIGATION MEASURES AND ALTERNATIVES AS REQUIRED BY CEQA

CEQA's purpose is to "[p]revent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the chances to be feasible."[20] CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring "environmentally superior" alternatives and all feasible mitigation measures.[21]

"CEQA establishes a duty for public agencies to avoid or minimize environmental damage where feasible."[22] A public agency cannot approve a project if there are feasible alternatives or mitigation measures available that would substantially lessen any significant effects that the project would have on the environment.[23] CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors."[24]

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[18] *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 392
[19] *California Oak Foundation v. City of Santa Clarita* 133 Cal.App.4th 1219, 1237 quoting *Santa Clarita Organization for Planning the Environment* 106 Cal.App.4th 715, 721; see also *Concerned Citizens of Costa Mesa Inc, v. 32nd Dist. Agricultural Assn.* (1986) 42 Cal.3d 929,935 ["To facilitate CEQA's informational role, the EIR must contain facts and analysis, not just the agency's bare conclusions or opinions"].
[20] 14 CCR § 15002(a)(3).
[21] 14 CCR § 15002(a)(2) and (3); *see also Berkeley Jets,* 91 Cal.App.4th at 1354; *Citizens of Goleta Valley,* 52 Cal.3d at 564.
[22] 14 CCR § 15021(a).
[23] 14 CCR § 15021(a)(2).
[24] 14 CCR § 15364.

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"The core of an EIR is the mitigation and alternatives sections."[25] The CEQA Guidelines define mitigation as a measure which (1) avoids the impact altogether by not taking a certain action or parts of an action, (2) minimizes the impact by limiting the degree or magnitude of the action and its implementation, (3) rectifies the impact by repairing, rehabilitating, or restoring the impacted environment, (4) reduces or eliminates the impact overtime by preservation and maintenance operations during the life of the action, and (5) compensates for the impact by replacing or providing substitute resources or environments.[26] "In deciding whether changes in a project are feasible, an agency may consider specific economic, environmental, legal, social, and technological factors."[27]

A lead agency is prohibited from approving a project with significant impacts unless it makes one or more of three findings:

(1) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR.[28]
(2) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.[29]
(3) Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR.[30]

Findings as to mitigation measures must be supported by substantial evidence.[31] Substantial evidence means "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached."[32] Substantial evidence "shall include facts, reasonable assumptions predicated upon

[25] *Citizens of Goleta Valley v. Bd. of Supervisors ("Goleta II")* (1990) 52 Cal.3d 553, 564.
[26] 14 CCR § 15370.
[27] 14 CCR § 15021(b).
[28] 14 CCR § 15091(a)(1).
[29] 14 CCR § 15091(a)(2).
[30] 14 CCR § 15091(a)(3).
[31] 14 CCR § 15091(b); *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439, 449.
[32] 14 CCR § 15384(a).

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facts, and expert opinion supported by facts,"[33] but it should not include "[a]rgument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate, or evidence of social or economic impacts which do not contribute to or are not caused by physical impacts on the environment."[34] The DEIR should be revised and recirculated to incorporate all feasible mitigation measures recommended by Commenters to reduce the Project's significant impacts.

A. The FEIR Does Not Include All Feasible Mitigation to Reduce Air Quality Impacts to the Greatest Extent Feasible

CARE CA previously commented that the DEIR failed to adequately mitigate the Project's construction and operational air quality impacts, which the DEIR had concluded were significant and unavoidable. Both CARB and Dr. Clark proposed additional feasible mitigation that would further reduce these impacts. The FEIR failed to adopt the recommended measures, and still does not include all feasible mitigation, leaving the County without substantial evidence to support a statement of overriding considerations.

The Staff Report provides that:

> [D]espite implementation of all feasible mitigation, construction of the Project would result in NOx and CO emissions ***above the SCAQMD threshold*** for construction Phase 1a; and NOx emissions ***above the SCAQMD threshold*** for Phase 1b and Phase 2. (Draft EIR, p. 4.3-27 to 4.3-29). Likewise, as shown in Draft EIR Table 4.3-13: Phase 1a Operational Emissions, Table 4.3-14: Phase 1b Operational Emissions, Table 4.3-15: Phase 2 Operational Emissions and Table 4.3-17: Project Buildout Emissions, despite implementation of all Standard Conditions, Project Design Features and feasible mitigation, operational emissions ***would still exceed applicable SCAQMD thresholds*** for ROG, NOx, PM10 and PM2.5 for Phase 1a; ROG, NOx and PM10 for Phase 1b; ROG and NOx for Phase 2; and ROG, NOx, PM10 and PM2.5 under Project Buildout conditions.

The FEIR only provides that "Construction on-road haul trucks shall be model year 2010 or newer if diesel-fueled."[35] Dr. Clark concludes that changing the requirement to model year 2014 or later for all heavy-duty vehicles entering or

[33] 14 CCR § 15384(b).
[34] 14 CCR § 15384(a).
[35] DEIR, p. 1-11 (emphasis added).

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operated on the Project site – a clearly feasible measure in 2022 – would reduce Project emissions below SCAQMD thresholds.[36] Specifically, Dr. Clark finds that changing the minimum allowable model year from 2010 to 2014 or 2018 would result in:

- 31% reduction in running NOx emissions (NOx RUNEX) from trucks operating on site if the vehicles were restricted to model year 2014 or later.
- A 44% reduction in running NOx emissions (NOx RUNEX) from trucks operating on site if the vehicles were restricted to model year 2018 or later.
- A 27.5% reduction in DPM emissions from trucks measured as PM2.5 operating on site (PM2.5 RUNEX) if the vehicles were restricted to model year 2014 or later.
- A 46.8% reduction in DPM emissions from trucks measured as PM2.5 operating on site (PM2.5 RUNEX) if the vehicles were restricted to model year 2018 or later.
- A 9.5% reduction in ROGs from trucks operating on site (ROG RUNEX) if the vehicles were restricted to model year 2014 or later.
- A 14.8% reduction in ROGs from trucks operating on site (ROG RUNEX) if the vehicles were restricted to model year 2018 or later.

The imposition of all feasible air quality mitigation for the Project is mandatory given that the FEIR concludes that the Project will result in significant air quality impacts due to exceedances of SCAQMD significance thresholds.[37] Yet, the FEIR fails to evaluate whether additional mitigation beyond a 2010 model year cut-off is feasible despite the substantial emission reductions from such a change and the feasibility of enforcing a revised cut-off date to 2014 or 2018 through the tenant agreement.[38] Accordingly, the County lacks substantial evidence to support the FEIR's conclusion that construction emissions are significant and unavoidable, and substantial evidence from CARB and Dr. Clark demonstrates that the FEIR has not incorporated all feasible mitigation measures to minimize the Project's significant impacts on air quality. The FEIR therefore remains deficient. The FEIR must be revised and recirculated to include all feasible mitigation to reduce construction air emissions, including model year 2014 or 2018 or newer construction on-road diesel haul trucks.

[36] Clark Comments, p. 11.
[37] Covington v. Great Basin Unified Air Pollution Control Dist. (2019) 43 Cal.App.5th 867, 879-883.
[38] *See* 14 C.C.R. § 15126.4(a)(2).

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Next, the County provides no evidence to support its conclusion that "Requiring non-diesel fueled emergency generators is not considered feasible because non-diesel emergency generators are typically not available in the size/horsepower necessary to support warehouse buildings."[39] As Dr. Clark explained, natural gas generators are commercially available, and feasible for implementation at the Project site. The County's conclusion is therefore unsupported.

The County similarly disregards feasible mitigation proffered by other commenters, which suggested that utilizing local state-certified apprenticeship program or a skilled and trained workforce with a local hire component can result in significant air pollution reductions.[40] SWAPE commented, "vehicle emissions can be reduced by decreasing the average overall trip length, by way of a local hire requirement or otherwise."[41] The County concludes that there is no feasible method for them to implement such a measure, but this is unsupported. The County provides no response to the proposal that this measure could feasibly be included in applicable bid documents where successful contractors must demonstrate the ability to provide for local hire. This would be similar to Mitigation Measure AQ-1 where the County requires that Tier 4 Final equipment and the option for Level 3 VDECS shall be included in applicable bid documents and successful contractors must demonstrate the ability to supply such equipment.[42] Yet again, the County offers mere conclusory statements to disregard feasible mitigation measures proffered by members of the public. The FEIR must be revised and recirculated to include *all* feasible mitigation.

B. The FEIR Relies on Impermissibly Deferred Mitigation for Traffic Impacts

The FEIR still contains improperly deferred mitigation which lacks performance standards, in violation of CEQA. MM TRANS-2 proposes to provide a comprehensive traffic management plan to manage traffic to and from the Next Gen motorsports facility and SCCIISP Project *only* during race weekends and as required for ancillary events, but MM TRANS-2 provides no performance standards for the comprehensive traffic management plan. Thus, the comprehensive traffic management plan constitutes impermissibly deferred mitigation. "Impermissible

[39] FEIR, Exhibit C, p. 2.0-191.
[40] FEIR, Exhibit C, p. 2.0-275.
[41] *Id.* at p. 2.0-280.
[42] Staff Report, p. 77 of 255.

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deferral of mitigation measures occurs when an EIR puts off analysis or orders a report without either setting standards or demonstrating how the impact can be mitigated in the manner described in the EIR."[43] The County has not included performance standards to guide the preparation of the traffic management plan, nor clarified why specifying performance standards was impractical or infeasible at the time the EIR was certified.[44]

CEQA prohibits deferring identification of mitigation measures when there is uncertainty about the efficacy of those measures.[45] An agency may only defer formulation of mitigation measures when there is a clear commitment to mitigation that will be measured against specific performance criteria.[46] Since the proposed MM TRANS-2 is not enforceable and lacks specific performance criteria that defines "where possible", or that reduction of disturbed areas is even feasible, this measure violates CEQA and the DEIR fails to support with evidence that impacts will be mitigated below the threshold of significance.

"By deferring environmental assessment to a future date, the conditions run counter to that policy of CEQA which requires environmental review at the earliest feasible stage in the planning process."[47] The EIR must be revised and recirculated to include adequate analysis and mitigation of the Project's traffic and transportation impacts.

The CEQA Guidelines provide that "[t]he specific details of a mitigation measure, however, may be developed after project approval when it is impractical or infeasible to include those details during the project's environmental review…"[48] The EIR does not state why specifying the traffic management plan was impractical or infeasible at the time the DEIR was drafted. In *Preserve Wild Santee v. City of Santee,* the city impermissibly deferred mitigation where the EIR did not state why

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[43] *City of Long Beach v. Los Angeles Unified School Dist.* (2009) 176 Cal.App.4th 889, 915-916.
[44] *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281.
[45] 14 C.C.R. § 15126.4(a)(1)(B); *City of Marina v. Board of Trustees of the California State University* (2006) 39 Cal.4th 341, 366; *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 308–309.
[46] 14 C.C.R. § 15126.4(a)(1)(B); *City of Marina v. Board of Trustees of the California State University* (2006) 39 Cal.4th 341, 366; *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 308–309. 56 *POET, LLC v. California Air Res. Bd.* (2013) 218 Cal.App.4th 681, 736, 739–740, as modified on denial of reh'g (Aug. 8, 2013), review denied (Nov. 20, 2013); see also *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281 (EIR deficient for failure to specify performance standards in plan for active habitat management of open space preserve).
[47] *Sundstrom* (1998) 202 Cal.App.3d 296, 305.
[48] 14 CCR § 15126.4(a)(1)(B).

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specifying performance standards for mitigation measures "was impractical or infeasible at the time the EIR was certified."[49] The court determined that although the City must ultimately approve the mitigation standards, this does not cure these informational defects in the EIR.[50] Further, the court in *Endangered Habitats League, Inc. v. County of Orange*, held that mitigation that does no more than require a report to be prepared and followed, or allow approval by a county department without setting any standards is inadequate.[51] Here, the fact that the traffic management plan will be approved later by the County does not cure the informational defects in the EIR.[52]

IV. GREENHOUSE GAS EMISSIONS IMPACTS ARE SIGNIFICANT AND UNMITIGATED

The Responses to Comments provides that the Development Agreement requires the Master Developer to implement an Electric Truck and Car Grant Program. "The Electric Truck and Car Grant Program requires the Master Developer to provide funding for the purchase of Class 8 heavy duty electric trucks, Class 4 through Class 7 medium duty trucks, light-duty (Class 1, 2, and 3) delivery vehicles, and local community and passenger vehicle grants. These grants provided by the Project Master Developer would also facilitate the adoption of zero emissions vehicles in the area and provide a clear set of standards for implementing these grants."[53] The Development Agreement has not been made available for public review and scrutiny and thus the public cannot be certain this measure will be implemented to reduce emissions as the County suggests.

Dr. Clark's comments provide substantial evidence that the Electric Truck and Car Grant Program is neither legally enforceable nor would sufficiently mitigate the Project's significant GHG emissions because the Program would not reduce operational GHG emissions significantly. The Grant Program requires that the Master Developer provide funding for the purchase of Class 8 heavy duty electric trucks, Class 4 through Class 7 medium duty trucks, light-duty (Class 1, 2, and 3) delivery vehicles, and local community and passenger vehicle grants. But, implementation of the grants would allow for the purchase of 7 heavy duty trucks, 6 medium trucks, and 6 local delivery trucks.[54] Dr. Clark concludes that this will

[49] *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281.
[50] *Id.*
[51] *Endangered Habitats League, Inc. v. County of Orange,* (2005) 131 Cal.App.4th 777, 794.
[52] *See Cal. Clean Energy Comm. v. City of Woodland* (2014) 225 Cal.App.4th 173, 194.
[53] Staff Report, Exhibit C, p. 2.0-28.
[54] Clark Comments, p. 11.

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hardly impact the emissions from the operations at the site.[55] The County must consider and adopt additional mitigation measures to further reduce the Project's significant GHG impacts.

V. HAZARDOUS CONTAMINATION REMAINS POTENTIALLY SIGNIFICANT AND UNMITIGATED

Dr. Clark's comments on the DEIR explained that the Project's construction phase will disturb large quantities of soils in areas that were identified in the DEIR as former process areas that contained measurable concentrations of COPCs from the Kaiser Steel Mill.[56] Mechanically disturbing the soils will release impacted soils that will migrate offsite to the residences nearby.[57] Dr. Clark concluded that this may result in a significant and unmitigated hazards impact. Dr. Clark recommended that the County must perform a Phase I and Phase II Environmental Site Assessment to analyze the full extent of the soil contamination onsite.

The Responses to Comment fail to meaningfully respond to Dr. Clark's comments, and lack any quantitative analysis of onsite soil contamination. Instead, the Responses offer merely conclusory dismissals of CARE CA's comments and do not clarify why the County has neglected to conduct additional soil sampling even though substantial evidence supports the conclusion that "[t]he Project's construction phase will disturb large quantities of soils in areas that were identified in the DEIR's appendices to represent former process areas that contained measurable concentrations of COPCs from the Kaiser Steel Mill."[58]

The County must assess the concentrations of contaminants that will be released offsite and calculate the potential health risks from those exposures.[59] The County must revise the hazardous materials section and health risk analysis of the FEIR and present the results in a revised EIR.

[55] *Id.*
[56] Clark Comments, p. 11.
[57] *Id.*
[58] Clark Comments, p. 11.
[59] *Id.*

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VI. THE FEIR FAILS TO ADEQUATELY RESPOND TO PUBLIC COMMENTS

CEQA requires that a lead agency evaluate and prepare written responses to comments in a FEIR.[60] The attached comments by Dr. Clark and Dan Smith describe in detail the County's failure to respond to their technical comments on the DEIR.

A lead agency under CEQA is required to substantively respond in detail to comments raising significant environmental issues, explaining, where applicable, why specific suggestions were not accepted by the agency.[61] Agencies are required to provide "detailed written response to comments . . . to ensure that the lead agency will fully consider the environmental consequences of a decision before it is made, that the decision is well informed and open to public scrutiny, and the public participation in the environmental review process is meaningful."[62] When a comment raises a "significant environmental issue," the written responses must describe the disposition of each such issue raised by commentators.[63] Specifically, the lead agency must address the comment "in detail giving reasons why" the comment was "not accepted. There must be good faith, reasoned analysis in response. Conclusory statements unsupported by factual information will not suffice."[64] The need for a reasoned, factual response is especially important when comments are made by agencies or experts.[65] Failure of a lead agency to respond to comments raising significant environmental issues before approving a project frustrates CEQA's informational purpose and may render the EIR legally insufficient.[66]

In *King & Gardiner Farms*, the Court of Appeal held that Kern County failed to separately address clustering of oil wells and other infrastructure as a possible

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[60] PRC § 21091(d); 14 CCR §§ 15088(a), 15132.
[61] 14 CCR § 15088(a), (c); *King & Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814, 879–882; *The Flanders Foundation v. City of Carmel-by-the-Sea* (2012) 202 Cal.App.4th 603, 615.
[62] *City of Long Beach v. Los Angeles Unified Sch. Dist.* (2009) 176 Cal.4th 889, 904.
[63] Pub Res C §21091(d); 14 Cal Code Regs §§15088(c), 15132(d), 15204(a).
[64] 14 CCR § 15088(c); *see Laurel Heights Improvement Assn. v. Regents of University of California* (1993) 6 Cal.4th 1112, 1124 ("*Laurel II*"); *The Flanders Foundation v. City of Carmel-by-the-Sea* (2012) 202 Cal. App. 4th 603, 615.
[65] *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Commissioners* (2001) 91 Cal.App.4th 1344, 1367, 1371; *People v. County of Kern* (1976) 62 Cal.App.3d 761, 772).
[66] *Flanders Foundation v. City of Carmel-by-the-Sea* (2012) 202 Cal.App.4th 603, 615; *Rural Landowners Association v. City Council* (1983) 143 Cal.App.3d 1013, 1020.

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mitigation measure when feasible and therefore failed to provide the "detailed, reasoned analysis" required by CEQA Guidelines section 15088(c).[67] In response to the comment, Kern County said that the General Plan did not require the proposed mitigation and said that competing policies were on balance better served by the proposed project than by an alternative.[68] However, this response did not separately address the clustering of wells and infrastructure and why the County did not find the proposal suitable.[69] This failure to address the substance of the comment head-on in a detailed and reasoned analysis resulted in a prejudicial abuse of discretion under CEQA because an EIR must describe and impose feasible mitigation measures to minimize or eliminate significant impacts.[70]

The County's Responses to Comments from CARE CA and other comments are nonspecific and general, dismissing CARE CA's comments through conclusory and unsupported responses.

Not only does the FEIR include inaccurate analysis of the Project's impacts as described above, the Responses to Comments contain numerous errors of their own. The County left numerous sections of the Responses blank, with "XXs" and Underlines to mark where additional information should go, but was never included. For example, one response on page 545 had 6 blank sections in it, making the whole response unintelligible.

The paragraph on page 2.0-545 is completely incomprehensible, it reads:

> Alternatives developed for the Project were based on State CEQA Guidelines Section XXX which requires_____. As evaluated in Section 6.0, Alternatives of the Draft EIR, a commercial alternative was developed which assumed _____. The Commercial Alternative did not meet a majority of the Project Objectives and XXXX. In addition the No Project Alternative assumed the Project site would be developed . Also see Master Response 3 and Response XXX regarding the community meetings held during the Notice of Preparation to solicity feedback on the scope of the EIR; community outreach for environmental justice; and _____.

[67] *King & Gardiner Farms*, 45 Cal.App.5th at 882.
[68] *Id.*
[69] *Id.*
[70] *Id.*

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There are so many errors and omissions in this one paragraph as to make uncertain what the County is even referring to.

There are upwards of 60 empty placeholders in the Responses rendering other entire paragraphs and sections unintelligible. The Responses to Comment do not appear to be "final", but rather appear to be a working draft that the County intended to fill in the blanks later on. The sloppy and incomplete work contained in the FEIR fails to meet CEQA's basic informational requirements, and renders the FEIR's analysis and Responses legally inadequate.

CEQA requires that an EIR include technical data and similar relevant information to permit the full assessment of significant environmental impacts by reviewing agencies and members of the public.[71] An EIR cannot rely on information that is neither included in the document nor adequately described therein.[72] The Responses to Comments section of the FEIR has so many typos, errors, and omissions as to render the County's responses inadequate for failure to meet the requirement of a detailed response to comments. "The requirement of a detailed analysis in response [to comments] ensures that stubborn problems or serious criticism are not swept under the rug."[73]

The County must revise the missing information and clear errors in its Responses to Comments in a revised and recirculated EIR to comply with CEQA before the Project can be referred to the Board of Supervisors for approval.

CEQA also requires that "all documents referenced in the environmental impact report" be available for review and "readily accessible" to the public.[74] A prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decision-making and informed public participation, thereby thwarting the statutory goals of the EIR process."[75] The County's failure to input the citations in the Responses to Comments violates CEQA, because it disallows the public from cross-referencing the County's citations. For example, the FEIR's

[71] CEQA Guidelines § 15147.
[72] Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova (2007) 40 Cal.4th 412, 442.
[73] Santa Clarita Organization for Planning the Environment v. County of Los Angeles (2nd Dist. 2003) 106 Cal.App.4th 715, 732.
[74] Pub. Resources Code § 21092(b)(1); CEQA Guidelines § 15087(c)(5).
[75] San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus (1994) 27 Cal.App.4th 713, 722.

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responses to comments leaves numerous citation sections blank, thus disabling the public from checking the County's work.

> G14-3 The Project proposes mitigation which would be aimed at minimizing Project-related emissions. This includes MM GHG-2 which requires the Project to supply a minimum of 50 percent of the energy demand on-site from a renewable source (e.g., solar photovoltaic (PV) panels, etc.). This includes the Project's total Title 24 demand and the plug-load. Additionally, MM GHG-3 requires the Project to meet or exceed CALGreen Tier 2 standards which require _____(which exceeds code requirements)…[76]

> G29-3 In compliance with the County's General Plan policies X and X, that require _____, two publicly noticed environmental justice outreach meetings were conducted as the Project is located within an Unincorporated Environmental Justice Focus Area. The outreach provided an opportunity for community engagement and additional analysis. As a result of these meetings and community input additional community benefits and facilities were added to the Project. These include _____[77]

These blank sections deprive the public from checking the County's work to ensure that the mitigation measures are fully integrated in the FEIR and fully enforceable through permit conditions, agreements, or other legally binding instruments, as required by CEQA.[78] The County's failure to provide citations for its Responses to Comments is a failure to proceed in a manner required by law.

The court in *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* determined that a reader of the EIR could not reasonably be expected to ferret out an unreferenced discussion in an earlier document, interpret that discussion's unexplained figures without assistance, and spontaneously incorporate them into the EIR's own discussion.[79] The court held "[t]he data in the EIR must not only be sufficient in quantity, it must be presented in a manner calculated to adequately inform the public and decision makers, who may not be previously familiar with the details of the project."[80]

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[76] FEIR, Exhibit C, p. 2.0-588.
[77] *Id.* at 2.0-644.
[78] CEQA Guidelines §15126.4(a)(2).
[79] *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 442.
[80] *Id.*

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Further, "information scattered here and there in EIR appendices or a report buried in an appendix, is not a substitute for a good faith reasoned analysis."[81] The requirement of a detailed analysis ensures that stubborn problems or serious criticism are not "swept under the rug."[82] Here, the FEIR references policies and regulations that are not only not available in the FEIR itself, but are not able to be located by the public due to the County's failure to provide citations.

The FEIR must be revised and recirculated to include the reference information undergirding the County's analysis in its Responses to Comments.

VII. CONCLUSION

For the foregoing reasons, CARE CA respectfully requests the Planning Commission remand the Project to Staff to remedy the errors and omissions in the EIR before the Project can be recommended for approval. Please include these comments in the record of proceedings for the Project.

Sincerely,

Kelilah D. Federman

Attachments
KDF:acp

[81] *Id., quoting California Oak Foundation v. City of Santa Clarita* (2005) 133 Cal.App.4th 1219, 1239, *quoting Santa Clarita Organization for Planning the Environment v. County of Los Angeles* (2003) 106 Cal.App.4th 715, 723.
[82] *Cleary v. County of Stanislaus* (1981) 118 Cal.App.3d 348, 357.

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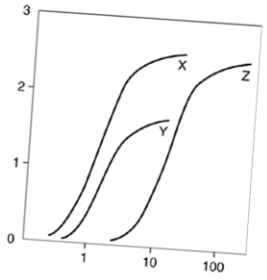
EXHIBIT A



Clark & Associates
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12405 Venice Blvd
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Los Angeles, CA 90066

PHONE
310-907-6165

FAX
310-398-7626

EMAIL
jclark.assoc@gmail.com

September 7, 2022

Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Attn: Ms. Kelilah Federman

Subject: Comments On Final Environmental Impact Report (FEIR) For Speedway Commerce Center II Specific Plan (SCCIISP Project), State Clearinghouse Number 2021120259

Dear Ms. Federman:

At the request of Adams Broadwell Joseph & Cardozo (ABJC), Clark and Associates (Clark) has reviewed materials related to the August 26, 2002 Staff Report and August, 2022 County of San Bernardino's (the County's) FEIR of the above referenced project.

Clark's review of the materials in no way constitutes a validation of the conclusions or materials contained within the plan. If we do not comment on a specific item this does not constitute acceptance of the item.

The conclusion from the County that the significant impacts are unavoidable is not supported by the facts of the Project. There are substantial impacts that are not addressed in the County's analysis that must be addressed in a supplemental final environmental impact report (S-FEIR).

Specific Comments:

1. **The County's Master Response 2 regarding the CalEnviroScreen analysis of air quality impacts in the surrounding census tracts to the Proposed Project ignores the value of defining the existing pollution burden on the census tracts while planning a Project.**

While a health risk analysis (HRA) provides project specific information on the emissions from the project and the resulting health risks, the analysis presented by the County fails to consider the cumulative impact from the existing health burdens in the Community. As was noted by several commenters to the DEIR, the Project is already located in an area which is one of the most impacted in the state per CalEnviroScreen, falling in the 93rd percentile overall, the 95th percentile for ozone, the 94th percentile for $PM_{2.5}$, and the 90th percentile for diesel particulate matter. The County's response that the CalEnviroScreen score is simply a screening tool and does not provide quantitative information on increases in cumulative impacts for specific sites or projects points to the need for additional quantification of impacts from the County.

Recently the South Coast Air Quality Management District (SCAQMD) completed its multiple site monitoring program with ten stations, an updated emissions inventory of toxic air contaminants, and a modeling effort to characterize risk across the Basin (known as MATES V). The study focused on the carcinogenic risk from exposure to air toxics but did not estimate mortality or other health effects from particulate exposures. One of the monitoring sites of special concern to the SCAQMD is the Inland Valley San Bernardino monitoring site. This fixed monitoring station is located less than 0.4 miles north of the Project site.

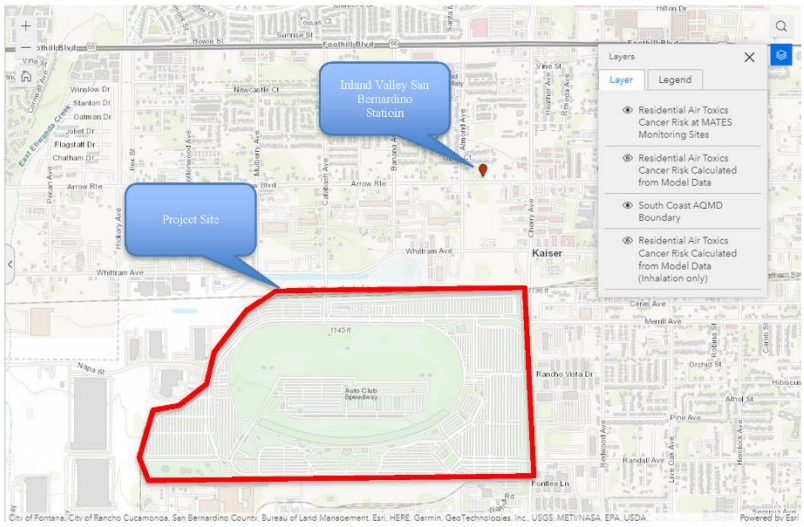

Figure 1: Location Inland Valley San Bernardino Monitoring Station From MATES V In Relation To Project Site

One of the chemicals measured over time in the MATES V fixed site monitoring is black carbon (BC), a fine particulate air pollutant which is generated from incomplete burning of biofuels, fossil fuels, and open biomass burning. BC is considered a good proxy for diesel particulate matter (DPM), the primary air toxin in the South California Air Basin (SCAB). DPM was estimated to account for 84% of the health risk calculated in the MATES III study and 68% of the health risk from the MATES IV study. In its most current study (MATES V), SCAQMD found that DPM accounted for 72% of the risk across the SCAB.

According to the MATES V study, the monitoring station with the highest air toxics cancer risk was the Inland Valley San Bernardino station.[1]

Table IX-7-10
Modeled Inhalation Cancer Risk at Monitoring Locations and Measured Risk

Location	MATES V CAMX RTRAC Simulation				
	Benzene	1,3-Butadiene	Diesel	Others	Total
Anaheim	49	14	307	56	426
Burbank Area	58	16	381	72	526
Central Los Angeles	65	21	499	82	667
Compton	53	15	381	70	519
Inland Valley San Bernardino	46	12	362	86	506
Huntington Park	57	20	408	75	559
Long Beach	52	16	359	65	492
Pico Rivera	50	11	368	63	492
Rubidoux	39	9	295	48	390
West Long Beach	60	20	455	80	615
10-Station Average Modeled	53	15	382	70	519
7-station+ Averaged Modeled	54	16	387	73	530
7-Station+ MATES V Average Measured*	62	56	362	114	593

*Including modeled species only, Risk from some measured species, such as carbon tetrachloride, chloroform and PAHs are excluded. Measured $EC_{2.5}$ was converted diesel PM as described in the Chapter 2.
+ Among the 10 monitoring stations, 3 stations, Anaheim, Los Angeles and Rubidoux do not have complete data. Therefore 7-station averages are used.

Adding to the health risk of the surrounding communities by allowing more diesel-powered vehicles to operate during the construction phase and operational phases of the Project seem incongruent with the goals of improving air quality for the Region as well the health of the residents

[1] MATES V. 2022. Appendix IX-89

nearby. The County must assess the health impacts in light of the additional burden the project will place on the community to assess the cumulative health impacts from DPM in a S-FEIR.

2. The County's Mitigation Measures (MMs) And Program Design Features (PDFs) Do Little To Curb The Primary Source of Air Toxics And Greenhouse Gases (GHG).

The summary by the County in the FEIR regarding Air Quality and GHG states that 86% of emissions are from mobile sources. Therefore, given the size of the Project it seems apparent that of all MMs and PDFs would focus on the primary source of those emissions – the trucks entering and exiting the Project. According to the DEIR and the FEIR, the Project would result in approximately 43,549 daily trips at full buildout, including approximately 9,865 daily truck trips. In response to the large number of vehicle trips the County is proposing to allow the Proponent to utilize grants for the down payments on electric vehicles. The Proposed Electric Truck and Car Grant Program requires the Master Developer to provide funding for the purchase of Class 8 heavy duty electric trucks, Class 4 through Class 7 medium duty trucks, light-duty (Class 1, 2, and 3) delivery vehicles, and local community and passenger vehicle grants. In total the grants would allow for the purchase of 7 heavy duty trucks, 6 medium trucks, and 6 local delivery trucks. These 19 vehicles would account for less than 0.19% of the daily truck trips. The measure would therefore have a negligible impact on the emission from the operational phase of the Project. The County must re-evaluate the MMs and PDFs to include measures that will actually reduce the Project impacts and report them in a S-FEIR.

3. The County's Response To The SCAQMD Regarding Changes to the LST Analysis And HRA Clearly Show That The Project Is Poorly Described And Was Not Accurately Assessed.

In the County's response to SCAQMD regarding changes to the LST Analysis and HRA, the County claims that "Potential tenants and end users are unknown at this time; therefore, the exact square footage allocation between high-cube logistics and e-commerce uses cannot be determined at this time." If the County cannot accurately define the square footage associated with the Project and therefore the associated emissions, that have not accurately described the Project in the manner required by CEQA. The County must provide a complete and accurate description in a S-FEIR..

4. The County's Response To The Availability of Electrified Construction Equipment Fails To Require The Use Of That Equipment When Available.

The response from the County that electrified construction equipment for ground works operations is not available at this time fails to require the Proponent to use that type of equipment when it does become available. This may mean that later phases of the Project will benefit from the use of the equipment. Equipment not currently being available does not mean that the County should require it for later phases of the Project. The Proponent should commit to using the equipment as soon as it is available. The County should require this stipulation in an S-FEIR.

Conclusion

The facts identified and referenced in this comment letter lead me to reasonably conclude that the Project could result in significant unmitigated impacts if the FEIR is approved. The County must re-evaluate the significant impacts identified in this letter by requiring the preparation of a supplemental final environmental impact report.

Sincerely,



EXHIBIT B

SMITH ENGINEERING & MANAGEMENT

September 6, 2022

Ms. Kelilah Federman
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037

Subject: Speedway Commerce Center II Specific Plan FEIR P22013

Dear Ms. Federman:

Per your request, I reviewed the Final Environmental Impact Report (the "FEIR") for the Speedway Commerce Center II Specific Plan Project (the "Project") in the County of San Bernardino (the "County"). My review is with respect to transportation and circulation considerations and focuses on the County's responses to my comments of July 18, 2022 which were included as Exhibit C to your letter of comment on the Draft Environmental Impact Report on that same date.

My qualifications to perform this review were thoroughly documented in my letter of July 18 and my professional resume was attached thereto.

The FEIR Fails to Respond Directly to Any of My Comments

The FEIR fails to respond directly to any of my comments. This is an evasion tactic sometimes employed by the preparers of environmental documents to avoid responding to the depth and evidentiary support of the commenting experts. In this instance, my comments were focused and brief, but the evasion is clearly evident in the failure to respond directly to the substantive and evidence-backed comments of other experts documented as Exhibits A and B of your comments.

TRAFFIC • TRANSPORTATION • MANAGEMENT
5311 Lowry Road, Union City, CA 94587 tel: 510.489.9477 fax: 510.489.9478

The County's VMT Significance Threshold Is Unreasonably Lenient and Not Based on Substantial Evidence. The More Rigorous Threshold Recommended By OPR Would Result In Findings of Significant Impact

My comment on this topic is similar to your comment now marked 03-27 in the FEIR response. That response asserts that the County's VMT threshold was based on evidence that was identified as an appropriate threshold through an undescribed exercise completed by Fehr & Peers as part of the General Plan process. However, the County has not presented a shred of such evidence in this response. The appropriate reaction to the response is that, if VMT can only be reduced by 4 percent below currently high levels of VMT generation in the unincorporated areas of the County, massive projects such as the one under consideration should only be undertaken in the more urbanized incorporated areas of the County where lower VMT may be feasible.

Comment and Response 03-26.

Your comment now labeled 03-26 in the FEIR response concerned improper deferral of mitigation. The County's response to the issue was to state that the deferral was not improper since the only instances where mitigation is necessary is event-specific to times of events at the raceway and that these traffic management plans can only be prepared when the time and nature (perhaps estimated attendance) of the events become known. The traffic management plans are deferred mitigation because the FEIR does not provide performance standards or specify why performance standards cannot be developed at this time.

Contrary to the County's claim traffic management plans for the raceway events are not the only matters that have been deferred. As we noted in our comments, roadway improvements related to the Project involve improving and converting two private rail crossings to public crossings and improving another public rail crossing. These are involved and time consuming matters involving negotiations with the California Public Utilities Commission and the consent of the involved railroads. Those negotiations do not always succeed in achieving the local public agency's intentions or the private developers' desired results.

The DEIR states at page 4.17-22 that "This application process would be conducted after approval of the Final EIR in conjunction with applicable agencies." Hence, there is no assurance that key elements of the Project's access and circulation system or alternative mitigation will be implemented in a manner that is timely if ever. Because this involves public safety at rail crossings, this is a reviewable matter under CEQA.

Conclusion

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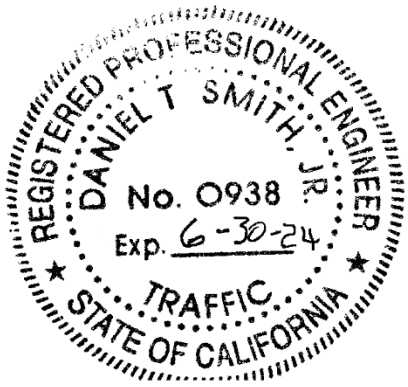
5311 Lowry Road, Union City, CA 94587 tel: 510.489.9477 fax: 510.489.9478

Ms. Kelilah Federman
Adams Broadwell Joseph & Cardozo
September 6, 2022
Page 3

Given the above, the FEIR's response is inadequate, and it should not be certified.

Sincerely,

Smith Engineering & Management
A California Corporation



Daniel T. Smith Jr., P.E.
President

TRAFFIC • TRANSPORTATION • MANAGEMENT
5311 Lowry Road, Union City, CA 94587 tel: 510.489.9477 fax: 510.489.9478

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Response to Comment Letter A3 – Alisha C. Pember and Kelilah D. Federman, Adams Broadwell Joseph & Cardozo

The comment letter was received after circulation of the Draft EIR and prior to the Planning Commission meeting, and provides preliminary comments on the Final EIR and the Planning Commission staff report, as well as reiterating previous comments on the Draft EIR. Further, the commenter provided public comments during the public hearing public comment period of the Planning Commission meeting. Comments were addressed during the public comment period by the Project attorney and technical experts regarding information received in the comment letter. No new information was presented that wasn't previously addressed or analyzed in the previous responses to Comments O1, O2, and O3 and therefore no further response is necessary. The letter is provided in the Final EIR and in the Planning Commission report and has been responded to as part of the Planning Commission hearing record. Please also refer to response to Comment Letter A1 regarding public review of a Final EIR.

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Hallie Kutak, Center for Biological Diversity (A4)

From: Hallie Kutak <hkutak@biologicaldiversity.org>
Sent: Thursday, September 08, 2022 12:04 PM
To: Planning Commission Comments <PlanningCommissionComments@lus.sbcounty.gov>
Cc: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: RE: Speedway Commerce Center II Specific Plan
Importance: High

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Hi Steve,

Could you also read the letter I submitted this morning around 10 am into the record? I have included the text below:

These comments are submitted on behalf of the Center for Biological Diversity (the "Center") regarding the Planning Commission's consideration of the Speedway Commerce Center II Specific Plan (SCH # 2021120259) (Project). The Center maintains that the EIR is defective for the reasons explained in our comments. The County has not fixed the issues we identified, and the EIR still fails to disclose and mitigate the Project's environmental impacts.

Under the DEIR's own admission, this one facility will **double** the existing warehouse square footage in the area (as defined by the DEIR's cumulative impacts analysis). (See DEIR at Table 4-1, 4-14 [existing 37 warehouse facilities identified in the cumulative projects list total 6.4 million sq ft, as compared to this Project's 6.6 million sq ft of warehouse uses].) This Project will compound air quality impacts in a region already suffering from the worst air quality in the nation. Yet, the Project fails to incorporate basic project design features and mitigation measures that have become standard best practice for warehouses in the region.

Furthermore, the County did not upload the Center's comment and the County's response until September 7th, the day before the meeting. During the meeting, Commissioner Gongora noted that the Commissioners had not received this most recent version of the Response to Comments, which the County's attorney confirmed. It appears that the County failed to provide our comments to the Commission, which address in detail Commissioner Gongora's concerns regarding the unmitigated air quality and greenhouse gas impacts.

We urge the Commission to protect the public health and overall quality of life of the people of San Bernardino and recommend a denial of the Project. Thank you.

From: Hallie Kutak
Sent: Thursday, September 8, 2022 10:19 AM
To: PlanningCommissionComments@lus.sbcounty.gov
Cc: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: RE: Speedway Commerce Center II Specific Plan

Hello,

I would also like to add that the County posted its response to comments last week, but inexplicably omitted our comments and its response at that time. Yesterday – the day before the hearing – the County posted a new version of its response to comments ("Version 3") that included our comments and the County's response. The County's inexplicable decision to withhold its response to our comment means that we have been deprived adequate time to review that response before the Planning Commission hearing. And as Commissioner Gongora noted, this also deprived the Commission the opportunity to review our comments and responses before the hearing.

Please include this in the record as well. Thank you.

Thank you.

Best,
Hallie

From: Hallie Kutak
Sent: Thursday, September 8, 2022 10:06 AM
To: PlanningCommissionComments@lus.sbcounty.gov
Cc: Valdez, Steven <Steven.Valdez@lus.sbcounty.gov>
Subject: Speedway Commerce Center II Specific Plan

Hello,

Attached please find the Center's comments to the Commission. Please include these comments in the public record. Thank you.

Best,
Hallie

Hallie Kutak
Staff Attorney | Senior Conservation Advocate
Urban Wildlands Program
CENTER *for* BIOLOGICAL DIVERSITY
510-844-7117
hkutak@biologicaldiversity.org

Response to Comment Letter A4 – Hallie Kutak, Center for Biological Diversity

The comment email/letter was read into the record at the Planning Commission meeting and was received after circulation of the Draft EIR, and after the close of the public comment period. Comments were addressed during public comment at the Planning Commission meeting, during the applicant's response to public comments by the Project attorney and technical experts. No new information was presented that wasn't previously addressed or analyzed in the previous responses to Comment O11 and therefore no further response is necessary. The letter is provided in the Final EIR and in the Planning Commission report and has been responded to as part of the Planning Commission hearing record.

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3.0

Errata

Kimley»Horn

Section 3.0 Errata

In accordance with California Environmental Quality Act (CEQA) Guidelines Sections 15132 and 15088.5(b), this section of the Final Environmental Impact Report (EIR) provides additional information that provide clarification, amplification and/or insignificant modifications presented in the Draft EIR. Changes to the Draft EIR are noted below. The changes to the Draft EIR do not affect the overall conclusions of the environmental document, but instead are a result of public and responsible agency comments on the Draft EIR. These clarifications and corrections do not warrant Draft EIR recirculation pursuant to CEQA Guidelines Section 15088.5. As set forth further below and elaborated upon in the respective Response to Comments, none of the Errata below reflect a new significant environmental impact, a "substantial increase" in the severity of an environmental impact for which mitigation is not adopted to reduce the impact to a level of insignificance, or a new feasible Project alternative or mitigation measure considerably different from others previously analyzed that would clearly lessen significant environmental impacts but is not adopted, nor do the Errata reflect a "inadequate" or "conclusory" Draft EIR.

Changes in this Errata Section are listed by chapter, page, and (where appropriate) by paragraph. Added or modified text is shown with double underline (example) while deleted text is shown with strikethrough (~~example~~).

2.1 SECTION 1.0, EXECUTIVE SUMMARY

Page 1-3, Subsection "Project Description," second bullet point.

Project Description

The Project proposes the development of a mixed-use development that would consist of a mix of the following land uses:

- Approximately 433 acres of the existing approximately 522-acre Auto Club Speedway (ACS) located in San Bernardino County.
- Up to approximately 6.6 million square feet of high-cube logistics and e-commerce development spread across ~~four~~ six planning areas.

Page 1-4, Objective 9, second sentence

Objective 9: Facilitate the establishment of design guidelines and development standards that create a unique, well-defined identity for the proposed Project. Enhance Project ~~project~~ identity through architecture, landscaping, walls, fencing, signage and entry treatments.

Page 1-4, Objective 10

Objective 10: Develop and operate a large format high-cube logistics ~~center~~ and e-commerce center that limits truck traffic disruption to residential areas within Southwestern San Bernardino County and neighboring jurisdictions.

Page 1-18, Table 1-1, Row 11, Column 3

Impact 4.5-3 Would the project disturb any human remains, including those interred outsides of dedicated cemeteries?	Less than Significant Impact with Mitigation Incorporated	Refer to **MM TCR~~TRC-4~~** below.

2.2 SECTION 2.0, INTRODUCTION

Page 2.5, Subsection "Native American Consultation," third paragraph

The ~~City~~ County sent AB 52 and SB 18 notification to representatives of the following tribes on February 22, 2022:

2.3 SECTION 3.0, PROJECT DESCRIPTION

Page 3-2, Section 3.2 "Project Overview," added as 2nd paragraph on page 3-2

Neither a General Plan Amendment nor a Zone Change is required to allow or authorize the uses permitted in the Specific Plan area. Although the Project site currently contains a commercial land use designation, the underlying special development zoning allows for combination of residential, commercial, industrial, agricultural, open space and recreation uses, and similar and compatible uses. A text and map amendment to the Development Code and General Plan will be made to identify the Specific Plan designation on the official map.

Page 3-2, Section 3.3 "Project Background," first paragraph of the section, fifth sentence

The existing ACS has been hosting NASCAR races and other motorsports and entertainment events since 1997. The Project would be constructed on approximately 433 acres of the existing site. The remaining approximately 90 acres are not a part of this Project, and plan to be developed as the "Next Gen in California Project" (Next Gen motorsports facility) which was separately approved by the County in June 2021.

Page 3-21, Table 3-2: Proposed Land Uses, Row 7, Column 2

Total	Approximately 433 acres	NA

Page 3-23, Table 3-3: Land Use Plan, Row 28, Column 3

Total	**--**	**Approximately 433 acres**	**Up to 6,600,000 sf High-cube Logistics/E-Commerce 261,360 sf Ancillary Commercial**	**0.55 (max)[3]**

Page 3-26, Subsection "Vehicular Circulation, 5th paragraph, second sentence

Widening of Cherry Avenue entries along the Project frontage would also be done to improve traffic movements at the intersections of Street "A"/Cherry Avenue and Street "D"/Cherry Avenue. ~~No other~~ If additional off-site improvements are ~~planned~~ necessary either along Cherry Avenue or Napa Street, it is

anticipated that these improvements would generally occur within the existing improved rights-of-way. Therefore, minimal impacts to biological resources, cultural resources, and air quality or GHG would occur. All relevant mitigation measures identified in this EIR would apply to the construction of any off-site circulation improvements by the Project.

Page 3-31, Subsection "Water Supply," first paragraph of the subsection, first two sentences

Potable and recycled water services for the ~~The~~ Project site would be provided ~~is served~~ by Fontana Water Company (FWC) ~~and Inland Empire Utilities Agency (IEUA)~~. To meet water supply demand, the portions of the County that are operated by the FWC ~~Fontana Water Company~~ receive water supply from Lytle Creek surface flow and from wells in the Lytle Basin, Chino Basin, and Rialto-Colton Basin ~~another groundwater basin known as No Man's Land~~.

Page 3-31, Subsection "Water Supply," second paragraph of the subsection

There is an existing 16~~18~~-inch waterline that runs through the Project site, connecting existing water facilities in Napa Street to Cherry Avenue. A portion of this existing waterline would need to be removed with the development of the Project site. New water facilities would be installed in the backbone streets (Streets "A," "B," "C," and "D"). The proposed new water facilities would connect to existing FWC waterlines located in Cherry Avenue and Napa Street to provide water for the Project site. The need for a new backbone main in Cherry Avenue was also identified as was new water production, storage, and distribution infrastructure. Although there are existing mains in the vicinity of the Project to provide both potable and recycled water, FWC's water system requires capacity improvements in order to meet the potable and recycled water demands for the Project. FWC also has a 16-inch waterline and rights of way that exist within the Project area that are required to be abandoned and relocated. These improvements would generally occur within the existing improved rights-of-way on Cherry Avenue which is generally improved or built out. Therefore, minimal impacts to biological resources, cultural resources, and air quality or GHG would occur. All relevant mitigation measures identified in this EIR would apply to the construction of any off-site water/wastewater improvements by the Project.

Page 3-31, Subsection "Recycled Water," first paragraph of subsection, second sentence

There is an existing recycled waterline located in Napa Street, west of the Project site. The recycled waterline was installed by the IEUA with service being provided by FWC. Recycled water supply is delivered at a lower cost than potable water and is not interrupted during drought restriction periods, making it ideal for irrigation uses. In accordance with the SWRCB Emergency Order published in May 2022, the use of potable water for landscaped areas will be prohibited. Therefore, ~~As an option to using potable water~~ for irrigation uses, new recycled water facilities would ~~may~~ be installed in the backbone streets (Streets "A," "B," "C," and "D") to provide irrigation water for the Project site. Recycled water for irrigation may also be used along Cherry Avenue, VIP Access Road and San Bernardino Avenue.

Page 3-32, Subsection "Site Utilities/Infrastructure," second sentence

To meet water supply demand, the portions of the County that are operated by the FWC receive water supply from Lytle Creek surface flow and from wells in the Lytle Basin, Chino Basin, and Rialto-Colton Basin ~~another groundwater basin known as No Man's Land~~.

Page 3-32, Subsection "Site Utilities/Infrastructure", second paragraph

The Project site is minimally served by water, power, and natural gas. ~~The Project site would tie into existing utility lines within the existing roadways and right-of-ways adjacent to the site.~~ The Project would be required to connect to the following utilities:

Page 3-34, Section 3.7: Approvals Requested as Part of the Project, added as Requested Approvals

Development Code Amendment: A text and map amendment to the Development Code will be made to identify the Specific Plan designation of SC/SP-COM on the official zoning map.

General Plan Amendment: A map amendment to the General Plan will be made to Special Development (SD) on the official land use map, which is the land use category used to identify Specific Plan areas.

2.4 SECTION 4.0, ENVIRONMENTAL IMPACT ANALYSIS

Page 4-7, Table 4-1: Cumulative Projects List

Table 4-1: Cumulative Projects List

Proj #	Description	Land Use	Quantity	Units	Trip Generation Estimates						
					Daily	AM Peak Hour			PM Peak Hour		
						In	Out	Total	In	Out	Total
San Bernardino County											
Entitled/Project Site											
113	Next Gen In California	Entertainment	90	AC	*A TIA was prepared for the 1995 EIR for the California Speedway Event Center Development Plan (Auto Club Speedway)						

* The 1995 FEIR determined that Friday race days would generate 6,814 Average Daily Traffic (ADT) (3,407 trips in and 3,407 trips out), Saturday race days would generate 33,122 ADT (18,347 trips in and 14,775 trips out), and Sunday race days would generate 69,096 ADT (33,655 trips in and 35,441 trips out). The Next Gen in California Project (Next Gen motorsports facility) attendance would decrease from the original maximum of 107,000 people (including spectators in grandstands, suites, or sky boxes, team members, race officials, workers, and media) for a premier race event, to a maximum total attendance of approximately 50,000 people for such events.

2.5 SECTION 4.3, AIR QUALITY

Page 4.3-19, first paragraph, second third and fourth sentences

The Project site would consist of up to approximately 6.6 million square feet of high-cube logistics and e-commerce uses with 261,360 square feet of ancillary commercial uses, and approximately 98 acres of parking fields/drop lot areas as well as ancillary open space. However, for purposes of trip generation and associated ~~air quality~~ traffic analysis, a conservative approach was used in the trip generation which assumes 2,641,000 ~~million~~ square feet of high-cube logistics and 2,773,050 ~~million~~ square feet of e-commerce uses, for a total of 5,414,050 million sf of combined high-cube logistics and e-commerce uses. This scenario provides for the maximum number of trips and related traffic ~~air quality~~ impacts that could be associated with the Project. For instance, if the Project were to develop with 6.6 million square feet of high-cube logistics uses only, the number of trips associated with the Project would be less than if the Project were to develop with the assumed 2,641,000 ~~million~~ square feet of high-cube logistics and

2,773,050 ~~million~~ square feet of e-commerce uses due to the higher intensity of trips generated with e-commerce uses.

Page 4.3-20, first paragraph, second sentence

provides for the maximum number of trips and related air quality impacts that could be associated with the Project. For instance, if the Project were to develop with up to approximately 6.6 million square feet of high-cube logistics uses only, the number of trips associated with the Project would be less than if the Project were to develop with the assumed 2,641,000 million square feet of high-cube logistics and 2,773,050 million square feet of e-commerce uses due to the higher intensity of trips generated with e-commerce uses.

Page 4.3-20, first paragraph, second sentence

For purposes of construction emissions modeling, the maximum potential development of up to approximately 6.6 million square feet building area was modeled to reflect the maximum square footage of building construction potential.

Page 4.3-25, third paragraph, last sentence

The Project would approve the Specific Plan for the property to allow for the development of up to approximately 6.6 million square feet of high-cube logistics/e-commerce uses and approximately 261,360 sf of ancillary commercial uses, as well as ancillary open space to support to the Project development.

Page 4.3-37, first paragraph, second sentence

conditions and requirements include compliance with the provisions of the Building Code, SCAQMD Rules, etc. The ~~City~~ County may impose additional conditions during the approval process, as appropriate.

Page 4.3-38, MM AQ-1

MM AQ-1 Prior to the issuance of grading permits, the County Engineer shall confirm that the Grading Plan and Specifications require all construction contractors to incorporate the following measures to minimize construction emissions. ~~These features shall be included in applicable bid documents and included on the grading plans.~~

- All off-road diesel-powered construction equipment greater than 50 horsepower meets California Air Resources Board Tier 4 Final off-road emissions standards or incorporate CARB Level 3 Verified Diesel Emission Control Strategy (VDECS). Requirements for Tier 4 Final equipment and the option for Level 3 VDECS shall be included in applicable bid documents and successful contractor(s) must demonstrate the ability to supply such equipment. A copy of each unit's Best Available Control Technology (BACT) documentation (certified tier specification or model year specification), and CARB or SCAQMD operating permit (if applicable) shall be provided to the County at the time of mobilization of each applicable unit of equipment. This equipment shall be used when commercial models that meet the construction needs of the proposed Project are commercially available from local suppliers/vendors. The

determination of commercial availability of such equipment shall be made by the County, based on applicant-provided evidence from expert sources, such as construction contractors in the region.

- Construction equipment shall be properly maintained according to manufacturer specifications.
- All diesel-powered construction equipment, delivery vehicles, and delivery trucks shall be turned off when not in use. On-site idling shall be limited to three minutes in any one hour.
- Construction on-road haul trucks shall be model year 2010 or newer if diesel-fueled.
- Information on ridesharing programs shall be made available to construction employees.
- During construction, lunch options shall be provided on-site.
- A publicly visible sign shall be posted with the telephone number and person to contact regarding dust complaints per SCAQMD Standards.
- All construction contractors shall be provided information on the South Coast Air Quality Management District Surplus Off-road Opt-In "SOON" funds which provides funds to accelerate cleanup of off-road diesel vehicles.
- The Project shall demonstrate compliance with SCAQMD Rule 403 concerning fugitive dust and provide appropriate documentation to the County of San Bernardino.
- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet-power vacuum street sweepers at least once per day. The use of dry-power sweeping shall be prohibited.
- All vehicle speeds on unpaved roads, driveways, or driving surfaces shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.
- Building pads shall be laid as soon as possible after grading, unless seeding or soil binders are used.
- A publicly visible sign shall be posted with the telephone number and the name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the SCAQMD shall also be visible to ensure compliance.

Page 4.3-40, MM AQ-3

MM AQ-3 Prior to issuance of tenant occupancy permits, the tenant/facility operator shall prepare and submit a Transportation Demand Management (TDM) program detailing strategies that would reduce the use of single occupant vehicles by employees by increasing the number of trips by walking, bicycle, carpool, vanpool, and transit. The TDM shall include, but is not limited to the following:

- Provide a transportation information center and on-site TDM coordinator to educate residents, employers, employees, and visitors of surrounding transportation options.
- Promote bicycling and walking through design features such as showers for employees, self-service bicycle repair area, etc. around the Project site.
- Each building shall provide secure bicycle storage space equivalent to two percent of the automobile parking spaces provided.
- Each building shall provide a minimum of two shower and changing facilities as part of the tenant improvements.
- Promote and support carpool/vanpool/rideshare use through parking incentives and administrative support, such as ride-matching service.
- Incorporate incentives for using alternative travel modes, such as preferential load/unload areas or convenient designated parking spaces for carpool/vanpool users.
- Provide meal options on-site or shuttles between the facility and nearby meal destinations.
- Each building shall provide preferred parking for electric, low-emitting, and fuel-efficient vehicles equivalent to at least eight percent of the required number of parking spaces.

This mitigation measure applies only to tenant occupancy/tenant improvements and not the building shell approvals and/or limited speculative tenant improvements installed for marketing purposes.

Page 4.3-41, MM AQ-4

MM AQ-4 The applicability of this Mitigation Measure applies in part to the tenant and in part to the Site Developer, as noted below:

Prior to the issuance of a building permit: for tenant improvements by tenant/facility operator for cold storage uses, the Planning Department shall confirm that the Project is designed to include the following:

- ~~Prior to issuance of a Building Permit for the Shell Design, the buildings' electrical room shall be sufficiently sized to hold additional panels that may be needed to supply power for the future installation of electric vehicle (EV) truck charging stations on the site. Conduit should be installed from the electrical room to tractor trailer parking~~

~~spaces in a logical location(s) on the site determined by the Site Developer during construction document plan check, for the purpose of accommodating the future installation of EV truck charging stations at a central location within the truck court at such time this technology becomes commercially available, and the buildings are being served by trucks with electric-powered engines.~~

- The buildings' electrical room shall be sufficiently sized to hold additional panels that may be needed in the future to supply power to trailers with transport refrigeration units (TRUs) during the loading/unloading of refrigerated goods, if required by future tenants who utilize cold storage. Conduit should be installed from the electrical room to the loading docks ~~in a location~~ determined by the ~~tenant~~ Project Applicant during construction document plan check as the logical location(s) to receive trailers with TRUs.

Prior to the issuance of a building permit: for the Shell Design by Site Developer, the Planning Department shall confirm that the Project is designed to include the following:

- Prior to issuance of a Building Permit for the Shell Design, the buildings' electrical room shall be sufficiently sized to hold additional panels that may be needed to supply power for the future installation of electric vehicle (EV) truck charging stations on the site. Conduit should be installed from the electrical room to tractor trailer parking spaces in a logical location(s) on the site determined by the Site Developer during construction document plan check, for the purpose of accommodating the future installation of EV truck charging stations at a central location within the truck court at such time this technology becomes commercially available and the buildings are being served by trucks with electric-powered engines.

~~This mitigation measure applies only to tenant improvements and not the building shell approvals.~~

Page 4.3-41, MM AQ-5

MM AQ-5 Prior to the issuance of tenant occupancy permits for cold storage uses, the Planning Department shall confirm that tenant lease agreements include contractual language that requires all Transport Refrigeration Units (TRUs) entering the Project site be plug-in capable. Conduit for electrical hookups shall be provided as part of the tenant improvements for any tenant that requires cold storage. The conduit for electrical hookups shall be provided at select loading bays for future transportation refrigeration units if required by future tenants who utilize cold storage. Electrical hookups allow for truckers to plug in any onboard auxiliary equipment and power refrigeration units while their truck is stopped. This mitigation measure applies only to tenant occupancy/tenant improvements and not the building shell approvals and/or limited speculative tenant improvements installed for marketing purposes.

Page 4.3-41, MM AQ-6

MM AQ-6 Prior to the issuance of a tenant occupancy permit, the Planning Department shall confirm that all truck access gates and loading docks within the Project site have a sign posted that states:

- Truck drivers shall turn off engines when not in use.
- Truck drivers shall shut down the engine after five minutes of continuous idling operation (pursuant to Title 13 of the California Code of Regulations, Section 2485). Once the vehicle is stopped, the transmission is set to "neutral" or "park," and the parking brake is engaged.
- Telephone numbers of the building facilities manager and CARB to report violations.
- Signs shall also inform truck drivers about the health effects of diesel particulates, the California Air Resources Board diesel idling regulations, and the importance of being a good neighbor by not parking in residential areas.

This mitigation measure applies only to tenant occupancy/tenant improvements and not the building shell approvals and/or limited speculative tenant improvements installed for marketing purposes.

Page 4.3-42, MM AQ-7

MM AQ-7 Prior to the issuance of a tenant occupancy permit, the Planning Department shall confirm that the Project plans and specifications shall include requirements (by contract specifications) that vendor trucks for the industrial buildings include energy efficiency improvement features through the Carl Moyer Program—including truck modernization, retrofits, and/or aerodynamic kits and low rolling resistance tires—to reduce fuel consumption. This mitigation measure applies only to tenant occupancy/tenant improvements and not the building shell approvals and/or limited speculative tenant improvements installed for marketing purposes.

Page 4.3-42, MM AQ-8

MM AQ-8 Prior to the issuance of a tenant occupancy permit, the Planning Department shall confirm that the Project plans and specifications for the industrial buildings shall include electric vehicle (passenger car) charging stations and a minimum of 12 percent carpool parking spaces at each building for employees and the public to use. This mitigation measure applies only to tenant occupancy/tenant improvements and not the building shell approvals and/or limited speculative tenant improvements installed for marketing purposes.

Page 4.3-42, MM AQ-9

MM AQ-9 Each building shall include the necessary charging stations for cargo handling equipment. Prior to the issuance of a tenant occupancy permit, the Planning Department shall confirm that the Project plans and specifications show that all outdoor cargo handling equipment

(including yard trucks, hostlers, yard goats, pallet jacks, and forklifts) are zero emission/powered by electricity. Note that SCAQMD Rule 2305 (Warehouse Indirect Source Rule) Warehouse Actions and Investments to Reduce Emissions (WAIRE) points may be earned for electric/zero emission yard truck/hostler usage. This mitigation measure applies only to tenant occupancy/tenant improvements and not the building shell approvals and/or limited speculative tenant improvements installed for marketing purposes.

2.6 SECTION 4.4, BIOLOGICAL RESOURCES

Page 4.4-5, final paragraph, second sentence

A BRA was prepared for the Next Gen motorsports facility project; see *Section 3.0 Project Description* for details. The Project would surround the separate Next Gen motorsports facility. The Project would be constructed on approximately 433 acres of the existing site.

2.7 SECTION 4.5, CULTURAL RESOURCES

Page 4.5-8, first paragraph, second and third sentences.

Archival information also suggests that the Metropolitan Water District's Upper Feeder ~~Aqueduct~~ was constructed through the southern portion of the Project site in the 1930s. The Project is not anticipated to impact the built environment resource ~~buried historic-era water pipeline~~.

Page 4.5-16, first paragraph, seventh and eighth sentences.

Archival information also determined that the Metropolitan Water District of Southern California's Upper Feeder ~~Aqueduct~~ was constructed through the Project area in the 1930s. Project implementation is not anticipated to impact the built environment resource ~~buried historic-era water pipeline~~ and construction activities will not alter, demolish, or relocate the existing feature.

Page 4.5-17, MM CUL-1.

MM CUL-1 If archaeological or cultural resources are exposed during construction of the Project, all ground disturbing activities within ~~50~~ 60 feet of the potential resource(s) shall be suspended. A qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, shall evaluate the significance of the find and determine whether or not additional study is warranted. Depending upon the significance of the find, the archaeologist may simply record the find and allow work to continue. If the discovery proves significant under CEQA, additional work, such as preparation of an archaeological treatment plan, testing, or data recovery, may be warranted and shall be submitted to the Development Services Director or his/her designee. If the resource(s) are determined to be Native American in origin, the Project archaeologist shall notify the appropriate Native American Tribe(s) from a list provided by the County.

Additionally, the Yuhaaviatam of San Manuel Nation Cultural Resources Department (YSMN) shall be contacted regarding any pre-contact and/or historic-era finds and be

provided information after the archaeologist makes his/her initial assessment of the nature of the find, so as to provide Tribal input with regards to significance and treatment.

MM CUL-2 If significant pre-contact and/or historic-era cultural resources, as defined by CEQA (as amended, 2015), are discovered and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan, the drafts of which shall be provided to YSMN for review and comment. The archaeologist shall monitor the remainder of the Project and implement the Plan accordingly.

MM CUL-3 If human remains or funerary objects are encountered during any activities associated with the Project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and that code enforced for the duration of the Project.

Page 4.5-19, fourth paragraph, third sentence.

Further, Project implementation would not be anticipated to impact the built environment resource ~~buried historic-era water pipeline~~, associated with the Metropolitan Water District's Upper Feeder ~~Aqueduct~~.

2.8 SECTION 4.6, ENERGY

Page 4.6-14, first paragraph, third sentence

associated air quality analysis, a conservative approach was used in the trip generation which assumes 2,641,000 million square feet of high-cube logistics and 2,773,050 million square feet of e-commerce uses, for a total of 5,675,410 million sf of combined high-cube logistics and e-commerce uses. This scenario provides for the maximum number of trips and related air quality impacts that could be associated with the Project. For instance, if the Project were to develop with up to approximately 6.6 million square feet of high-cube logistics uses only, the number of trips associated with the project would be less than if the project were to develop with the assumed 2,641,000 million square feet of high-cube logistics and 2,773,050 million square feet of e-commerce uses due to the higher intensity of trips generated with e-commerce uses.

2.9 SECTION 4.8, GREENHOUSE GAS EMISSIONS

Page 4.8-19, final paragraph, fourth sentence

This scenario provides for the maximum number of trips and related air quality impacts that could be associated with the Project. For instance, if the Project were to develop with up to approximately 6.6 million square feet of high-cube logistics uses only, the number of trips associated with the Project would be less than if the Project were to develop with the assumed 2,641,000 million square feet of high-cube logistics and 2,773,050 million square feet of e-commerce uses due to the higher intensity of trips generated with e-commerce uses.

Page 4.8-20, first paragraph, last sentence

occur in a combination that would not exceed the maximum number of vehicle trips analyzed within this EIR, which represents a conservative, worst-case scenario. For purposes of construction emissions

modeling, the maximum potential development of up to approximately 6.6 million square feet building area was modeled to reflect the maximum square footage of building construction potential.

Page 4.8-32, MM GHG-1

MM GHG-1 Project development proposals with building permit applications for tenant improvements by tenant/facility operator shall implement Screening Table Measures that demonstrate that each building achieve at least 100 points per the Screening Tables. The County shall verify that Screening Table Measures achieving the 100-point performance standard are incorporated in development plans prior to the issuance of building permit(s) and/or site plans (as applicable). The County shall verify implementation of the selected Screening Table Measures prior to the issuance of Certificate(s) of Occupancy. At the discretion of the County, measures that provide GHG reductions equivalent to GHG emissions reductions achieved via the Screening Table Measures may be implemented. Multiple development proposals may, at the discretion of the County, be allowed to collectively demonstrate achievement of at least 100 points per the Screening Tables. This mitigation measure applies only to tenant occupancy/tenant permits and not the building shell approvals and/or limited speculative tenant improvements installed for marketing purposes.

Page 4.8-32, MM GHG-2

MM GHG-2 As part of the building permit for tenant improvements by tenant/facility operator, the Project shall install solar photovoltaic (PV) panels or other source of renewable energy generation on-site, or otherwise acquire energy from the local utility that has been generated by renewable sources, that would provide at least 50 percent of the expected total building load. On-site solar PV or other clean energy systems shall be installed within two years of commencing operations. Each building shall include an electrical system and other infrastructure sufficiently sized to accommodate the PV arrays. The electrical system and infrastructure must be clearly labeled with noticeable and permanent signage. This mitigation measure applies only to tenant occupancy/tenant permits and not the building shell approvals and/or limited speculative tenant improvements installed for marketing purposes.

Page 4.8-33, MM GHG-3

MM GHG-3 Prior to the issuance of a building permit for the Shell Design by Site Developer ~~tenant improvements~~, the Site Developer ~~tenant~~ or successor in interest shall provide documentation to ~~the~~ San Bernardino County demonstrating that the Project is designed to achieve Leadership in Energy and Environmental Design (LEED) standards or meet or exceed CALGreen Tier 2 standards in effect at the time of building permit application. ~~This mitigation measure applies only to tenant permits and not the building shell approvals.~~

Page 4.8-33, MM GHG-4

MM GHG-4 The development shall divert a minimum of 75 percent of landfill waste. Prior to issuance of tenant occupancy permits, a recyclables collection and load area shall be constructed in compliance with County standards for Recyclable Collection and Loading Areas. This mitigation measure applies only to tenant occupancy/tenant permits and not the building shell approvals and/or limited speculative tenant improvements installed for marketing purposes.

Page 4.8-33, MM GHG-5

MM GHG-5 Prior to the issuance of tenant occupancy permits, the Planning Department shall confirm that tenant lease agreements include contractual language that all handheld landscaping equipment used onsite shall be 100 percent electrically powered. This mitigation measure applies only to tenant occupancy/tenant permits and not the building shell approvals and/or limited speculative tenant improvements installed for marketing purposes.

Page 4.8-38, Table 4.8-6: Project Consistency with Applicable Scoping Plan Measures, row 16, column 3

Water	Water	Title 24 Part 11 California Green Building Code Standards	**Consistent.** The Project would comply with the CalGreen standards, which requires a 20 percent reduction in indoor water use. The Project would also comply with the ~~City's~~ County's Water-Efficient Landscaping Regulations (Chapter 22, Section 63.2201 of the County's Code).
		SBX 7-7—The Water Conservation Act of 2009	
		Model Water Efficient Landscape Ordinance	

Page 4.8-39, Table 4.8-6: Project Consistency with Applicable Scoping Plan Measures, row 21, column 3

Recycling and Waste Management	Recycling and Waste	Title 24 Part 11 California Green Building Code Standards	**Consistent.** The Project would not conflict with implementation of these measures. The Project is required to achieve the recycling mandates via compliance with the CALGreen code. The ~~City~~ County has consistently achieved its state recycling mandates.
		AB 341 Statewide 75 Percent Diversion Goal	

2.10 SECTION 4.10, HYDROLOGY AND WATER QUALITY

Page 4.10-16, first paragraph, seventh sentence.

In accordance with the SWRCB Emergency Order published in May 2022, the use of potable water for landscaped areas will be prohibited. Therefore, ~~As an option to using potable water for irrigation uses,~~ new recycled water facilities would ~~may~~ be installed in the backbone streets (Streets "A," "B," "C," and "D"), shown in SCCIISP Figure 3-17: Conceptual Recycled Water Plan to provide irrigation water for the Project area.

Page 4.10-16, second paragraph, second sentence.

The Project would be developed within the western portion of the FWC service area. FWC receives groundwater from multiple groundwater sources including the Chino Basin, the Lytle Basin, and the Rialto-Colton Basin~~, and the No Man's Land Basin~~.

2.11 SECTION 4.11, LAND USE AND PLANNING

Page 4.11-5, after Speedway Commerce Center II Specific Plan section, before Section 4.11.3

Development Code Amendment

A text and map amendment to the Development Code will be made to identify the Specific Plan designation of SC/SP-COM on the official zoning map.

General Plan Amendment

A map amendment to the General Plan will be made to Special Development (SD), which is the land use category used to identify Specific Plan areas.

Page 4.11-10, Construction and Operations, added as 2nd paragraph

Neither a General Plan Amendment nor a Zone Change is required to allow or authorize the uses permitted in the Specific Plan area. Although the Project site currently contains a commercial land use designation, the underlying special development zoning allows for combination of residential, commercial, industrial, agricultural, open space and recreation uses, and similar and compatible uses. A text and map amendment to the Development Code and General Plan will be made to identify the Specific Plan designation on the official map.

Page 4.11-18, Table 4.11-4, Row 33

Goal TM-4 Complete Streets, Transit, and Active Transportation. On- and off-street improvements that provide functional alternatives to private car usage and promote active transportation in mobility focus areas.	
Policy TM-4.2: We evaluate the feasibility of installing elements of complete street improvements when planning roadway improvements in mobility focus areas, and we require new development to contribute to complete street improvements in mobility focus areas. In evaluating complete street improvements, we prioritize those in mobility focus areas that are within unincorporated environmental justice focus areas.	**Consistent:** The Project would involve improvements to surrounding roadways including Cherry Avenue. Improvements would include the creation of sidewalks to encourage pedestrian usage as well as a multi-use trail which will allow for bicycle and pedestrian travel.
Policy TM-4.5: Transit access to job centers and tourist destinations. We support and work with local transit agencies to generate public transportation systems that provide access to job centers and reduce congestion in tourist destinations in unincorporated areas.	**Consistent:** The Project has been and would continue to coordinate with Omnitrans to increase bus service into the Project site through the placement of bus stops.

2.12 SECTION 4.13, NOISE

Page 4.13-24, Subsection "Standard Conditions and Requirements:," second sentence

Standard Conditions are existing requirements and standard conditions that are based on local, state, or federal regulations or laws that are frequently required independently of CEQA review. The ~~City~~ County may impose additional conditions during the approval process, as appropriate.

Page 4.13-24, SC NOI-1

SC NOI-1 Prior to Grading Permit issuance, the Master Developer and/or Site Developer, as applicable, shall demonstrate, to the satisfaction of the County Engineer that the Project complies with the following:

- Construction contracts specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other State required noise attenuation devices.
- A sign, legible at 50 feet shall be posted at the Project construction site. The sign(s) shall be reviewed and approved by the Building Official and County ~~City~~ Planning Department, prior to posting and shall indicate the dates and duration of construction activities, as well as provide a contact name and a telephone number where residents can inquire about the construction process and register complaints.
- Prior to issuance of any Grading or Building Permit, the Contractor shall provide evidence that a construction staff member will be designated as a Noise Disturbance Coordinator and will be present on-site during construction activities. The Noise Disturbance Coordinator is responsible for responding to local complaints about construction noise. When a complaint is received, the Noise Disturbance Coordinator shall notify the County within 24-hours of the complaint, determine the cause (e.g., starting too early, bad muffler, etc.), and implement reasonable measures to resolve the complaint as deemed acceptable by the Public Works Department.
- Prior to issuance of any Grading or Building Permit, the Master Developer and/or Site Developer, as applicable, shall demonstrate to the satisfaction of the County Engineer that construction noise reduction methods shall be used where feasible. These reduction methods include shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and electric air compressors and similar power tools.
- Construction haul routes shall be designed to avoid noise-sensitive uses (e.g., residences, convalescent homes, etc.) to the extent feasible.
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.
- Construction of the Project would be limited to the daytime hours of construction permitted (between the hours of 7:00 a.m. to 7:00 p.m. and would not occur on Sundays or Federal holidays as stated in the County Building Code Standards (§ 150.003 Construction: Hours of Construction) (unless otherwise approved by the County), and nighttime lighting would only be required seasonally.

2.13 SECTION 4.16, RECREATION

Page 4.16-6, Impact 4.16-2, Subsection "Construction and Operations," second paragraph, second-to-last sentence

This growth is accounted for in SCAG's demographic forecast as well as each ~~city's~~ County's general plan EIR, which found that recreational impacts would be less than significant. Therefore, the Project would not require the construction or expansion of recreational facilities that could result in an adverse physical effect on the environment and a less than significant would occur.

Page 4.16-7, Section 4.16.6 "Cumulative Impact," first paragraph, fourth sentence

This growth is accounted for in SCAG's demographic forecast as well as each ~~city's~~ County's general plan EIR, which found that recreational impacts would be less than significant.

2.14 SECTION 4.17, TRANSPORTATION

Page 4.17-9, New paragraph 8

Policy TM-4.2 We evaluate the feasibility of installing elements of complete street improvements when planning roadway improvements in mobility focus areas, and we require new development to contribute to complete street improvements in mobility focus areas. In evaluating complete street improvements, we prioritize those in mobility focus areas that are within unincorporated environmental justice focus areas.

2.15 SECTION 4.18, TRIBAL CULTURAL RESOURCES

Page 4.18-11, Mitigation Measure, MM TCR-2

MM TCR-2 Discovery of TCRs.

A. Upon the discovery of a TCR, all construction activities in the immediate vicinity of the discovery (i.e., not less than the surrounding ~~50~~ 60 feet) shall cease. The Consulting Tribes, Gabrieleño Band of Mission Indians – Kizh Nation and Yuhaaviatam of San Manuel Nation (YSMN) ~~San Manuel Band of Mission Indians (SMBMI)~~, shall be immediately informed of the discovery. An archaeologist that meets Secretary of Interior Professional Qualifications, a Kizh monitor and/or Kizh archaeologist, and a~~n~~ YSMN ~~SMBMI~~ CRM staff member will promptly report to the location of the discovery to evaluate the TCR and advise the project manager regarding the matter, protocol, and any mitigating requirements. No project construction activities shall resume in the surrounding 60 ~~50~~ feet of the discovered TCR unless and until the Consulting Tribes and archaeologist have completed their assessment/evaluation/treatment of the discovered TCR and surveyed the surrounding area. Treatment protocols outlined in TCR-3 shall be followed for all discoveries that do not include human remains.

   Additionally, the Yuhaaviatam of San Manuel Nation Cultural Resources Department (YSMN) shall be contacted, as detailed within TCR-1, regarding any pre-contact and/or historic-era cultural resources discovered during project implementation and be provided information regarding the nature of the find, so as to provide Tribal input with regards to significance and

treatment. Should the find be deemed significant, as defined by CEQA (as amended, 2015), a cultural resource Monitoring and Treatment Plan shall be created by the archaeologist, in coordination with YSMN, and all subsequent finds shall be subject to this Plan. This Plan shall allow for a monitor to be present that represents YSMN for the remainder of the project, should YSMN elect to place a monitor on-site.

Any and all archaeological/cultural documents created as a part of the project (isolate records, site records, survey reports, testing reports, etc.) shall be supplied to the applicant and Lead Agency for dissemination to YSMN. The Lead Agency and/or applicant shall, in good faith, consult with YSMN throughout the life of the project.

Page 4.18-14, third paragraph, second sentence

All future development with the potential to impact tribal cultural resources would be subject to compliance with the existing federal, state, and local regulatory framework concerning the protection of tribal cultural resources. Furthermore, each future project considered for approval by the ~~City~~ County would be required to include mitigation measures to protect resources if they are uncovered during grading activities.

2.16 SECTION 4.19, UTILITIES AND SERVICE SYSTEMS

Page 4.19-2, Table 4.19-1.

Table 4.19-1: Potable Water Demand by Land Use (AFY)

Land Use	2015 Volume	% of 2015 Total	2020 Total	% of 2020 Total	Numerical Change 2015 to 2020	% change 2015 to 2020
Residential	21,192	62%	22,459	57%	1,267	6%
Commercial/Institutional	8,175	24%	5,509	14%	-2,666	-33%
Industrial	1,198	3%	3,256	8%	2,058	172%
Other (and landscaping)	1,124	3%	4,984	13%	3,860	343%
Losses	2,695	8%	3,187	8%	492	18%
Total	**34,384**	**100%**	**39,395**	**100%**	**5,011**	**15%**

Source: San Gabriel Water Company Fontana Water Company Division. (2021). *2020 Urban Water Management Plan.* Pages 4-2 and 4-3. Retrieved from: https://www.fontanawater.com/wp-content/uploads/2021/10/FWC-2020-UWMP-June-2021-Final.pdf (Accessed November 1, 2021).

Page 4.19-2, Table 4.19-2.

Table 4.19-2: Water Demand Projections by Land Use (AFY)

Land Use	2025	2030	2035	2040	2045	Number Change 2020 to 2045	% Change 2020 to 2045
Residential	27,661	28,167	28,946	29,738	30,359	7,900	35%
Commercial/Institutional	6,785	6,908	7,099	7,294	7,446	1,937	35%
Industrial	4,010	4,084	4,197	4,312	4,402	1,146	35%
Other (and landscaping)	6,138	6,250	6,423	6,598	6,736	1,752	35%
Total	**44,593**	**45,409**	**46,665**	**47,942**	**48,943**	**9,548**	**24%**

Source: San Gabriel Water Company Fontana Water Company Division. 2021. *2020 Urban Water Management Plan.* Page 4-4. https://www.fontanawater.com/wp-content/uploads/2021/10/FWC-2020-UWMP-June-2021-Final.pdf (accessed November 2021).

Page 4.19-2, Table 4.19-3

Table 4.19-3: Normal Year Water Supplies (AFY)

Source	2020	2025	2030	2035	2040	2045	Number Change 2020 to 2045	% Change 2020 to 2045
Groundwater								
Chino Basin	11,859	9,278	9,983	11,128	12,293	13,183	1,324	10%
Rialto-Colton Basin No Man's Land Basin	5,171	5,865	5,976	6,087	6,199	6,310	1,139	18%
Lytle Basin	6,423	6,390	6,390	6,390	6,390	6,390	-33	-1%
Groundwater Subtotal	*23,453*	*21,533*	*22,349*	*23,605*	*24,882*	*25,883*	*2,430*	*10%*
Surface Water								
Lytle Creek	5,966	4,860	4,860	4,860	4,860	4,860	-1,106	-19%
Surface Water Subtotal	*5,966*	*4,860*	*4,860*	*4,860*	*4,860*	*4,860*	*-1,106*	*-19%*
Imported Water								
IEUA	10,027	15,000	15,000	15,000	15,000	15,000	4,973	33%
SBVMWD	0	3,200	3,200	3,200	3,200	3,200	3,200	100%
Imported Water Subtotal	*10,027*	*18,200*	*18,200*	*18,200*	*18,200*	*18,200*	*8,173*	*82%*
Potable Water Subtotal	***39,446***	***44,593***	***45,409***	***46,665***	***47,942***	***48,943***	***9,497***	***24%***
Recycled Water	387	1,000	1,500	2,000	2,500	3,000	2,613	675%
Supply Total	**39,833**	**~~40,446~~ 45,593**	**46,909**	**48,665**	**50,442**	**51,943**	**12,110**	**30%**

Source: San Gabriel Water Company Fontana Water Company Division. 2021. *2020 Urban Water Management Plan.* Page 6-2. https://www.fontanawater.com/wp-content/uploads/2021/10/FWC-2020-UWMP-June-2021-Final.pdf (accessed November 2021).
Notes:
IEUA = Inland Empire Utilities Agency
SBVMWD = San Bernardino Valley Municipal Water District

Page 4.19-4, Subsection "Imported Water," final sentence of subsection

Due to FWC's recent agreement with SBVMWD ~~Although FWC has no established allocation with the SBVWMD~~, FWC anticipates the importation of approximately 3,650 ~~3,200~~ AFY of imported water from SBVMWD by 2025. Additional water may be purchased from SBVMWD, if available, at a higher rate.

Page 4.19-4, Subsection "Wastewater and Recycled Water," first paragraph of subsection, new third paragraph

IEUA provides recycling and wastewater services for the cities of Chino, Chino Hills, Fontana, Montclair, Ontario, Upland, and Rancho Cucamonga. FWC receives recycled water resources from IEUA which operates four Regional Water Recycling Plants (RPs). However, FWC is the service provider for the direct use of recycled water for irrigation and any applicable industrial/commercial uses. The IEUA RP-4 is the wastewater treatment plant for the City of Fontana and its sphere of influence (SOI), which includes the Project site, located in the City of Rancho Cucamonga.

Page 4.19-9, new final paragraphs (three)

Under SB 610, water assessments must be furnished to local governments for inclusion in any environmental documentation for certain projects (as defined in CWC § 10912 [a]) subject to the State CEQA Guidelines.

California Public Utilities General Order 103

General Order 103 was enacted by CPUC with the purpose of establishing minimum design and development standards for water and wastewater utilities within the jurisdiction of CPUC. These standards include guidance on materials and infrastructure sizing and metering. Additionally, General Order 103 outlines policies which govern the utility's methods for public outreach and provides customer service and reporting standards. The general order is meant to provide consistency between utility services within the CPUC jurisdiction.

California Water Code, Section 64554: New and Existing Source Capacity

Section 64554(a) states that "At all times, a public water system's water source(s) shall have the capacity to meet the system's maximum day demand (MDD). MDD shall be determined pursuant to subsection (b)", which states that "a system shall estimate MDD and PHD for the water system as a whole (total source capacity and number of service connections) and for each pressure zone within the system (total water supply available from the water sources and interzonal transfers directly supplying the zone and number of service connections within the zone)." Subsequent subsections discuss well and groundwater capacity and reporting requirements.

California Water Code, Section 64572: Water Main Separation

Section 64572 describes the required separation for new water mains and new supply lines conveying such substances as untreated sewage; primary and secondary treated sewage; disinfected secondary recycled water; hazardous fluids; disinfected tertiary water; and storm drainage. Exemptions are also discussed as follows, "With State Board approval, newly installed water mains may be exempt from the separation distances in this section, except subsection (f), if the newly installed main is:

(1) less than 1320 linear feet,

(2) replacing an existing main, installed in the same location, and has a diameter no greater than six inches more than the diameter of the main it is replacing, and

(3) installed in a manner that minimizes the potential for contamination, including, but not limited to:

(A) sleeving the newly installed main, or

(B) utilizing upgraded piping material

Page 4.19-9, new discussion to following Assembly Bill 1668 and Senate Bill 606, and precede Assembly Bill 341

Additional Drought Actions and Regulations

California is once again in a period of extended severe drought. In response, Governor Newsom proclaimed a State of Emergency asking all Californians to reduce their water use by up to 20 percent. The Governor's action was in response to unprecedented drought conditions that have brought below average

snow and rainfall, resulting in record low water levels in the state's water reservoirs and historically low snowpack levels recorded in the Sierra Nevada mountain range.

In response to the governor's call to action, on April 26, 2022, the Board of Directors of the Metropolitan Water District of Southern California ("MWD"), Southern California's water wholesaler, declared a Water Shortage Emergency Condition for areas that depend on the State Water Project. MWD's Board voted unanimously to adopt a framework for an Emergency Water Conservation Program which requires local water suppliers, like FWC, to adopt one of two approaches to reduce water use; either (1) limit outdoor watering once per week, or (2) comply with monthly water allocation limits.

In addition to MWD's declaration and in response to the governor's call to action, on May 24, 2022, the State Water Resources Control Board ("SWRCB") adopted an Emergency Regulation to remain in effect for one year unless it is determined that drought conditions no longer persist or unless the regulation is renewed by the SWRCB. This regulation calls on each local water supplier to implement a Shortage Level 2 (ten to twenty percent) from its Water Supply Contingency Plan by June 10, 2022. The Regulation also bans use of potable water to irrigate turf on commercial, industrial, or institutional properties that are not regularly used for human recreational purposes or for civic or community events.

Page 4.13-13, Subsection "Water," 2nd paragraph

Potable and recycled water (if available) would be conveyed throughout the Project site via new water lines beneath Streets "A," "B," "C," and "D." The new infrastructure would include fire flow, domestic, and irrigation. The Project would also utilize existing water pipelines which run across Street A and along Cherry Avenue.

Page 4.19-15, Subsection "Water" first paragraph of subsection, fifth sentence

The WSA created for the Project concluded that the Project would generate a potable water demand of 596 AFY and a recycled water demand of 570 AFY, which would be accommodated by FWC based on its existing water supply projections with~~out~~ the construction of new and ~~or~~ expanded facilities. The Project would require construction of new and expanded facilities, including new water production, storage, and distribution infrastructure facilities.

Page 4.19-15, Subsection "Construction and Operations" second paragraph of subsection, first two sentences

Water use on the Project site ~~may~~ would involve the use of existing recycled water infrastructure, further reducing potable water demand. This ~~could~~ would be accomplished through the use of existing recycled waterlines along Napa Street and the installation of additional recycled water facilities within proposed Streets "A," "B," "C," and "D."

Page 4.19-16, second paragraph, last sentence

Since these water demands have been incorporated and accounted for, ~~and do not directly necessitate the further development of water infrastructure,~~ a less than significant impact would occur.

Page 4.19-18, References

Stetson Engineers, Inc. 2022. *Supplement to the Water Supply Assessment, Speedway Commerce Center II Project*.

Civiltec Engineering, Inc. 2022. *Hydraulic Assessment of Speedway Commerce Center II.*

2.17 SECTION 4.20, WILDFIRE

Page 4.20-8, new fourth paragraph

California Public Utilities General Order 103

General Order 103 was enacted by CPUC with the purpose of establishing minimum design and development standards for water and wastewater utilities within the jurisdiction of CPUC. These standards include guidance on materials and infrastructure sizing and metering. Additionally, General Order 103 outlines policies which govern the utility's methods for public outreach and provides customer service and reporting standards. The general order is meant to provide consistency between utility services within the CPUC jurisdiction.

Page 4.20-15, Section 4.20.6: "Cumulative Impact," second paragraph, last sentence

Future projects would be required to meet minimum standards for fire safety and comply with the Fire Code and ~~City~~ County regulations.

2.18 SECTION 5.0, OTHER CEQA CONSIDERATIONS

Page 5-4, Subsection "Population and Employment," second sentence

Population and employment information is provided in ***Section 4.14: Population and Housing***. The Project is anticipated to generate approximately 3,732 ~~3,127~~ employees as a result of implementation.

2.19 SECTION 6.0, ALTERNATIVES

Page 6-4, Objective 10

Objective 10: Develop and operate a large format high-cube logistics and e-commerce center that limits truck traffic disruption to residential areas within Southwestern San Bernardino County and neighboring jurisdictions.

Page 6-20, Reduced Footprint Alternative, Utilities and Service Systems

Project impacts to utilities and service systems would be less than significant in consideration of compliance with existing laws, ordinances, regulations, and standards. Both this Alternative and the Project would result in an increased demand for utilities. Demand for services including natural gas, electricity, water, wastewater treatment, and solid waste disposal would be less than that of the Project. New water production, storage, and distribution infrastructure facilities would be required, and existing utilities would be extended and upgraded as needed during construction of the Project or this Alternative to serve the anticipated demands and to accommodate operation of each. ~~While~~ The Project and this Alternative would increase the overall demand for services, ~~adequate~~ requiring increased capacity to

serve this Alternative and the Project ~~is anticipated~~. This Alternative would tie into existing and proposed utility lines within the existing roadways and within the existing already disturbed rights-of-way adjacent to the site, similar to the Project. No additional impacts to listed resources, including electricity, natural gas, sewer, water, and telecommunications infrastructure, would occur. Impacts under this Alternative would be reduced as compared to the Project, but would remain less than significant under both this Alternative and the Project.

Page 6-24, first paragraph, fifth sentence

The County does not contain areas with land use designations for either Forest Land or Timberland. The Project site is within SD-COM zoned land within the ~~City~~ County and there are no agricultural, forest land, or timberland zoning designated resources in this unincorporated portion of the County

Page 6-29, Commercial Project Alternative, Utilities and Service Systems

Both this Alternative and the Project would result in an increased demand for utilities. This Alternative's demands for services including natural gas, electricity, water, wastewater treatment, and solid waste disposal are anticipated to be greater than that of the Project. New water production, storage, and distribution infrastructure facilities would be required, and existing utilities would be extended and upgraded as needed during construction of the Project and this Alternative to serve the anticipated demands and to accommodate operation of each. ~~While~~ The Project and this Alternative would increase the overall demand for services, ~~adequate~~ requiring increased capacity to serve this Alternative and the Project ~~is anticipated~~. Project impacts to utilities and service systems would be less than significant in compliance with existing laws, ordinances, regulations, and standards. No additional unmitigated impacts to utilities and service systems including, electricity, natural gas, sewer, water, and telecommunications infrastructure, are anticipated to occur. It is anticipated that the Alternative would tie into existing and proposed utility lines within close proximity to the Project site.

Therefore, this Alternative would result in increased impacts to utilities and service systems as compared to the Project.

2.20 SECTION 8.0, EIR CONSULTATION AND PREPARATION

Page 8-1, last paragraph, first sentence

As noted above, the ~~City~~ County engaged in public and agency consultation through the NOP and public scoping process.

4.0
Appendices

Section 4.0 Final EIR Appendices

4.1 Technical Memorandum for Supplement to the Water Supply Assessment

The Technical Memorandum is a Supplement to the Water Supply Assessment (WSA) prepared in December 2021 by Stetson Engineers Inc. (Stetson) for San Gabriel Valley Water Company (San Gabriel) regarding the proposed Speedway Commerce Center II Project (Project).

4.2 Hydraulic Assessment of Speedway Commerce Center II Project

CIVILTEC engineering, inc. (Civiltec) prepared a hydraulic assessment of the proposed "Speedway Commerce Center II" development that is located within the service boundary of the San Gabriel Valley water Company, Fontana Water Company Division (FWC) and in the County of San Bernardino, California.

4.3 Speedway Commerce Center II Specific Plan Traffic Study

The Level of Service Traffic Study and Appendix were updated to address comments from the County and received from circulation of the Draft EIR. The updates were generally editorial with minor updates to the analysis however the conclusions and findings in the study did not change from the version included in the Draft EIR appendices.

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Appendix 4.1 Technical Memorandum for Supplement to the Water Supply Assessment

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MEMORANDUM

TO: **Mr. Bryant Marroquin**
Fontana Water Company

FROM: **Stetson Engineers Inc.**

SUBJECT: **Supplement to the Water Supply Assessment**
Speedway Commerce Center II Project

JOB NO.: **2048-18.1**

DATE: **June 17, 2022**

Introduction

This Technical Memorandum is a Supplement to the Water Supply Assessment (WSA) prepared in December 2021 by Stetson Engineers Inc. (Stetson) for San Gabriel Valley Water Company (San Gabriel) regarding the proposed Speedway Commerce Center II Project (Project). The proposed Project is located in the western portion of Fontana Water Company's (FWC) certificated service area as authorized by the California Public Utilities Commission (CPUC). The submitted WSA included a discussion of additional water infrastructure required to meet the industrial, commercial, and irrigation water demands for the proposed Project. The submitted WSA recommended additional water storage infrastructure for the proposed Project. The purpose of this Technical Memorandum is to provide additional information and analysis regarding the recommended additional water storage infrastructure requirements of the proposed Project.

Proposed Project Description

As described in the December 2021 WSA, the proposed Project is located east of Etiwanda Avenue, south of Whittram Avenue, north of San Bernardino Avenue, and west of Cherry Avenue. The proposed Project is located on a portion of the existing Auto Club Speedway site within an unincorporated area of San Bernardino County. It is anticipated the existing Auto Club Speedway race track will be reconfigured into a "short track" (i.e. the existing race track will be reduced in size). As a result, portions of the proposed Project will replace the remaining areas of the existing race track. The proposed Project will include seven buildings with a total of approximately 6,480,000 square feet (sf) of warehouse floor space and 120,000 sf of office floor space, for a total of 6,600,000 sf. The Project will also include approximately 4,497,483 sf (103.25 acres) of surrounding parking areas (pavement) and approximately 1,250,003 sf (28.70 acres) of landscaping on a Project site of approximately 522.22 acres. However, the proposed Project is separate from the Auto Club Speedway and will not include the reduced race track area (i.e. proposed short track).

Proposed Project Water Demands

The December 2021 WSA previously estimated the total water demand for the proposed Project, which includes commercial and industrial water demands (594 acre-feet per year, or AFY) and landscape irrigation (124 AFY), at approximately 718 AFY. The commercial and industrial water demands were previously based on a water use rate of 3,500 gallons per day (gpd) per acre derived from average recorded water use data for large industrial warehouse buildings within FWC's service area. However, pursuant to further review of the water demand for buildings of similar size and use in the vicinity, the water use rate was adjusted to 2,843 gpd per acre for the proposed Project. As a result, the updated commercial and industrial water demands are approximately 482 AFY, and the total updated water demand is approximately 606 AFY (including 124 AFY of landscape irrigation demand). However, in order for FWC to provide 606 AFY to the Project site,

FWC will need to produce water supplies which account for water losses within its water distribution system. Accounting for average system water losses (approximately 7.8 percent), FWC would need to produce approximately 657 AFY of water in order to supply 606 AFY to the Project site.

In order to determine the additional water storage infrastructure requirements of the proposed Project (discussed in the following sections), it is necessary to determine the Maximum Day Demand (MDD) and Peak Hour Demand (PHD) to account for fluctuations in water demands on a seasonal or hourly basis. The MDD and PHD are determined based on "peaking factors" relative to the Average Day Demand (ADD). Pursuant to historical water production records, FWC's "*2021 Water System Master Plan*" determined that a peaking factor of 1.7 (multiplied by the ADD) should be used to calculate the MDD, and that a peaking factor 1.6 (multiplied by the MDD) should be used to calculate the PHD. These peaking factors are consistent with the California Code of Regulations (§ 64554. New and Existing Source Capacity[1]) based on the following requirements: "*If daily water usage data are available, identify the day with the highest usage during the past ten years to obtain MDD; determine the average hourly flow during MDD and multiply by a peaking factor of at least 1.5 to obtain the PHD.*"

Based on an annual water requirement of 657 AFY for the proposed Project, the ADD is approximately 0.59 million gallons per day (MGD). Pursuant to the peaking factors identified above, the MDD is approximately 1.0 MGD and the PHD is approximately 0.07 million gallons per hour (MGH).

[1] https://govt.westlaw.com/calregs/Document/I09869AC5E2E24845946DA6392BB8ED5F?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

Reservoir Storage Capacity Analysis

The total reservoir storage required for the proposed Project is based on the following three (3) components:

1) Operational Storage;
2) Fire Storage; and
3) Emergency Storage.

These three required storage components are discussed in more detail below, and are based on design criteria from the following documents:

- California Code of Regulations (§ 64554)
- CPUC's General Order 103-A (September 2009)
- FWC's "*2021 Water System Master Plan*".
- American Water Works Association "M32 Computer Modeling of Water Distribution Systems" (2017)

Operational Storage

Operation storage (or equalization storage) is the amount of water required to meet demands in excess of the production and delivery capabilities of a water system. It is necessary to coordinate the production rates of water sources and the available storage capacity in a water system to provide a continuous flow of treated water supply. Water systems are often designed to have the capacity to supply the average flow on the day of maximum demand (i.e. MDD). The peak hour demand will be met by both the designed water production capacity (MDD) and outflow from the operational storage. This operational storage is continuously replenished throughout the day to maintain water quality.

Pursuant to the California Code of Regulations (§ 64554), large water systems (including FWC) are required to meet four hours of PHD with source capacity and storage capacity during the MDD. In addition, pursuant to the CPUC's General Order 103-A, dated September 2009, "*If a system provides potable water for fire protection service, new portions of the system shall have supply and storage facilities that are designed to meet MDD plus the required fire flow at the time of design*". As a result, an operational storage requirement equal to 100 percent of the MDD (or 1.0 MG) has been estimated for the proposed Project. This operation storage requirement is also consistent with the criteria identified in FWC's "*2021 Water System Master Plan*".

Fire Flow Storage

Fire storage is the volume of storage water reserved for firefighting. The fire storage volume is determined by multiplying the required fire flow rate by the required time duration. It is assumed that no more than one fire event would occur in any pressure zone at one time. The 2020 San Bernardino County Fire Code adopts the 2019 California Fire Code, which sets fire flow requirements based upon the building material (combustible or non-combustible), building size, and occupancy to determine the required fire flow and duration. Pursuant to the 2019 California Fire Code, the minimum fire flow requirements can range from 1,500 gallons per minute (gpm) (with 2 hours duration), for building sizes less than 3,600 sf, to 8,000 gpm (with 4 hours duration), for building sizes greater than 85,101 sf. Based on FWC's past experience, the maximum fire flow requirement for buildings similar in the size to the proposed Project is 4,000 gpm over a 4 hour duration[2]. This fire flow rate is equivalent with a reservoir storage requirement of 0.96 MG and is also consistent with criteria identified in FWC's "*2021 Water System Master Plan*".

[2] According to the largest building size in the proposed Project, the maximum fire flow requirement would be 6,000 gpm over a 4 hour duration based on the 2019 California Fire Code. The estimated fire flow storage here would be conservative on the low side.

Emergency Storage

Emergency storage provides water during emergencies. Emergencies cover a wide range of rare but probable events, such as pipeline failures, equipment failures, power outages, pumping system failures, water treatment plant failures, raw water contamination events, and natural disasters. The volume of water that is needed during an emergency is usually based on the estimated amount of time expected to elapse before the disruptions caused by the emergency are corrected. The occurrence and magnitude of emergencies are difficult to predict.

Pursuant to the American Water Works Association (AWWA) "M32 Computer Modeling of Water Distribution Systems", dated 2017, "*The amount of emergency storage is based on an assessment of the risk of failures and the desired degree of system dependability. As an example, a system operator may desire a full day of emergency storage in order to provide enough storage in the event of a system-wide power failure. An assessment must be made as to the type and nature of the emergency condition, including the frequency, intensity, and duration. In general, a vulnerability analysis, as described in AWWA Manual M19 {2001), should be used to determine emergency storage requirements. Some state or provincial regulations indicate the minimum emergency storage required for the community based on the average or maximum daily demands. In addition, water quality should be a part of the equation when determining the amount of emergency storage to provide. The utility may relax its minimum pressure requirements under emergency conditions as long as negative pressures are avoided.*

Although the California Code of Regulations does not have a defined requirement for emergency storage, the emergency storage criteria used in FWC's "*2021 Water System Master Plan*" is 50 percent of the MDD (or 0.50 MG). FWC's facilities depend on electrical utility services to operate. Disruption of electrical service may be caused by grid/distribution failures, natural hazards, or intentional power disruptions. Southern California Edison (SCE) provides electrical service to all FWC facilities. Due to the recent wildfire history in California, the State's investor-owned electric utilities, including SCE,

have implemented intentional de-energizations, or public safety power shutoffs (PSPS) during high-risk wildfire conditions. For example, the regional-wide power shutoff in October 2019 lasted about 3 to 5 days. FWC has dedicated backup generators at many critical facilities. However, pursuant to an analysis conducted in FWC's "*2021 Water System Master Plan*", there could be a shortage of about 50 percent of the MDD over a 5 day emergency period. The 0.50 MG volume of emergency storage ensures that FWC will have water available to distribute to the proposed Project during such an extended period.

Required Reservoir Storage Capacity

As discussed above, the total reservoir storage required for the proposed Project is based on Operational Storage (1.0 MG), Fire Storage (0.96 MG); and Emergency Storage (0.50 MG) components and totals approximately 2.5 MG. The tabulation below summarizes the total reservoir storage.

Projected Water Demand	657	AFY
Average Day Demand (ADD)	0.59	MGD
Maximum Day Demand (MDD, or 1.7 x ADD)	1.00	MGD
Peak Hour Demand (PHD, or 1.6 x MDD)	0.07	MGH
Reservoir Storage Components		
(1) Operation Storage (100 Percent of the MDD)	1.00	MG
(2) Fire Flow Storage (4,000 gpm over 4 hours)	0.96	MG
(3) Emergency Storage (50 percent of the MDD)	0.50	MG
Total Required Storage	**2.46**	**MG**

Appendix 4.2 Hydraulic Assessment of Speedway Commerce Center II Project

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CIVILTEC
engineering inc.

Civil, Water, Wastewater, Drainage and Transportation Engineering
Construction Management ● Surveying
California ● Arizona

June 21, 2022

San Gabriel Valley Water Company
Engineering Department
15966 Arrow Route
Fontana, CA 92335

Attention: Karolina Guzman | Design Manager

Subject: Hydraulic Assessment of Speedway Commerce Center II FINAL

Dear Ms. Guzman:

CIVILTEC engineering, inc. (Civiltec) has prepared a hydraulic assessment of the proposed "Speedway Commerce Center II" development that is located within the service boundary of the San Gabriel Valley water Company, Fontana Water Company Division (FWC) and in the County of San Bernardino, California. This development will include seven new warehouse buildings covering 6,600,000 square feet (sf) (152± acres (ac)), demolition of the existing race-track, reconfiguration of the existing race-track into a NASCAR short track, and construction of several parking lots of approximately 4,497,483 sf (103.2± ac). Domestic demands for the buildings and short track, irrigation demands (onsite and offsite), and fire demands have been developed.

The development is located east of Etiwanda Avenue, south of Whittram Avenue, north of San Bernardino Avenue, and west of Cherry Avenue. The development is expected to tie into the FWC water distribution system at three water tie-ins as follows:

- One tie-in will be on the existing 16-inch pipeline on the west side Cherry Avenue near Rancho Vista Drive
- The second tie-in will be on the existing 16-inch along Entry Road, west of Cherry Avenue.
- The third tie-in will be west of the development, on the existing 16-inch along Napa Street, just west of Perimeter Road.

This Hydraulic Assessment includes the project description, an estimate of the incremental increase in demand associated with the project, hydraulic analysis of the impact of the increase in demand, preliminary design of new infrastructure that meets the design criteria, and any recommendations for improvements to meet the proposed demands.

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Project Description

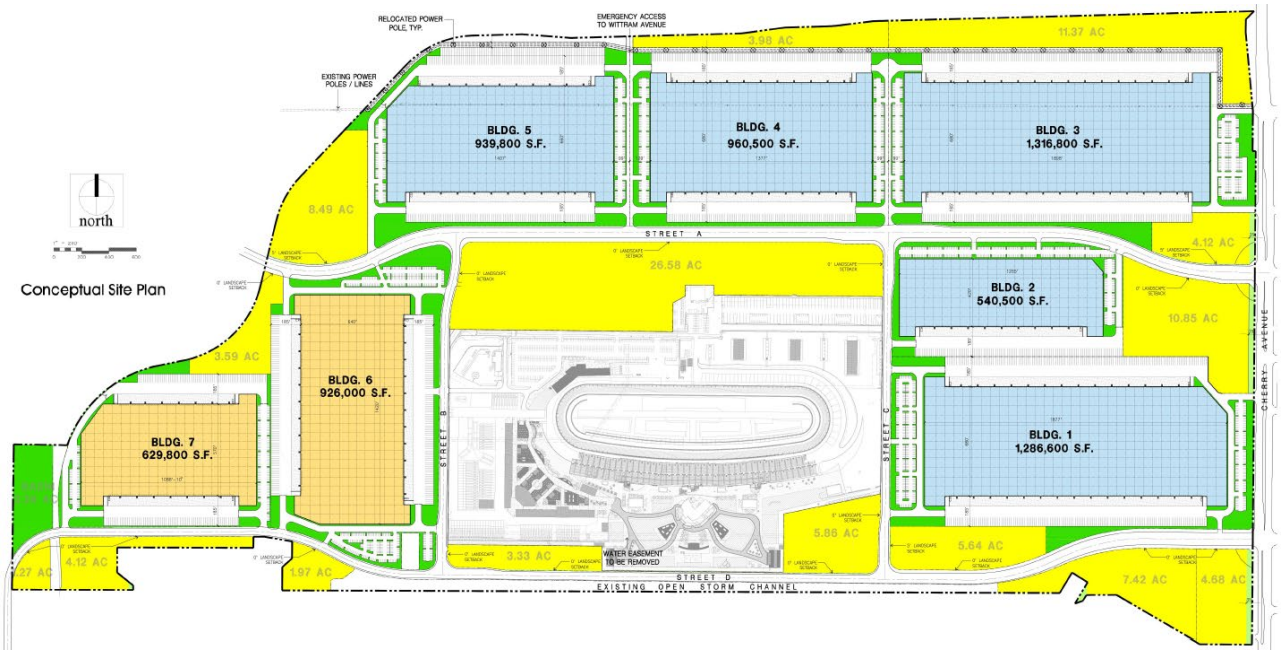
The Speedway Commerce Center II development covers approximately 780.6 ac in San Bernardino County. The development is located east of Etiwanda Avenue, south of Whittram Avenue, north of San Bernardino Avenue, and west of Cherry Avenue. The proposed development is located on a portion of the existing Auto Club Speedway. The existing Auto Club Speedway racetrack is planned to be reconfigured into a short track. Due to the reduced size of the track, portions of this development are planned to be constructed on space of the existing racetrack.

The development includes seven buildings that cover approximately 6,480,000 sf of warehouse floor space and 120,000 sf of office floor space for a total of 6,600,000 sf (152± ac). New parking lots will cover approximately 4,497,483 sf (103.2± ac) and the new landscaping of 1,250,003 sf (28.7± ac) will cover the project site of approximately 522.22 ac as shown in **Figure 1**.

Average Day Demands (ADD) and Fire Flow requirements for this project have been obtained from an exhibit from the Final Water Supply Assessment (WSA) for the Speedway Commerce Center II Project prepared by Stetson Engineers dated December 2021. The exhibit of the conceptual site plan can be found in **Appendix A** and the WSA prepared by Stetson Engineers can be found in **Appendix B**.

Based on the location of the proposed development, FWC will serve the proposed development from the Juniper Pressure Zone that has a hydraulic grade line (HGL) that ranges from 1,274 feet to 1,045 feet.

Figure 1 – Speedway Commerce Center II Development



Design Criteria

Design criteria is used to evaluate the hydraulic capacity of a distribution system. Evaluation consists of a quantitative analysis comparing field measurements or engineering calculations with a series of benchmarks that reflect customer expectations, the regulatory environment, sustainable design, redundancy/reliability, functionality, emergency preparedness, efficiency, and economics.

The design criteria discussed in this section were established from a combination of ***Civiltec's*** professional experience and the FWC 2021 Water System Master Plan (WMP) (**Appendix C**). The design criteria follow regulations stated as part of the 2009 California Public Utilities Commission (CPUC) General Order 103-A **(Appendix E)** and the 2019 California Code of Regulations Title 22 **(Appendix F)**

Water Pressure and Service Conditions

System Pressure

Goal for normal system pressure range: 40 psi to 125 psi

A set range of pressures is established within a domestic water system in order to provide consistent service to customers. The minimum pressure during Maximum Day Demand (MDD) is 40 psi.

Individual pressure regulators should be installed on any services that could have pressure greater than 80 psi at the meter as recommended in Section 1007 (b) of the Uniform Plumbing Code. It is typically the customer's responsibility to install and maintain these pressure regulators at their own expense.

Daily pressure fluctuation: 20 psi maximum

In order to provide consistent service delivery, a stable water pressure is desirable at service connections. Minimizing pressure fluctuation results in more consistent delivery.

Goal for minimum pressure during fire: 20 psi

When the system is providing the required fire flow rate, residual pressures should not fall below 20 psi. This threshold provides a buffer against the possibility of negative pressure in the distribution system which could cause in contamination ingress. This requirement is set by the San Bernardino County Fire Code (2020) which adopts the California Fire Code (2019).

Goal for maximum pressure during minimum hour demand with respect to facilities: 150 psi or pipeline pressure class, whichever is less.

Maximum pressures typically occur (1) at production and transmission facilities such as wells, booster pumping stations and control valves or (2) at low elevations. Under no circumstances should the pressure in the system exceed the pressure class rating of the pipe. During minimum hour demands when booster pumps are operating to refill reservoirs, pressures should not exceed 150 psi, or the pressure rating of the pipe, whichever is lower.

Supply

As noted in Appendix E in the FWC 2021 WMP, "pursuant to the 2019 CCR Title 22 and the 2009 CPUC General Order 103-A, the following criteria are recommended for sizing water supply criteria:"

In system with storage, provide firm supply capacity (largest well or treatment component out of service) equal to MDD; meet Peak Hour Demand (PHD) and fire flow requirement from a combination of supply sources and storage.

In a system that has storage, the supply portfolio must be capable of meeting MDD when the largest well or treatment component is out of service. The system must also be able to meet both PHD and the fire flow requirement using a combination of various supply and storage sources. This level of redundancy will allow FWC to maintain normal deliveries regardless of a temporary loss of a source of supply due to an unforeseen emergency or any maintenance.

In system without storage, provide firm supply capacity equal to PHD or MDD+FF, whichever is greater.

In the case of a system without storage, supply capacity must be able to be provided equal to the greater of PHD or MDD+FF. Since there is no storage in this scenario, the system must be able to supply to the greatest demand that could occur in order to allow FWC to maintain deliveries during the highest calculated demand scenario.

Storage Capacity

Sum of Operational (Equalization), Fire and Emergency Storage in each pressure zone

- Operational (Equalization) Storage, as noted under 2019 CCR Title 22, Section 64554:
  - In pressure zones with continuous water supply: 4 hours of PHD
  - In pressure zones without continuous water supply: 100% MDD
- Fire Storage:
  - For existing systems, fire flow demand for the most severe fire recommended in the pressure zone multiplied by the recommended duration.
  - For new or expanded systems, fire flow demand for the most severe fire recommended for the individual structure required in the system multiplied by the required duration, as noted under General Order 103-A, Section II-B-3b
- Emergency Storage, as noted under 2019 CCR Title 22, Section 64554:
  - 50% MDD (based on the assessment of public safety power shutoffs (PSPS) during high-risk wildfire conditions and the water system's dedicated backup generators)

The principal functions of storage are:

- To equalize fluctuations in hourly demand so that extreme and rapid variations in demand are not imposed on the source of supply;
- To provide water for firefighting; and
- To meet demand during an emergency such as a disruption of the major source of supply, a power outage, a pipe break, or any other unforeseen emergencies or maintenance issues.

Operational (Equalization) Storage: Operational storage is the volume needed to equalize the difference between supply and demand over the course of a day. It allows for system functionality. The maximum operational storage required is dependent on whether the pressure zone has a continuous water supply. The required value of operational storage in pressure zones with a continuous water supply is 4 hours of PHD. The requirement for pressure zones without continuous water supply is 100% of MDD.

Fire Storage: Fire storage is the volume representing one MDD event in terms of fire flow and duration. For existing system evaluation, the fire storage must be the fire demand for the most severe fire recommended in the pressure zone multiplied by the recommended duration. For new or expanded systems, the fire storage must be the fire demand for the most severe fire recommended for the individual structure.

Emergency Storage: Emergency storage is the volume that is required to meet demands during emergencies and times of planned and unplanned equipment outages (pump breakdown, power failure, pipeline rupture etc.). This storage will provide FWC the capability to meet demands while having time to solve any issues and return to normal operation. Emergency storage is 50% of MDD based on an assessment of public safety power shutoffs (PSPS during high-risk wildfire conditions and the water system's dedicated backup generators).

Pumping Capacity

In pressure zones with gravity storage, provide firm pumping capacity (largest pump out of service) equal to MDD.

In pressure zones with gravity storage, system pressure fluctuates relative to the water surface in the reservoir and establishes the hydraulic gradient of the zone. Booster pumping stations should be sized to supply MDD with the largest pump out of service in this case. If there are sources of supply other than booster stations in the zone, then the combination of the capacity of the sources of supply and the capacity of booster stations should provide these criteria instead. This will provide redundancy in the case of the largest pump out of service and allow the system to continue operation.

In pressure zones without gravity storage, provide firm pumping capacity equal to MDD+FF or PHD, whichever is greater.

In pressure zones without gravity storage, the system is pressurized by booster pumps. There are various means that can be used to establish the hydraulic gradient in this case: (1) a balance is established between pumps (which add pressure) and relief valves (which reduce pressure), (2) pumps may be equipped to regulate the amount of energy they impart to the water with variable frequency drives (VFDs), (3) pressure is established in a hydropneumatic tank by an air compressor. Since there is no elevated storage to equalize supply and demand, the pressure zone must be supplied by the booster pumps and other supply sources.

In this case, booster pumping stations must provide firm pumping capacity equal to MDD+FF or PHD, whichever is greater. If there are sources of supply other than booster stations in the zone, then the combination of the capacity of the sources of supply and the capacity of booster stations should provide these criteria instead. This will provide redundancy in the case of the largest pump out of service and allow the system to continue operation.

Pipeline Sizes

Minimum size for pipeline replacement and new mains is 6-inches.

Transmission Mains

Maximum pipe velocity under normal operating conditions: 6 feet per second (fps)

Maximum energy loss under normal operating conditions: 3 feet of head loss per 1000 feet

Transmission mains carry large volumes of water between facilities within a water system. Energy losses can be managed by controlling pipe velocity. Over-sizing transmission mains to reduce velocity and head loss can inadvertently increase detention time and lead to water quality issues. Therefore, a system must simultaneously balance energy loss and water quality.

Distribution Mains

Sized to satisfy three conditions:

(1) MDD+FF with residual pressure of 20 psi
(2) PHD with a minimum system pressure of 40 psi
(3) Maximum pipe velocity: 10 fps

Distribution mains carry water to fire hydrants and service connections within a water system. Mains must be sized to efficiently operate under peak demand conditions and satisfy fire flow demands.

System Design

Land Use and Water Demand

A WSA for the Speedway Commerce Center II Project was prepared by Stetson Engineers dated December 2021 along with a Supplement dated May 10, 2022. This WSA contains ADD for the warehouse/office space that were derived from record water use data for similar site buildings within FWC's service area and the irrigation demands were derived from Department of Water Resources (DWR) water budget calculator. These demands were utilized because they are based upon historical usages for similar industrial projects within the area and is site specific.

Demand Calculations Using Provided Average Day Demands from WSA

As mentioned, ADD for this project have been extracted from the WSA for the Speedway Commerce Center II. A summary of the provided ADD are shown in Table 1. The project site contains "large industrial warehouse buildings" for warehouse/office space area. The water duty factor associated with that category was calculated to be 2,843 gallons per day (gpd)/ac.

$$Large\ Industrial\ Warehouse\ Demand\ = Water\ Duty\ Factor * Area\ (AC)$$

$$Large\ Industrial\ Warehouse\ Demand\ = 2{,}843 \frac{gpd}{ac} * 152\ ac = 430{,}758\ gpd = 482\ AFY$$

As for the irrigation demand, the WSA states the water budget calculator provided by DWR is used. It utilized: Reference Evapotranspiration (Eto), Plant Factor (PF), Irrigation Area (IA), and Irrigation Efficiency (IE) of the project site. The calculation uses all those components to create the irrigation water demand formula as shown below.

$$Irrigation\ Water\ Demand\ = ETo * 0.62 * \frac{PF * IA}{IE}$$

$$Irrigation\ Water\ Demand\ = 60.77\ inch * 0.62 * \frac{0.6 * 1{,}250{,}003\ SF}{0.7} = 124\ AFY$$

As for water loss, the supplement to the WSA states FWC would need to account for water losses within its water distribution system which averaged to approximately 7.8%. Hence, water loss was calculated to be 45,527 gpd or 32 gpm.

Together, the overall ADD for the Speedway Commence Center II development was calculated to be approximately 657 AFY or 408 gpm as shown below.

Table 1 – Average Day Demands per WSA

Land Use	Water Duty Factor (gpd/ac)	Water Duty Factor (gpy)	Area (ac)	Demand (gpd)	Demand (gpm)	Demand (AFY)
Large Industrial Warehouse	2,843	-	152	430,758	299	482
Irrigation	-	40,368,739	-	110,707	77	124
Water Loss (7.8%)				45,527	32	51
			Total	**586,992**	**408**	**657**

Peaking Factors

The peaking factors were obtained from the FWC 2021 WMP[1]. Using peaking factors and the provided ADD of the development, the other two demand scenarios, MDD and PHD can be calculated for this analysis as shown in Table 2.

Table 2 – FWC Peaking Factors and Development Demands

Demand Scenario	Peaking Factor Ratio	Peaking Factor	Demand (gpd)	Demand (gpm)	Demand (AFY)
ADD	AD:AD	1.00	586,992	408	657
MDD	AD:MD	1.70	997,886	693	
PHD	AD:PHD	2.72	1,596,617	1,109	

Fire Flow Requirements

The fire flow requirement for this project has been provided through the Water Supply Assessment for the Speedway Commerce Center II Project prepared by Stetson Engineers. The highest fire demand requirement for this development is 4,000 gpm for a duration of 4 hours as shown in Table 3.

Table 3 – Highest Fire Demand Requirement for the Development

Fire Demand Requirement Flow (gpm)	Fire Demand Requirement Duration (hours)
4,000	4

This fire flow requirement follows the criteria from Table 7.1 of the Fontana Water Company Division 2021 Water System Master Plan. This criterion is based on the 2020 San Bernardino Fire Code (which adopts the 2019 California Fire Code). The fire flow requirements per land use can be found in Table 4.

[1] Section ES.5 in 2021 Water Master Plan for Fontana Water Company.

Table 4 – Fire Demand Requirements per FWC WMP

Land Use	Fire Demand Requirement Flow (gpm)	Fire Demand Requirement Duration (hours)
Single Family Residential	1,000	1
Multi-Family Residential	2,500	2
Commercial/Industrial/Governmental	4,000	4

Supply Analysis

Existing Supply Conditions

As mentioned, the development is located within the Juniper Pressure Zone. The Juniper Pressure Zone has existing well capacity as well as existing storage capacity.

The wells located in the Juniper Pressure Zone can be found in Table 5. The largest well capacity in the pressure zone is F17C. With that supply out of service, the total supply capacity is 5,731 gpm. This correlates to the summary data in Table 8.1, Existing System Water Capacity Analysis in the FWC 2021 WMP.

Table 5 – Juniper Pressure Zone Wells

Well	Capacity (gpm)
F17B	2,132
F17C	2,955
F21B	2,384
F23A	1,215
Capacity with Largest Source Offline (gpm)	5,731

Per the Design Criteria from the FWC WMP:

In system with storage, provide firm supply capacity (largest well or treatment component out of service) equal to MDD; meet PHD and fire flow requirement from a combination of supply sources and storage.

First Criteria for Supply:

To meet the first criteria for supply, the system must provide sufficient supply capacity with the largest well or treatment component out of service to meet MDD.

As stated in Table 8.1, Existing System Water Capacity Analysis in the FWC 2021 WMP **(Appendix G)**, for the Grouped Juniper Zone, the existing firm supply capacity is 5,731 gpm and the existing MDD is 11,662 gpm. With these two values, the firm supply balance within this pressure zone is confirmed to be (5,931 gpm) as shown below.

Existing Firm Supply Balance:

$$Existing\ Firm\ Supply\ Balance_{Juniper\ Zone} = Existing\ Capacity_{Juniper\ Zone} - Existing\ MDD_{Juniper\ Zone}$$

$$Existing\ Firm\ Supply\ Balance_{Juniper\ Zone} = 5{,}731\ gpm - 11{,}662\ gpm = (5{,}931\ gpm)$$

Utilizing the firm supply balance, by adding the incremental MDD due to the development, the new firm supply balance will now be (6,624 gpm).

New Firm Supply Balance:

$$New\ Firm\ Supply\ Balance_{Juniper\ Zone} = Existing\ Firm\ Supply\ Balance_{Juniper\ Zone} + Incremental\ MDD\ Increase\ due\ to\ development$$

$$Surplus\ or\ Defict_{Juniper} = (5{,}931\ gpm) + 693\ gpm = (6{,}624\ gpm)$$

There are not enough sources to provide MDD with the largest source out of service with the current deficit.

Second Criteria for Supply:

To meet the second criteria for supply, the system must provide sufficient supply capacity with all supply components in operation to meet PHD+FF requirements.

$$PHD_{Development} = 1{,}108\ \frac{gal}{min} * \frac{60\ min}{1\ hour} * \frac{1\ MG}{10^6\ gal} = 0.07\ MG$$

$$FF_{Development} = 4{,}000\ \frac{gal}{min} * 4\ hr * \frac{60\ min}{1\ hour} * \frac{1\ MG}{10^6\ gal} = 0.96\ MG$$

New PHD +FF:

$$PHD + FF\ Requirement = 0.07\ MG + 0.96\ MG = 1.03\ MG$$

Based on the results of the second criteria for supply, the developer would need to provide a source of supply to meet the minimum capacity of 1.03 MG and be able to meet 693 gpm with a new well.

Recommend Supply CIP

There are two supply design criterion that need to be met according to the FWC's WMP. One is to ensure MDD could be met with the largest well out of service in the pressure zone and the other is to ensure PHD+FF requirement could be met using supply and storage capacities for this particular pressure zone. After conducting the supply analysis with the incremental demands due to the Speedway Commence Center II development, the largest resulting incremental supply deficit for this development is 693 gpm under the MDD conditions.

A new groundwater well is required to supply the development with a minimum capacity of 693 gpm. Based upon discussion of these supply calculation results with the SGVWC Staff, the proposed new well can be built on the existing Reservoir F7 Site, just north of the Speedway site.

Storage Analysis

Per the Design Criteria from the FWC WMP:

Sum of Operational (Equalization), Fire and Emergency Storage in each pressure zone

- Operational (Equalization) Storage, as noted under 2019 CCR Title 22, Section 64554:
  - In pressure zones with continuous water supply: 4 hours of PHD
  - In pressure zones without continuous water supply: 100% MDD
- Fire Storage:
  - For existing systems, fire flow demand for the most severe fire recommended in the pressure zone multiplied by the recommended duration.
  - For new or expanded systems, fire flow demand for the most severe fire recommended for the individual structure required in the system multiplied by the required duration, as noted under General Order 103-A, Section II-B-3b
- Emergency Storage, as noted under 2019 CCR Title 22, Section 64554:
  - 50% MDD (based on the assessment of public safety power shutoffs (PSPS) during high-risk wildfire conditions and the water system's dedicated backup generators)

As stated in Table 8.3, Existing System Storage Capacity Analysis in the FWC 2021 WMP **(Appendix G)**, there is an existing storage deficit of 5.17 MG within the Juniper Pressure Zone.

Existing Storage Conditions

As shown in Table 6, there is an existing storage deficit in the Juniper Pressure Zone of 5.17 MG.

Table 6 – Existing Storage Conditions

Total Storage (MG)	Fire Storage			Operational (Equalization) Storage	Emergency Storage	Total Required Storage	Surplus or (Deficit) (MG)
	(gpm)	(hrs)	(MG)	(4 hours of PHD) (MG)	(50% of 1 day of MDD) (MG)	(MG)	
8.67	4,000	4	0.96	4.48	8.40	13.84	(5.17)

Applications of Incremental Increase in Demand

Both the operational storage and the emergency storage is driven by MDD for the Speedway Commerce Center II Development.

Operational Storage:

$$Operational\ Storage = 100\%\ of\ MDD_{Development}$$

$$Operational\ Storage = 1.0 * 693\ \frac{gal}{min} * \frac{60\ min}{1\ hour} * \frac{24\ hours}{1\ day} * \frac{1\ MG}{10^6\ gal} = 1.00\ MG$$

Fire Storage:

$$Fire\ Storage = 4{,}000\ gpm\ for\ 4\ hours$$

$$Fire\ Storage = 4{,}000\ \frac{gal}{min} * 4\ hr * \frac{60\ min}{1\ hour} * \frac{1\ MG}{10^6\ gal} = 0.96\ MG$$

Emergency Storage:

$$Emergency\ Storage = 50\%\ of\ MDD_{Development}$$

$$Emergency\ Storage = 0.50 * 693\ \frac{gal}{min} * \frac{60\ min}{1\ hour} * \frac{24\ hours}{1\ day} * \frac{1\ MG}{10^6\ gal} = 0.50\ MG$$

Total Storage:

$$Total\ Storage = Operation\ Storage + Fire\ Storage + Emergency\ Storage$$

$$1.00\ MG + 0.96\ MG + 0.50\ MG = 2.46\ MG$$

Based on the results of the storage criteria, the developer would need to construct a storage reservoir with a minimum capacity of 2.46 MG to meet the FWC's design criteria.

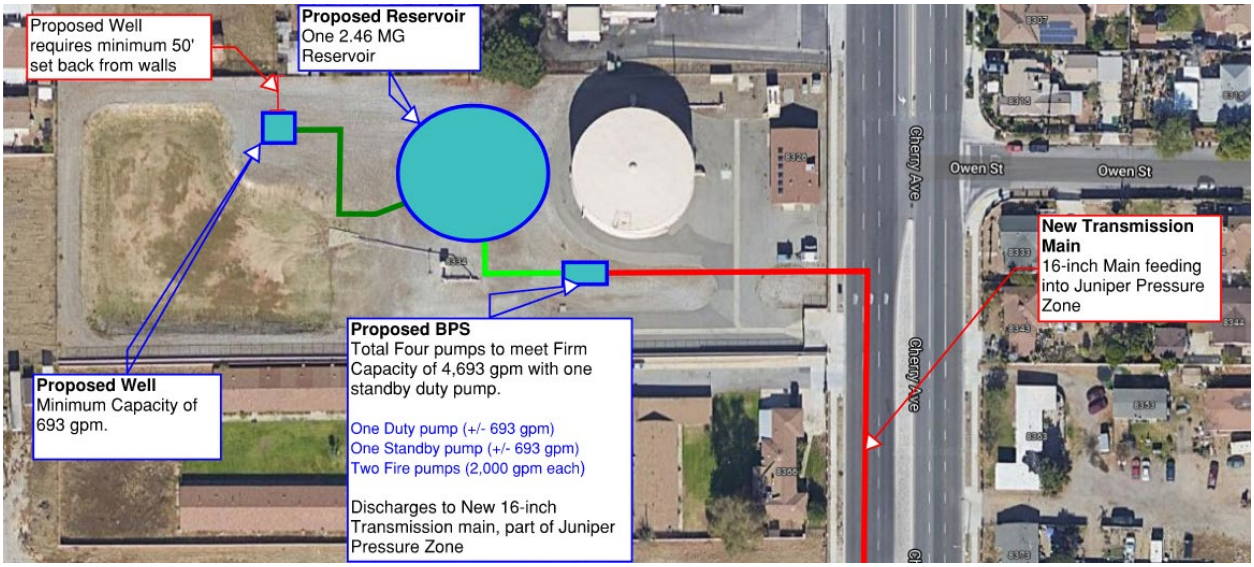
Recommended Storage CIP

It is recommended one 2.46 MG reservoir be constructed to address the anticipated storage deficiencies due to the Speedway Commerce Center II development.

After discussing these storage calculation results with the FWC Staff, the proposed 2.46 MG can be built on the existing Reservoir F7 Site. The proposed reservoir should be sized to fit on the site, but may not necessarily match the height of the existing Reservoir F7 that has a maximum water height of 25 feet in accordance with AWWA freeboard requirements. Since the new reservoir will be supplied by a new well and will be dedicated to serve the Speedway Commerce Center II development, the reservoir height does not have to match the existing Reservoir F7. With that assumption, the reservoir may be sized with a 32-feet or 40-feet shell height. Based upon these possible shell heights, the reservoir is sized to have a diameter of approximately 126.91 feet or 110.98 feet respectively, to provide the required 2.46 MG usable capacity. Alternatively, an equal height reservoir can be constructed at the back of the site by backfilling the existing detention basin. The final configuration of the reservoir location and height will be determined by FWC.

The reservoir is proposed to be built at the base elevation of 1,209 feet, with a maximum water depth of either 29 or 37 feet. This will result in an HGL of 1,238 feet or 1,246. Due to the proposed location and HGL of the proposed reservoir, a booster pump station is required to pump MDD plus fire flow to the development which equates to 4,693 gpm. The booster pump station will contain two 693± gpm pumps (one duty, one standby) each sized to meet MDD requirements. The booster pump station will also contain two 2,000± gpm pumps sized to pump the fire flow requirement to the development. These two larger pumps plus one of the smaller pumps should be sized to produce 4,693 gpm as a firm capacity. The booster pump station will also be built on the existing Reservoir F7 Site as shown in **Figure 2** below.

Figure 2 – Proposed Well, Reservoir and Booster Pump Station at Existing F7 Site



In order to deliver the required water supply from the new reservoir and booster pump station, approximately 4,240 LF of 16-inch transmission main is needed to supply water to the tie-in into Juniper Pressure Zone just north of the Speedway site.

Booster Pump Analysis

Per the Design Criteria from the FWC WMP:

In pressure zones with gravity storage, provide firm pumping capacity (largest pump out of service) equal to MDD.

As stated in Table 8.4, Existing System Booster Pumping Capacity Analysis in the FWC 2021 WMP **(Appendix G)**, there is an existing surplus in booster pump capacity of 18,984 gpm within the Juniper Pressure Zone. With the increase in MDD of 693 gpm due to the development, the surplus decreases to 18,291 gpm.

Existing Booster Pump Conditions

Per the 2021 WMP, the Juniper Pressure Zone has gravity storage and according to the design criteria, the system must provide firm pumping capacity equal to MDD.

The plants that serve the Juniper Pressure Zone and their respective booster pumps are shown in Table 7. The firm pumping capacities (total capacity with the largest pump out of service) of each plant is also shown in the table.

Table 7 – Juniper Pressure Zone Booster Pumps

Plant	Booster Pump Name	Booster Pump Available Capacity (gpm)	Firm pumping Capacity (gpm)
F17	F17B1	1,876	10,864
	F17B2	1,912	
	F17B3	2,382	
	F17B4	2,447	
	F17B5	2,336	
	F17B6	2,358	
F21	F21B1	1,047	2,978
	F21B2	1,062	
	F21B3	869	
	F21B4	1,482	
F23	F23B1	1,066	3,984
	F23B2	1,298	
	F23B3	1,620	
	F23B4	1,807	
F43	F43B1	2,590	12,820
	F43B2	2,473	
	F43B3	2,729	
	F43B4	2,564	
	F43B5	2,591	
	F43B6	2,602	
Total Firm Supply Capacity (gpm)			**30,646**

The existing firm pumping capacity of the Juniper Pressure Zone is 30,646 gpm. The existing MDD of the pressure zone is 11,662 gpm. This leaves a surplus of 18,984 gpm in the system as shown in Table 8.

Table 8 – Existing Booster Pump Conditions

Existing Pump Station Capacity (gpm)	MDD (gpm)	Existing Capacity Surplus or (Deficit) (gpm)
30,646	11,662	18,984

Applications of Incremental Increase in Demand

With the anticipated increase in demand from the Speedway Commerce Center II Development, the MDD for the Juniper Zone will increase by 693 gpm.

Existing Firm Booster Capacity Balance:

$$Existing\ Firm\ Booster\ Capacity_{Juniper\ Zone} = Existing\ Pump\ Station\ Capacity_{Juniper\ Zone} - Existing\ MDD_{Juniper\ Zone}$$

$$Existing\ Firm\ Booster\ Capacity_{Juniper\ Zone} = 30{,}646\ gpm - 11{,}662\ gpm = 18{,}984\ gpm$$

New Firm Booster Capacity Balance:

$$New\ Firm\ Booster\ Capacity_{Juniper\ Zone} = Existing\ Firm\ Booster\ Capacity_{Juniper\ Zone} - Incremental\ MDD\ Increase$$

$$New\ Firm\ Booster\ Capacity_{Juniper\ Zone} = 18{,}984\ gpm - 693\ gpm = 18{,}291\ gpm$$

Although there is a surplus in the pressure zone with the incremental demand increase of the development, there is still a need to install a booster pump station at the existing F7 Site to pump the water out of the proposed reservoir to feed into the Juniper Zone.

System Computer Model

The Speedway Commerce Center II development was incorporated into FWC's existing hydraulic model. The development was modeled to receive flow from all the reservoirs that serve the Juniper Zone by either gravity flow or pumped. Elevations were obtained from Google Earth and the scenarios tested were ADD, MDD, PHD, and MDD+FF.

Pipe Sizing and Layout

To best size the proposed pipelines and to ensure the design criteria is met, the worst-case scenario MDD+FF was utilized to determine the size of the pipelines within the development. The surrounding existing pipelines were also taken into consideration when sizing.

MDD+FF under ultimate buildout is calculated to be approximately 4,693 gpm. The proposed worst-case scenario demand with the design criteria with the maximum desired pipe velocity be 10 fps for distribution mains, the smallest possible size diameter for the pipeline would be 12-inch. If the mains were sized as an 8-inch, the velocities experienced under MDD+FF conditions would be as high as 13.5 fps, exceeding the design criteria.

After programming the new pipelines to be 12-inch and leaving the existing mains along Entry Road as 16-inch within the development, each phase was incrementally tested under the MDD+FF scenario to determine if the proposed pipeline configuration would be sufficient to meet flows. Table 9 displays the results of the ranges of available fire flows during each incremental phase.

Table 9 – Available Fire Flow Ranges per Phase

Available Fire Flow at 20psi Residual (gpm)			
Phase	**1a**	**1a + 1b**	**Ultimate Buildout 1a +1b + 2**
Fire Flow Requirement	4,000	4,000	4,000
Lowest Flow	5,198	5,242	5,684
Highest Flow	7,946	8,343	8,971

Since all design criteria requirements were met by sizing the development per the pipeline configuration, the preliminary pipeline layout was programmed as shown in Figure 3. The dotted blue pipes are the existing 16-inch mains that are currently served by the Juniper pressure zone. The figure below also shows the three tie-ins into the existing FWC water infrastructure to ensure adequate flow to the development. Figure 4 shows the proposed tie-in into the existing 16-inch main in Cherry Avenue for the proposed 16-inch transmission main coming from the proposed booster pump station at the existing F7 Site, south of Owens Street required as the offsite portion required for the development.

Figure 3 – Preliminary Pipeline Layout – Onsite

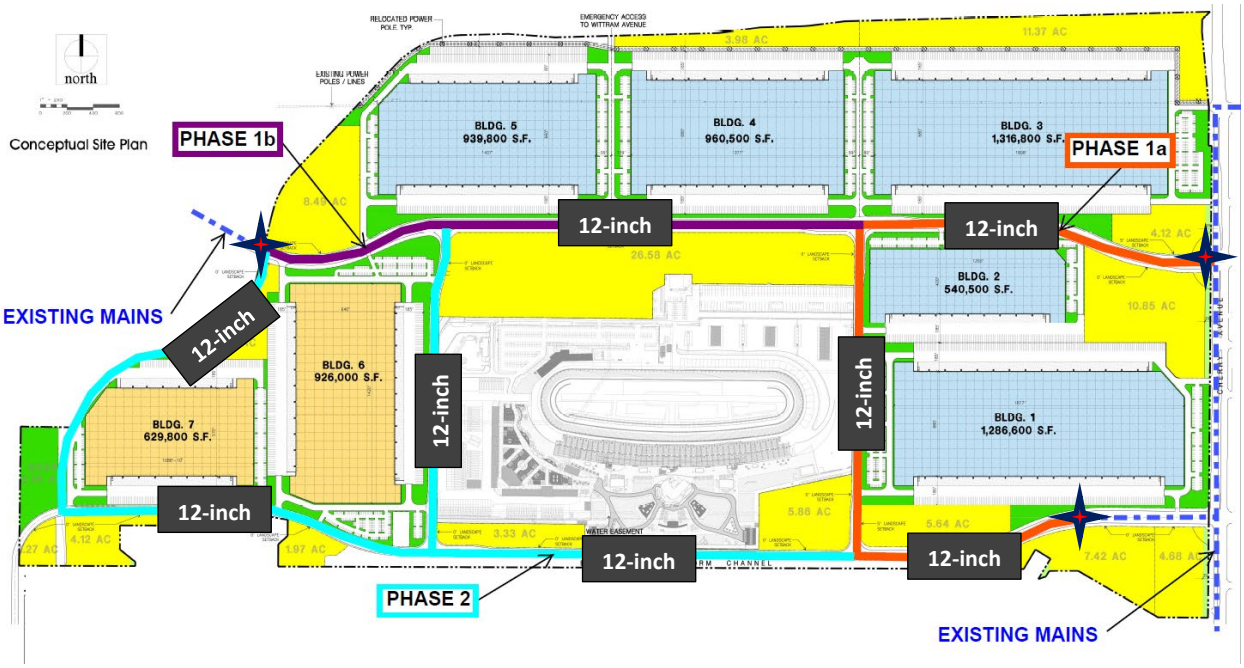
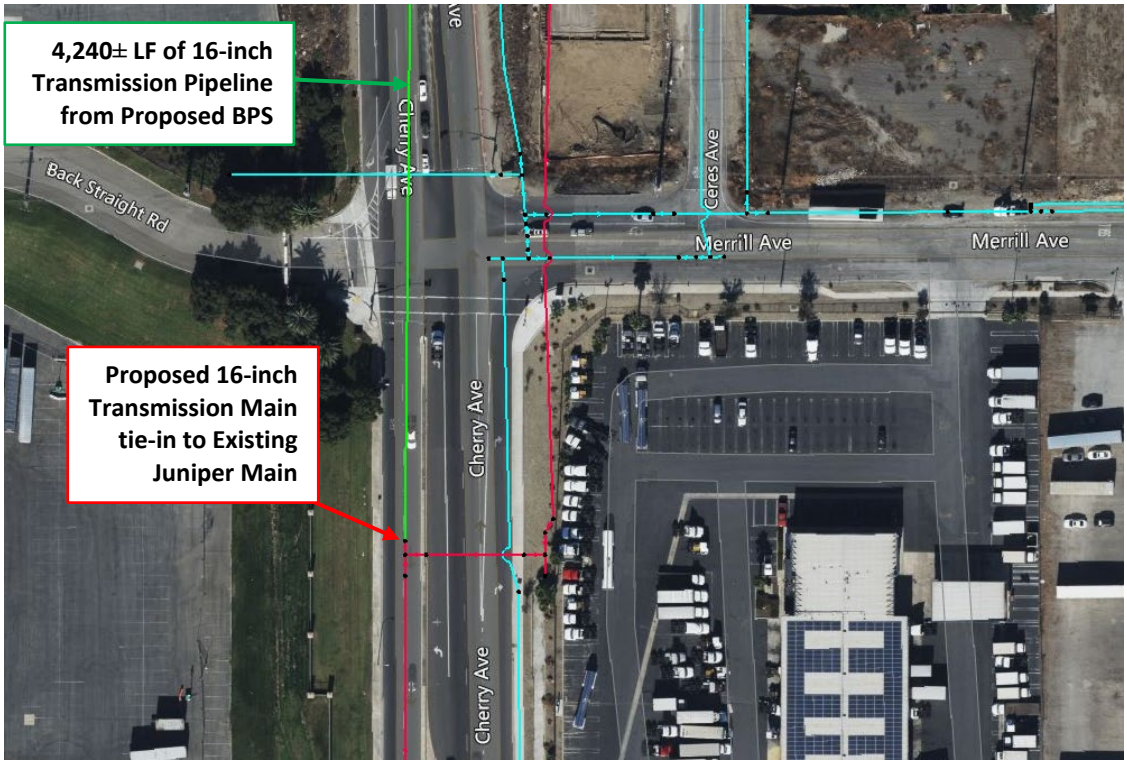


Figure 4 – Preliminary Tie-in for the Offsite Portion



Distribution System Design Criteria Analysis

After the preliminary pipeline layout was configured into the hydraulic model, the other simulated scenarios, such as ADD, MDD and PDH were tested. The junction and pipeline output results of each of these scenarios are provided as **Appendix D** in the report. The results for each scenario were tested against the FWC's design criteria.

System Pressure Criteria*: Goal for normal system pressure range: 40 psi to 125 psi*

Normal system pressures would represent the ADD scenario. Under this scenario, pressures ranged from 44 psi to 71 psi, which meet the design criteria.

Fire Flow Residual Pressures: *Goal for minimum pressure during fire: 20 psi*

Under all phased MDD+FF scenarios for performed for this analysis, the minimum pressure did not drop below 20 psi when provided adequate available fire flow. When running MDD+FF, the lowest residual pressure was 37.4 psi.

Transmission Main Pipeline Criteria - Velocity*: Maximum pipe velocity under normal operating conditions: 6 feet per second (fps)*

Under MDD+FF, when flowing 4,693 gpm throughout the development, the pipe velocity along the transmission mains on Cherry Avenue was 2.88 fps. Under ADD, the maximum pipe velocity along the transmission mains was 1.89 fps. All normal operating simulations displayed velocities under 4.84 fps within the Speedway site, meeting criteria.

Transmission Main Pipeline Criteria - Headloss*: Maximum energy loss under normal operating conditions: 3 feet of head loss per 1000 feet*

Under ADD, the maximum headloss along the transmission mains on Cherry Avenue ranged from 2.7 feet of head loss per 1,000 feet, which meet the design criteria.

Distribution Main Pipeline Criteria*: Goal for distribution mains must satisfy three conditions to be adequately sized to meet design criteria.*

(1) MDD+FF with residual pressure of 20 psi
(2) PHD with a minimum system pressure of 40 psi
(3) Maximum pipe velocity: 10 fps

The results show the pipelines are sized to meet all three of the requirements.

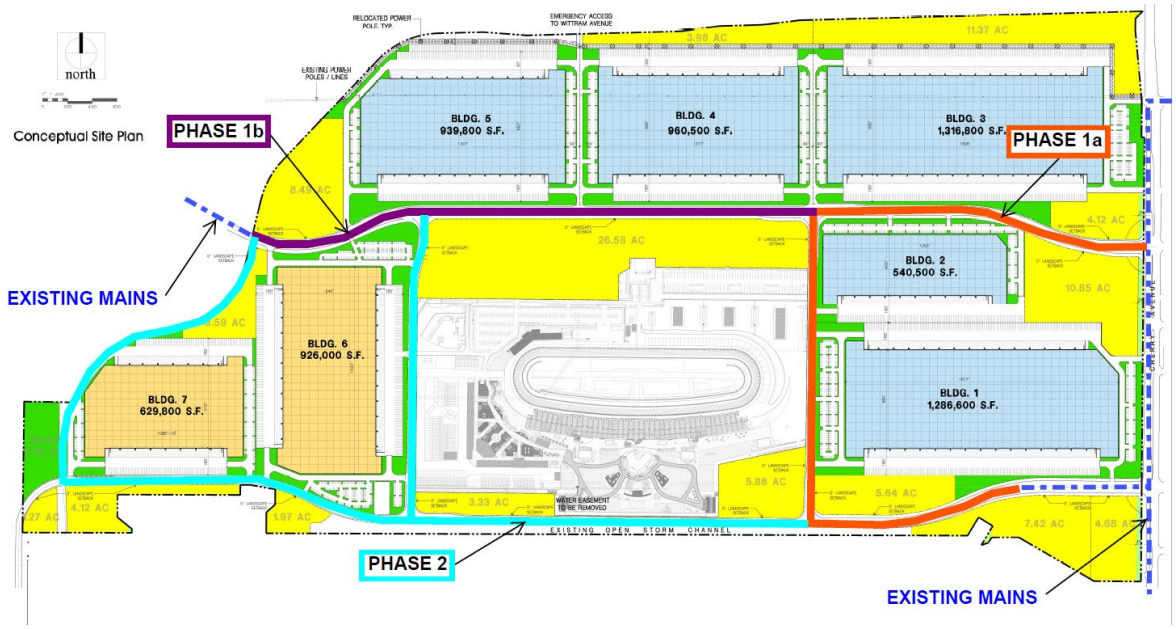
(1) The minimum residual pressure under MDD+FF (4,693 gpm) did not drop below 37 psi, which is greater than the required 20 psi.
(2) The minimum pressure under PHD was 42 psi, which is greater than the required 40 psi.
(3) The maximum pipe velocity under MDD+FF was 7.07 fps, which is below the required 10 fps.

Phasing

According to the WSA, the developer would like to stage the project into three phases as shown in Figure 5. The offsite work phasing was determined by FWC staff and deemed critical to be constructed to provide sufficient supply to the development.

- **Phase 1a** would consist of constructing buildings 1 through 3 (approximately 3,143,900 sf or 72.17 ac) and constructing approximately 5,775± LF of proposed 12-inch pipeline within the on-site portion of the development. In addition to the onsite work, there is a need to construct off-site infrastructure to meet incremental demands due to the development.
    - Offsite Work: Construct 2.46 MG Reservoir at the existing Reservoir F7 Site (west of the intersection of Owens Street and Cheery Avenue), the new booster pump station and a new groundwater well (approximately 1,000 feet depth) at the F7 site
    - Along with the new reservoir, well and booster pump station, approximately 4,240± LF of 16-inch transmission main along Cherry Avenue from the proposed booster pump at the existing Reservoir F7 Site to existing 16-inch tee on the west side of Cherry Avenue, approximately 245 feet south of Merrill Avenue.
- **Phase 1b** would consist of constructing buildings 4 and 5 (approximately 1,900,300 sf or 43.62 ac) and constructing approximately 5,905± LF of proposed 12-inch pipeline within the development.
- **Phase 2 (Ultimate Build-Out)** would consist of constructing buildings 6 and 7 (approximately 1,555,800 sf or 35.72 ac) and constructing approximately 7,480± LF of proposed 12-inch pipeline to complete the development.

Figure 5 – Ultimate Phase Build Out



Needed Infrastructure

The following new facilities are needed to provide supply, storage, and service to the Speedway Commerce Center II development. The total length of the pipelines by pipe diameter size, well capacity and storage capacity to meet the 2021 WMP design criteria is shown in Table 10.

Table 10 – Needed Infrastructure

Type of Facility	Diameter (inch)	Length (feet)	Minimum Capacity (gpm)	Minimum Storage Capacity (MG)
Pipelines – Onsite	12	19,160±	-	-
Pipelines – Offsite	16	4,240±	-	-
Well	-	-	693	-
Storage Reservoir	-	-	-	2.46
Booster Pump Station			4,693	

In addition to the above listed improvements, it is also necessary to construct a building to house the needed booster pumps as well as related work such as piping, electrical system, telemetry controls and electrical panel and conduits for the proposed well. The capacity of the electrical service at the site needs to be verified to confirm it can handle the additional load from the booster pumps and well pump. In the event it cannot supply the additional load, the Southern California Edison service will need to be upsized and related infrastructure improvements.

Please contact the undersigned with any questions regarding these analyses.

Very truly yours,

CIVILTEC engineering, inc.



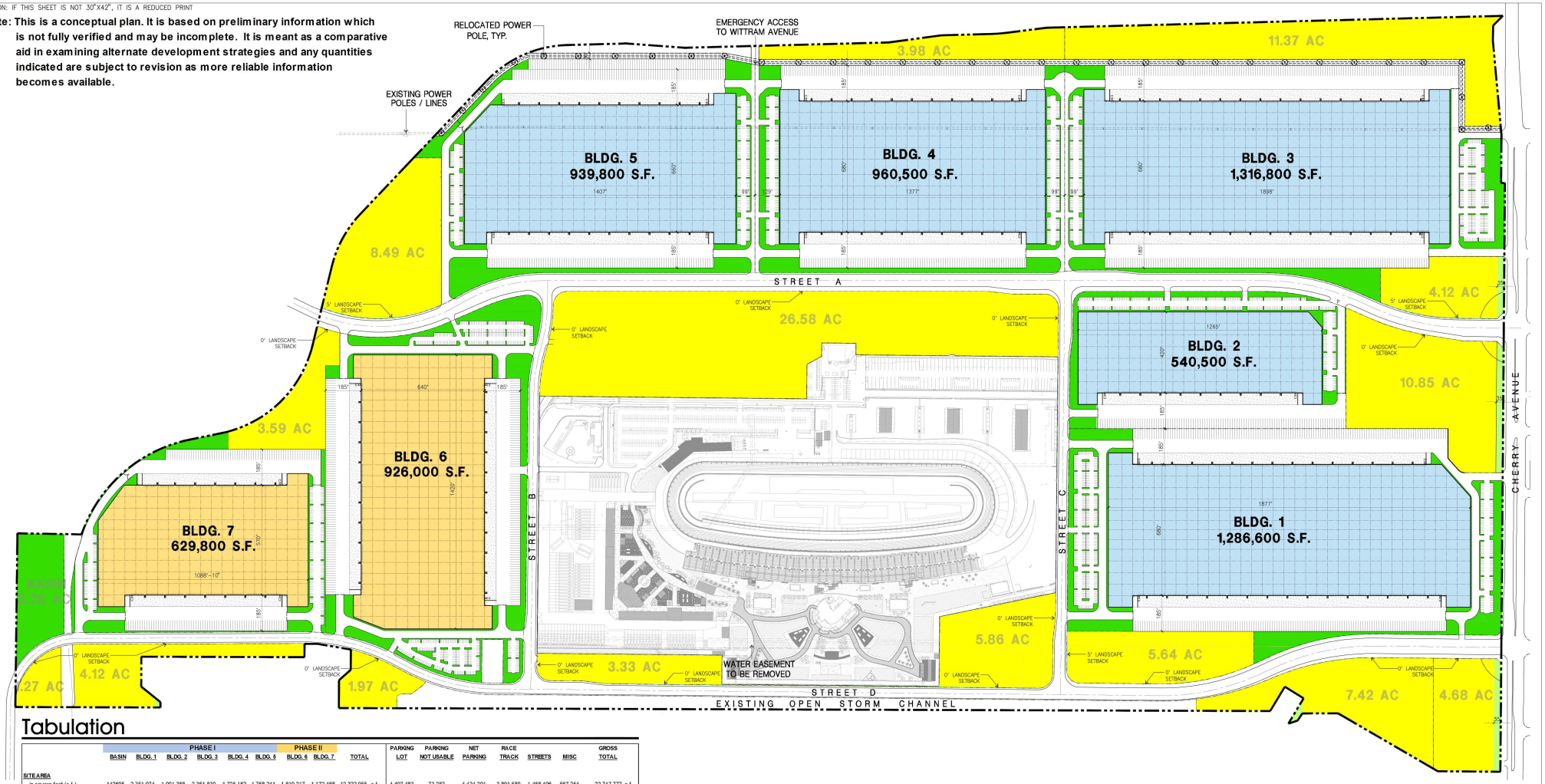
W. David Byrum, P.E.
Principal Engineer

X:\2021\2021172.00-SGVWC-Hydraulic Assessment-Speedway Commerce\Documents\Reports\Tech Memo\Hydraulic Assessment of Speedway Commerce Center II FINAL WDB.docx

Appendix A – Exhibit from Water Supply Assessment (WSA) for the Speedway Commerce Center II Project by Stetson Engineers, December 2021

CAUTION: IF THIS SHEET IS NOT 30"X42", IT IS A REDUCED PRINT

Note: This is a conceptual plan. It is based on preliminary information which is not fully verified and may be incomplete. It is meant as a comparative aid in examining alternate development strategies and any quantities indicated are subject to revision as more reliable information becomes available.



Tabulation

	PHASE I						PHASE II				PARKING LOT	PARKING NOT USABLE	NET PARKING	RACE TRACK	STREETS	MISC	GROSS TOTAL
	BASIN	BLDG. 1	BLDG. 2	BLDG. 3	BLDG. 4	BLDG. 5	BLDG. 6	BLDG. 7	TOTAL								
SITE AREA																	
In square feet (s.f.)	142695	2,351,974	1,001,368	2,351,830	1,725,162	1,758,241	1,819,217	1,172,468	12,322,955	s.f.	4,497,483	73,282	4,424,201	3,891,589	1,468,496	567,254	22,747,777 s.f.
In acres (AC)	3.28	53.99	22.99	53.99	39.60	40.36	41.76	26.92	252.70	AC	103.25	1.68	101.57	89.34	33.71	13.02	522.22 AC
BUILDING AREA																	
Office		20,000	10,000	20,000	20,000	20,000	20,000	10,000	120,000	s.f.							
Warehouse		1,266,600	530,500	1,296,600	940,500	919,600	906,000	619,800	6,480,000	s.f.							
TOTAL		1,286,600	540,500	1,316,600	960,500	939,600	926,000	629,800	6,600,000	s.f.							
PARKING REQUIRED																	
Office @ 1/250 s.f.		80	40	80	80	80	80	40	480	stalls							
Whse: 1st 40K @ 1/1,000 s.f.		40	40	40	40	40	40	40	280	stalls							
Above 40K @ 1/4,000 s.f.		307	123	314	225	220	217	145	1551	stalls							
TOTAL		427	203	434	345	340	337	225	2311	stalls							
AUTO PARKING PROVIDED																	
Standard (9' x 19')		414	324	347	292	235	366	202	2,180	stalls							
TRAILER PARKING PROVIDED																	
Trailer (12' x 53')		271	107	292	210	274	187	136	1,477	stalls							
LANDSCAPE REQUIREMENT		15%															
LANDSCAPE PROVIDED																	
Landscape Area	142695	213,372	96,333	172,749	134,166	162,122	232,534	96,032	1,250,003								
Landscape Percentage	100.0%	9.1%	9.6%	7.3%	7.8%	9.2%	12.8%	8.2%	10.1%								
ZONING ORDINANCE FOR CITY																	
Zoning Designation - Special Development (SD-COM)																	

north

1" = 200'
0 200 400 600

Legend

- PARKING AREA
- NOT USABLE PARKING
- LANDSCAPE

Conceptual Site Plan

Speedway Commerce Center

County of San Bernardino, CA

HPA architecture
18831 Bardeen Ave. - Ste. #100
Irvine, CA 92612
(949) 863-1770
www.hparchs.com

HILLWOOD A PEROT COMPANY

November 17, 2021 / Job #19318

Scheme 24

Appendix B – Water Supply Assessment (WSA) for the Speedway Commerce Center II Project by Stetson Engineers, December 2021 and Supplement to the WSA, June 17, 2022

WATER SUPPLY ASSESSMENT FOR THE SPEEDWAY COMMERCE CENTER II PROJECT

SAN BERNARDINO COUNTY, CALIFORNIA

PREPARED
FOR

FONTANA WATER COMPANY
DECEMBER 2021

PREPARED
BY

STETSON ENGINEERS INC.
San Rafael and Covina, California
Mesa, Arizona
Denver, Colorado

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ABBREVIATIONS AND ACRONYMS

AF	Acre-Feet
AFY	Acre-Feet per Year
CEQA	California Environmental Quality Act
cfs	Cubic feet per second
CPUC	California Public Utilities Commission
CVWD	Cucamonga Valley Water District
DLIS	Delta Levees Investment Strategy
DWR	Department of Water Resources
DYYP	Dry-Year Yield Program
Fontana Union	Fontana Union Water Company
FWC	Fontana Water Company
gpm	Gallons per minute
IEUA	Inland Empire Utilities Agency
LSLS	Local Storage Limitation Solution
MGD	Million Gallons per Day
MWD	Metropolitan Water District of Southern California
PEIR	Programmatic Environmental Impact Report
RBGC	Rialto Basin Groundwater Council
SBVMWD	San Bernardino Valley Municipal Water District
sf	Square Feet
Project	Speedway Commerce Center II Project
SWP	State Water Project
USBR	United States Bureau of Reclamation
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
WSA	Water Supply Assessment

1.0 EXECUTIVE SUMMARY

Fontana Water Company (FWC) has prepared this Water Supply Assessment (WSA) for the proposed industrial development known as the Speedway Commerce Center II Project (the "Project"). The water demands for the Project are included in this WSA.

The present and future water supplies available to FWC to provide water service to the Project are groundwater pumped from the Chino Basin, Lytle Basin, and Rialto Basin, surface water diversions from Lytle Creek, imported State Water Project water from Inland Empire Utilities Agency (IEUA) and San Bernardino Valley Municipal Water District (SBVMWD), and recycled water.

The Chino Basin has enhanced reliability during drought and is FWC's most reliable source of water supply. The Chino Basin Watermaster and its technical staff ensure long-term reliability of water supplies from the Chino Basin. The Watermaster, under the direct supervision of the San Bernardino County Superior Court, manages basin water supplies, arranges for local and supplemental groundwater recharge and implements and administers the Chino Basin physical solution as prescribed in the governing Superior Court groundwater pumping rights adjudication (the "Chino Basin Judgment").

The Chino Basin Watermaster's groundwater management responsibilities are closely coordinated with IEUA water management goals and implementation of strategies. IEUA's role as a regional water wholesaler includes delivery of supplemental, imported, untreated State Water Project (SWP) water directly to water purveyors like FWC, delivery of water from the Metropolitan Water District of Southern California (MWD) to the Chino Basin Watermaster for groundwater recharge, exchange, groundwater banking, and conjunctive use programs, as well as delivery of recycled water. IEUA has also analyzed future water demands and water supplies within its service area, which includes most of FWC's service area, including the Project, and concluded that sufficient water supplies will be available for the next 20 years through 2045, including during single and multiple (five consecutive) dry years.

This WSA analyzes and evaluates FWC's historical water supplies, water rights, current Urban Water Management Plans (UWMPs) developed by FWC and IEUA, the Chino Basin Optimum Basin Management Plan, and the historical and future availability of SWP water.

Based on that analysis and evaluation, this WSA shows clearly that FWC's available water supplies will be sufficient to meet all of the water demands of the entire Project for the next 20 years through 2045, including during single and multiple dry years.

2.0 INTRODUCTION

PROJECT DESCRIPTION

The proposed Project is located east of Etiwanda Avenue, south of Whittram Avenue, north of San Bernardino Avenue, and west of Cherry Avenue. The proposed Project is located on a portion of the existing Auto Club Speedway site within an unincorporated area of San Bernardino County. It is anticipated the existing Auto Club Speedway race track will be reconfigured into a "short track" (i.e. the existing race track will be reduced in size). As a result, portions of the proposed Project will replace the remaining areas of the existing race track. The proposed Project will include seven buildings with a total of approximately 6,480,000 square feet (sf) of warehouse floor space and 120,000 sf of office floor space, for a total of 6,600,000 square feet. The Project will also include approximately 4,497,483 sf (103.25 acres) of surrounding parking areas (pavement) and approximately 1,250,003 sf (28.70 acres) of landscaping on a Project site of approximately 522.22 acres. However, the proposed Project is separate from the Auto Club Speedway and will not include the reduced race track area (i.e. proposed short track). The Project information used in this WSA was based on a Project conceptual site plan (Scheme 24) prepared by HPA Architecture dated November 17, 2021 (See Appendix A). The proposed Project is located in the western portion of FWC's certificated service area as authorized by the California Public Utilities Commission (CPUC) (Figure 1). The Project is located within the following Assessor Parcel Numbers:

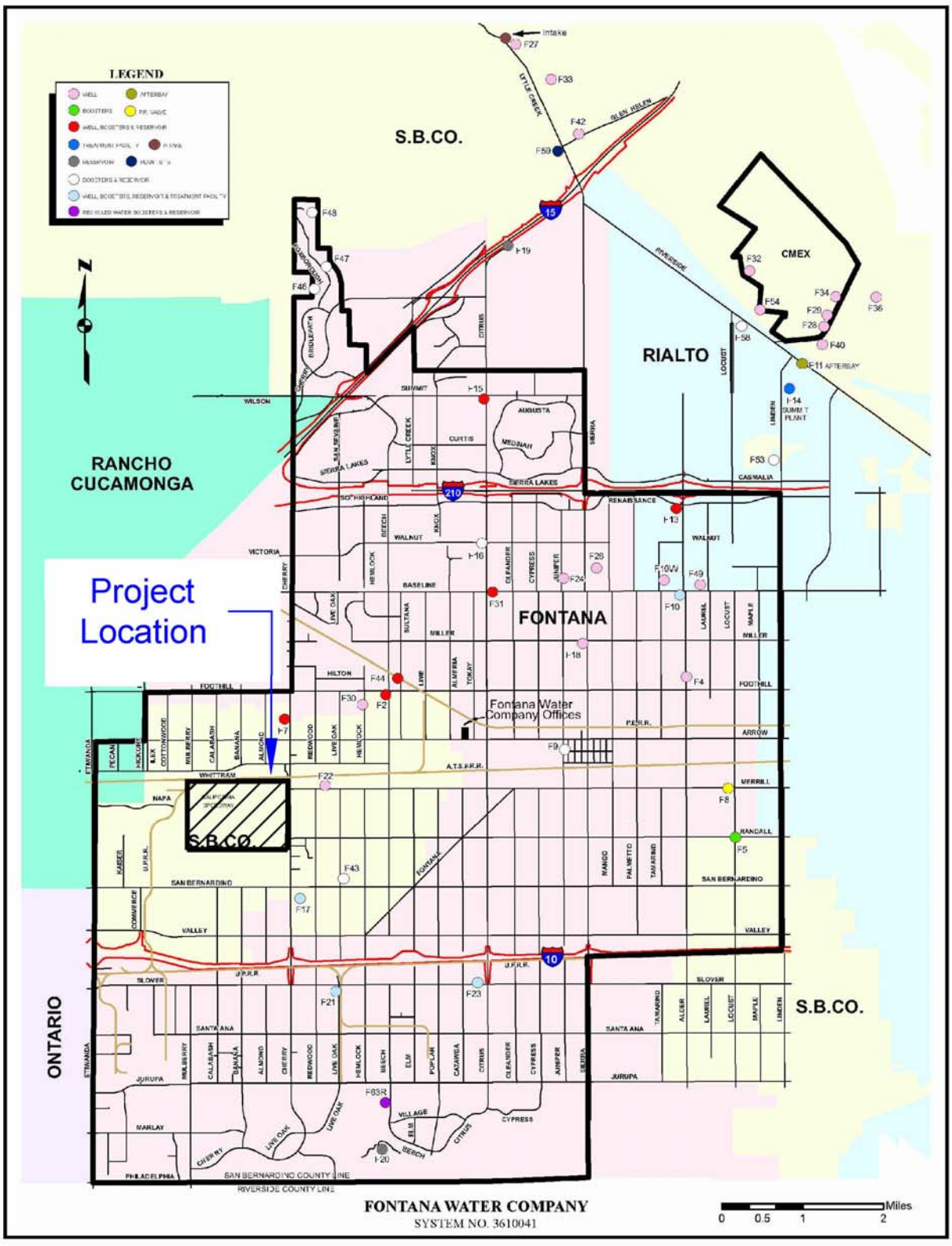
- 0231-011-09
- 0231-011-10
- 0231-011-11
- 0231-011-12
- 0231-111-17
- 0231-111-18
- 0231-111-20
- 0231-111-19
- 0231-111-06
- 0231-111-10

PURPOSE AND SCOPE OF ASSESSMENT

The Project is located within FWC's present CPUC certificated service area, as shown in Figure 1. FWC is ready, willing, and able to provide all necessary water utility service to meet all of the water supply needs of the entire Project.

The purpose of this WSA is to evaluate and confirm FWC's ability to provide all public utility water service to the Project. The reliability of future water supplies available to FWC is based on FWC's longstanding water rights and access to local groundwater and surface water supplies as listed in Table 1 (Summary of FWC Water Rights). Also, it is based on the Chino Basin Watermaster's and IEUA's water management goals and implementation strategies, such as the Optimum Basin Management Plan, supplemental imported water distribution programs, and the use of recycled water. This WSA evaluates all of FWC's available water supply sources and projected water demands within its service area, including the Project area.

FIGURE 1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Project Location
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RANCHO CUCAMONGA
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ONTARIO
CMEX
Fontana Water Company Offices
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TABLE 1 SUMMARY OF FWC WATER RIGHTS

Sources of Supply	Water Right	Description
Lytle Creek (Surface Water) **Lytle Basin**	Lytle Judgments, (1897 McKinley Decree and January 28, 1924 Judgment)	• Entitled to divert up to 3,480.78 miner's inches (~50,400 AFY) from Lytle Creek Region, including up to 2,500 miner's inches (~36,200 AFY) of combined surface and groundwater extractions to augment surface water diversions. • Entitled to divert groundwater from Lytle Basin up to 1,300 miner's inches (~18,800 AFY).
Chino Basin	Chino Basin Judgment, 1978	• Unrestricted pumping to provide water for beneficial use for FWC customers subject to existing appropriative rights, groundwater storage, leases, and replenishment through Watermaster. • Safe yield of Chino Basin = 131,000 AFY (subject to change). • 11.659 percent share of the "Operating Safe Yield." (FWC and FUWC)
Rialto Basin	1961 Rialto Basin Decree and 2021 Rialto Basin Groundwater Council	• Adjustable rights subject to curtailment based on the Key Wells • Rialto Adjustable Rights = 5,564 AFY • Fixed Rights = 370 AFY • Fixed Rights – Standby Rialto Lease = 1,600 AFY

Note: AFY = Acre-Feet per Year

Water Supply Planning Provisions

Population growth in the State of California (State) has resulted in increased demands on water systems. The State legislature has enacted laws to ensure that the increased demands are adequately addressed and that a firm source of water supply is available prior to approval of certain new developments. The regulations include California Water Code Division 6, Part 2.10, Sections 10910-10915 (Water Supply Planning to Support Existing and Planned Future Use) (California Water Code) which is briefly described below. The provisions of the California Water Code seek to promote more collaborative planning between local water suppliers and cities and counties and require detailed information regarding water availability to be provided to city and county land use planners prior to approval of certain specified large land use development projects.

This WSA was prepared pursuant to the requirements of the California Water Code for the approach, required information, and criteria confirming that FWC has sufficient water supplies to meet the projected demands of the Project, in addition to existing and planned future uses. The UWMP is a foundational document for compliance with the California Water Code. The provisions of the California Water Code repeatedly identify the UWMP as a planning document that can be used by a water supplier to meet the standards set forth in both statutes. California Environmental Quality Act (CEQA) guidelines section 15083.5 contains similar provisions regarding consultation with water agencies for certain projects. FWC's 2020 UWMP (June 2021), Metropolitan Water District of Southern California's (MWD's) 2020 UWMP (June 2021), and IEUA's 2020 UWMP Update (June 2021) were prepared pursuant to California Water Code Division 6, Part 2.55, Section 10608 (Sustainable Water Use and Demand Reduction) and California Water Code Division 6, Part 2.6, Sections 10608-10656 (Urban Water Management Planning) and the Water Conservation Act of 2009 (also known as SB X7-7), describe future water demands and future availability of the water supply sources used by FWC and other retail water agencies operating within IEUA's service area. These UWMP documents were used to prepare this WSA.

This WSA includes specific Project water demand estimates and available sources of water supply. FWC will separately notify the Project developer of the specific water supply distribution system and infrastructure facilities required for FWC to provide water utility service to the Project. In addition to the annual Project water demand estimates shown in Section 4.0 of this WSA, FWC's notice to the Project developer also will include a review of any peaking factors (maximum day demands and peak hour demands), fire flow demands, storage, booster pump, and pipeline infrastructure requirements for the proposed Project together with FWC's estimate of the costs for all of the required facilities which the Project developer must deposit with FWC before those required facilities can be installed. Further information regarding the requirements for water storage facilities for the project is provided in Section 4.0 below.

FWC owns easements, and rights-of-way over the Project site between 20 to 50 feet wide for installation, operation, and maintenance of water facilities and related access to the Project site. Additionally, FWC owns approximately 8,000 linear feet of 16-inch diameter underground

steel water pipeline on the Project site. Recycled water pipelines will need to be constructed on the Project site for landscape irrigation. Recycled water is currently being delivered by IEUA to the Banana Basin and Hickory Basin recharge basins, located adjacent to the Project site.

California Water Code (Sections 10910-10915)

Existing law requires every urban water supplier to identify, as part of its UWMP, the existing and planned sources of water available to the supplier. Existing law prohibits an urban water supplier that fails to prepare or submit its UWMP to the Department of Water Resources (DWR) from receiving financial or drought assistance from the state until the plan is submitted.

The California Water Code requires an urban water supplier to include in its UWMP a description of all water supply projects and programs that may be undertaken to meet total projected water use over the next 20 years. The California Water Code requires a city or county that determines a project is subject to the CEQA to identify any public water system that may supply water for proposed developments and to request those public water systems to prepare a specific WSA, including for proposed industrial projects occupying more than 40 acres of land or having more than 650,000 square feet (sf) of floor area. If the water demands for the proposed developments have been accounted for in a recently adopted UWMP, the water supplier may incorporate information contained in that plan to satisfy certain requirements of a WSA. The California Water Code requires the assessment to include, along with other information, an identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project and the quantities of water received in prior years pursuant to those entitlements, rights, and contracts.

The California Water Code also requires the public water system, or the city or county, as applicable, to submit its plans for acquiring additional water supplies if that entity concludes that water supplies are, or will be, insufficient.

3.0 FWC'S HISTORICAL WATER SUPPLIES AND USES

HISTORICAL WATER SUPPLIES

FWC is a public utility water company subject to the regulatory jurisdiction of the CPUC. FWC provides public utility water service to most of the City of Fontana and to portions of the City of Rialto, the City of Rancho Cucamonga, and to adjoining unincorporated areas of San Bernardino County. FWC's CPUC certificated service area encompasses approximately 52 square miles bordered generally by the Riverside County line on the south, Etiwanda and Cherry Avenues on the west, Lytle Creek Wash and Linden Avenue on the east, and Highland and Summit Avenues on the north, as shown on Figure 1.

FWC currently derives its water supply from 29 active groundwater production wells and a surface water treatment plant, the Summit Water Treatment Plant. The water supply is produced from groundwater wells in the Chino Basin, Rialto Basin, and Lytle Basin, and surface water from Lytle Creek. FWC also receives untreated SWP water from IEUA and SBVMWD which is treated at FWC's Summit Water Treatment Plant. The groundwater basins are shown on Figure 2. FWC receives well water, local surface water, imported water, or a combination of those sources at various points in its water distribution system. In addition, FWC has two emergency interconnections, with a total capacity of 3,000 gallons per minute (gpm), to receive water from Cucamonga Valley Water District (CVWD). Emergency interconnections are distribution system interconnections between water purveyors for use during critical situations where one system is temporarily unable to provide sufficient potable water to meet minimum health and/or fire protection needs. Emergency interconnections allow FWC to continue serving water during critical situations such as local water supply shortages as a result of earthquakes, fires, prolonged power outages, and droughts.

Table 1 summarizes FWC's water rights, most of which are held by Fontana Union Water Company (Fontana Union) and are subject to FWC's irrevocable right to utilize, pursuant to court-approved agreements with CVWD and Fontana Union of which FWC is a principal shareholder.

Historical annual water supplies utilized by FWC are summarized in Table 2. Annual water supplies from 2001 to 2020 ranged from 34,895 acre-feet (AF) in 2016 to 49,879 AF in 2007, with an average annual production of 42,907 AFY.

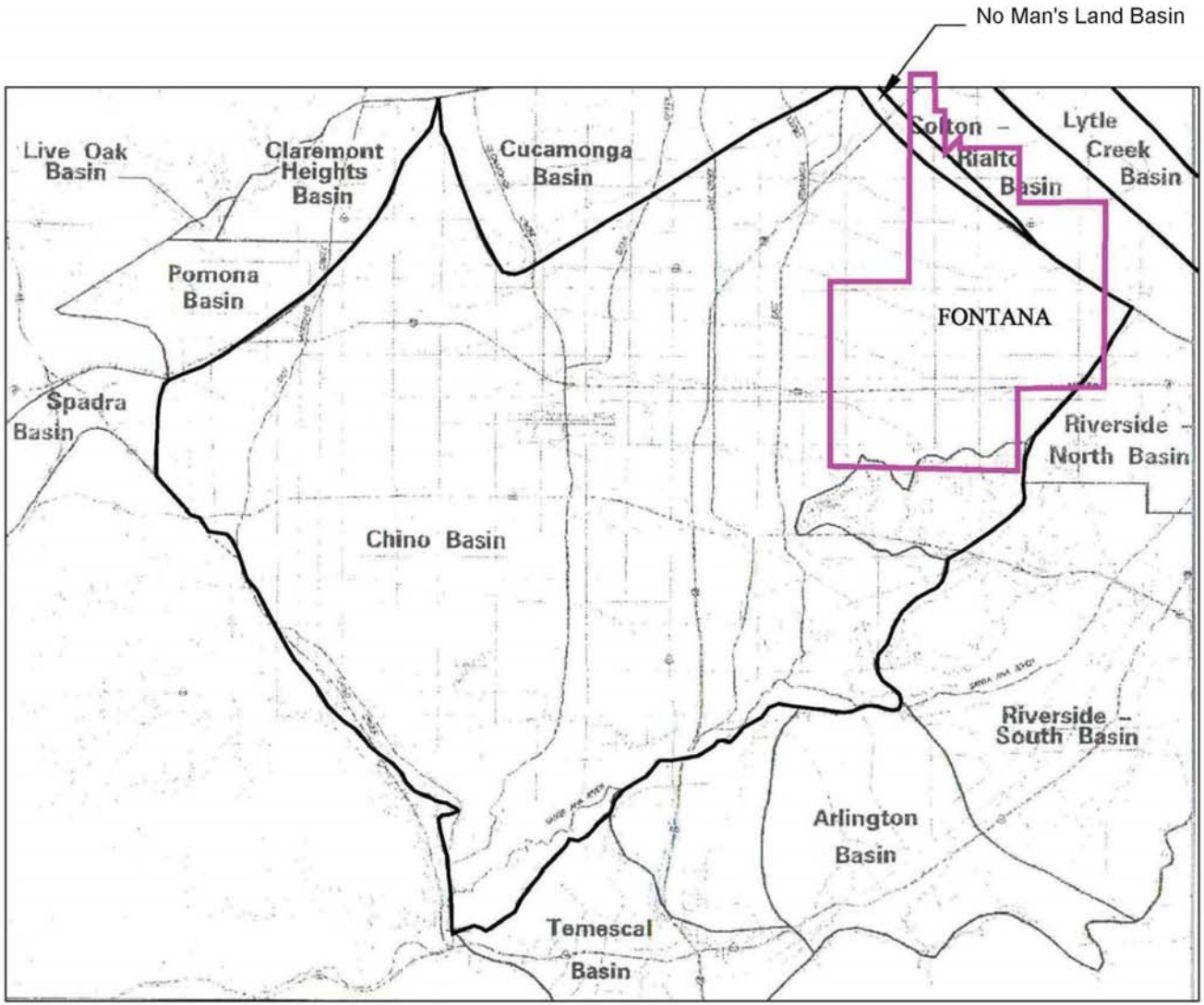
TABLE 2 HISTORICAL ANNUAL WATER SUPPLY PRODUCTION BY FWC (AFY)

Year	Groundwater					Imported Water	Lytle Creek	Recycled Water	Total
	Lytle Basin	Chino Basin	Rialto Basin	No-Man's Land	Subtotal				
2001	8,869	18,766	6,106	3,123	36,864	--	6,235	--	43,098
2002	7,520	23,060	9,452	3,135	43,166	933	2,048	--	46,147
2003	6,029	22,110	9,321	3,783	41,243	2,040	3,502	--	46,785
2004	5,664	24,718	8,173	3,930	42,485	2,530	4,484	--	49,498
2005	11,424	18,499	7,252	3,550	40,726	520	6,352	--	47,597
2006	12,593	14,747	5,695	3,683	36,718	640	11,999	--	49,356
2007	15,021	19,622	7,325	3,930	45,899	0	3,980	--	49,879
2008	10,523	16,192	6,312	4,165	37,191	2,765	7,613	--	47,569
2009	7,789	14,490	8,480	4,293	35,051	3,923	5,390	--	44,363
2010	7,073	9,921	7,782	4,421	29,197	1,099	11,473	--	41,769
2011	9,573	2,509	6,386	3,392	21,860	977	18,576	--	41,413
2012	12,604	13,305	6,306	3,875	36,090	1,086	5,616	--	42,791
2013	8,025	11,604	7,358	4,119	31,105	9,898	3,301	--	44,304
2014	5,530	13,784	7,347	4,103	30,764	9,784	1,951	--	42,498
2015	3,768	14,504	2,728	4,523	25,523	7,657	1,784	--	34,964
2016	2,649	16,299	2,563	4,341	25,852	7,617	1,419	7	34,895
2017	4,111	10,640	2,378	4,533	21,662	11,824	3,867	128	37,481
2018	5,148	10,796	2,679	4,069	22,692	12,961	2,298	163	38,113
2019	6,046	9,351	2,469	3,142	21,007	10,771	3,869	149	35,795
2020	6,423	11,859	2,538	2,633	23,453	10,027	5,966	387	39,831

Notes:
"Imported Water" deliveries of SWP water to FWC began in 2002; "Recycled Water" deliveries began in 2016

Sources:
FWC records

FIGURE 2



CHINO GROUNDWATER BASIN AND SURROUNDING BASINS

The following describes the FWC's sources of water supplies and water rights in more detail.

Chino Basin

The Chino Basin is FWC's largest and most reliable groundwater source. During the last 20 years, FWC's production from the Chino Basin ranged from approximately 2,509 AFY in 2011 to 24,718 AFY in 2004, as shown in Table 2. In most years, the Chino Basin accounted for a significant portion of FWC's total water supply.

The Chino Basin, in San Bernardino County, is the largest groundwater basin in the Upper Santa Ana River Watershed. The Chino Basin is bounded by the Rialto-Colton, Chino, San Jose, and Cucamonga faults, and by the Puente Hills and the San Gabriel Mountains. The total surface area of the basin is approximately 154,000 acres (240 square miles).

The Chino Basin currently has over 5,000,000 AF of water in storage, with an additional unused storage capacity, based on historical water levels in the basin, of about 1,000,000 AF. Over the past 20 years, total groundwater production from the Chino Basin has ranged from approximately 133,275 AFY to 188,910 AFY[1]. A majority of production is pumped for municipal and industrial purposes and the remaining production is pumped by agricultural producers.

The Chino Basin was adjudicated under the Chino Basin Judgment, entered on January 27, 1978 by the Superior Court for the County of San Bernardino. FWC is a party to the Chino Basin Judgment and is classified as an appropriator. The Chino Basin Judgment established an average Safe Yield in the Chino Basin of 131,000 AFY (July 1 to June 30), pursuant to the most recent Safe Yield reset effective in 2020. The Safe Yield is defined in the Chino Basin Judgment as "the long-term average annual quantity of ground water (excluding replenishment of stored water but including return flow to the Basin from use of replenishment or stored water) which can be produced from the Chino Basin under conditions of a particular year without causing an undesirable result." The 1978 Chino Basin Judgment's allocation of the Safe Yield of the Chino Basin includes three separate Pools: the "Overlying Agricultural Pool", the "Overlying Non-Agricultural Pool", and the "Appropriative Pool." FWC's appropriative rights together with those of Fontana Union (of which FWC is a principal shareholder) currently amount to

[1] Pursuant to the Chino Basin Watermaster "*Fiscal Year 2019-20, 43rd Annual Report*", Appendix Hhttp://www.cbwm.org/rep_annual.htm

approximately 11.659 percent share of the Safe Yield. Appendix B provides the historical Chino Basin production by Pool presented in the Chino Basin Watermaster's "Fiscal Year 2019-20 Annual Report".

Appropriators who are parties to the Chino Basin Judgment, such as FWC, are authorized to produce groundwater in excess of their rights. Appropriators pay assessments for such production to the Chino Basin Watermaster. The assessments are used to replenish the basin through imported surface water recharge. The Chino Basin Watermaster purchases water to replenish the Chino Basin from the MWD through IEUA or Three Valleys Municipal Water District. Additional supplemental sources of replenishment water come from recycled water and from increased recharge of local storm water capture. Reliability of water purchased from IEUA to replenish the Chino Basin is discussed in Section 4.

In addition, the Chino Basin Watermaster reallocates the unused portion of the Chino Basin safe yield from the Overlying Agricultural Pool to the Appropriative Pool members as a supplement to the Appropriative Pool share of Operating Safe Yield rights in any year. These transfers are permanent if agricultural land has been converted to non-agricultural use, or temporary if agricultural pool extractions are less than their share of the safe yield. From fiscal year 2000-01 to fiscal year 2019-20, the total portion of the annual Agricultural Pool available for reallocation to Appropriative Pool members[2] has ranged from 40,822 AF to 61,014 AF, with an annual average of 50,457 AF of which FWC receives a portion. As agricultural production declines within the Chino Basin, the reallocation of water to the Appropriative Pool will increase.

Lytle Creek Region

FWC produces water from the Lytle Creek Region that consists of surface water from Lytle Creek and groundwater from Lytle Basin. The Lytle Creek Watershed is approximately 46.4 square miles. The area of the Lytle Basin is approximately 22.3 square miles. Lytle Creek is located in the Lytle Creek Watershed which originates in the vicinity of Mount San Antonio in the San Bernardino National Forest and includes the Upper Santa Ana River Basin located in San Bernardino County. Lytle Creek includes the North Fork Lytle Creek, Middle Fork Lytle Creek, and South Fork Lytle Creek, each flowing eastward. Water from Lytle Creek is diverted by

[2] Pursuant to the Chino Basin Watermaster "*Fiscal Year 2019-20, 43rd Annual Report*", Appendix G

Southern California Edison to generate electricity from two hydroelectric power plants in the Lytle Creek Region. Following the power generation, Lytle Creek water is diverted to FWC's Afterbay where it is shared with other water purveyors pursuant to long standing agreements. FWC's share is diverted to FWC's Summit Water Treatment Plant where it is treated for domestic water use within FWC's distribution system. In addition to Lytle Creek surface flows, FWC obtains water from the Grapeland Tunnel, which is a groundwater infiltration system with extensive collector lines in Lytle Creek Canyon tributaries and a large line running below the streambed of Lytle Creek. Water from the Grapeland Tunnel historically flowed through a large transmission pipeline directly into FWC's water system. Because water from the Grapeland Tunnel is under the influence of surface water, water from the Grapeland Tunnel is currently combined with the Lytle Creek stream flow in the Afterbay and then flows to the Summit Water Treatment Plant.

The 1897 McKinley Decree, which specifies surface water allocations, and the January 28, 1924 Judgment by the Superior Court for the County of San Bernardino, which confirms the McKinley Decree and specifies allowed groundwater diversions, allow Fontana Union Water Company and FWC to divert surface water and pump groundwater from the Lytle Creek Region up to a maximum of 3,480.78 miner's inches, or 69.6 cubic feet per second (cfs) (approximately 50,400 AFY). The amount includes up to 2,500 miner's inches, (approximately 36,200 AFY) of allowable combined surface and groundwater extractions to augment deficiencies in surface water diversions. FWC is allowed to extract and divert a combined 1,300 miner's inches, or 26 cfs (approximately 18,800 AFY) of groundwater from the Lytle Creek Region. The Lytle Basin is managed by the Lytle Creek Water Conservation Association which is made up of the successors to the parties of the 1897 McKinley Decree and the 1924 Judgment. FWC's diversion and production of water from the Lytle Creek Region can vary due to fluctuations in rainfall, snowpack and runoff, especially during dry years.

Rialto Basin

The Rialto Basin underlies a portion of the Upper Santa Ana Valley in southwestern San Bernardino County and northwestern Riverside County. The Rialto Basin is about 10 miles long and varies in width from about 3.5 miles in the northwestern part to about 1.5 miles in the southeastern part. The Rialto Basin is bounded by the San Gabriel Mountains on the northwest, the San Jacinto fault on the northeast, the Badlands on the southeast, and the Chino Basin on the southwest.

Under the December 22, 1961 Rialto Basin Court Decree, FWC, by virtue of its shareholdings in Fontana Union, is entitled to produce water from the Rialto Basin. Parties to the Rialto Basin Decree, including FWC, are authorized to pump from the Rialto Basin without limitation, except pumping during certain months in some water years can be affected by groundwater elevations measured between March and May for three specific "index" wells (Duncan Well, Willow Street Well, and Boyd Well). On February 3, 2021, Fontana Union Water Company, West Valley Water District, the City of Rialto, and the City of Colton entered into the Rialto Basin Groundwater Council (RBGC) Framework Agreement for the purpose of groundwater management and coordination in the Rialto Basin. The RBGC Framework Agreement incorporates the FWC production right from No Man's Land Basin into the Rialto Basin groundwater production limitations. FWC's water rights in the Rialto Basin are subject to the December 22, 1961 Rialto Basin Court Decree which are affected by the average water elevations in three index wells and other provisions among the RBGC Framework Agreement parties. The water rights allocation of Rialto Basin and No Man's Land groundwater to FWC are divided into adjustable rights and fixed rights. An additional discussion regarding FWC's water rights in the Rialto Basin and No Man's Land is provided in Section 5.0.

Inland Empire Utilities Agency

IEUA, originally known as Chino Basin Municipal Water District, was formed by popular vote of its residents in June 1950, to become a member agency of MWD for the purpose of importing supplemental water to augment local stream and groundwater supplies. Since its formation in 1950, IEUA has significantly expanded its services. These include production of recycled water, wholesaling of untreated imported water and recycled water supplies, sewage treatment, co-composting of manure and municipal biosolids, desalinization of groundwater supplies and disposal of non-reclaimable industrial wastewater and brine. IEUA does not provide treated MWD water to retail water purveyors in its service area.

FWC is located within IEUA's service area. FWC has upgraded (including construction of conventional pretreatment facilities and capacity expansion) its existing surface water treatment plant (the Summit Water Treatment Plant) to treat SWP water from IEUA and

SBVMWD, in addition to surface water from Lytle Creek. The 2008 Summit Water Treatment Plant upgrades increased the plant's capacity from 17 million gallons per day (MGD) to 29 MGD. FWC has the facilities and capacity to receive up to 40 cfs of untreated imported SWP water from IEUA and 14 cfs of untreated imported SWP water from SBVMWD. IEUA's water management goals and implementation strategies, such as its imported water distribution policy, groundwater banking, conjunctive use programs, and use of recycled water, enhances the reliability of water supplies utilized by FWC. The following discussion of water sources, future water demands, and future water supplies in IEUA's service area illustrates that sufficient water is available for FWC and the other purveyors within IEUA's service area in the future.

IEUA wholesales untreated SWP water and provides industrial/municipal wastewater collection and treatment services, and other related services for the western portion of San Bernardino County. IEUA's service area is located in the southwestern section of San Bernardino County. The 242-square mile service area, which encompasses the Chino Groundwater Basin, consists of a relatively flat alluvial valley from east to west which slopes downward from north to south at a one to two percent grade.

IEUA's service area includes the cities of Fontana, Chino, Chino Hills, Montclair, Pomona, Ontario, Rancho Cucamonga and Upland. According to IEUA's 2020 UWMP, approximately 906,000 people resided in IEUA's service area as of 2020. IEUA's service area, as shown in Figure 3, lies almost entirely within the Chino Groundwater Basin.

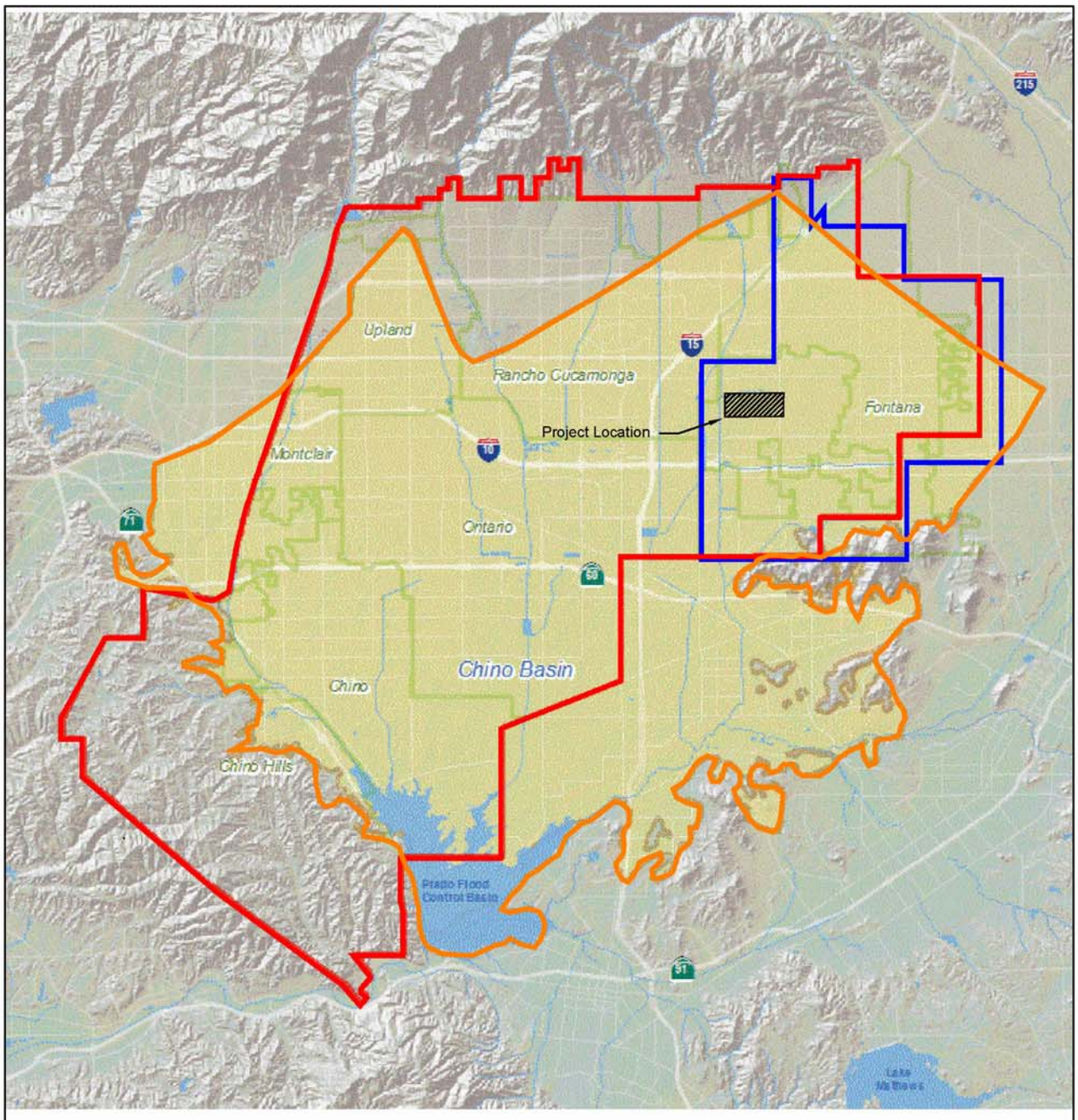
Water used in IEUA's service area comes from both local and imported sources. Local sources include local groundwater, surface water and, most recently, recycled water. IEUA purchases untreated imported SWP water from MWD for wholesale redistribution to local retail water purveyors within its service area, including FWC. The local retail water purveyors must first treat the imported MWD water before delivery to their potable water customers.

According to IEUA's 2020 UWMP, total local groundwater production by FWC and other local retail water agencies in IEUA's service area was approximately 92,834 AF in fiscal year 2019-20, which includes production from the Chino Basin as well as the other local groundwater sources shown in Figure 2.

FWC and a number of other retail water agencies in IEUA's service area that produce groundwater from the Chino Basin also obtain a portion of their water from local surface sources. The principal sources of surface water include Lytle Creek, San Antonio Canyon, Cucamonga Canyon, Day Creek, Deer Creek, and several smaller surface streams. According to IEUA's 2020 UWMP, annual production from all such local surface supplies was approximately 16,652 AF in fiscal year 2019-20.

Historical MWD deliveries to IEUA's service area are shown in Table 3. Full service imported water deliveries from MWD to IEUA over the past 20 years have ranged from approximately 31,713.8 AF of water in fiscal year 2015-16 to a peak of approximately 81,616 AF in fiscal year 2008-09. Additional imported water supplies from IEUA can be used for groundwater replenishment, thereby augmenting the annual yield and production from the Chino Basin.

FIGURE 3



Source : 2010 Inland Empire Utilities Agency Urban Water Management Plan

IEUA SERVICE AREA BOUNDARY, CHINO BASIN BOUNDARY
FONTANA WATER COMPANY SERVICE AREA BOUNDARY, AND PROJECT AREA

Table 3 MWD Historical Water Purchases by IEUA [1] (AFY)

Fiscal Year	Full Service	Agricultural	Interruptible/Local Projects	Storage [2]	Total
1990-91	20,015.9	26.2	28,071.0	4,011.70	52,124.80
1991-92	31,924.5	152.0	0.0	75,976.10	108,052.60
1992-93	34,032.2	94.4	0.0	51,554.10	85,680.70
1993-94	28,897.1			28,046.90	56,944.00
1994-95	36,967.8	8.5		1,579.50	38,555.80
1995-96	35,204.1	77.4		4,408.80	39,690.30
1996-97	44,728.2	118.8		5,058.70	49,905.70
1997-98	39,320.6	83.8		11,895.10	51,299.5
1998-99	41,599.5	76.4	100.3	8,414.1	50,190.3
1999-00	57,070.3	104.1	495.5	5,332.1	63,002.0
2000-01	57,735.6	45.1	3,841.8	11,742.5	73,365.0
2001-02	64,996.3	44.0	4,498.9	9,006.3	78,545.5
2002-03	60,082.5	43.3	5,637.2	13,449.9	79,212.9
2003-04	64,024.7	49.3	6,561.1	7,582.0	78,217.1
2004-05	54,841.4	56.4	5,653.0	42,259.4	102,810.2
2005-06	50,607.8	90.4	8,916.5	36,227.8	95,842.5
2006-07	52,869.1	89.7	11,331.2	24,759.1	89,049.1
2007-08	70,780.0	43.2	21,307.8	0.0	92,131.0
2008-09	81,615.9	3.0	24,664.2	0.0	106,283.1
2009-10	65,539.6		20,245.1	0.0	85,784.7
2010-11	51,134.4		20,646.1	9,650.6	81,431.1
2011-12	52,059.6		20,212.9	24,407.8	96,680.3
2012-13	59,050.9		25,435.0		84,485.9
2013-14	67,833.1		26,800.8		94,633.9
2014-15	58,907.7		23,734.6		82,642.3
2015-16	31,713.8		22,933.2		54,647.0
2016-17	47,848.4		25,390.7		73,239.1
2017-18	68,157.7		13,009.9		81,167.6
2018-19	63,870.4		13,244.6		77,115.0
2019-20	64,835.4		13,272.2		78,107.6

1) Source: Metropolitan Water District of Southern California, Operations Data. Data includes full service, agricultural, local project, and/or storage program sales.

2) Seasonal Storage Service Program and Cyclic Storage Account

Water recycling involves treatment of wastewater to create a high quality, safe source of water for landscape irrigation, industrial uses, and groundwater recharge. A recycled water marketing program was initiated by IEUA in 1999. Recycled water is a critical component of the Optimum Basin Management Plan developed by the Chino Basin Watermaster in 2000 to address water supply and quality issues in the Chino Basin. Recycled water has become an increasingly important source of renewable local water supply for the region. FWC has already taken steps in constructing a recycled water system and is providing recycled water to customers in its service area who are able to use recycled water. Based on the IEUA's "Fiscal Year 2019-2020 Recycled Water Annual Report[3]," recycled water supplies from IEUA's facilities totaled approximately 56,388 AF in fiscal year 2019-20. The total recycled water demands in IEUA's service area in fiscal year 2019-20 were 30,495 AF, or approximately 54 percent of the available recycled water supply. The recycled water supply and demand from IEUA's facilities is expected to increase to 66,836AF and 44,691 AF, respectively, by fiscal year 2044-45 (IEUA 2020 UWMP, Tables 2-3 and 3-3). Remaining future projected recycled water supplies will be used for groundwater recharge purposes and to meet Santa Ana River obligations.

The population within IEUA's service area is projected by the local retail water agencies (including FWC) to collectively increase from approximately 906,046 in 2020 to 1,119,568 people by the year 2045 (Table 4). This represents an increase of approximately 213,500 people over a 25-year period, an average annual growth rate of approximately 0.9 percent.

TABLE 4 CURRENT AND PROJECTED POPULATION IN IEUA'S SERVICE AREA [1]

Year	2020	2025	2030	2035	2040	2045
Population	906,046	945,849	987,401	1,031,771	1,074,773	1,119,568

1) Source: IEUA 2020 UWMP (June 2021), Table 1-4

As a result of this projected regional population growth, water demand in IEUA's service area is expected to increase by approximately 33 percent over the 25-year period from 2020 to 2045. Table 5 presents the projected water demands for IEUA's service area. According to IEUA's 2020 UWMP, total annual water use is expected to increase from approximately 96,934 AF in fiscal year 2019-20 to approximately 128,756 AF in fiscal year 2044-45.

[3] https://www.ieua.org/read-our-reports/recycled-water-reports/

TABLE 5 CURRENT AND PROJECTED WATER DEMANDS IN IEUA'S SERVICE AREA [1] (AFY)

Year	2020	2025	2030	2035	2040	2045
Potable and Raw Water	66,438	77,416	79,630	81,974	84,021	84,065
Recycled Water (Direct Reuse and Groundwater Recharge)	30,496	39,300	41,297	42,162	44,191	44,691
Total Demand	96,934	116,716	120,927	124,136	128,212	128,756

1) Source: IEUA 2020 UWMP (June 2021), Table 2-4.

Projected water supplies within IEUA's service area include groundwater, surface water, recycled water, and untreated imported water purchased from MWD. Table 6 summarizes the total available supplies and water demands under a normal year.

TABLE 6 IEUA FUTURE WATER DEMAND/SUPPLY BALANCE IN NORMAL YEARS [1] (AFY)

Year	2025	2030	2035	2040	2045
Supply Totals	153,356	156,490	157,425	160,119	160,119
Demand Totals	116,716	120,927	124,136	128,212	128,756
Surplus	36,640	35,563	33,289	31,907	31,363

1) Source: IEUA 2020 UWMP (June 2021), Table 7-4

According to IEUA's 2020 UWMP, total supplies from the Chino Basin and adjacent groundwater basins are projected at 137,318 AFY through fiscal year 2044-45 for normal years, although the Chino Basin could accommodate much greater water production rates if necessary.

According to IEUA's 2020 UWMP, IEUA projected total supplies from surface water within its service area at approximately 10,089 AFY through fiscal year 2044-45 for normal years. Surface water flows are substantially greater in wet years and less during dry years.

According to IEUA's 2020 UWMP, the direct use of recycled water within IEUA's service area in fiscal year 2019-20 was approximately 30,496 AF. Recycled water use during normal years is expected to increase to approximately 44,691 AFY by fiscal year 2044-45. As part of an existing agreement with IEUA, the City of Fontana is entitled to approximately 12,000 AFY of tertiary treated recycled water. FWC has completed a project with the City of Fontana for the direct use of recycled water in the southern portion of FWC's service area known as the 1158 Zone. This project will provide up to approximately 2,000 AFY of recycled water within the City of Fontana to schools, parks, and commercial customers as part of a multi-phased program. FWC is looking to expand its direct use projects with the City of Fontana in the future. Additional discussion regarding recycled water, including FWC's agreements to provide recycled water to the California Speedway Corporation and California Steel Industries, is provided in Section 5.0.

According to IEUA's 2020 UWMP, imported water supplied from the SWP and the Colorado River provided by IEUA are projected to be 98,928 AF through fiscal year 2044-45.

FWC supports and works closely with IEUA to implement a mix of water management strategies to meet the region's long-term needs. IEUA's water management goals are the following:

- Implement an effective conservation program that will maximize efficient water use and reuse in IEUA's service area;
- Continue development of a groundwater recovery program;
- The Dry-Year Yield Program (DYYP) is a groundwater storage and recovery program where supplemental water is stored in the Chino Basin during surplus years and could be recovered in-lieu of imported water from MWD through IEUA. The DYYP was developed jointly by the Chino Basin Watermaster, the IEUA, and MWD. The DYYP can store up to 100,000 AF with maximum replenishment of 25,000 AFY and maximum extraction of 33,000 AFY. The agreement that authorized the DYYP will expire in 2028. IEUA "Addendum No. 2 to the Optimum Basin Management Plan" was prepared in February 2021 and addresses managed storage within the Chino Basin following the termination of the DYYP. Based on the Chino Basin Watermaster's findings, the Local Storage Limitation Solution (LSLS) was developed. From July 1, 2017 through June 30, 2021, the Safe Storage Capacity of the Chino Basin was 600,000 AF. The Safe Storage Capacity was increased to 700,000 AF through an August 2021 San Bernardino County Superior Court ruling.
- Achieve maximum use of all available storm water;

- Achieve maximum reuse of all available recycled water; and
- Minimize dependence on imported water supplies.

The water demands and supplies for IEUA's service area were analyzed by IEUA to assess the region's ability to meet demands given a repeat of California's severe drought from 2011 to 2014. Table 7 and Table 8 present the supply-demand balance for single and multiple year drought scenarios for fiscal years 2024-25 and 2044-45. With the implementation of the local programs outlined above, the region is expected to meet 100 percent of its dry year demand.

TABLE 7 IEUA'S 2025 WATER SUPPLY AND DEMAND IN NORMAL, SINGLE DRY, AND MULTIPLE DRY YEARS [1] (AFY)

Demand and Supply	Normal Year	Single Dry Year	Multiple Dry Years				
			Dry Year 1	Dry Year 2	Dry Year 3	Dry Year 4	Dry Year 5
Total Water Supply	153,356	153,329	153,329	153,329	153,329	153,329	153,329
Total Demand	116,716	118,899	120,206	120,206	120,206	120,206	120,206
Surplus	36,640	34,431	33,124	33,124	33,124	33,124	33,124

1) Source: IEUA 2020 UWMP (June 2021), Tables 7-4, 7-5, and 7-6

TABLE 8 IEUA'S 2045 WATER SUPPLY AND DEMAND IN NORMAL, SINGLE DRY, AND MULTIPLE DRY YEARS [1] (AFY)

Demand and Supply	Normal Year	Single Dry Year	Multiple Dry Years				
			Dry Year 1	Dry Year 2	Dry Year 3	Dry Year 4	Dry Year 5
Total Water Supply	160,119	160,091	160,091	160,091	160,091	160,091	160,091
Total Demand	128,756	133,571	136,456	136,456	136,456	136,456	136,456
Surplus	31,363	26,519	23,635	23,635	23,635	23,635	23,635

1) Source: IEUA 2020 UWMP (June 2021), Tables 7-4, 7-5, and 7-6

San Bernardino Valley Municipal Water District

SBVMWD was formed in 1954. It is an independent SWP contractor and is not a member agency of MWD. The District's services include providing wholesale distribution of untreated imported SWP water, and wastewater, stormwater disposal, recreation, and fire protection services.

SBVMWD, which covers approximately 325 square miles in southwestern San Bernardino County, currently serves a population of approximately 715,900. SBVMWD's service area includes the eastern two-thirds of the San Bernardino Valley, the Crafton Hills, and a portion of the Yucaipa Valley, and includes all or portion of the cities and communities of San Bernardino, Colton, Fontana, Loma Linda, Redlands, Rialto, Bloomington, Highland, Grand Terrace, and Yucaipa.

Groundwater from the Colton, Rialto, Bunker Hill, Yucaipa, and San Timoteo Basins, is the principal local source of supply in SBVMWD's service area. Other sources of water supply include surface water from Lytle Creek, the Santa Ana River, and Mill Creek as well as imported SWP water.

SBVMWD's contract entitlement for SWP water was 1,677 AF in 1972, the initial year of deliveries, and increased to a maximum entitlement of 102,600 AF in 1991. The entitlement is the fifth largest of all SWP contractors.

FWC has the ability to purchase and use untreated imported water from SBVMWD. A portion of FWC's service area is within SBVMWD's service area. FWC did not receive any SWP water from SBVMWD from 2012 to 2020. FWC projects receiving up to 3,200 AFY of imported untreated SWP water from SBVMWD. FWC has upgraded its existing Summit Water Treatment Plant to treat approximately 29 MGD of Lytle Creek surface water and SWP water. The Summit Water Treatment Plant will treat the imported untreated SWP water from SBVMWD in addition to treating available Lytle Creek surface water and untreated SWP water from IEUA.

4.0 FWC'S FUTURE WATER DEMANDS WITH THE PROJECT

FWC's 2020 UWMP was completed and adopted in June 2021 and includes water demand projections for FWC's service area over the next twenty years (through 2045).

Water demands projected in FWC's 2020 UWMP were calculated based on the urban per capita water use target developed per the Water Conservation Bill of 2009 (SB X7-7) and population projections within FWC's service area. Methodologies for calculating urban per capita water use were published by DWR in its February 2016 guidance document[4]. The methodology applied to FWC included an urban per capita water use reduction of 20 percent by 2020. DWR's guidance document was used by FWC to calculate a projected urban per capita water use target of 165 gallons per capita per day through 2045.

Projected water demands for the proposed Project include commercial, industrial and landscape irrigation demands. Based on the Project site map prepared by HPA Architecture, the proposed Project is estimated to include approximately 6,600,000 sf of combined warehouse and office building space, 103.25 acres of parking and pavement, and 1,250,003 sf of landscaping on a Project site of approximately 522.22 acres. The total Project water demand was estimated by multiplying the planned Project site area by a water use rate of 3,500 gallons per day (gpd) per acre derived from average recorded water use data for large industrial warehouse buildings within FWC's service area. The estimated water demand for the commercial and industrial area of the Project is approximately 594 AFY (or 6,600,000 sf x (1 acre / 43,560 sf) x 3,500 gpd per acre x (0.00112 AFY / 1 gpd)).

The Project landscape irrigation demand was estimated using a water budget calculator from DWR. The water budget calculator estimates the water use of a landscaped area based on the following components:

- Reference Evapotranspiration (ETo)

[4] California Department of Water Resources, Division of Statewide Integrated Water Management, Water Use and Efficiency Branch. *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*. February 2016.

- ETo refers to the total amount of water lost through evaporation in the soil and transpiration of plants
- The average ETo in the vicinity of the Project site is approximately 60.77 inches per year[5]

- Plant Factor (PF)
  - The PF is a factor (generally from 0 to 1) for each type of irrigated plant and is based on the water requirements for the plant
  - Plants with a lower PF (0 to 0.3) require less water than plants with a higher PF (0.7 to 1.0). The PF for turf is approximately 0.7[6]. The PF for medium water use trees, shrubs and groundcover is approximately 0.5. A PF of 0.6 has been estimated for the Project which is based on different landscaped areas consisting of turf, trees, shrubs and groundcover.

- Irrigated Area (IA)
  - Based on the Project site map prepared by HPA Architecture (Appendix A), the irrigated area is approximately 1,250,003 square feet

- Irrigation Efficiency (IE)
  - The IE is a factor (generally from 0 to 1) which represents irrigation efficiency.
  - Irrigation systems which are well designed and operated can have an efficiency range of 0.8 to 0.9. Irrigation systems which are poorly designed and operated may have efficiencies less than 0.5[7]. An irrigation efficiency of 0.7 (representing rotor and standard drip irrigation) has been estimated for the Project.

The estimated irrigation water demand at each potential site is then calculated based on the following formula:

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[5] Pursuant to the International Water Management Institute's "World Water & Climate Atlas" (http://wcatlas.iwmi.org)

[6] http://ucanr.edu/sites/UrbanHort/Water_Use_of_Turfgrass_and_Landscape_Plant_Materials/SLIDE__Simplified_Irrigation_Demand_Estimation/

[7] "*A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California",* University of California Cooperative Extension California, DWR, August 2000

Irrigation Water Demand = (ETo) x (0.62) x ([PF x IA] / IE)

It should be noted 0.62 represents a factor used to convert units from "inches per year" to "gallons per square foot per year". The potential irrigation water demand is in units of "gallons per year". Based on the formula, the estimated irrigation water demand for the Project is approximately 40,368,739 gallons per year (or 60.77 inches x 0.62 x ([0.6 x 1,250,003 square feet] / 0.7)) or 124 AFY (or 40,368,739 gallons per year x (1 acre-foot / 325,851 gallons)). The irrigated water demands include offsite irrigation demands (parkways and medians) which would be maintained by the County of San Bernardino, and onsite irrigation demands (onsite landscaping) which would be maintained by the owner.

The proposed Project is located on a portion of the existing Auto Club Speedway site within an unincorporated area of San Bernardino County. It is anticipated the existing Auto Club Speedway race track will be reconfigured into a "short track" (i.e. the existing race track will be reduced in size). As a result, portions of the proposed Project will replace the remaining areas of the existing race track. Based on FWC records, potable water use at the Project site over the past four years has averaged approximately 4 .1 AFY. In addition, the existing Auto Club Speedway currently utilizes an onsite well to meet irrigation demands (approximately 400 AFY). Because the proposed Project is separate from the Auto Club Speedway and will not include the reduced race track area (i.e. proposed short track), the projected water demands for the proposed Project are considered separate from the water demands from the Auto Club Speedway.

The total estimated water demand for the Project, which includes commercial and industrial water demands (594 AFY) and landscape irrigation (124 AFY), is approximately 718 AFY. However, in order for FWC to provide 718 AFY to the Project site, FWC will need to produce water supplies which account for water losses within its water distribution system. Pursuant to Water Loss Audits[8] prepared by FWC (pursuant to the California Water Code), FWC's water system losses have averaged approximately 7.8 percent over the past five years (from calendar year 2016 to calendar year 2020). Accounting for this average water loss, FWC

[8] https://wuedata.water.ca.gov/awwa_plans

would need to produce approximately 780 AFY of potable water in order to supply 718 AFY to the Project site.

As a result of an existing water storage deficiency in the water system utilized to provide water supply and service to the Project, FWC must construct additional water storage infrastructure facilities to supply water to the Project. To meet the Project's industrial, commercial and irrigation water demands, FWC estimates that an additional 2.7 million gallons (MG) in water storage infrastructure facilities are required to be constructed to provide water service to the Project, including new water storage reservoirs, piping, and pumping equipment. If recycled water would be available to meet demands for irrigation water use, FWC would be required to extend new recycled water mains to provide recycled water service to the Project and would then be required to construct only an additional 2.4 MG in new water storage infrastructure facilities in order to provide sufficient water supply to meet the commercial and industrial water demands for the Project.

FWC's 2020 UWMP includes current and projected future water demands for its service area over the next 25 years. It is anticipated construction of the Project will be completed by 2025 (i.e. after 2020). The additional water demands (780 AFY) for the proposed Project are incorporated within the existing and projected water demands (potable and recycled) presented in FWC's adopted 2020 UWMP over a 20-year period and through 2045, as shown in Table 9. A further description regarding FWC's recycled water facilities, agreements, demands, and supplies is provided in Section 5.0

It should be noted, the projected water demands for the proposed "Goodman Industrial Park Fontana III Project", the "Southwest Fontana Logistics Center Project", the "Fontana Foothills Industrial Project", the "Sierra Business Center", the "Speedway Commercial Development Project", and the "Duke-Cypress at Slover Industrial Project" (six separate active/proposed projects located within FWC's service area) were also included in the overall water demands identified in FWC's 2020 UWMP. The overall projected water demands for FWC from FWC's 2020 UWMP, which incorporates the demands from the proposed Project and the six separate active/proposed projects, are provided in Table 9.

TABLE 9 PROJECTED WATER DEMAND ESTIMATES (AFY)

YEAR	2025	2030	2035	2040	2045
Potable Water Demands[1]	44,593	45,409	46,665	47,942	48,943
Recycled Water Demands[2]	1,000	1,500	2,000	2,500	3,000
Total FWC Projected Water Demands[2]	**45,593**	**46,909**	**48,665**	**50,442**	**51,943**

Notes:

[1] Water demands from the Speedway Commerce Center II Project (Project) are assumed to be included in water demands identified from FWC's 2020 UWMP. It is anticipated water demands for the Project will begin by 2025.

[2] Demand projections reported in FWC's 2020 UWMP, Table 4-4

5.0 FWC'S FUTURE WATER SUPPLIES

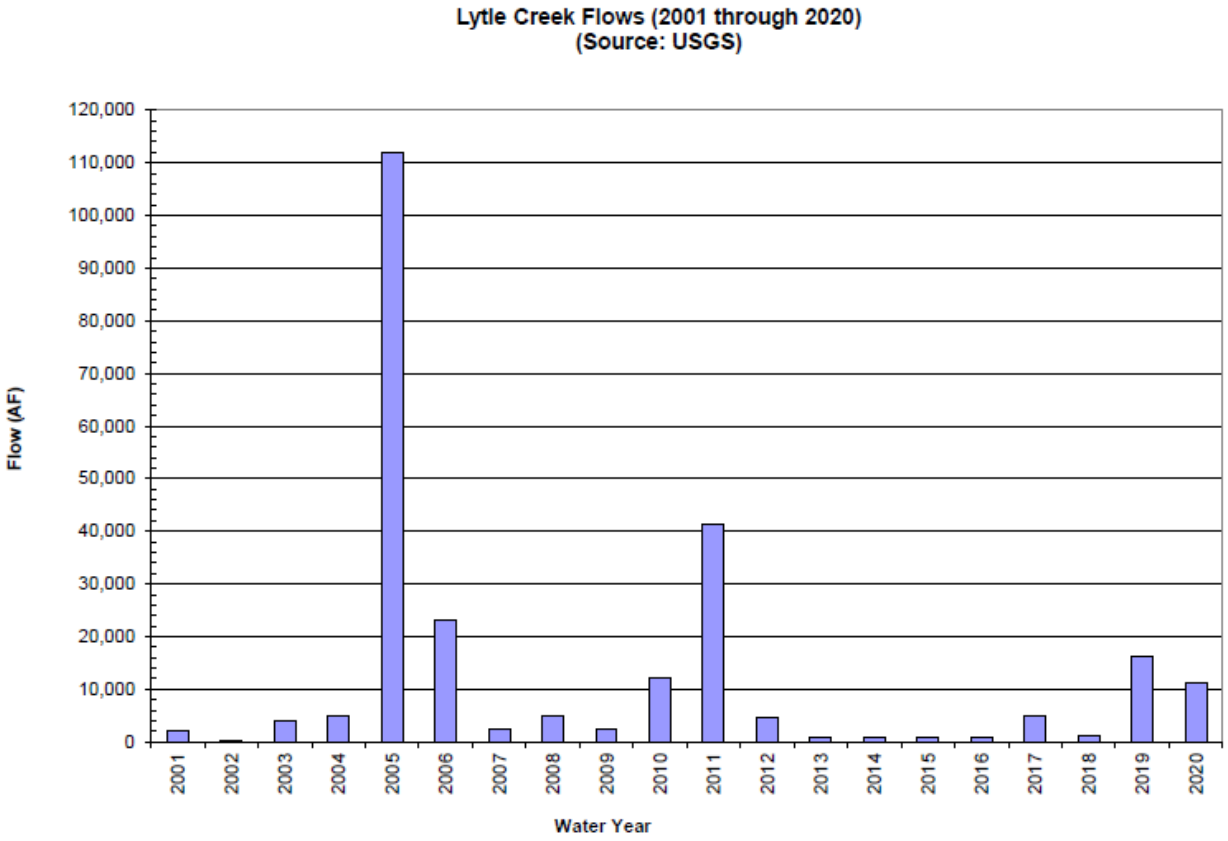
FWC's principal future water supplies available and documented in its 2020 UWMP are groundwater pumped from Chino Basin, Lytle Basin, and Rialto Basin, and surface water from Lytle Creek, recycled water, and imported water from SBVMWD and IEUA. The following describes the potential yield from these sources.

LYTLE CREEK

FWC is entitled to divert up to 3,480.78 miner's inches (approximately 50,400 AFY) from the Lytle Creek Region, including up to 2,500 miner's inches (approximately 36,200 AFY) of combined surface and groundwater extractions to augment surface water diversions. Annual Lytle Creek flows from 2001 to 2020 based on United States Geological Survey (USGS) data are shown in Figure 4. USGS data from a Lytle Creek gaging station[9] in the vicinity and upstream of FWC's diversion and intake facilities was used to determine the annual Lytle Creek flows. Based on USGS data, recent drought periods occurred from 1999 to 2004, 2007 to 2009, and 2012 to 2018. Pursuant to FWC's 2020 UWMP, and based on historical diversions during normal rainfall years, FWC's projected water supplies from Lytle Creek during normal rainfall years are estimated at approximately 4,860AFY over the next twenty years. FWC's 2020 UWMP estimates that Lytle Creek projected surface water supplies could be reduced by 83 percent (to 826 AFY) in single dry or multiple dry years.

[9] https://waterdata.usgs.gov/nwis

FIGURE 4 HISTORICAL LYTLE CREEK FLOWS (2001-2020)



Source: USGS 11062000 (Lytle C NR Fontana CA) gauge station

LYTLE BASIN

FWC can pump and divert more than 18,800 AFY of groundwater from the Lytle Basin. The Lytle Basin is subject to changes in groundwater elevation depending on rainfall, snowpack, and stormwater runoff. This was demonstrated after the significant rainfall received during 1993 and 2010. In the months following a series of storms during those very wet years, basin static water levels increased as much as 200 feet in three months. However, basin static water levels could likewise decrease and thus affect groundwater production during sustained dry years. Pursuant to FWC's 2020 UWMP, and based on historical production during normal rainfall years, FWC's projected water supplies from the Lytle Basin during normal rainfall years and single dry are estimated at 6,390 AFY over the next twenty years. FWC's 2020 UWMP estimates that Lytle Basin projected groundwater supplies could be reduced by 35 percent (to 4,154 AFY) in multiple dry years.

CHINO BASIN

FWC's average annual production from the Chino Basin from 2001 to 2020 was approximately 14,824 AFY. During the most recent five years, FWC's annual production ranged from approximately 9,351 AFY to 16,299 AFY. According to IEUA's 2020 UWMP, total Chino Basin groundwater production in IEUA's service area in a normal year is estimated to be 109,813AFY through fiscal year 2044-45. The Chino Basin Judgment authorizes FWC to produce all the water it requires from the Chino Basin for beneficial use by FWC's customers, subject to replenishment requirements. With over 5,000,000 AF of water currently in storage, more than ample water is present in the Chino Basin to allow FWC to do so. FWC will construct additional wells and associated infrastructure in the Chino Basin to match additional water supply with additional water demands from growth in the number of customers. Because of groundwater contamination in the Chino Basin from nitrate and perchlorate, production of groundwater from affected wells may be interrupted until wellhead treatment or remedy is installed. FWC has the necessary technical and financial resources available to allow FWC to quickly respond to any such water quality incidents to assure continuity and reliability of water service. FWC's Wells F17B, F17C, F21B, and F23A, which pump from the Chino Basin, currently have perchlorate treatment equipment, which removes perchlorate from these sources. FWC plans to utilize best available treatment technologies to install additional treatment, install alternative technologies such as packers, and drill replacement wells as needed to meet its water supply needs.

RIALTO BASIN

On February 3, 2021, the Rialto Basin Groundwater Council Framework Agreement was signed by Fontana Union Water Company, West Valley Water District, the City of Rialto, and the City of Colton to incorporate the FWC production rights from No Man's Land Basin (previously unrestricted) into the Rialto Basin that is subject to curtailment. The RBGC Framework Agreement was created for the purposes of coordinating, developing, and implementing groundwater management activities that affect groundwater management and sustainability in the Rialto Basin. The agreement acknowledged FWC's production capabilities of 5,014 AFY from the No Man's Land Basin and incorporated them with the Rialto Basin production capacity limits in the 1961 Rialto Basin Court Decree.

FWC's water rights as allowed under the 1961 Decree and the RBGC Framework Agreement are listed below:

- Adjustable Rights: 5,564 AFY
- Fixed Rights: 370 AFY
- Fixed / Standby Rialto Lease: 1,600 AFY

- Combined Rights: 7,534 AFY (as of 2020 before adjustment)

Pursuant to the 1961 Decree and declining groundwater elevations in the three index wells in the Rialto Basin, FWC projects a 30 percent curtailment to its annual adjustable water rights by 2025. The curtailment is anticipated to decrease by 2 percent every five years thereafter (e.g., 28 percent curtailment in 2030) to reflect a coordinated plan to recharge the Rialto Basin. Groundwater production of approximately 5,865 AFY is estimated to be available to FWC from the Rialto Basin during normal, single-dry and multiple-dry years in 2025, and is expected to increase to 6,310 AFY by 2045.

RECYCLED WATER

Achieving maximum use of all available recycled water is one of FWC's and IEUA's water management goals. Recycled water is used for groundwater recharge and storage as well as direct use by customers who are equipped and able to use recycled water. As shown in Table 2, FWC began using recycled water supplies within its service area in 2016 (with a recycled water demand of 387 AF in 2020). FWC strongly supports the use of recycled water and will provide recycled water to its customers who are able to use it when it is made available. FWC has completed a project with the City of Fontana for the direct use of recycled water in the southern portion of FWC's service area known as the 1158 Zone. This project will provide up to approximately 2,000 AFY of recycled water within the City of Fontana to schools, parks, and commercial customers as part of a multi-phased program. As part of an existing agreement with IEUA, the City of Fontana is entitled to approximately 12,000 AFY of tertiary treated recycled water. FWC has designed and is constructing recycled water distribution system facilities in the 1158 Zone to meet those needs. Recycled water will be provided by IEUA's Regional Water Recycling Plant 4. In addition, facilities also will be required to distribute recycled water from IEUA to FWC's customers beyond the 1158 Zone. Those additional facilities will include

pipelines, booster stations and reservoirs. In 2015, FWC entered into separate agreements with IEUA, the California Speedway Corporation (Speedway), and California Steel Industries (CSI) in which FWC will deliver recycled water supplies from IEUA to the Speedway and CSI. FWC will deliver up to 450 AFY of recycled water to the Speedway and up to 550 AFY of recycled water to CSI over an initial term of 60 years. The 2015 recycled water agreement between FWC and the Speedway is provided in Appendix C. IEUA has constructed the recycled water transmission and distribution facilities to the Speedway and CSI.

IEUA's 2020 UWMP projected the total recycled water use (for direct use and groundwater recharge) within IEUA's service area at approximately 66,836 AFY by the year 2045. As shown in Table 10, IEUA projects having enough supply to meet the recycled water demand within IEUA's service area. The report also projected that IEUA would supply approximately 8,350 AFY of recycled water for distribution within the City of Fontana. The report identified potential recycled water uses irrigation of golf courses, landscaping, parks, and schools, agricultural uses, commercial car washes and laundries, industrial cooling towers, miscellaneous construction and dust control uses, and groundwater recharge. Pursuant to FWC's 2020 UWMP, FWC is projected to use approximately 1,000 AFY of recycled water within its service area by 2025, with a gradual increase to approximately 3,000 AFY of recycled water by 2045. FWC's increased future use of recycled water for landscape and agricultural irrigation (including potential landscaping for proposed developments such as the Project), construction, industrial cooling, and groundwater recharge use, will offset the need for potable water use within FWC's service area. In the future, the Project could be connected to IEUA's regional recycled water line if there are sufficient recycled water demands in the area.

TABLE 10 PROJECTED RECYCLED WATER SUPPLY AND DEMAND ESTIMATES (AFY)

YEAR	2025	2030	2035	2040	2045
Demands (Direct Use)	22,880	24,877	25,742	27,771	28,271
Demands (Groundwater Recharge)	16,420	16,420	16,420	16,420	16,420
Total IEUA Projected Recycled Water Demand[1]	**39,300**	**41,297**	**42,162**	**44,191**	**44,691**
Total IEUA Projected Recycled Water Supply[2]	**60,073**	**63,207**	**64,142**	**66,836**	**66,836**

Notes:

[1] Demand projections reported in IEUA's 2020 UWMP, Table 5-2
[1] Supply projections reported in IEUA's 2020 UWMP, Table 4-6

IMPORTED WATER SUPPLIES

As discussed previously, FWC can purchase untreated imported SWP water from SBVMWD and untreated imported water supplies from MWD (including Colorado River water, SWP water, water storage, and water transfers) through IEUA[10]. According to FWC's 2020 UWMP, FWC conservatively estimates it will receive up to 15,000 AFY of SWP water from IEUA and up to 3,200 AFY of SWP water from SBVMWD over the next twenty years. FWC has the capacity to purchase additional imported SWP water from IEUA and SBVMWD if needed to meet current and future water demands reported in the FWC's 2020 UWMP. A discussion regarding the reliability of these imported water supply sources is provided below.

COLORADO RIVER WATER

In addition to obtaining water from the SWP, MWD obtains water from the Colorado River. MWD owns and operates the Colorado River Aqueduct which conveys water from Lake Havasu on the Colorado River to water transmission pipelines and to Lake Matthews for storage. MWD's Colorado River water right includes a fourth and fifth priority under the 1931 Seven Party Agreement relating to California's share in the Colorado River water supply. In 1964 a United States Supreme Court decree (Arizona v. California) limited California to 4.4 million AF per year from the Colorado River plus any available surplus water. An amount of 550,000 AF was allotted to California under the fourth priority right and an amount of 662,000 AF was allotted to California under the fifth priority right. MWD can receive water under the fifth priority right when the United States Secretary of the Interior determines that there is a surplus of water or if Arizona or Nevada does not use all of their allocated water.

Under a 2007 agreement reached by the seven States of the Colorado River Basin, if Lake Mead's level drops to 1,075 feet, an official shortage would be declared. That declaration would

[10] FWC has an additional existing standby connection with IEUA to receive untreated water from MWD at its Plant F43.

trigger cuts in water deliveries to Arizona and Nevada. During 2019, the seven States of the Colorado River Basin developed two drought contingency plans: the Upper Basin Drought Contingency Plan (Upper Basin DCP) and the Lower Basin Drought Contingency Plan (Lower Basin DCP). The Upper Basin DCP is designed to: a) protect critical elevations at Lake Powell and help assure continued compliance with the 1922 Colorado River Compact, and b) authorize storage of conserved water in the Upper Basin that could help establish the foundation for a Demand Management Program that may be developed in the future. The Lower Basin DCP is designed to: a) require Arizona, California and Nevada to contribute additional water to Lake Mead storage at predetermined elevations, and b) create additional flexibility to incentivize additional voluntary conservation of water to be stored in Lake Mead. Under the Lower Basin DCP, the state of California is required to make the following annual DCP contribution based on projected January 1st Lake Mead elevations:

- Elevation above 1,040 feet and at or below 1,045 feet – 200,000 AF
- Elevation above 1,035 feet and at or below 1,040 feet – 250,000 AF
- Elevation above 1,030 feet and at or below 1,035 feet – 300,000 AF
- Elevation at or below 1,030 feet – 350,000 AF

On August 16, 2021, the United States Bureau of Reclamation (USBR) released the "Colorado River Basin August 2021 24-Month Study" used to set annual operations for Lake Powell and Lake Mead. Based on the results of the Study, the USBR declared the first federal water shortage declaration for the Colorado River Basin. Because of the 2019 DCP, California has so far been spared from cuts to its Colorado River supplies for 2022. In response to the continued drought conditions and the USBR declaration, MWD's Board of Directors declared a Water Supply Alert on August 17, 2021, calling for consumers and businesses to voluntarily reduce their water use and help preserve the region's storage reserves. A Water Supply Alert is the third of four escalating conditions in MWD's framework indicating the urgency of Southern California's need to save water. The action calls for water agencies to reduce their water demand through public awareness campaigns and by adopting local measures including increased outdoor water use efficiency, prohibiting home car washing or filling of ornamental water

features, and requiring that restaurants only serve water upon request. MWD's declaration seeks to avoid the need for more severe actions, including moving to the fourth and final stage in MWD's framework. In addition, while shortages in the Colorado River can potentially impact water supplies, MWD owns priority rights to the Colorado River and water supply will not be impacted in the immediate future. MWD has indicated that its supplies from the Colorado river will not be impacted in 2022 and may be impacted in 2023 and more likely in 2024, if the drought continues[11], which could potentially trigger a Water Supply Allocation Plan through which MWD would implement higher rates for increased use among its member agencies.

In April 2021, Governor Gavin Newsom proclaimed a drought emergency in several counties. By July 2021, Governor Newsom expanded the drought emergency to a total of 50 counties (excluding the six counties within MWD's service area). However, in October 2021, Governor Newsom widened the drought emergency to all counties and called on local and regional water agencies to implement their Water Shortage Contingency Plans to conserve water. The governor also urged Californians to voluntarily reduce their water by 15 percent.

On July 1, 2021, FWC adopted a resolution to approve its 2020 Urban Water Management Plan and Water Shortage Contingency Plan. FWC's 2020 Urban Water Management Plan describes FWC's historical and existing water conservation program, the status of implementation of Demand Management Measures, and projected future conservation implementation. FWC's Water Shortage Contingency Plan describes the actions FWC will take to reduce demands or increase supplies under 10, 20, 30, 40, 50 percent, and greater than 50 percent shortage conditions.

STATE WATER PROJECT

The SWP is a water storage and delivery system maintained and operated by DWR. MWD holds a long-term contract with DWR for SWP water. MWD currently has a contractual

[11] https://www.latimes.com/california/story/2021-08-17/amid-worsening-drought-mwd-declares-water-supply-alert

'Table A' amount of 1,911,500 AFY of SWP water ('Table A' represents the proportion of available SWP water allocated and delivered to each SWP contractor). The delivery reliability of SWP water is discussed below.

The San Francisco Bay-Sacramento River Delta area (Bay-Delta) is a part of the SWP water delivery system. The reliability of the Bay-Delta to deliver water may be impacted by potential risks associated with endangered species, earthquakes, levee failure, and climate change. In order to mitigate these potential risks, State and federal resources and environmental protection agencies and a broad range of stakeholders are involved in a multiyear planning process to develop programs to greatly improve the capacity and reliability of the SWP and the environmental conditions of the Bay-Delta, including projects related to DWR's SWP conveyance capacity, water quality, and operation of the SWP.

The State of California enacted comprehensive legislation, including the Sacramento-San Joaquin Delta Reform Act of 2009 (California Water Code Division 35) which provided for an independent state agency, the Delta Stewardship Council. Pursuant to that act, the Delta Stewardship Council developed a comprehensive management plan that provides more reliable water supply for California and protects and enhances the Delta ecosystem (through development and implementation of a Delta Plan). The Delta Stewardship Council adopted a final Delta Plan in May 2013 which is the comprehensive long-term management plan for the Delta to improve statewide water supply reliability and to protect the Delta. Subsequently its 14 regulatory policies were approved by the Office of Administrative Law and became effective with legally-enforceable regulations on September 1, 2013. The Delta Stewardship Council also adopted a Programmatic Environmental impact Report (PEIR) on the Delta Plan in May 2013. The PEIR evaluates the potential impact of the Delta Plan and identifies mitigation measures. The Delta Plan was amended in February 2016, September 2016, April 2018, July 2019, and March 2020. The Delta Plan contains a set of 14 regulatory policies as well as 95 recommendations, which are non-regulatory but identify actions essential to increasing water supply reliability while protecting, restoring, and enhancing the Delta ecosystem. In May 2020, the Delta Stewardship Council authorized the Ecosystem Amendment for environmental review under CEQA. As a result, a draft Program Environmental Impact Report (PEIR) was prepared and is undergoing a 64-day public review from September 27, 2021 to November 30, 2021. The Delta Stewardship

Council is also currently considering an amendment to Chapter 7 (Delta Levees Investment Strategy, or DLIS). The DLIS is a multiyear project to update the Delta Plan's 2013 interim priorities for flood risk reduction and to guide the prioritization of Delta investments that reduce flood risk and better integrate Delta levees with other Delta actions and statewide flood control. The Delta Stewardship Council approved the DLIS priorities in 2018, however the amendment was rescinded in order to evaluate new levee geometry and hydraulic data. In August 2021, the Delta Stewardship Council directed staff to reinitiate the rulemaking process for DLIS.

In June 2013, a lawsuit was filed by the State Water Contractors and others seeking to overturn the Delta Stewardship Council's adoption of the Delta Plan, promulgation of related regulations, and certification of the above referenced PEIR. The litigation brought by the State Water Contractors and others claims that the Delta Stewardship Council exceeded its authority under the Sacramento-San Joaquin Delta Reform Act of 2009 and failed to analyze impacts under CEQA, particularly foreseeable impacts of the Delta Plan on water supplies around the state. In May 2016, the Superior Court upheld the Delta Stewardship Council on the vast majority of issues, including that the Council used best available science in developing the Delta Plan. The Court also ruled that the Delta Plan's regulations promote improved water quality, its flow recommendations promote conditions for species recovery, it promotes risk reduction strategies, and its conservation measures promote reduced reliance on the Delta. The Court, however, invalidated the entire Delta Plan because of what it identified as inadequacies in the following areas:

- The lack of enforceable, quantifiable targets for achieving reduced Delta reliance, reduced harm from invasive species, restoring more natural flows and increased water supply reliability, and
- Inadequate "promotion" of conveyance options to improve the way water projects move water across the Delta.

In November and December 2016, the Delta Stewardship Council and other parties have appealed the Court's ruling, which means the invalidation of the Delta Plan was placed on hold. In April 2020, the Third District Court of Appeal (Appellate Court) sided with the Delta Stewardship Council on all remaining issues from the 2013 lawsuit, and found the alleged failure

to have sufficient performance measures and to promote conveyance options were both moot because of subsequent amendments to the Delta Plan. In August 2020, the California Supreme Court declined a petition for review made by State Water Contractors in response to the Appellate Court decision. As a result, the central role of the Delta Stewardship Council in Delta water management and land use remains intact and is the governing law[12].

Governor Jerry Brown announced the creation of the California EcoRestore program in April 2015, committing to restore more than 30,000 acres of Delta habitat, which will be implemented on an accelerated timeline independent of the proposed water conveyance facilities. This comprehensive suite of habitat restoration actions under the California EcoRestore program includes specific targets for floodplain, tidal and sub-tidal, managed wetlands, and fish passage improvements to benefit native fish species and a commitment to adaptive management.

DWR's "The Final State Water Project Delivery Capability Report 2019" (2019 Report), dated August 26, 2020, indicates that there is a 72 percent likelihood (77 percent in the 2017 Final State Water Project Delivery Capability Report) that more than 2,000 thousand acre-feet per year (taf/year) of Table A water will be delivered under current conditions. The 2019 Report incorporated future impacts on water deliveries as a result of climate change and potential limited pumping of the SWP to protect salmon, smelt, and other species in the Sacramento-San Joaquin Delta and Central Valley areas, including operational restrictions of the biological opinions issued by the U.S. Fish and Wildlife Service (USFWS) in December 2008 and the National Marine Fisheries Service (NMFS) in June 2009 governing the SWP and Central Valley Project (a Federal water storage and conveyance facility) operations. In August 2016, Reclamation and DWR requested reinitiating consultation with the USFWS and the NMFS on long-term operations of the Central Valley Project (CVP) and SWP due to new information and science on declining fish species populations. The USFWS and the NMFS released the "Biological Opinion for the Reinitiation of Consultation on the Coordinated Operations of the CVP and SWP", dated October 2019, included proposed CVP and SWP operations plans. In February 2020, Reclamation approved a Record of Decision regarding modifications to long-

[12] https://www.deltacouncil.ca.gov/pdf/news-release/2020-08-12-supreme-court-upholds-delta-plan-affirms-council-authority-for-sustainable-management-of-the-delta.pdf

term operations of the CVP. The 2019 Report also incorporated DWR operations as a result of the new Incidental Take Permit (ITP) issued by the California Department of Fish and Wildlife to DWR in March 2020. The ITP covers fish species (including the Delta smelt, Longfin smelt, winter-run Chinook salmon and spring-run Chinook salmon) which are subject to incidental take through long-term operation of the SWP. In February 2020, the Bureau of Reclamation released a Record of Decision which identified the following operations:

- Additional pumping curtailments if monitoring and analysis show Delta smelt and salmon are sensitive to the effects of water exports while also allowing for more pumping when species are not present in areas most affected by pumping;
- Provide enhanced cold water management of imperiled winter-run Chinook salmon populations on Battle Creek; and,
- Implement a strategy to supplement Delta smelt in the wild in the next 3 to 5 years.

In April and May of 2019, Governor Gavin Newsom announced a new approach for Delta water conveyance through a single tunnel alternative (to improve delivery reliability) and released Executive Order 10-19 directing state agencies to assess new planning for the single tunnel project (Delta Conveyance Project). DWR subsequently withdrew all project approvals and permit applications for the previously proposed twin tunnels project under the California WaterFix and Bay Delta Conservation Plan (BDCP). DWR released a "Notice of Preparation of Environmental Impact Report for the Delta Conveyance Project" in January 2020 to start planning for the Delta Conveyance Project. DWR also released a scoping summary report in July 2020 and anticipates release of a Public Draft Environmental Impact Report / Environmental Impact Statement for review mid-2022[13].

As discussed previously, on August 17, 2021, MWD's Board of Directors declared a Water Supply Alert on August 17, 2021, calling for consumers and businesses to voluntarily reduce their water use and help preserve the region's storage reserves. In early 2021, the California Department of Water Resources reduced the allocation of supplies delivered on the

[13] https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/DC_Schedule_August2020_508.pdf?la=en&hash=9069D624DB200C0BC9C8B57BAA51DB7FC3CCB19B

State Water Project from 10 percent to 5 percent which resulted in MWD receiving about a one-month supply. If dry year conditions continue, SWP allocations in 2022 could be set to zero.

On November 9, 2021, MWD adopted a resolution declaring a Regional Drought Emergency and called upon its Member Agencies to reduce use of SWP supplies. MWD's Member Agencies which depend on the SWP include the Los Angeles Department of Water and Power, Calleguas Municipal Water District, Las Virgenes Municipal Water District, Upper San Gabriel Valley Municipal Water District, Three Valleys Municipal Water District, and IEUA. MWD requested these six agencies to implement actions they deem necessary under their Water Shortage Contingency Plans, including enforcing restrictions limiting outdoor water days and lowering the amount of water allowed under a first-tier price. MWD's resolution also provides MWD's General Manager with authority to take actions needed to address the regional drought emergency, including the following: enhance local water production, recycling, conservation, and storage; purchase, transfer, and exchange water supplies; procure equipment, materials, services, and supplies; and provide media buying and placement services for a water awareness and conservation advertising campaign. MWD also expanded several water saving programs including increased rebates for turf removal and providing additional funding for rebate programs for water-efficient toilets and devices.

As discussed previously, FWC adopted a resolution to approve its 2020 Urban Water Management Plan and Water Shortage Contingency Plan on July 1, 2021. FWC's 2020 Urban Water Management Plan describes FWC's historical and existing water conservation program, the status of implementation of Demand Management Measures, and projected future conservation implementation. FWC's Water Shortage Contingency Plan describes the actions FWC will take to reduced demands or increase supplies under 10, 20, 30, 40, 50 percent, and greater than 50 percent shortage conditions.

Imported Water from SBVMWD

FWC projects receiving up to 3,200 AFY of imported water supplies from SBVMWD. FWC expects to receive greater quantities of SWP water from SBVMWD as population and water use increase in the SBVMWD portion of FWC's service area.

The delivery reliability of SWP water from SBVMWD is similar to the previous discussion of SWP deliveries above. SBVMWD currently has a contractual 'Table A' amount of 102,600 AFY of SWP water. FWC's 2020 UWMP conservatively projects that it will receive up to 3,200 AFY of SWP water from SBVMWD in the next twenty years. Supplies from SBVMWD could be reduced by up to 95 percent in single dry years and up to 78 percent during multiple dry years. SBVMWD anticipates storage of SWP water during normal and wet years for use, along with direct deliveries, during dry years. Imported water provided by SBVMWD will be treated at FWC's Summit Water Treatment Plant, which is discussed in the following section on imported water from IEUA.

Imported Water from IEUA

FWC's upgraded Summit Water Treatment Plant can treat imported water from IEUA and SBVMWD and local surface water from Lytle Creek. The Summit Water Treatment Plant, which has a capacity of up to 29 MGD, includes a 40 cfs connection with IEUA to receive untreated SWP water. FWC's 2020 UWMP conservatively assumed that FWC will receive up to approximately 15,000 AFY of SWP water from IEUA in the next twenty years. Imported water supplies will allow FWC flexibility in managing its water supply sources both short and long term, as well as in normal and dry years. Also, the upgraded Summit Water Treatment Plant allows FWC to treat and maximize the use of SWP supplies and turbid Lytle Creek storm water flows that could not be used in the past.

WATER SUPPLY SUMMARY

Based on the above discussion of the available water supply sources, FWC's water supply-demand balance in normal, single dry, and multiple dry years during the next twenty years are summarized in Tables 11, 12, and 13, respectively.

The Chino Basin is an important source of groundwater for FWC now and will continue to be in the future. In addition, the Chino Basin Watermaster's Optimum Basin Management Program (the Chino Basin Watermaster updated the "Optimum Basin Management Program Report" in January 2020), including a Storage Management Plan, will greatly increase the Chino Basin's reliability and safe yield through recharge of imported water, additional local storm water, and recycled water. FWC currently has a total pumping capacity from the Chino Basin of approximately 35,000 gpm. At the present time FWC has five inactive wells in the Chino Basin (with a total pumping capacity of approximately 9,500 gpm or 15,300 AFY) which cannot be used because of high levels of perchlorate and nitrate contamination.

FWC is planning to restore most, if not all, of the lost pumping capacity in the Chino Basin through construction of additional wells or installing wellhead treatment or alternative remedies (e.g. packers) on existing wells in the near future. FWC is also planning to replace existing aging and poor producing wells, which will result in a net increase in production over existing capacity. Additional well capacity will provide emergency water supply in case of interruptions of water service due to migration of contamination, loss of power, physical damage to electrical power supply equipment, or failure of a water transmission pipeline.

Tables 11, 12, and 13 show that the water supplies available to FWC will be sufficient to meet all present and future water supply requirements of the Project for the next twenty years (through 2045), including during single and multiple dry years.

TABLE 11 FWC'S FUTURE WATER SUPPLIES IN NORMAL YEARS (AFY)

Year		2025	2030	2035	2040	2045
Demands from 2020 UWMP[1]		**45,593**	**46,909**	**48,665**	**50,442**	**51,943**
Potable Water Demand		44,593	45,409	46,665	47,942	48,943
Recycled Water Demand		1,000	1,500	2,000	2,500	3,000
Total FWC Projected Water Demands[1]		**45,593**	**46,909**	**48,665**	**50,442**	**51,943**
Water Supplies[2]	Surface Water	4,860	4,860	4,860	4,860	4,860
	Lytle Basin	6,390	6,390	6,390	6,390	6,390
	Chino Basin	9,278	9,983	11,128	12,293	13,183
	Rialto Basin	5,865	5,976	6,087	6,199	6,310
	Recycled Water	1,000	1,500	2,000	2,500	3,000
	Imported Water from SBVMWD	3,200	3,200	3,200	3,200	3,200
	Imported Water from IEUA	15,000	15,000	15,000	15,000	15,000
	Total	**45,593**	**46,909**	**48,665**	**50,442**	**51,943**

Notes:

1) Demand projections reported in adopted FWC 2020 UWMP, Table 4-4. Water demands from the Speedway Commerce Center II Project (Project) are assumed to be included.

2) Water supplies projection reported in adopted FWC 2020 UWMP, Table 6-12

TABLE 12 COMPARISON OF FWC 2025 WATER SUPPLY AND DEMAND IN NORMAL, SINGLE DRY, AND MULTIPLE DRY YEARS (AFY) FOR THE PROJECT

Demand and Supply		Normal Year	Single Dry Year [2]	Multiple Dry Years [2]				
				Dry Year 1	Dry Year 2	Dry Year 3	Dry Year 4	Dry Year 5
Demands from 2020 UWMP[1]		**45,593**	**34,006**	**42,886**	**41,415**	**34,074**	**34,006**	**36,526**
Potable Water Demand		44,593	33,006	41,886	40,415	33,074	33,006	35,526
Recycled Water Demand		1,000	1,000	1,000	1,000	1,000	1,000	1,000
Total FWC Projected Water Demands		**45,593**	**34,006**	**42,886**	**41,415**	**34,074**	**34,006**	**36,526**
Water Supplies[3]	Surface Water	4,860	826	826	826	826	826	826
	Lytle Basin	6,390	6,390	4,154	4,154	4,154	4,154	4,154
	Chino Basin	9,278	4,765	15,210	13,738	6,397	6,329	8,849
	Rialto Basin	5,865	5,865	5,865	5,865	5,865	5,865	5,865
	Recycled Water	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	Imported Water from SBVMWD	3,200	160	832	832	832	832	832
	Imported Water from IEUA	15,000	15,000	15,000	15,000	15,000	15,000	15,000
	Total	**45,593**	**34,006**	**42,887**	**41,415**	**31,770**	**34,006**	**36,526**

Notes:

1) Demand projections reported in adopted FWC 2020 UWMP, Table 7-4, Table 7-5, and Table 7-6. Water demands from the Speedway Commerce Center II Project (Project) are assumed to be included.

2) Single Dry Year and Multiple Dry Year projections are based on percentage of the Dry Year Demand compared to the Total Normal Year Demand multiplied by the Normal Demand for each Project. Projected water demands are assumed to be included in water demands identified from FWC's 2020 UWMP.

3) Supply projections reported in adopted FWC 2020 UWMP, Table 6-2.

TABLE 13 COMPARISON OF FWC'S 2045 WATER SUPPLY AND DEMAND IN NORMAL, SINGLE DRY, AND MULTIPLE DRY YEARS (AFY) FOR THE PROJECT

Demand and Supply		Normal Year	Single Dry Year [2]	Multiple Dry Years [2]				
				Dry Year 1	Dry Year 2	Dry Year 3	Dry Year 4	Dry Year 5
Demands from 2020 UWMP[1]		**51,943**	**38,742**	**48,859**	**47,183**	**38,819**	**38,742**	**41,613**
Potable Water Demand		48,943	35,742	45,859	44,183	35,819	35,742	38,613
Recycled Water Demand		3,000	3,000	3,000	3,000	3,000	3,000	3,000
Total FWC Projected Water Demands		**51,943**	**51,943**	**51,943**	**51,943**	**51,943**	**51,943**	**51,943**
Water Supplies[3]	Surface Water	4,860	826	826	826	826	826	826
	Lytle Basin	6,390	6,390	4,154	4,154	4,154	4,154	4,154
	Chino Basin	13,183	7,056	18,865	17,189	8,825	8,748	11,620
	Rialto Basin	6,310	6,310	6,310	6,310	6,310	6,310	6,310
	Recycled Water	3,000	3,000	3,000	3,000	3,000	3,000	3,000
	Imported Water from SBVMWD	3,200	160	704	704	704	704	704
	Imported Water from IEUA	15,000	15,000	15,000	15,000	15,000	15,000	15,000
	Total	**51,943**	**38,742**	**48,859**	**47,183**	**38,819**	**38,742**	**41,613**

Notes:

1) Demand projections reported in adopted FWC 2020 UWMP, Table 7-4, Table 7-5, and Table 7-6. Water demands from the Speedway Commerce Center II Project (Project) are assumed to be included.

2) Single Dry Year and Multiple Dry Year projections are based on percentage of the Dry Year Demand compared to the Total Normal Year Demand multiplied by the Normal Demand for each Project. Projected water demands are assumed to be included in water demands identified from FWC's 2020 UWMP.

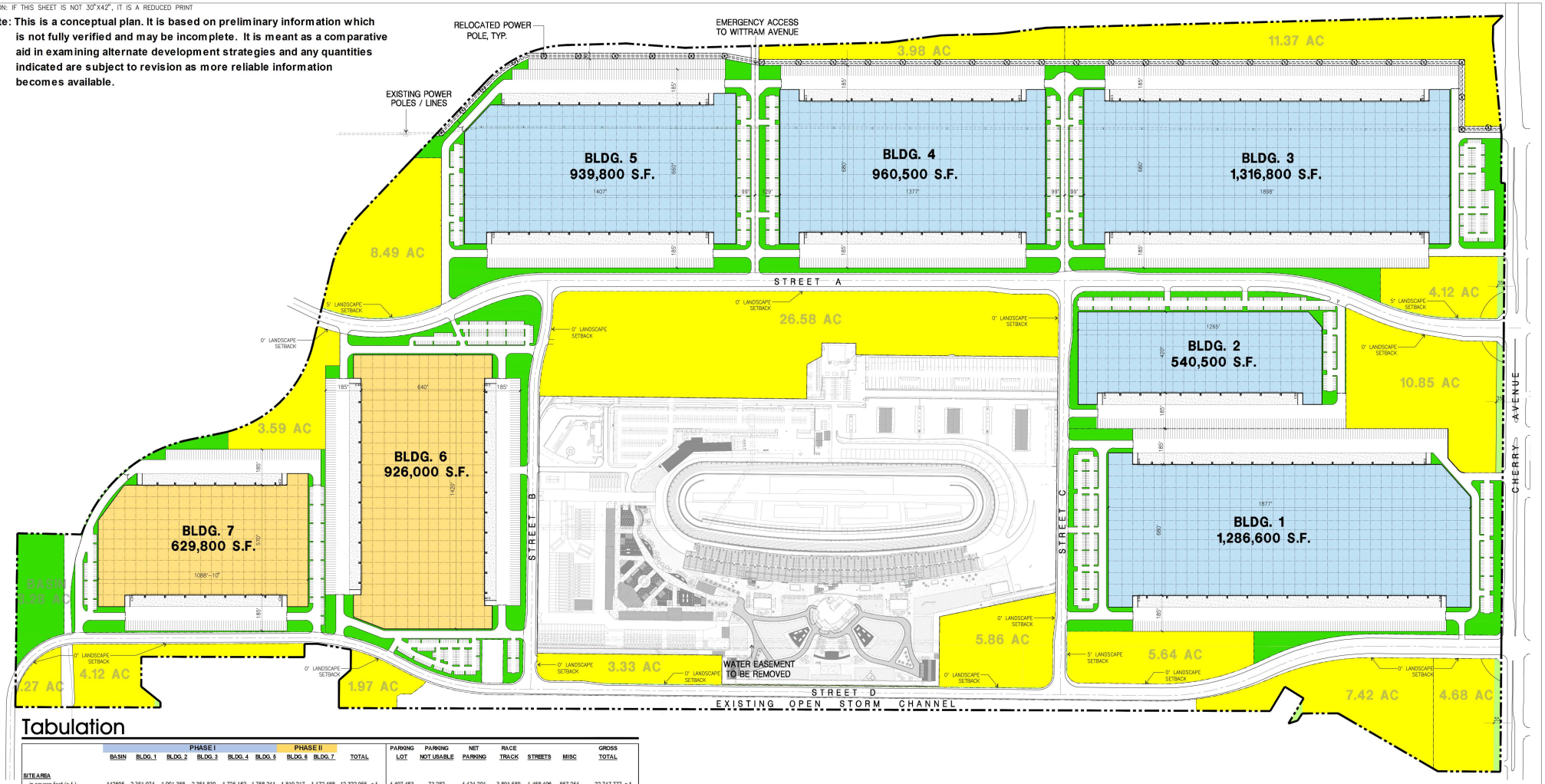
3) Supply projections reported in adopted FWC 2020 UWMP, Table 6-2.

J:\2048\2048-18 (Speedway Commerce)\01 Text\Speedway Commerce WSA.Doc

APPENDIX A

CAUTION: IF THIS SHEET IS NOT 30"X42", IT IS A REDUCED PRINT

Note: This is a conceptual plan. It is based on preliminary information which is not fully verified and may be incomplete. It is meant as a comparative aid in examining alternate development strategies and any quantities indicated are subject to revision as more reliable information becomes available.



Tabulation

	PHASE I						PHASE II				PARKING LOT	PARKING NOT USABLE	NET PARKING	RACE TRACK	STREETS	MISC	GROSS TOTAL
	BASIN	BLDG. 1	BLDG. 2	BLDG. 3	BLDG. 4	BLDG. 5	BLDG. 6	BLDG. 7	TOTAL								
SITE AREA																	
In square feet (s.f.)	142695	2,351,974	1,001,368	2,351,830	1,725,162	1,758,241	1,819,217	1,172,468	12,322,955	s.f.	4,497,483	73,282	4,424,201	3,891,589	1,468,496	567,254	22,747,777 s.f.
In acres (AC)	3.28	53.99	22.99	53.99	39.60	40.36	41.76	26.92	252.70	AC	103.25	1.68	101.57	89.34	33.71	13.02	522.22 AC
BUILDING AREA																	
Office		20,000	10,000	20,000	20,000	20,000	20,000	10,000	120,000	s.f.							
Warehouse		1,266,600	530,500	1,296,600	940,500	919,600	906,000	619,800	6,480,000	s.f.							
TOTAL		1,286,600	540,500	1,316,600	960,500	939,600	926,000	629,800	6,600,000	s.f.							
PARKING REQUIRED																	
Office @ 1/250 s.f.		80	40	80	80	80	80	40	480	stalls							
Whse: 1st 40K @ 1/1,000 s.f.		40	40	40	40	40	40	40	280	stalls							
Above 40K @ 1/4,000 s.f.		307	123	314	225	220	217	145	1551	stalls							
TOTAL		427	203	434	345	340	337	225	2311	stalls							
AUTO PARKING PROVIDED																	
Standard (9' x 19')		414	324	347	292	235	366	202	2,180	stalls							
TRAILER PARKING PROVIDED																	
Trailer (12' x 53')		271	107	292	210	274	187	136	1,477	stalls							
LANDSCAPE REQUIREMENT		15%															
LANDSCAPE PROVIDED																	
Landscape Area	142695	213,372	96,333	172,749	134,166	162,122	232,534	96,032	1,250,003								
Landscape Percentage	100.0%	9.1%	9.6%	7.3%	7.8%	9.2%	12.8%	8.2%	10.1%								
ZONING ORDINANCE FOR CITY																	
Zoning Designation - Special Development (SD-COM)																	

north

1" = 200'
0 200 400 600

Legend

- PARKING AREA
- NOT USABLE PARKING
- LANDSCAPE

Conceptual Site Plan

Speedway Commerce Center

County of San Bernardino, CA

HPA architecture
18831 Bardeen Ave. - Ste. #100
Irvine, CA 92612
(949) 863-1770
www.hparchs.com

HILLWOOD A PEROT COMPANY

November 17, 2021 / Job #19318

Scheme 24

APPENDIX B

HISTORY OF TOTAL ANNUAL GROUNDWATER PRODUCTION FROM THE CHINO BASIN (ACRE-FEET)

Production Year	Appropriative Pool[13]	Agricultural Pool[13]	Non-Agricultural Pool[13]	Chino Basin Desalters[14]	Department of Toxic Substances Control[15]	Total Production[16]
77-78	62,408	91,714	10,102 [1]	-	-	164,224
78-79	61,372	81,479	7,263	-	-	150,114
79-80	65,371	70,050	7,541	-	-	142,961
80-81	71,443	67,726	5,777	-	-	144,945
81-82	66,844	64,032	5,801	-	-	136,676
82-83	63,557	56,858	2,448	-	-	122,864
83-84	70,544	60,076	3,258	-	-	133,877
84-85	76,903	54,248	2,446	-	-	133,598
85-86	80,885	50,611	3,255	-	-	134,751
86-87	84,662	57,964	2,696	-	-	145,322
87-88	91,579 [2]	55,949	3,018	-	-	150,545
88-89	93,617 [3]	45,683	3,692	-	-	142,992
89-90	101,344 [4]	47,358	4,927	-	-	153,629
90-91	86,513 [5]	47,011	5,479	-	-	139,003
91-92	91,736 [6]	43,456	4,900	-	-	140,092
92-93	86,584 [7]	44,300	5,226	-	-	136,110
93-94	80,934 [8]	44,492	4,322	-	45	129,793
94-95	93,608 [9]	55,415	4,091	-	45	153,159
95-96	103,729 [10]	43,639	3,240	-	60	150,668
96-97	112,205	44,923	3,779	-	76	160,983
97-98	99,810 [11]	43,370	3,274 [12]	-	83	146,537
98-99	111,048	47,792	3,734	-	81	162,655
99-00	128,892	44,242	5,605	-	82	178,821
00-01	116,204	39,285	5,991	7,989	100	169,570
01-02	123,531	38,196	4,150	9,458	81	175,416
02-03	121,748	35,168	3,979	10,439	79	171,413
03-04	125,320	38,192	2,057	10,605	79	176,253
04-05	118,030	31,505	2,246	9,854	81	161,715
05-06	107,249	30,253	2,641	16,542	80	156,765
06-07	119,438	29,653	3,251	27,077	79	179,498
07-08	120,650	23,539	3,421	30,121	81	177,813
08-09	134,119	23,277	2,420	29,012	83	188,910
09-10	117,299	21,043	2,039	28,857	85	169,323
10-11	99,172	21,030	1,986	29,043	87	151,319
11-12	93,615	22,319 [17]	3,162	28,411	89	147,595
12-13	109,294	23,718 [17]	3,686	27,098	87	163,883
13-14	113,976	21,796 [17]	3,834	29,282	85	168,973
14-15	97,842	17,118 [17]	3,371	30,022	84	148,436
15-16	100,297	17,109 [17]	2,670	28,191	85	148,352
16-17	93,699	17,715 [17]	3,636	28,284	104	143,438
17-18	88,740	18,827	2,919	30,088	83	140,656
18-19	83,280	15,478	3,204	31,233	80	133,275
19-20	95,418	15,722	2,350	35,630	72	149,190

* Total Production adjusted from prior annual reports to include previously omitted production from wells that have become non-active over time.

[1] Includes 3,945 AF of mined water pumped by Edison as agent for IEUA.
[2] Does not include 7,674.3 AF exchanged with MWDSC.
[3] Does not include 6,423.6 AF exchanged with MWDSC.
[4] Does not include 16,377.1 AF exchanged with MWDSC.
[5] Does not include 14,929.1 AF exchanged with MWDSC.
[6] Does not include 12,202.4 AF exchanged with MWDSC.
[7] Does not include 13,657.3 AF exchanged with MWDSC.
[8] Does not include 20,194.7 AF exchanged with MWDSC.
[9] Does not include 4,221.9 AF exchanged with MWDSC.
[10] Does not include 6,167.2 AF exchanged with MWDSC.
[11] Does not include 4,275.4 AF exchanged with MWDSC.
[12] Does not include 216.5 AF exchanged with MWDSC.
[13] Represents total physical production by Pools, not assessed production.
[14] Production by the Chino Basin Desalters is not considered assessable production; Desalter replenishment obligation accounting is shown in the Assessment Package.
[15] Production by DTSC is accounted separately, by agreement, such that the production is not assessed by Watermaster.
[16] Total reflects physical production by pumpers and does not account for any adjustments that are made in the Assessment Packages.
[17] Total Agricultural Pool production revised due to incorrect multiplier used on an irrigation well meter.

APPENDIX C

AGREEMENT FOR THE PROVISION OF SEWER AND RECYCLED WATER SERVICE

This Agreement is entered into this, the 24 day of Nov., 2015 ("Effective Date"), by and between Inland Empire Utilities Agency, a Municipal Water District; City of Fontana; Fontana Water Company; and California Speedway Corporation d/b/a Auto Club Speedway ("Speedway").

RECITALS

WHEREAS, Inland Empire Utilities Agency is a Municipal Water District organized and existing pursuant to Section 71000, et seq. of the California *Water Code* and is authorized to provide wastewater treatment and recycled water services to property owned, operated, managed, and controlled by Speedway; and

WHEREAS, The City of Fontana is a general law city located within the County of San Bernardino, State of California; and

WHEREAS, Fontana Water Company, a division of San Gabriel Valley Water Company, a California corporation, is a public utility water company subject to regulatory jurisdiction of the California Public Utilities Commission doing business in the County of San Bernardino, with its principal place of business being 15966 Arrow Route, Fontana, California; and is authorized to provide public utility water service, including service of recycled water, to its customers, such as Speedway's property, which are located within its service area as authorized and approved by the California Public Utilities Commission; and

WHEREAS, Speedway owns, operates, manages, and controls certain real property within the County of San Bernardino, State of California, which property is more commonly identified as the Auto Club Speedway of Southern California; and

NOW THEREFORE, the Parties hereto agree as follows:

I. DEFINITIONS

1.1 "Capital Costs" shall mean all actual, out of pocket costs incurred by IEUA for the design, engineering, construction, permitting and all other similar third party costs of constructing the Temporary System, Permanent System and Recycled Water System.

1.2 "City" shall mean the City of Fontana.

1.3 "Connection Point" shall mean that location where the Temporary System and Permanent System are connected to the Lift Station (see 1.6 below).

1.4 "CSI" shall mean California Steel Industries.

1.5 "IEUA" shall mean the Inland Empire Utilities Agency, a Municipal Water District.

1.6 "Lift Station" shall mean that lift station facility owned by IEUA located on San Bernardino Avenue and depicted on Exhibit "A" of this Agreement.

1.7 "NAPA Properties" shall mean those four properties which are identified by the following San Bernardino County Assessor's Parcel Numbers: 0229-291-039-0000, 0229-291-034-0000, 0229-291-040-0000, and 0229-291-031-0000, and which are understood to be currently owned, respectively, by Triple-S California Logistics LLC, a Texas limited liability company ("Triple-S"); Maas-Hansen Steel Corporation, a California corporation ("Maas"); McLeod Properties, Fontana LLC, a California limited liability company and Budway Enterprises, Inc., a California corporation (collectively, "McLeod"), and West Valley MRF, LLC, a California limited liability company ("MRF").

1.8 "Party" or "Parties" shall mean an entity, individually, or the entities, collectively, that are bound by and have executed this Agreement.

1.9 "Permanent System" shall mean that certain gravity sewer pipe for the transmission of wastewater to be designed and constructed by IEUA from the point of connection on the Sewer Property up to the point of connection to the IEUA Lift Station, and as depicted on Exhibit "B" of this Agreement. Sewer Property is that property owned by PAC Operating Limited Partnership, a Delaware limited partnership ("POLP") and more commonly identified as Parcel 8 of Parcel Map 15640 recorded in San Bernardino Official Records, Book 207, Pages 26-30.

1.10 "Prologis" shall mean PAC Operating Limited Partnership, a Delaware limited partnership and CCG Ontario Operations, LLC collectively.

1.11 "Pumping Rights" shall mean those rights owned by Speedway to pump and use up to 475 acre feet of water per year from Chino Basin Management Zone 3 as more thoroughly described in the water rights agreement between CCG Ontario Operations, LLC and Speedway as successors-in-interest to Kaiser Ventures and Speedway Development Corporation respectively.

1.12 "PWWTP" shall mean the Prologis Wastewater Treatment Plant.

1.13 "Regional Contract" shall mean the Chino Basin Regional Sewerage Service Contract with Exhibits (as amended October 19, 1994) as amended from time to time.

1.14 "Related Contracts" shall mean the following contracts: (a) this , (b) the Agreement for the Provision of Recycled Water and Sewer Service between IEUA, the City, the Water Company (defined below) and CSI dated substantially concurrently herewith, and (c) the Agreement for the Provision of Sewer Service between IEUA, the City, the Water Company, and Prologis (defined below) dated substantially concurrently herewith, all of which are for the provision of temporary wastewater services, permanent wastewater services, and/or recycled water services.

1.15 "RWS" shall mean that infrastructure designed, constructed, maintained, and controlled by IEUA to provide wholesale recycled water service to the Water Company which will provide retail recycled water service to Speedway connections, as depicted on Exhibit "C" attached hereto.

1.16 "Speedway" shall mean California Speedway Corporation dba Auto Club Speedway.

1.17 "Storage Account" shall mean the account established by Speedway through Watermaster, containing unused Pumping Rights held exclusively for the benefit of IEUA.

1.18 "Temporary System" shall mean that certain above-ground piping for wastewater transmission to be designed and constructed by IEUA and operated and maintained by POLP from the point of connection on the Sewer Property up to the point of connection to the IEUA Lift Station, and as depicted on Exhibit "D" of this Agreement, which shall remain in service from the date of its completion until such time as the Permanent System is completed and accepting wastewater flows. By separate agreement with IEUA, CSI shall maintain that portion of the Temporary System located on its property.

1.19 "Third-Party Properties" shall mean all of those properties located within the Kaiser Distribution Center industrial park which park is depicted on Exhibit "E" attached hereto, and/or which includes, but is not limited to, those parcels which are understood to be currently owned by Watson Land Company, the Estate of James Campbell, the David F. Bolger Sixth Amended and Restated Revocable Trust, the Appel Family Trust, BNSF, and various entities which are affiliated with POLP, or other entities which have not yet developed their parcels within the park.

1.20 "Water Company" shall mean the Fontana Water Company.

1.21 "Watermaster" shall mean the Chino Basin Watermaster.

II. WASTEWATER SERVICES

2.1 Temporary System. Within ninety (90) days of the execution of Related Contracts by IEUA, Prologis, CSI, Speedway, Water Company, and City, IEUA shall design and construct the Temporary System which shall divert all flows currently treated at the PWWTP to IEUA's Lift Station. The Temporary System will be constructed above-ground and located as depicted in Exhibit "D" attached hereto. IEUA and the Speedway shall cooperate with each other to support IEUA in the planning and implementation of the construction of the Temporary System and other reasonably required site improvements on Speedway property necessary to implement the Temporary System.

2.2 Service Date. Upon completion of the Temporary System, IEUA will begin accepting all untreated wastewater flows diverted from the PWWTP.

2.3 Operation and Maintenance. Prologis and CSI, by separate agreement, will operate and maintain the Temporary System from the location of the PWWTP to the IEUA Lift Station until such time as the Permanent System is operational so that it is accepting all flows of untreated wastewater from Prologis and all current users of the PWWTP. At such time, the Temporary System will be dismantled by IEUA

2.4 Permanent System. IEUA shall design and cause to be constructed all infrastructure necessary to create the Permanent System to divert all wastewater flows from the PWWTP to the Lift Station as depicted in Exhibit "B" attached hereto. The Permanent System will replace the Temporary System.

2.5 Capital Cost. The Capital Cost shall be allocated equally between Prologis, CSI, and Speedway up to a total amount of Three Hundred Thousand Dollars ($300,000) each. If bids for the construction of the Permanent System exceed the not to exceed cost stated above, the Parties shall reopen negotiations and shall have the option to withdraw from this Agreement. The reimbursable Capital Costs shall be paid within thirty (30) days of acceptance of the Permanent System as complete by the Board of Directors of IEUA. The Capital Costs that are allocated to Speedway shall be paid only as provided in Section 4.1 of this Agreement although Speedway may, at its sole discretion, utilize the alternative method of payment described in Section 5.1 of this Agreement. Speedway shall not have any responsibility for the failure of CSI or Prologis to timely pay their respective share of the Capital Costs.

2.6 Operation and Maintenance. Speedway shall own, operate, manage, control, inspect, maintain, and repair those permanent sewer infrastructure facilities located on Speedway properties up to the point of connection to the Permanent Systems depicted on Exhibit "B". IEUA shall own, operate, manage, control, inspect maintain and repair those permanent sewer infrastructure facilities located in the public right of way. In the event of the sale of all or part of its properties, it shall be incumbent upon Speedway to assign to its successor-in-interest, the ownership and obligation for operation, management, control, inspection, maintenance, repair, and replacement of the sewer infrastructure associated with the sold property. In the absence of

any such assignment, Speedway shall remain responsible for all said infrastructure. IEUA shall have no responsibility for the operation or maintenance of existing or future systems located on Speedway property or to any successors-in-interest to Speedway.

2.7 Transition of Service. Speedway and IEUA shall cooperate with each other in the transition of wastewater treatment services from the PWWTP to the Permanent System. Not more than sixty (60) days prior to such transition, IEUA shall submit a schedule prepared in coordination with CSI, Prologis, and Speedway proposing the acts required of each Party, and the timing thereof, to accomplish the transition. Upon approval by CSI, Prologis, and Speedway, the schedule shall be implemented with the costs associated with the transition activities described in this Section 2.7 shall be borne by the Party incurring the expense.

2.8 Waste Regulation. The Temporary and Permanent Systems are to be used for domestic waste only of a nature materially similar to the waste water that the Speedway is sending to the PWWTP as of the Effective Date. Speedway shall ensure that its use of the Temporary System and Permanent System will be in compliance with all applicable laws, ordinances, and regulations, including those contained in the Regional Contract as set forth in Exhibit "G" attached hereto. IEUA shall be responsible for the administration of the pretreatment program with CSI, Speedway, Prologis, NAPA Properties and Third Party Properties.

2.9 Connection Fees. Speedway shall owe IEUA for all connection fees associated with connecting its property to the Permanent System in the amount prescribed by the Regional Contract. Speedway shall pay such connection fees to IEUA as provided in Section 4.1 of this Agreement. Speedway may, at its sole discretion, utilize an alternative method of payment as described in Section 5.1 of this Agreement. Speedway shall report any future fixture unit additions to IEUA and City and shall pay applicable connection fees in accordance with the applicable terms and conditions of the Regional Contract. The current rates are set forth in Exhibit "F" attached hereto and are subject to change by action of the Board of Directors of IEUA.

2.10 Valuation of Costs and Fees. If Speedway elects to pay Capital Costs and connection fees by cash payment as provided in Section 5.1 of this agreement, then Speedway shall pay the actual cost incurred for Capital Costs as set forth in section 2.5 of this Agreement and connection fees estimated to be an additional Three Million Dollars ($3,000,000). If Speedway elects to pay Capital Costs and connection fees through assignment of Pumping Rights as provided in Section 4.1 of this agreement, the total value thereof shall be equal to fifty percent (50%) of the volume of the Pumping Rights.

2.11 User Fees. Speedway shall pay monthly wastewater user fees as billed by City in accordance with the rate structure established by City for such services for similarly situated outside of City users. Speedway shall provide site water use data to City as required to complete the monthly wastewater billing. User fees shall be assessed from the date that IEUA begins

accepting untreated wastewater flows into the Temporary System. The current rates are set forth in Exhibit "F" and are subject to change by action of the City's City Council.

2.12 Failure to Perform. In the event that IEUA fails to perform any of the services contemplated in Section II within two years of the effective date of this Agreement, then Speedway shall have the right to terminate this Agreement. Provided, however, that the Speedway must first deliver to the IEUA a Notice of Intent to Terminate, and the IEUA shall have a reasonable opportunity (which shall not exceed sixty [60] days) to perform the obligation.

III. RECYCLED WATER

3.1 Design and Construction. IEUA shall design and cause to be constructed the RWS as depicted in Exhibit "C" which shall serve recycled water to the Water Company for delivery by Water Company to Speedway for industrial and irrigation use. Through separate agreement with Speedway, IEUA may also design and assist in the construction of recycled water infrastructure on Speedway property. The RWS shall be constructed only if Water Company obtains California Public Utilities Commission (CPUC) approval of recycled water rates as provided in Section 3.3 of this Agreement, and shall be deemed completed upon acceptance of the project by IEUA's Board of Directors. The City agrees to cooperate and support the development of the RWS infrastructure, which would enable IEUA to comply with the provisions of this Agreement.

3.2 Ownership, Operation, and Maintenance. IEUA shall own, operate, inspect, manage, maintain, and repair the RWS depicted in Exhibit "C" up to the point of connection at Speedway. Said RWS shall be deemed a constituent of IEUA's overall recycled water system. Speedway shall own, operate, inspect, manage, maintain and repair recycled water infrastructure located on Speedway Property up to the point of connection to the RWS. Water Company shall own, operate, inspect, manage, maintain, repair, and read the water meters at each such point of connection.

3.3 Rates. Speedway shall incur costs and fees for only to the extent that recycled water is utilized and then only as set forth in this Section 3.3. Current rates for recycled water are set forth in Exhibit "F". In accordance with Section 3.1 Water Company will seek CPUC approval to provide recycled water to Speedway at a rate equal to 85% of the Metropolitan Water District of Southern California's ("MWD") full service untreated Tier 1 rate, including any future adjustments thereto. Upon and subject to such CPUC approval, Water Company shall provide recycled water service to Speedway subject to and in accordance with the Water Company's applicable tariff rules and schedules on file with and approved by the CPUC including but not limited to Tariff Schedule FO-6. However, in consideration of (i) IEUA's commitment to design, construct, own, operate, inspect, manage, maintain and repair the recycled water system as provided in Sections 3.1 and 3.2 above; (ii) Speedway's commitment to reimburse IEUA for the capital costs of constructing the recycled water system as provided in Section 3.6 below; (iii) Speedway's long-term interest in use of recycled water thereby

potentially conserving significant quantities of high quality, local, potable water resources; and (iv) IEUA's commitment to make available to Water Company recycled water pursuant to the terms and conditions of the Regional Contract as provided in Section 3.4 below, Water Company will provide recycled water service to Speedway at a discounted quantity rate which differs from the rates for Recycled Water Metered Service set forth in Water Company's Tariff Schedule No. FO-6. Such discounted quantity rate shall be determined by substituting the quantity rate shown in Tariff Schedule No. FO-6 with an agreed-upon rate equal to 85% of the MWD full service untreated Tier 1 rate and by eliminating any temporary surcharge or surcredit that would otherwise apply from time to time. Because such rates differ from Water Company's applicable tariff schedule, such rates will become effective only upon authorization by the CPUC. Sections 3.1 through 3.5 of this Agreement at all times shall be subject to such modifications as the CPUC may direct from time to time in the exercise of its jurisdiction, provided however, nothing in Part III of this Agreement shall preclude any of the parties from opposing any such modifications by the CPUC, through any available legal and/or administrative means. Water Company shall seek CPUC approval within ninety (90) days of the execution of this Agreement by all of the Parties hereto. Should such CPUC approval not be obtained within 12 months of the above-stated date, the Parties hereto shall meet and confer in good faith to consider the project being implemented with resulting terms acceptable to the Parties.

3.4 Quantity and Quality Delivered. IEUA shall supply recycled water through Water Company for use at Speedway pursuant to the terms and conditions of the Regional Contract, and any amount delivered shall not be deemed part of the City's base entitlement as described therein. It is expected that the annual use of recycled water by Speedway will be 450 acre feet. The Parties hereto recognize that demand may increase over time and any additional demands shall be subject to recycled water availability and further agreement between the Parties. All recycled water provided by IEUA shall meet the water recycling criteria established by the State Water Resources Control Board – Division of Drinking Water in terms of quality and level of treatment required for allowable use. In the event that the IEUA does not supply enough recycled water to meet the Speedway's needs, for any reason, then the Speedway shall be entitled, without any penalty, to utilize any water available to the Speedway in order to do so, including the portion of the Pumping Rights allocated to recycled water capital costs as outlined in Section 3.6 of this Agreement. Use of recycled water is deemed a priority use. Further, this Agreement contains no "take or pay" provision and Speedway shall be the sole determinant of its actual volume of recycled water use, from the volume made available to Speedway.

3.5 Irrigation System. Within thirty (30) days of completion of the RWS, Speedway, at its sole expense, shall convert its entire irrigation system to use primarily recycled water provided the IEUA and Water Company is able to supply adequate recycled water.

3.6 Capital Costs. Speedway shall pay the Capital Costs associated with constructing the RWS as provided in Section 4.1 of this Agreement and shall be solely responsible for the recycled water infrastructure located on Speedway property up to the point of connection to the RWS. If, in its sole discretion, the Speedway elects to pay Capital Costs by cash payment as provided in Section 5.1 of this Agreement, then Speedway shall pay the actual cost incurred for

Capital Costs estimated to be Three Million Dollars ($3,000,000). If Speedway elects to pay Capital Costs through assignment of Pumping Rights as provided in Section 4.1 of this Agreement, the total thereof shall be equal to fifty percent (50%) of the volume of the Pumping Rights.

3.7 Failure to Perform. Until IEUA completely performs all of the services contemplated in Section III, Speedway shall be excused from performance obligations set forth in Section III and Section 4.1 herein as to those obligations not performed by IEUA. Speedway will be obligated to compensate IEUA for those obligations that are performed by IEUA in compliance with the provisions of this Agreement. If IEUA fails to completely perform its obligations set forth in this Section III within two (2) years of the completion date of the Permanent System, then Speedway shall have the right to terminate Section III and Section 4.1 of this Agreement provided, however, that the Speedway must (i) deliver to the IEUA a Notice of Intent to Terminate Section III, and the IEUA has a reasonable opportunity (which shall not exceed sixty [60] days) to perform the obligation and (ii) Speedway shall be responsible for its portion of the Capital Costs and connection fees of the Permanent System, which Speedway may pay out pro rata over a ten (10) year time frame.

IV. PAYMENT THROUGH ASSIGNMENT OF PUMPING RIGHTS

4.1 Assignment of Pumping Rights. Speedway will assign its Pumping Rights to IEUA as full consideration for all Capital Costs and connection costs related to the design and construction of the Temporary System, the Permanent System and the RWS. The assignment shall have a term of sixty (60) years and shall be allocated as follows:

Years one (1) through forty (40) – 450 acre feet per year

Years forty-one (41) through fifty (50) – 300 acre feet per year

Years fifty-one (51) through sixty (60) – 150 acre feet per year

IEUA shall be entitled to utilize Pumping Rights as determined in its sole discretion, subject only to Watermaster oversight and approval. The assigned pumping rights shall be free, clear, and exclusive of the rights of all others who claim an interest therein. Subject to the terms herein, this assignment shall survive and be effective despite the sale of Speedway property, lease of Speedway property or cessation of business.

4.2 Storage of Pumping Rights. If, at any time and for any reason, IEUA is precluded from or elects not to exercise its assignment or use of Pumping Rights, in whole or in part, then all unused Pumping Rights shall be accumulated by Speedway in the Storage Account for later IEUA use. Speedway shall report to IEUA annually with respect to the amount of Pumping Rights held in the Storage Account. Once each year, IEUA shall have the right to audit the Storage Account subject to reasonable notice to Speedway. The Storage Account shall be

subject to losses normally assessed to Overlying (Non-Agricultural) Pool storage accounts by Watermaster.

4.3 Assignment of Stored Water. IEUA shall retain sole discretion over the assignment of Pumping Rights held in the Storage Account, however, any assignment shall be subject to Watermaster oversight. The assignment of Pumping Rights shall be subject to the provisions of the Restated Judgment and other Watermaster documents as applicable, in the case of *Chino Basin Municipal Water District v. City of Chino*, Case No. RCV 51010, as implemented by Watermaster. Speedway shall cooperate and shall perform all acts reasonably required of it by IEUA, Watermaster or others to complete any assignment of water held in the Storage Account, at no cost to IEUA.

4.4 Condition Precedent. The assignment of Pumping Rights described herein shall be conditioned upon reaching an agreement with Prologis whereby Prologis agrees to the assignment, and waives and releases any interest they may have in the Pumping Rights.

4.5 Grant Funding. IEUA shall exercise its best efforts to obtain grant funding from available sources to offset, in part, the cost of design and construction of the RWS. As set forth in Section 3.6 of this Agreement, IEUA shall also retain the discretion to utilize grant funding to offset the capital costs associated with constructing recycled water infrastructure situated on Speedway property, including onsite retrofits for additional recycled water connections at Speedway facilities. Speedway shall exercise its best efforts in support and cooperation with IEUA to obtain grant funding. In the event that the IEUA secures any grant funding, then Speedway's amount due for capital costs and connection fees shall be reduced by the amount of the grant funding proportionally allocated to Speedway in an amount determined by IEUA in the exercise of reasonable discretion.

V. ALTERNATIVE PAYMENT

5.1 Lump Sum Payment. Speedway shall have the option, at its sole discretion, to pay its share of any Capital Costs and connection fees for both wastewater and recycled water systems that is still due at the time of payment in one lump sum payment in lieu of continuing to assign pumping rights as set forth in Section 4.1 of this Agreement. Capital Costs shall not include grant funding. The IEUA's claims for Capital Costs and connection fees shall be supported by documentation to the Speedway's satisfaction establishing the amount claimed was incurred and was reasonable and necessary.

In the event that the Speedway exercises its right under Section 5.1, any and all value derived from the sale or banking of water (at the value set forth by the Metropolitan Water District full service untreated Tier 1 water value) recovered through the exercise of Pumping Rights shall offset, in like amount, capital costs and connection fees owed to IEUA by Speedway.

VI. TERM

6.1 Term of Agreement. This Agreement shall begin on the date that all Related Contracts are executed by the respective Parties and shall continue for a term of sixty (60) years whereupon the sewer services and recycled water services shall continue to be provided by IEUA and Water Company, respectively, under terms and conditions then applicable to persons and/or entities similarly situated to Speedway.

6.2 Termination. This Agreement may be terminated by either Speedway or IEUA upon a material breach by the other Party. A breach of this Agreement will only be considered a material breach after a Party has delivered to the other Party a Notice of Intent to Declare a Material Breach, and the breaching Party has received a reasonable opportunity to cure the breach but has failed or refused to do so within that time.

VII. INSURANCE

7.1 Insurance. IEUA and Speedway shall each provide insurance so as to provide protection as described in this Agreement. The Parties shall furnish to each other certificates issued by insurance companies reasonably acceptable to one another showing policies carried and the limits of coverage as follows:

(a) Speedway and IEUA shall maintain Workers' Compensation Insurance for their respective employees to the extent of statutory limits and Occupational Disease and Employer's Liability Insurance for not less than $1,000,000.

(b) Speedway and IEUA shall maintain Commercial General Liability Insurance, including but not limited to Products and Completed Operations and Contractual Liability, as applicable to their obligations under this Agreement with limits not less than:

  (i) Personal Injury - $1,000,000 per occurrence; and

  (ii) Property Damage - $1,000,000 per occurrence.

(c) Each Party shall maintain Automobile Liability Insurance with limits not less than:

  (i) Bodily Injury - $1,000,000 each accident; and

  (ii) Property Damage - $1,000,000 each accident.

7.2 Certificates of Insurance. Each Party shall provide certificates of insurance to the other during the term of this Agreement certifying that such coverages shall remain in effect for the duration of this Agreement; provided, however, that IEUA shall deliver certificates of insurance to Speedway during the term of this Agreement with a satisfactory loss payable endorsement naming Speedway as a loss payee, or in the case of any real property, an additional insured, such endorsements to contain a waiver of warranties. All certificates of insurance shall state that prior to cancellation, non-renewal or any material change, thirty (30) calendar days

written notice shall be given to IEUA. Failure of IEUA or Speedway to enforce the minimum insurance requirements listed above shall not relieve Speedway or IEUA of responsibility for maintaining these coverages.

7.3 Occurrence Policy. All insurance required hereunder shall provide insurance for occurrences from the Effective Date hereof throughout the later of the expiration or termination hereof.

VIII. INDEMNITY

8.1 Indemnification by Speedway. Speedway shall fully indemnify, save harmless, and defend IEUA and any of its officers, directors, employees, contractors, and agents or assignees from and against any and all costs, claims, and expenses incurred by such parties in connection with or arising from any claimed interest to Pumping Rights asserted by third-parties, or any claim by a third-party for physical damage to or physical destruction of property, or death of or bodily injury to any person, but only to the extent caused by the negligence, gross negligence, or willful misconduct of Speedway or it agents or employees or others under the control of Speedway in performing any of the conditions and covenants of this Agreement.

8.2 Indemnification by IEUA. IEUA shall fully indemnify, save harmless, and defend Speedway or any of its officers, directors, employees, contractors, and agents from and against any and all costs, claims, and expenses incurred by such parties in connection with or arising from any claim by a third-party for physical damage to or physical destruction of property, or death or bodily injury to any person, but only to the extent caused by the negligence, gross negligence, or willful misconduct of IEUA or its agents or employees or others under the control of IEUA.

IX. GENERAL PROVISIONS

9.1 Amendments. This Agreement may only be amended, modified, changed, or rescinded in a writing signed by each of the Parties hereto.

9.2 Interpretation. The language of this Agreement shall not be construed for or against any Party, as each Party has participated in the drafting of this Agreement and had the opportunity to have its counsel review it. Whenever the context and construction so requires, all words used in the singular shall be deemed to be used in the plural, all masculine shall include the feminine and neuter, and vice-versa. Unless the context otherwise requires, references herein: (i) to Sections and Exhibits mean the Sections of and the Exhibits attached to this Agreement; and (ii) to an agreement, instrument, or other document means such agreement, instrument, or other document as amended, supplemented, and modified in writing from time to time to the extent permitted by the provisions thereof and by this Agreement.

9.3 Headings. The headings of the Sections hereof are inserted for convenience only and shall not be deemed a part of this Agreement.

9.4 Partial Invalidity. If any one or more of the covenants or agreements provided in this Agreement to be performed should be determined to be invalid or contrary to law, such covenant or agreement shall be deemed and construed to be severable from the remaining covenants and agreements herein contained and shall in no way affect the validity of the remaining provisions of this Agreement.

9.5 Counterparts. This Agreement may be executed in several counterparts, all or any of which shall be regarded for all purposes as one original and shall constitute and be but one and the same instrument.

9.6 Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

9.7 Notices. Any notices required or permitted to be given hereunder shall be given in writing and shall be delivered: (a) in person; or (b) by Federal Express or another reputable commercial overnight courier that guarantees next day delivery and provides a receipt; and (c) such notices shall be addressed as follows:

If to IEUA:
Inland Empire Utilities Agency
Attn: General Manager
6075 Kimball Avenue
Chino, CA 91708

If to Speedway:
California Speedway Corporation d/b/a Auto Club Speedway
Attn: President
9300 Cherry Avenue
Fontana, CA 92335

With a copy to:
Legal Department
One Daytona Boulevard
Daytona Beach, FL 32114

If to Water Company:
Fontana Water Company, a division of
San Gabriel Valley Water Company
Attention: President
11142 Garvey Avenue

Post Office Box 6010
El Monte, CA 91734

With a copy to:
T. J. Ryan, Vice President and General Counsel (same address)

If to City:
City of Fontana
Attention: City Manager
8353 Sierra Ave.
Fontana, CA 92335

9.8 Merger of Prior Agreements. This Agreement and the Exhibits hereto constitute the entire agreement between the Parties and supersede all prior agreements and understandings between the Parties relating to the subject matter hereof.

9.9 Attorney's Fees. If any legal action or any arbitration or other proceeding is brought for the enforcement of this Agreement, or because of an alleged dispute, breach, default, or misrepresentation in connection with any of the provisions of this Agreement, the successful or prevailing party shall be entitled to recover reasonable attorney's fees and other costs incurred in that action or proceeding, in addition to any other relief to which it or they may be entitled.

9.10 Dispute Resolution. The Parties shall seek to resolve any dispute concerning the interpretation or implementation of this Agreement through good faith negotiation, involving, as and when appropriate, the general manager or chief executive officer of each of the Parties. Any dispute that remains unresolved thirty (30) days after notice of the dispute is made to the Parties, shall be resolved by a single arbitrator with substantial experience in the matter or matters in dispute, conducted in accordance with Judicial Arbitration and Mediation Services (JAMS). The JAMS arbitrator shall apply the American Arbitration Association's rules on commercial disputes, which shall govern any arbitration. If the Parties cannot agree on a single arbitrator within ten (10) days of the written election to submit the matter to arbitration, any Party may request JAMS to appoint a single, neutral arbitrator. The Parties shall use their reasonable best efforts to have the arbitration proceeding concluded within ninety (90) business days of selection of the arbitrator.

9.11 Cooperation. The Parties acknowledge that they are entering into a long-term arrangement in which the cooperation of all of them will be required, including the execution of necessary documents. The Parties agree to cooperate in good faith with each other in the development, construction, ownership, operation, and maintenance of the facilities that are described in this Agreement and that the Parties will support IEUA in the planning and implementation of the construction of the Temporary System, Permanent System, and other reasonably required site improvements on property owned by Speedway to the extent necessary

to achieve performance of the terms and conditions of this Agreement. . The Parties agree to cooperate in good faith with Fontana Water Company in its implementation of recycled water service at CSI's property, including support of Fontana Water Company's efforts to obtain PUC approvals necessary to implement this Agreement. Provided, however, that this Section 9.12 is not intended to impose any substantive obligations or cost on either Party beyond those expressly included in this Agreement.

9.12 Independent Contractors. The Parties agree that they are independent contractors and shall be at all times solely responsible for themselves, as well as their respective officers, directors, members, partners, employees, agents, and contractors as to workmanship, accidents, injuries, wages, supervision, and control. This Agreement may not be altered in any manner, such as course of conduct or practice, so as to change the relationship or responsibilities of the Parties as independent contractors.

9.13 Third-Party Beneficiaries. This Agreement is for the sole benefit of the Parties hereto, and nothing in this Agreement or any action taken hereunder shall be construed to create any duty, liability, or standard of care to any person not a Party to this Agreement. Except as specifically otherwise provided herein, no person shall have any rights or interest, direct or indirect, in this Agreement.

9.14 Savings Clause. Each term and condition of this Agreement is deemed to have independent effect and the invalidity of any partial or whole paragraph shall not invalidate the remaining paragraphs. The obligation to perform all of the terms and conditions of this Agreement shall remain in effect regardless of the performance of any invalid term by the other Party.

The effective date of this Agreement is the date of execution by the last Party to sign (the "Effective Date").

"IEUA"

INLAND EMPIRE UTILITIES AGENCY,
a California Municipal Water District

By: _____

Name: P. Joseph Grindstaff

Its: Chief Executive Officer

"Approved as to Form"

_____

Jean Cihigoyenetche, Esq.
General Counsel

"Speedway"

CALIFORNIA SPEEDWAY CORPORATION dba AUTO CLUB SPEEDWAY

By: _____
Name:

Name: DAVID P. ALLEN
Its: PRESIDENT

"Approved as to Form"

_____
Print Name: Benjamin W Odom
Attorney for California Speedway Corporation dba Auto Club Speedway

"City"

CITY OF FONTANA

By: _____
Name:

Name: _____
Its: _____

"Approved as to Form"

_____
Print Name: _____
Attorney for City of Fontana

"Water Company"

FONTANA WATER COMPANY

By: _____
Name:

Name: _____
Its: _____

"Approved as to Form"

_____
Print Name: _____
Attorney for Fontana Water Company

"Speedway"

CALIFORNIA SPEEDWAY CORPORATION dba AUTO CLUB SPEEDWAY

By: _____
Name:

Name: _____
Its: _____

"Approved as to Form"

_____
Print Name: _____
Attorney for California Speedway Corporation dba Auto Club Speedway

"City"

CITY OF FONTANA

By: _____
Name:

Name: Kenneth R. Hunt
Its: City Manager

"Approved as to Form"

_____
Print Name: Jeff Ballinger
Attorney for City of Fontana

"Water Company"

FONTANA WATER COMPANY

By: _____
Name:

Name: _____
Its: _____

"Approved as to Form"

"Speedway"

CALIFORNIA SPEEDWAY CORPORATION dba AUTO CLUB SPEEDWAY

By: _____
Name:

Name: _____
Its: _____

"Approved as to Form"

_____
Print Name: _____
Attorney for California Speedway Corporation dba Auto Club Speedway

"City"

CITY OF FONTANA

By: _____
Name:

Name: _____
Its: _____

"Approved as to Form"

_____
Print Name: _____
Attorney for City of Fontana

"Water Company"

FONTANA WATER COMPANY

By: _____
Name: Michael L. Whitehead

Name: _____
Its: Chief Executive Officer

"Approved as to Form"

Print Name: Timothy J. Ryan
Attorney for Fontana Water Company

EXHIBIT "A"

LIFT STATION

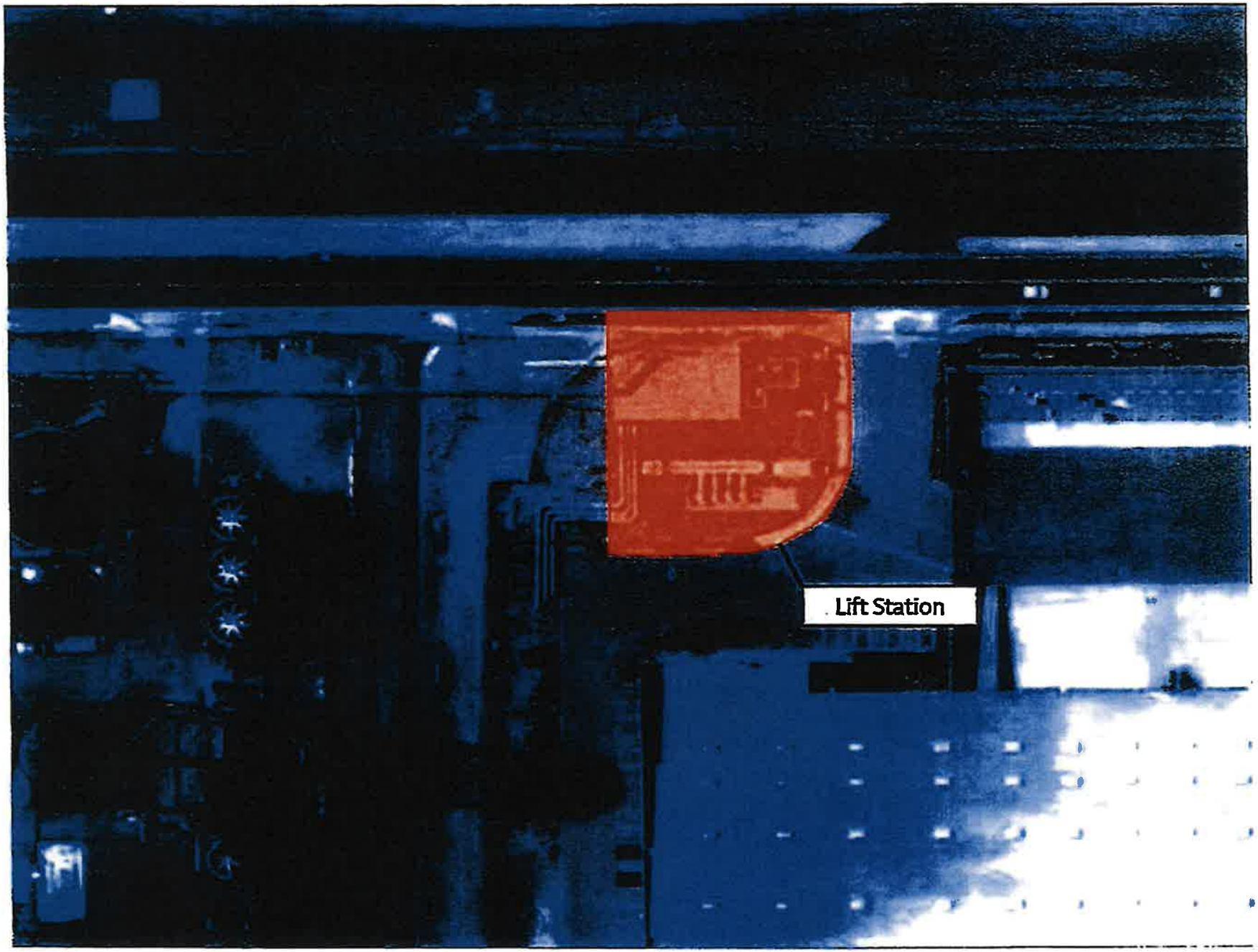

Lift Station

EXHIBIT "B"

PERMANENT WASTEWATER SYSTEM

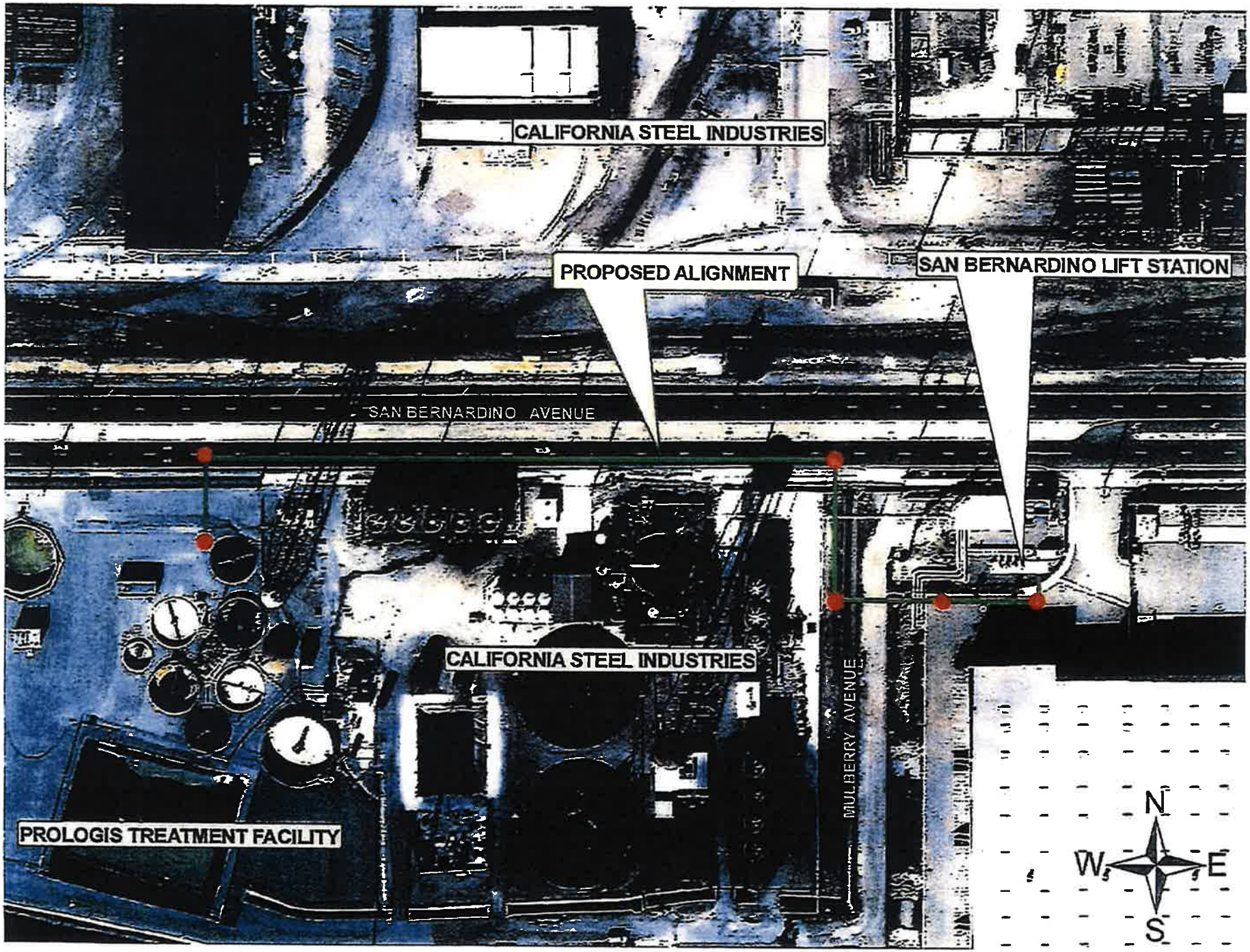

CALIFORNIA STEEL INDUSTRIES
PROPOSED ALIGNMENT
SAN BERNARDINO LIFT STATION
SAN BERNARDINO AVENUE
CALIFORNIA STEEL INDUSTRIES
MULBERRY AVENUE
PROLOGIS TREATMENT FACILITY
N
W
E
S

EXHIBIT "C"

DEPICTION OF RECYCLED WATER SYSTEM

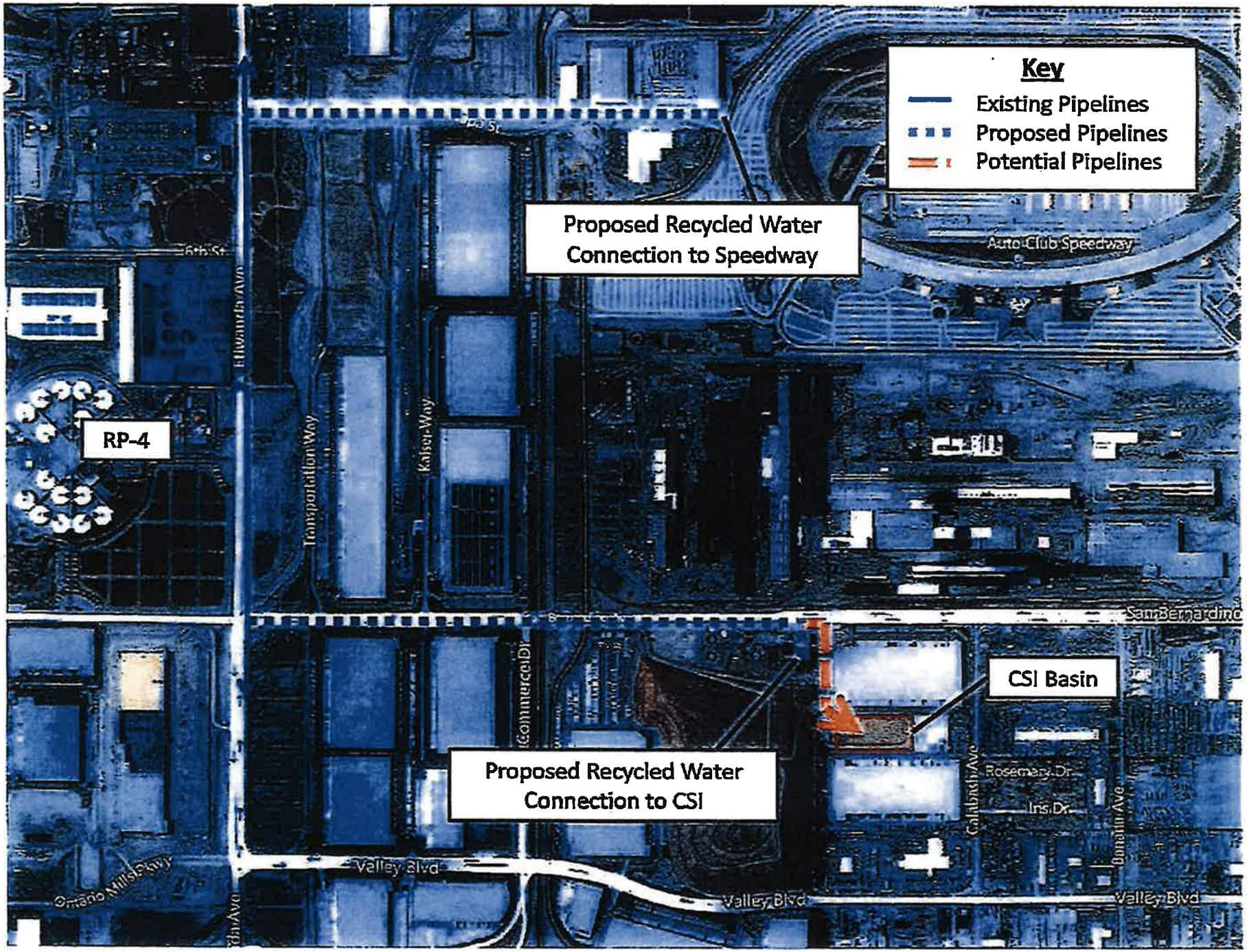

Key
Existing Pipelines
Proposed Pipelines
Potential Pipelines
Proposed Recycled Water Connection to Speedway
Auto Club Speedway
RP-4
Transportation Way
Kaiser Way
Commerce Dr
CSI Basin
Proposed Recycled Water Connection to CSI
Rosemary Dr
Iris Dr
Valley Blvd
Valley Blvd
Valley Blvd
San Bernardino

EXHIBIT "D"

TEMPORARY WASTEWATER SYSTEM

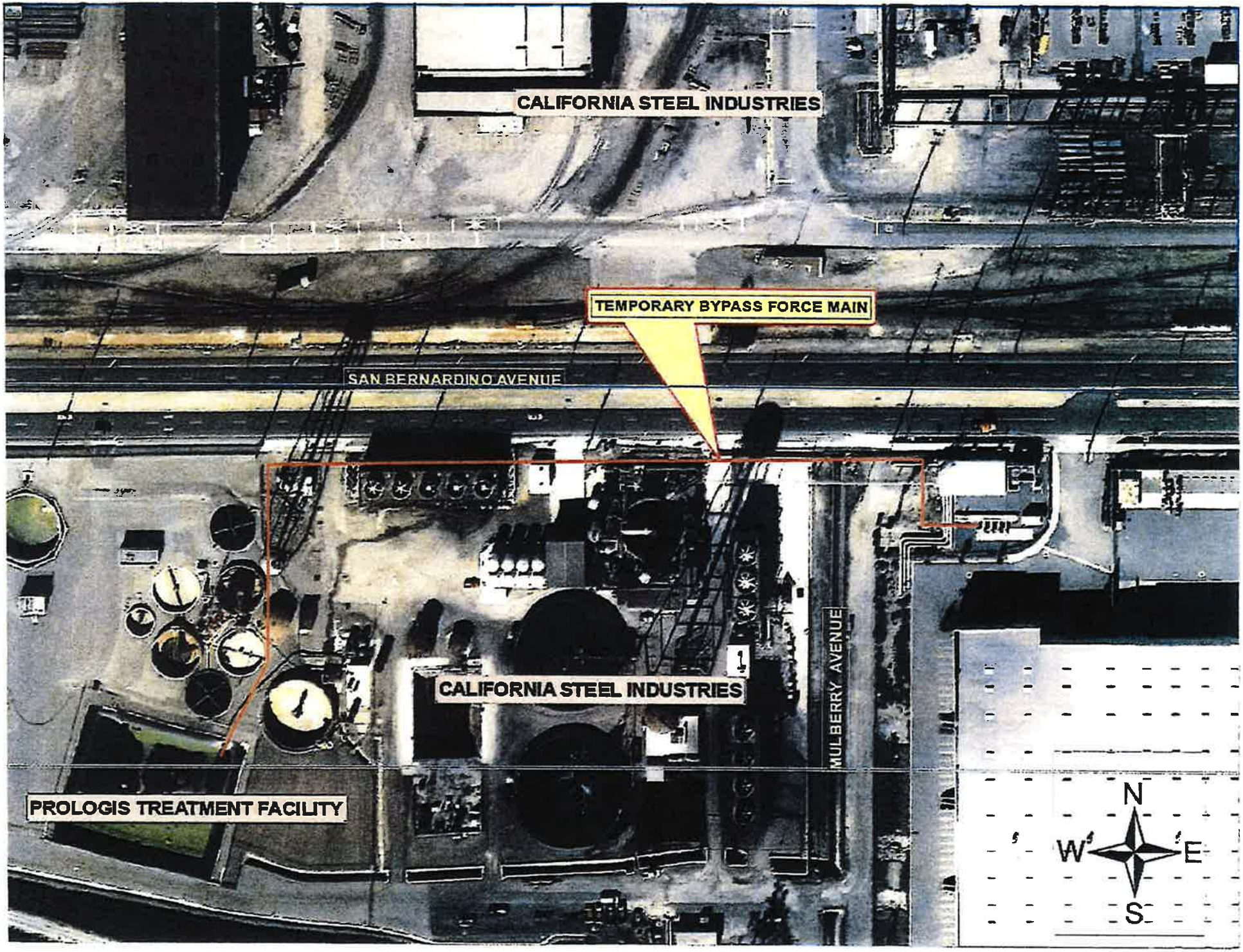

CALIFORNIA STEEL INDUSTRIES
TEMPORARY BYPASS FORCE MAIN
SAN BERNARDINO AVENUE
CALIFORNIA STEEL INDUSTRIES
MULBERRY AVENUE
PROLOGIS TREATMENT FACILITY
N
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EXHIBIT "E"

PROJECT PROPERTIES

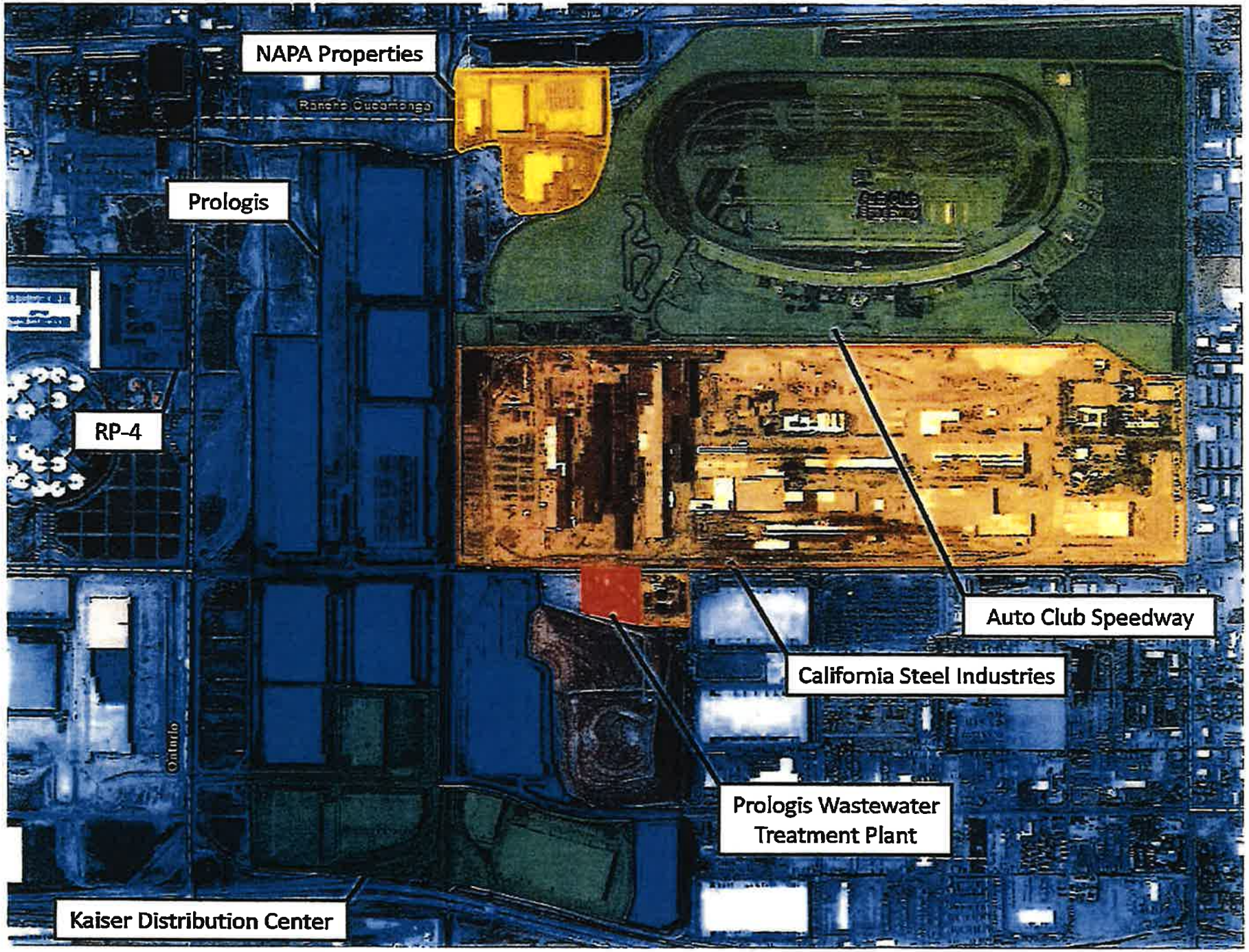
NAPA Properties
Rancho Cucamonga
Prologis
RP-4
Ontario
Auto Club Speedway
California Steel Industries
Prologis Wastewater Treatment Plant
Kaiser Distribution Center

EXHIBIT "F"

CURRENT RATES

Current Rates

Wastewater Connection Fee

$5,107/EDU (one-time); Parties acknowledge that the City of Fontan connection fee has been waived or eliminated

Monthly Wastewater User Fee

County Area

$40.03/EDU/month

Recycled Water Rate Basis

CSI/Speedway: 85% of MWD Bundled Untreated Tier 1

Metropolitan Water District of Southern California

Tier 1 Untreated (effective1/1/2015) = $582/AF

Fontana Water Company

RW rate indexed on current MWD rate = $494.70/AF

Prologis: Recycled Water Metered Service

Fontana Water Company

Schedule No. FO-6 = $2.0394/100 cu.ft.

*All rates are subject to Board/Council approved changes (typically evaluated on an annual basis based on public input). Values are in effect as of 10/1/15 unless otherwise noted.

EDU = Equivalent Dwelling Unit

EXHIBIT "G"

REGIONAL CONTRACT

Chino Basin
Regional Sewage Service Contract

With Exhibits

(As Amended October 19, 1994)

Also included:

Regional Pretreatment Agreement
Regional Wastewater Ordinance

(CBMWD Ord. No. 57)

Wastewater Quality Limitations Applicable to Contracting Agencies

CHINO BASIN REGIONAL

SEWAGE SERVICE CONTRACT

(AS AMENDED APRIL 12, 1984,

AS AMENDED OCTOBER 19, 1994)

October 19, 1994

CHINO BASIN REGIONAL

SEWAGE SERVICE CONTRACT

(AS AMENDED APRIL 12, 1984,

AS AMENDED OCTOBER 19, 1994)

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CHINO BASIN REGIONAL

SEWAGE SERVICE CONTRACT

(AS AMENDED APRIL 12, 19984, AS AMENDED

OCTOBER 19, 1994)

Section 1. DEFINITIONS

Unless otherwise required by the context, various terms used in this contract, including the recitals, shall have the meanings set forth in this section. The singular number includes the plural and the plural the singular.

"Acquire" or "Acquisition" means to acquire or make the acquisition of one or more of the following:

A. Fee simple title to land.

B. Any interest in land by deed, easement, lease, sublease, contract or otherwise.

C. Title to or any interest in any existing facilities located upon land.

D. Interests or capacity rights in any land or facilities owned by others.

"Capacity Demand" means the volume and strength (i.e., biochemical oxygen demand and suspended solids) of sewage discharged from the Community Sewer System of a Contracting Agency into the Regional Sewerage System expressed in Equivalent Dwelling Units. (Added April 12, 1984)

"Capital Outlay Ordinance" means Ordinance No. 24 of CBMWD (Added April 12, 1984)

"Capital Capacity Reimbursement Account" means the accounts established and maintained by the Contracting Agencies and to which are deposited or credited Capital Capacity Reimbursement Payments. (Added April 12, 1984)

"Capital Capacity Reimbursement Payment" means a deposit or credit made to the Capital Capacity Reimbursement Account of a Contracting Agency for new connections to its Community Sewer System. (Added April 12, 1984)

"CBMWD" means the Chino Basin Municipal Water District, a municipal water district.

"Chino Basin" means that area underlain by the Chino And Cucamonga groundwater basins and that portion of the Claremont Heights groundwater basin within San Bernardino County which groundwater basins are described in Bulletin No. 53 of the California Division of Water Resources, dated March, 1947, and entitled "South Coastal Basin Investigation - Overdraft on Groundwater Basins."

"Commercial Unit" means a building, establishment or premises where businesses selling goods or providing professional or other services to the public or governmental offices are or will be located. (Added April 12, 1984)

"Community Sewer System" means all facilities owned, controlled or operated by a sewage collection agency for the purpose of collecting and conducting sewage to a delivery point, including collector sewers conducting sewage from the originating premises, trunk sewers conducting sewage from

tributary collector sewers or other trunk sewers and any facilities appurtenant to the foregoing.

"Contracting Agency" means any sewage collection agency located, in whole or in part, within the boundaries of CBMWD which has entered into a Service Contract with CBMWD. (Amended April 12, 1984)

"Demand Deficit" means the difference between the aggregate total Forecasted Demand of a Contracting Agency and the total aggregate Equivalent Dwelling Units connected to its Community Sewer System during an eight-year period commencing with the fifth fiscal year preceding the fiscal year for which CBMWD is at the time of the determination of such difference preparing a Ten-Year Forecast, and including the initial three fiscal years of such Ten-Year Forecast. (Added April 12, 1984)

"Delivery Point" means the transfer point at which sewage is delivered from a Community Sewer System into the Regional Sewerage System.

"Dispose" or "Disposal" means any process or method for the elimination or beneficial use of sewage and any effluent or solid waste residuals thereof, including exportation from the Chino Basin.

"Disposal Facilities" means all facilities owned, controlled and operated by CBMWD to meet effluent discharge requirements, excluding reclamation facilities operated by CBMWD to meet obligations under the judgment entered in the action entitled Orange County Water District v. City of Chino, et al.

(Case No. 117628, Superior Court, County of Orange), or to meet the requirements of Contracting Agencies exercising the right of first purchase of reclaimed effluent. (Added April 12, 1984)

"Effluent" means the liquid outflow at the discharge point of any treatment or reclamation facility.

"Equivalent Dwelling Unit" or "EDU" means a measure of sewage flow equivalent in quantity and strength to the daily flow of an average single family household determined as provided in Exhibit "J" hereto. (Added April 12, 1984)

"Expansion" means the acquisition or construction of new facilities for the Regional Sewerage System and the making of any replacements, betterments, additions or extensions of the Regional Sewerage System.

"Facilities" means any pipelines, buildings, structures, works, improvements, fixtures, machinery, equipment, or appliances and any real property, or interests therein, necessary or convenient for the construction, maintenance and operation of any of the foregoing.

"Fiscal Year" means a 12-month period commencing on July 1 and ending on the following June 30.

"Forecasted Demand" means the yearly forecasted or estimated volume and strength of sewage discharged from the Community Sewer System of a Contracting Agency into the Regional Sewerage System expressed in Equivalent Dwelling Units as set forth in a Ten-Year Forecast. (Added April 12, 1984)

"Industrial Unit" means a building, establishment or premises where manufacturing, fabrication or assembly operations or industrial or chemical processes are conducted. (Added April 12, 1984)

"Industrial Waste" means any waste water and any water borne solid, liquid, or gaseous wastes resulting from any producing, manufacturing, or processing operations of whatever nature as more particularly defined, from time to time, by any federal, state, or regional agency authorized by law to prescribe quality standards for the discharge of sewage effluent and industrial waste effluent within the Chino Basin.

"Interceptor Sewer" (Deleted April 12, 1984)

"Non-Domestic Waste" means waste or wastewater discharged into the Community Sewer System of a Contracting Agency which has a greater concentration of total dissolved solids or biochemical oxygen demand or any other constituents limited by CBMWD than the waste or wastewater discharged from the typical single family domestic household in the Contracting Agency's Service Area. as defined in the current contract. (Amended October 19, 1994)

"Non-Reclaimable Waste Disposal System" means the system owned and operated by CBMWD primarily for the disposal of nonreclaimable industrial waste. (Added April 12, 1984)

"Original Contracting Agencies" means any one or any two or more of the Cucamonga County Water District or the Cities of Upland, Ontario, Montclair, Chino or Fontana who, on or before July 31, 1972, shall have authorized execution of a

Service Contract with CBMWD.

"Outfall Sewer" means any sewer transmitting treated effluent from the discharge point of a sewage treatment and disposal plant to a point of disposal or reuse.

"Reclaim" or "Reclamation" means any process or method for altering the quality of treated sewage effluent to standards superior to those prescribed for treatment, as specified in Exhibit "A" attached hereto and made a part hereof.

"Regional Interceptor" means a sewer which receives sewage from the most downstream trunk or collector sewer of a Community Sewer System, or a portion thereof, for the purpose of transmitting the sewage to a Regional Treatment Plant or to any other point of disposal, and any facilities appurtenant thereto, or any sewer which is utilized for the transmission of the sewage of two or more Contracting Agencies to such a plant or point of disposal. (Added April 12, 1984)

"Regional Policy Committee" means the committee provided for in Section 24 hereof. (Added April 12, 1984)

"Regional Sewerage System" means all facilities owned, controlled or operated by CBMWD and any interest or capacity rights of CBMWD in facilities owned, controlled, or operated by others, for the purpose of transmitting, treating and disposing of sewage, including interceptor sewers, sewage treatment and disposal plants, outfall sewers, facilities for the disposal of effluent and solid waste residuals and any facilities appurtenant to the foregoing; the Regional Sewerage System shall

not include any reclamation facilities or portions of reclamation facilities which are operated by or for the benefit of CBMWD to meet obligations under the judgment entered in the action entitled Orange County Water District v. City of Chino, et al. (Case No. 117628, Superior Court, County of Orange), or to meet the requirements of Contracting Agencies exercising the right of first purchase of reclaimed effluent; provided that the Regional Sewerage System shall include all other disposal facilities which are required to meet the requirements of the National Pollutant Discharge Elimination System Permit or permits or Waste Discharge Requirements issued to CBMWD by the Regional Water Quality Control Board, Santa Ana Region, for the operation of the Regional Treatment Plants and, to the extent it is used as provided in Section 8 hereof, the Nonreclaimable Waste Disposal System. (Amended April 12, 1984)

"Regional Technical Committee" means the committee provided for in Section 25 hereof. (Added April 12, 1984)

"Regional Treatment Plant" means a sewage and wastewater treatment plant operated by CBMWD as part of the Regional Sewerage System. (Added April 12, 1984)

"Regional Wastewater Capital Improvement Fund" means the fund of CBMWD into which is deposited or to which is credited all Improvement District "C" tax revenues and standby charge revenues received by CBMWD and all Supplemental Capital Outlay Funds received by CBMWD from the Contracting Agencies for the acquisition, construction, improvement and expansion of the

Regional Sewerage System. (Added April 12, 1984)

"Residential Unit" means a single family residence, a condominium unit, an apartment unit or other such structure or portion thereof which is equipped and suitable for human habitation or a mobile home space in a mobile home park, not including, however, transient lodging rooms in motels or hotels which are considered to be commercial units. (Added April 12, 1984)

"Service Area" means all territory now or hereafter served by the Community Sewer System owned, controlled or operated by any sewage collection agency.

"Service Contract" means this contract and any substantially similar contract between CBMWD and a Contracting Agency providing for the transmission, treatment and disposal of the sewage of the agency by means of the Regional Sewerage System.

"Sewage" means any liquid waste and water borne solid waste resulting from residential, commercial, industrial, or institutional activities or uses.

"Sewage Collection Agency" means the County of San Bernardino and any city or special district, other than CBMWD, which is located in whole or in part within CBMWD and which is authorized to own, control and operate a Community Sewer System.

"Sewer" means any pipeline conducting sewage, either by gravity or by pressure, and any facilities appurtenant thereto.

"Sewer User Charge" means any charge, fee, rental, or rate, excluding property taxes and Capital Capacity Reimbursement Payments, which is imposed on and collected from the owner, lessee, or occupant of property for providing him with the services and facilities of any Community Sewer System or the Regional Sewerage System, or both. (Amended April 12, 1984)

"Supplemental Capital Outlay Funds" means contributions by a Contracting Agency from its Capital Capacity Reimbursement Account reserves to CBMWD to supplement the funding of the planning, design and construction of Regional Sewerage System capital improvement projects. (Added April 12, 1984)

"Transmit" or "Transmission" means the conducting (i) of sewage from any delivery point to a sewage treatment and disposal plant or other point of disposal or (ii) of effluent from a sewage treatment and disposal plant to a point of disposal or reuse.

"Treat" or "Treatment" means any process or method for altering the quality of sewage to standards equal to those prescribed in Exhibit "A" hereof.

"Undersigned Contracting Agency" includes only the contracting agency specifically designated in the first paragraph of this sewage service contract and the signatory of this particular contract.

Section 2. RIGHTS AND OBLIGATIONS

The Contracting Agencies shall have the right to deliver all sewage collected by their respective Community Sewer Systems to the Regional Sewerage System and CBMWD shall have the obligation to receive into the Regional Sewerage System all sewage so delivered by the Contracting Agencies. Notwithstanding the foregoing, a Contracting Agency may acquire, construct, own and operate a wastewater treatment plant or permit another person, firm or corporation to acquire or construct a wastewater treatment plant which will be controlled and operated by the Contracting Agency when to do so is not detrimental to the operation of the Regional Sewerage System.

A Contracting Agency which intends to acquire or construct and own, operate and maintain a wastewater treatment plant shall notify CBMWD and the Regional Technical Committee in writing of its intentions. Such a notice shall include the following information: the location and capacity of the proposed wastewater treatment plant, the method and location of disposal or reuse of the effluent therefrom, the area which will be sewerage through said plant and the quantity of wastewater flow, if any, which will be removed from any Regional Treatment Plant. The Regional Technical Committee shall make a recommendation as to whether the Contracting Agency's operation of the proposed Wastewater treatment plant will be detrimental to the operation of the Regional Sewerage System within 45 days of the receipt of the Contracting Agency's written notice. Upon

receipt of such recommendation, the Board of Directors of CBMWD shall within 45 days of the receipt of the Regional Technical Committee recommendation make a determination as to whether the Contracting Agency's operation of the proposed wastewater treatment plant will be detrimental to the operation of the Regional Sewerage System, and thereafter forthwith notify the Contracting Agency and all other Contracting Agencies in writing of such determination. Any Contracting Agency may within 20 days of the date of such written notification file a written request for a hearing with the Secretary of CBMWD. Upon receipt of such a written request, the Board of Directors of CBMWD shall schedule and conduct a hearing on its determination within 30 days of the date of receipt of such written request, and at the conclusion thereof shall affirm or modify its determination. The provisions of Section 26A hereof shall apply with respect to such hearings.

The failure of the Regional Technical Committee or the Board of Directors of CBMWD to take any action required by this section within the time specified herein or to take any action required by said Section 26A within the time specified therein shall be deemed a determination by said committee or said Board that the operation of the proposed wastewater treatment plant by the Contracting Agency giving notice will not be detrimental to the operation of the Regional Sewerage System; provided that, said committee or said Board may extend the time within which action is required of it under this section for a period of 30

days by giving written notice of such extension to all Contracting Agencies at least seven days prior to the expiration of the time specified herein.

Notwithstanding the prior provisions of this section, removal of sewage flows by a Contracting Agency from an existing Regional Treatment Plant to a wastewater treatment plant to be owned or controlled and operated by the Contracting Agency shall not be considered detrimental to the operation of the Regional Sewerage System, providing that the remaining flows into said Regional Treatment Plant will meet the quality standards set forth in and established by CBMWD and will not result in the effluent from said plant violating the waste discharge requirements prescribed for said plant by the California Regional Water Quality Control Board; and provided further that the construction by a Contracting Agency of a wastewater treatment plant for the treatment and disposal of sewage from a Community Sewer System constructed by the Contracting Agency in an area which was prior to the construction of said plant unsewered shall not be considered to be detrimental to the operation of the Regional Sewerage System.

A Contracting Agency which constructs such a plant may enter into a contract with CBMWD for the maintenance and operation of the plant; provided that CBMWD shall not be obligated to enter into such a contract. A Contracting Agency which acquires or constructs such a wastewater treatment plant shall be solely responsible for the cost and expense of the

acquisition or construction and maintenance and operation of said plant. Any such wastewater treatment plant which is acquired or constructed and owned by a Contracting Agency shall not be acquired or operated by CBMWD as a part of the Regional Sewerage System without the written consent of all other Contracting Agencies except the State of California. (Amended April 12, 1984)

Section 3. COMMUNITY SEWER SYSTEMS

Each Contracting Agency shall have the exclusive right to own and operate a Community Sewer System within its Service Area and to determine in which areas within its Service Area it will operate a Community Sewer System. Each Contracting Agency shall be responsible for all costs and expenses of the acquisition, construction, maintenance and operation of its Community Sewer System. (Amended April 12, 1984)

Section 4. SEWER USER CHARGES

Each Contracting Agency may, in the manner provided by law, impose and collect sewer user charges within its Service Area for providing the services and facilities of its Community Sewer System and of the Regional Sewerage System and shall be entitled to retain, use and expend the charges for any lawful purpose. CBMWD shall not impose sewer user charges within the Service Area of any Contracting Agency without the prior consent of the Contracting Agency. (Amended April 12, 1984)

Section 5. REGIONAL INTERCEPTORS

Regional Interceptors are a part of the Regional Sewerage System and their design and construction or acquisition shall be financed as provided in section 9 hereof. Any Contracting Agency may make a written request to CBMWD for a determination as to whether or not an existing sewer has become a Regional Interceptor. Each such request received by CBMWD shall be referred to the Regional Technical Committee and such committee shall make a written recommendation to the Board of Directors of CBMWD as to whether or not the interceptor in question shall be acquired by CBMWD as a Regional Interceptor. Any Contracting Agency which disagrees with such a recommendation of the Regional Technical Committee may file a written request for a hearing thereon with the Secretary of the Board of Directors of CBMWD. Upon receipt of such a request, said Board of Directors shall schedule and conduct a hearing and give notice thereof in accordance with the provisions of section 26A hereof. Notwithstanding the preceding provisions of this section, a sewer which is utilized for the transmission of sewage of two or more Contracting Agencies and which is transmitting less than 300,000 gallons per day of sewage for the most upstream Contracting Agency shall not be acquired by CBMWD as a Regional Interceptor unless it is determined by the Board of Directors of CBMWD after recommendation by the Regional Technical Committee that such acquisition is in the best interest of the Regional Sewerage System. (Amended April 12, 1984)

Section 6. (DELETED April 12, 1984)

Section 7. REGIONAL SEWERAGE SYSTEM

CBMWD shall own and operate a Regional Sewerage System for the transmission, treatment and disposal of sewage delivered by the Contracting Agencies. The Regional Sewerage System, including any interests or capacity rights of CBMWD in facilities owned, controlled or operated by others, shall be as shown or described in the Chino Basin Regional Sewerage Plan, as provided in the Capital Outlay Ordinance, Ordinance No. 24 of CBMWD, a copy of which is attached hereto as Exhibit "B", or any amendment thereof.

Since August 14, 1972 CBMWD has proceeded with the construction of regional treatment, disposal and transmission facilities shown and described in the said Chino Basin Regional Sewerage Plan and shown on the map attached hereto as Exhibit "E". Future construction and expansion of said Regional Sewerage System facilities will be required to meet the needs of the Contracting Agencies and shall be funded as provided in Section 9 hereof.

CBMWD shall pay all costs and expenses incurred in the acquisition, construction, maintenance, and operation of the Regional Sewerage System. Each Contracting Agency shall, as provided in Section 17 hereof, pay to CBMWD service charges representing a pro rata share of all net audited costs incurred by CBMWD in the maintenance and operation of the Regional Sewerage System, and each Contracting Agency shall contribute

Supplemental Capital Outlay Funds to CBMWD for the improvement and expansion of the Regional Sewerage System as provided in Section 9 hereof. (Amended April 12, 1984)

Section 8. DISPOSAL OF SEWAGE BY CBMWD'S NON-RECLAIMABLE WASTE DISPOSAL SYSTEMS

CBMWD may provide for the transmission, treatment and disposal of any sewage delivered by a Contracting Agency either by means of the Regional Sewerage System, CBMWD's existing Nonreclaimable Waste Disposal System or any other nonreclaimable waste disposal system which CBMWD may hereafter own or have an interest in. For the purpose of this contract, sewage delivered into a Nonreclaimable Waste Disposal System by a Contracting Agency shall be deemed delivered into the Regional Sewerage System and the Contracting Agency shall be liable only for payment of the service charges hereinafter provided for. To the extent that sewage of any Contracting Agency is transmitted, treated and disposed of by means of a Nonreclaimable Waste Disposal System, a portion of the costs of the maintenance and operation of that system shall be included in the net audited costs of the maintenance and operation of the Regional Sewerage System and in the service charge rate as provided in Section 17 hereof. Such portion shall include: (i) charges actually paid or incurred by CBMWD to any person or public or private entity providing for the further transmission, treatment and disposal of the sewage delivered by a Contracting Agency and (ii) a pro rata share of the total costs of maintenance and operation of

those parts of the Nonreclaimable Waste Disposal System actually used by CBMWD for the transmission of said sewage to the person or public or private entity providing for the further transmission, treatment, and disposal thereof. Said pro rata share shall be in the proportion that the quantity of sewage delivered into the Nonreclaimable Waste Disposal System by all Contracting Agencies bears to the total quantity of all sewage and nonreclaimable industrial wastes delivered by CBMWD to the person or public or private entity providing for the further transmission, treatment, and disposal thereof.

Any capital costs associated with the disposal of Regional Sewerage System sewage through a Nonreclaimable Waste Disposal System, including the cost of acquiring permanent capacity or usage rights in Nonreclaimable Waste Disposal System facilities, shall be funded as provided in Section 9 hereof. (Amended April 12, 1984)

Section 9. CAPITAL FINANCING OF REGIONAL SEWERAGE SYSTEM

A. General

The Regional Sewerage System and any improvement or expansion of that system will provide benefits to the entire territory served by that system in that the entire territory will be benefited by the protection of public health, the protection of the quality of water sources, the improvement of water management through integrated use of all sources of water supply, including sewage treatment plant effluent, the

improvement of general conditions for individual, residential, commercial and agricultural development and the reduction in costs for the transmission, treatment, and disposal of sewage by the pro rata sharing of all costs incurred by CBMWD in the maintenance and operation of the Regional Sewerage System.

The acquisition, construction, improvement and expansion of the Regional Sewerage System shall be financed with Improvement District "C" real property tax revenues, revenues from sewage service standby or availability charges levied by the Board of Directors of CBMWD, grants and other financial assistance which may be available from any federal, state, local or other source and Supplemental Capital Outlay Funds contributed by the Contracting Agencies.

B. Improvement District "C" - Acquisition From Original Contracting Agencies and Expansion of Regional Sewerage System

CBMWD has heretofore initiated and completed proceedings under the provisions of Part 8 (commencing with Section 72000) of Division 20 of the Water Code for the formation of Improvement District "C" for the purpose of (i) acquiring certain existing sewage facilities for the Regional Sewerage System from some of the Contracting Agencies, (ii) the expansion of that system, and (iii) levying and collecting taxes in said improvement district for payment of the costs and expenses of the foregoing. The boundaries of Improvement

District "C" are shown on Exhibit "D" attached hereto and made a part hereof.

C. Acquisition of Sewage Treatment Plants and Interceptor Sewers of Other Sewage Collection Agencies; Annexation to Improvement District "C"

Upon obtaining the written approval of all Contracting Agencies, other than the State of California, CBMWD may acquire all or any part of any existing sewage treatment and disposal plant or interceptor sewers owned by any sewage collection agency and all such property, upon its acquisition, shall become a part of the Regional Sewerage System.

Any agreement by CBMWD for the acquisition of any existing sewage treatment and disposal plant or interceptor sewer, as part of the Regional Sewerage System, shall provide for either the annexation of the area benefited by said existing facilities to Improvement District "C" or sewer service under provisions of Section 12 hereof for the benefited area, and for the designation of the Contracting Agency which shall be responsible for the operation of the Community Sewer System within said area. CBMWD agrees that if it initiates and conducts proceedings for the annexation of such territory to Improvement District "C", the Contracting Agency responsible for the operation of the Community Sewer System therefore shall be liable as a condition of annexation for payment of (i) all costs

and expenses incurred by CBMWD incident to such annexation proceedings, including legal and engineering fees, reproduction, publication, mailing, administration any other related costs and expenses, (ii) capital outlay charges and extraordinary capital outlay charges, as provided for in Section 12 hereof, and (iii) Capital Capacity Reimbursement Payments which would have been payable or credited to the Contracting Agency's Capital Capacity Reimbursement Account if the annexed territory had been part of said improvement district from its formation. The total of such charges and payments shall be adjusted for the present value of the sewage facilities acquired by CBMWD. All such payments received by CBMWD pursuant to this part C shall be credited to the Regional Wastewater Capital Improvement Fund.

D. Improvement District "C" Taxes; Sewage Service Standby or Availability Charges

The primary source of financing the acquisition, improvement and expansion of the Regional Sewerage System shall be CBMWD's share of the property tax revenues allocated each fiscal year by the County Auditor of the County of San Bernardino to CBMWD for Improvement District "C". Upon receipt, CBMWD shall deposit or credit the total amount of such property tax revenues in or to the Regional Wastewater Capital Improvement Fund and all such amounts together with all interest earned thereon shall be available to and utilized by CBMWD solely for the purpose of financing the acquisition, improvement

and expansion of the Regional Sewerage System.

The Board of Directors of CBMWD may fix, levy, and collect sewage service standby or availability charges for the propose of financing the acquisition, improvement and expansion of the Regional Sewerage System. When collected, such charges shall be deposited in or credited to the Regional Wastewater Capital Improvement Fund and use for the aforesaid purpose. Any ordinance or any amendment of an ordinance imposing such charges shall be adopted by the Board of Directors of CBMWD in the manner provided in section 5 of the Capital Outlay Ordinance, or any amendment thereof, and the applicable provisions of the Municipal Water District Act of 1911, Division 20 of the Water Code. Notwithstanding the preceding provisions of this paragraph, upon receiving written request from a majority of the Contracting Agencies for the levy and collection by CBMWD of such sewage service standby or availability charges, the Board of Directors of CBMWD shall initiate the proceedings necessary for the fixing, levying and collection of such charges; provided that the Board of Directors of CBMWD may, after the public hearing on the fixing, levying and collection of such charges, elect not to fix, levy and collect such charges if it determines in its sole discretion that such an election is in the best interest of the Contracting Agencies and CBMWD.

E. Capital Capacity Reimbursement Account and Capital Capacity Reimbursement Payments

1. General

For the purpose of providing Supplemental Capital Outlay Funds to CBMWD, each Contracting Agency shall establish and maintain throughout the term of this Contract a Capital Capacity Reimbursement Account to which the Contracting Agency shall deposit or credit its Capital Capacity Reimbursement Payments. The amounts so deposited or credited by a Contracting Agency to its said account shall be used by the Contracting Agency only for the purpose of providing Supplemental Capital Outlay Funds to CBMWD; provided that interest earned on such amounts shall not be so restricted and may be used by the Contracting Agency for any lawful purpose. The source of Capital Capacity Reimbursement Payments shall be at the discretion of each Contracting Agency.

2. Capital Capacity Reimbursement Payments

Each Contracting Agency shall have deposited or credited to its Capital Capacity Reimbursement Account a Capital Capacity Reimbursement Payment for each connection which has been or will be made to its Community Sewer System or for each change in use of an existing commercial or industrial connection in an amount determined as follows:

(a) Prior to July 1, 1984:

(1) $950 for each newly constructed, Residential Unit which is connected to the Contracting Agency's Community Sewer

System after July 1, 1979, not including, however, any such units which are replacements for similar units which were connected to said system.

(2) For each newly constructed Commercial Unit or Industrial Unit which is connected to the Contracting Agency's Community Sewer System after January 1, 1980, the amount of such payment shall be $150 plus $30 per fixture unit as defined in the Uniform Plumbing Code and $0.50 per gallon estimated sewage flow in excess of 3,000 gallons per day up to a maximum of 15,000 gallons per day; provided that for any such unit or use having an estimate sewage flow in excess of 15,000 gallons per day, the amount of the Capital Capacity Reimbursement Payment therefore shall be determined by the Regional Technical Committee and approved by CBMWD.

(b) After the date set forth in paragraph (a) above the amount of the Capital Capacity Reimbursement Payment for each new connection to a Contracting Agency's Community Sewer System and for each change in use of any existing Commercial Unit or Industrial Unit which results in an increase in volume or strength of sewage therefrom shall be determined by computing the number of Equivalent Dwelling Units therefor as provided in Exhibit "J" attached hereto and made a part hereof and applying the then current Capital Capacity Reimbursement Payment amount as established by the Regional Policy Committee to each such EDU.

Notwithstanding the preceding provisions of this subpart 2, the amount which a Contracting Agency is required to have deposited in or credited to its Capital Capacity Reimbursement account for any such new connection or change of use shall be reduced by payments, if any, made by the Contracting Agency to CBMWD for the new connection or change of use under either of the following agreements: The agreement entitled "Agreement to Increase Capacity of Regional Plant No. 2 of the Chino Basin Municipal Water District", entered into on May 26, 1979, between CBMWD, City of Chino and the County of San Bernardino or the agreement entitled "Agreement for Interim Sewage Treatment Plant between Chino Basin Municipal Water District and the Cities of Upland and Ontario and the Cucamonga County Water District," entered into on January 23, 1979.

A Capital Capacity Reimbursement Payment shall be deposited or credited to a Contracting Agency's Capital Capacity Reimbursement Account for such a new connection or change of use at the time of the issuance of a building permit or a sewer connection permit, whichever is issued earlier, or for changes in the use of existing Commercial Units and Industrial Units, the permit required therefor.

3. Capital Capacity Reimbursement Reports

(a) Each Contracting Agency shall report monthly to CBMWD, at such time as CBMWD shall designate, the balance of the funds in its Capital Capacity Reimbursement Account as of the last day of the preceding month. Such monthly reports shall be

in writing and shall also contain the number of building permits and sewer permits which were issued in the Contracting Agency's Service Area during the preceding month and estimated volume of sewage flows for all residential, commercial and industrial connections within the Contracting Agency's Service Area for the current month and the cumulative total thereof. Commercial and industrial sewer connection permits shall be listed by individual permit with the number of fixture units and expected volume and strength of sewage for each permit.

(b) CBMWD shall maintain a summary accounting of the Capital Capacity Reimbursement Account reserves of all Contracting Agencies and shall make written quarterly reports to the Contracting Agencies on or before January 15, April 15, July 15 and October 15 of each fiscal year which shall include: (i) the amounts of the Capital Capacity Reimbursement Account reserves of all Contracting Agencies as of the last day of the second month of the preceding quarter (i.e., November 30, February 28, May 31 and August 31, respectively), (ii) the amount of the Regional Wastewater Capital Improvement Fund reserves as of the last day of the preceding quarter (i.e., the preceding three calendar months), (iii) a summary of all expenditures from said fund during the preceding quarter for each Regional Sewerage System capital improvement project then in progress, (iv) an estimate of the amounts to be expended from said fund for each such project during the quarter then commencing or in progress (the "current quarter"), (v) the

estimated amount of Supplemental Capital Outlay Funds, if any, which it will be necessary for the Contracting Agencies to contribute to CBMWD during the current quarter in order to provide a working capital balance in said fund which shall not exceed $1,000,000 on the last day of the second month of the quarter next succeeding the current quarter (i.e., May 31, August 31, November 30 and February 28, respectively), and (vi) the amount, if any, of the contribution of Supplemental Capital Outlay Funds for each Contracting Agency for the current quarter, determined as provided in subparts 5 and 6 of this part E.

4. Determination of Demand Deficits

Annually at the time of the preparation of each Ten-Year Forecast, pursuant to Section 9A hereof, CBMWD shall determine each Contracting Agency's Demand Deficit, if any. The determination of Demand Deficits pursuant to this subpart is for the sole purpose of allocating shortages in Supplemental Capital Outlay Fund payments as provided in subpart 6 of this part E. Except as provided in said subpart 6, such determinations shall not result in the creation of an obligation or indebtedness on the part of any Contracting Agency to CBMWD or other Contracting Agencies.

5. Supplemental Capital Outlay Fund Payments

On July 15, October 15, January 15, and April 15 of any fiscal year CBMWD may require payment by each Contracting Agency from its Capital Capacity Reimbursement Account of

Supplemental Capital Outlay Funds for the planning, design and construction of Regional Sewerage System capital improvement projects in the amount, if any, set forth for the Contracting Agency in the quarterly report due from CBMWD on such date. Upon receiving such a demand from CBMWD each Contracting Agency shall pay the amount demanded to CBMWD within 45 days of receipt of such demand. The amount of each Contracting Agency's proportionate share of the total amount of Supplemental Capital Outlay Funds demanded by CBMWD from all Contracting Agencies shall be determined based on the percentage which the amount of Supplemental Capital Outlay Funds demanded by CBMWD from all Contracting Agencies is to the total amount of the current Capital Capacity Reimbursement Account reserves of all Contracting Agencies set forth in the quarterly report upon which the demand is based. The amount demanded by CBMWD from each Contracting Agency on any such date shall be an amount determined by applying the percentage thus obtained to the balance of the reserves, not including interest, in the Contracting Agency's Capital Capacity Reimbursement Account set forth in the quarterly report upon which the demand is based. All amounts received by CBMWD from the Contracting Agencies as Supplemental Capital Outlay Funds shall be deposited in or credited to the Regional Wastewater Capital Improvement Fund. All such amounts together with all interest earned thereon shall be available and utilized by CBMWD solely for the purpose of financing the acquisition, improvement and expansion of the

Regional Sewerage System.

6. Allocation of Supplemental Capital Outlay Fund Shortages

If at the time of any demand by CBMWD for Supplemental Capital Outlay Funds, pursuant to subpart 5 of this part E, there are not sufficient funds deposited or credited to the Capital Capacity Reimbursement Accounts of all Contracting Agencies to pay the full amount of the demand, each Contracting Agency which has a Demand Deficit shall pay to CBMWD the full balance then deposited or credited to its Capital Capacity Reimbursement Account plus an amount determined based on the percentage which the amount of its Demand Deficit is of the total Demand Deficit for all Contracting Agencies. The amount to be paid by each such Contracting Agency shall be determined by multiplying the difference between the Supplemental Capital Outlay Fund demand and the total amount of the Capital Capacity Reimbursement Account balances of all Contracting Agencies by the percentage thus determined. (Amended April 12, 1984)

F. Investment of Regional Wastewater Capital Improvement Fund

All amounts deposited or credited to the Regional Wastewater Capital Improvement Fund shall be invested by CBMWD in a prudent manner in accordance with sound investment practices for the investment of public funds and pursuant to Section 53635 and 53651 of the Government Code. All earnings from such investments shall remain in the Regional Wastewater

Capital Improvement Fund and shall be reinvested and used solely for the purpose of financing the acquisition, improvement and expansion of the Regional Sewerage System.

Section 9A. FORECASTING AND PLANNING

A. Contracting Agency Reports

1. Annual Forecast

Prior to January 15, of each year, each Contracting Agency shall submit to CBMWD an updated forecast of its Capacity Demand for the succeeding ten fiscal years, which shall contain in a format required by CBMWD an estimate of the annual increase in volume of combined residential, commercial and reclaimable domestic strength industrial sewage to be delivered from the Contracting Agency's Community Sewer System into the Regional Sewerage System for each such year and the number of Equivalent Dwelling Units associated with such estimated volume.

2. Monthly Reports

On such date as CBMWD may designate, each Contracting Agency shall submit to CBMWD monthly reports of sewered building activity. Each such report shall contain the following information in a format which will allow tracking through the development process:

(a) The number of building permits issued during the month for structures which will contribute sewage to the Regional Sewerage System;

(b) Estimate volume of sewage and EDUs for such building permits;

(c) The tract number and number of lots for each tentative tract map approved during the month;

(d) The tract number and number of lots or dwelling units for each final tract map recorded during the month;

(e) The number of final inspections or certificates of occupancy issued during the month for structures which will contribute sewage to the Regional Sewerage System;

(f) The estimate volume of sewage and EDUs for all such structures.

B. CBMWD Reports

1. Ten-Year Forecast

Prior to April 1 of each year, CBMWD shall prepare and deliver to the Regional Technical Committee and the Regional Policy Committee a ten-year forecast of the Capacity Demands of all Contracting Agencies and a forecast of the dates of commencement and completion of the design and construction of capital improvement projects which will be necessary to enable the Regional Sewerage System to meet the forecasted Capacity Demands of all Contracting Agencies. Such forecasts, hereinafter referred to as the "Ten-Year Forecast," shall include:

(a) Estimates for each Regional Treatment Plant of the Capacity Demand of each Contracting Agency which receives sewerage service thereat as of June 30 of each year;

(b) An estimate of the amount of existing unused capacity for each Regional Treatment Plant as of July 1 of each year;

(c) Projected dates for the commencement and completion of design and construction of capital improvement projects necessary to meet forecasted Capacity Demands;

(d) An estimate of the amount of capacity to be added by each such project;

(e) Projected annual expenditures for the design and construction of such projects;

(f) The current balance of funds in the Regional Wastewater Capital Improvement Fund and an estimate for each year identified by source of the amount to be deposited into said fund;

(g) Current reserves in the Capital Capacity Reimbursement Accounts of all Contracting Agencies;

(h) The estimate Supplemental Capital Outlay Funds to be contributed by each Contracting Agency to CBMWD for each fiscal year included in the Ten-Year Forecast;

(i) The Demand Deficit, if any, of each Contracting Agency;

(j) A recommendation as to whether the amount of the Capital Capacity Reimbursement Payment should be increased or decreased and, if so, the amount of increase or decrease.

2. Mid-Year Report as to Financial Requirements

Prior to October 1 of each year, CBMWD shall prepare

and submit to the Regional Technical Committee and the Regional Policy Committee for review and comment a report as to the progress and status of the design and construction of capital improvement projects. Said report shall also contain revisions or current information regarding the matters referred to in subparagraphs (a), (b), (e), (g), (i) and (j) of subpart 1 of this part B.

3. Review by Regional Policy Committee

A. Ten-Year Forecast

Within 45 days after receipt from CBMWD of a Ten-Year Forecast, the Regional Policy Committee shall prioritize the capital improvement projects recommended therein and make such further recommendations to CBMWD as it deems appropriate. Capital improvement projects shall be prioritized based on the Forecasted Demands for all Contracting Agencies who do or will receive sewerage service therefrom or thereat as of the end of the third fiscal year included in the Ten-year Forecast, and facilities having the highest ratio of forecasted rates of flow to rated capacity shall be given the highest priority. Interceptor sewers shall be considered to be at 100 percent of capacity when the forecasted rate of flow therein will result in a depth of flow therein of three-fourths of the pipe diameter thereof; sewage treatment and disposal plants shall be considered to be 100 percent of capacity when the projected rate of flow into the plant will exceed 80 percent of the rated capacity thereof as determined by the Regional Technical

Committee. The prioritization of the Regional Policy Committee shall be binding upon CBMWD, and CBMWD shall follow the recommendations of the Regional Policy Committee with respect to scheduling of design and construction of prioritized capital improvement projects unless the Board of Directors of CBMWD determines, based on specific findings, that the Regional Policy Committee's recommended schedule for design and construction would impair its ability to operate the Regional Sewerage System or would impose unreasonable burdens upon it with respect to construction supervision or administration or financing of Regional Sewerage System capital improvement projects or unless a Contracting Agency objects in writing to the recommendations of the Regional Policy Committee. In the event of such a determination by CBMWD's Board of Directors or such a written objection, the hearing procedures set forth in Section 26A hereof shall apply and CBMWD's Board of Directors shall not make a final determination with respect to the Regional Policy Committee's recommendation until such hearing procedures have been completed.

B. Mid-Year Reports

Within 45 days after receipt from CBMWD of a mid-year report as provided in subpart 2 of this part B the Regional Policy Committee may but need not make recommendations or comments to CBMWD with respect thereto. CBMWD's Board of Directors shall follow the recommendations of the Regional Policy Committee with respect to such reports unless it

determines, based on specific findings, that to do so would impair its ability to operate the Regional Sewerage System or impose unreasonable burdens with respect to the timing of design and construction or financing of design and construction of Regional Sewerage System capital improvement projects or unless a Contracting Agency objects thereto in writing. In the event of such a determination by said Board of Directors or the filing of such a written objection, the hearing procedures set forth in Section 26A hereof shall apply and CBMWD's Board of Directors shall not make a final determination with respect to the Regional Policy Committee's recommendations until such hearing procedures have been completed.

C. Determination of Capital Capacity Reimbursement Amount; Amendment of Exhibit "J"

The Regional Policy Committee may prior to July 1 or January 1 of any year determine to increase or decrease the amount of the Capital Capacity Reimbursement Payment to be deposited or credited by the Contracting Agencies to their Capital Capacity Reimbursement Accounts for all new connections to their Community Sewer Systems based upon the estimated financial requirements set forth in a Ten-Year Forecast or mid-year report received from CBMWD. Prior to either of said dates, the Regional Policy Committee may also determine to modify the table and formulae set forth in Exhibit "J" hereto for determining Equivalent Dwelling Units and the amount of Capital Capacity Reimbursement Payment for new connections to Community

Sewer Systems. If the Regional Policy Committee determines that it is necessary to increase or decrease the amount of such payment or to modify such formulae, or both, the chairman of said committee shall communicate such determination or determinations in writing to the Board of Directors of CBMWD, and upon receiving such a communication, said Board of Directors shall adopt a resolution implementing the increase or decrease in the amount of Capital Capacity Reimbursement Payment and the modification of said table and formulae or both, and setting forth the date when such increase or decrease or such modification or both will become effective. Such a determination or determinations by the Regional Policy Committee and the adoption of such a resolution by the Board of Directors of CBMWD shall be binding on all Contracting Agencies, and they shall expeditiously implement the resulting change in the amount of Capital Capacity Reimbursement Payment by appropriate legislative and administrative action.

D. Reclaimable Industrial Waste

No allowance shall be made in Contracting Agency reports submitted to CBMWD pursuant to part A of this section or in any Ten-Year Forecast for any expected increase in the volume or strength of sewage attributable to proposed new industrial connections to Community Sewer Systems which are expected to discharge more than 15,000 gallons per day of reclaimable domestic strength industrial waste. All such proposed new

connections shall be reviewed by CBMWD and the Regional Technical Committee on a case-by-case basis to determine whether the waste to be discharged therefrom shall be taken into the Regional Sewerage System and the appropriate connection point' provided that, CBMWD and the Regional Technical Committee shall not disapprove such an industrial connection to a Contracting Agency's Community Sewer System unless it is determined by CBMWD or said committee that the sewage to be discharged there from will not meet the quality standards set forth by CBMWD, or will adversely affect the ability of the Regional Treatment Plant where the sewage therefrom will be treated to meet the Forecasted Demands of other Contracting Agencies which also receive sewerage service thereat, or will result in the effluent from said plant violating the waste discharge requirements prescribed for said plant by the California Regional Water Quality Control Board. (Amended October 19, 1994)

E. Forecast for Purposes of Determining Demand Deficits

Notwithstanding the preceding provisions of this section, for purposes of determining the Demand Deficits, if any, of the Contracting Agencies, as provided in subpart 4 of part E of Section 9 hereof, the Forecasted Demand for each Contracting Agency for each of the initial two years of each Ten-Year Forecast shall be deemed to be the same as was set forth for each of said years in the preceding Ten-Year Forecast. CBMWD shall set forth separately in each Ten-Year Forecast the

Forecasted Demand for each Contracting Agency for the initial two years thereof, determined as in this part provided. Said portion of each such Ten-Year Forecast shall be applicable only for purposes of determinations to be made pursuant to said subpart 4 and for no other purpose. Notwithstanding the preceding provisions of this part E, if in this most recent Annual Forecast, pursuant to subpart 1 of part A of this Section 9A, preceding the preparation of any Ten-Year Forecast a Contracting Agency has increased its Forecasted Demand for either of the initial two years of the Ten-Year Forecast over the Forecasted Demand set forth in the preceding Ten-Year Forecast, the Forecasted Demand for that Contracting Agency for each of such initial two years of the Ten-Year Forecast then begin prepared shall be the increased Forecasted Demand set forth therefor in the Contracting Agency's said Annual Forecast. (Added April 12, 1984)

Section 9B. AVAILABLE SEWERAGE CAPACITY

A. Monitoring and Reports

To ensure that available unused capacity in the Regional Sewerage System is and will be utilized to provide sewerage service to the Contracting Agencies based on their Forecasted Demands contained in the Ten-Year Forecasts, and that no Contracting Agency is deprived of sewerage service based on its Forecasted Demand as the result of any other Contracting Agency or Contracting Agencies utilizing capacity of the Regional Sewerage System substantially in excess of its or their

Forecasted Demand or Demands, respectively, CBMWD shall, at intervals not exceeding 60 days in duration, determine the quantity of sewage entering the Regional Sewerage System from the Community Sewer System of each Contracting Agency. On or before March 1 and September 1 of each fiscal year CBMWD shall submit to the Regional Policy Committee a written report regarding the relationship between the actual Capacity Demand of each Contracting Agency and the Contracting Agency's Forecasted Demand for the fiscal year.

B. New Connections

So long as the Capacity Demand of a Contracting Agency does not at any time in any fiscal year exceed its Forecasted Demand for the year by more than 15 percent or 100,000 gallons per day, whichever is greater, or if said 15 percent exceeds 200,000 gallons per day, the Contracting Agency may allow new connections to its Community Sewer System without restriction. However, if at any time during any fiscal year the Contracting Agency's Capacity Demand exceeds its Forecasted Demand for the year by more than 15 percent or 100,000 gallons per day, whichever is greater, or if said 15 percent exceeds 200,000 gallons per day, the Contracting Agency shall not allow further connections to its Community Sewer System until and unless it is determined by CBMWD that the Contracting Agency's Capacity Demand no longer so exceeds its Forecasted Demand.

C. Transfer of Capacity Demand

Notwithstanding the provisions of part B of this section, a Contracting Agency whose Capacity Demand exceeds its Forecasted Demand by more than 15 percent or 100,000 gallons per day, whichever is greater, or if said 15 percent exceeds 200,000 gallons per day ("Exceeding Contracting Agency"), may continue to allow new connections to its Community Sewer System if it receives a transfer of a portion of the Forecasted Demand of a Contracting Agency which receives sewerage service at the same Regional Treatment Plant and whose Capacity Demand is more than 15 percent or 100,000 gallons per day, whichever is greater, less than its Forecasted Demand. In the event of such a transfer, the portion of the Forecasted Demand of the transferring Contracting Agency to be transferred shall be deducted from the Forecasted Demand of the transferring agency and added to the Forecasted Demand of the Exceeding Contracting Agency for purposes of determining whether the Exceeding Contracting Agency's Capacity Demand will continue to exceed its Forecasted Demand by more than 15 percent or 100,000 gallons per day, whichever is greater, or if said 15 percent exceeds 200,000 gallons per day. Such transfers of Forecasted Demand between Contracting Agencies shall become effective upon the filing with CBMWD of a written agreement between the affected Contracting Agencies. A transferring Contracting Agency shall not receive

any payment or other consideration from the Exceeding Contracting Agency for the transfer of Forecast Demand.

D. Policy Committee Review

If CBMWD determines that a Contracting Agency's Capacity Demand is exceeding the Contracting Agency's Forecasted Demand for the fiscal year by more than 15 percent or 100,000 gallons per day, whichever is greater, or if said 15 percent exceeds 200,000 gallons per day, or if a Contracting Agency determines at any time that its Capacity Demand will so exceed its Forecasted Demand, the Contracting
Agency may request the Regional Technical Committee and the Regional Policy Committee to determine whether because of Regional Sewerage System capital improvement projects then under construction or the construction of which will be commenced within the next six months, it can nevertheless be allowed to continue to make new connections to its Community Sewer System without affecting the availability of capacity in the Regional Treatment Plant where it receives sewerage service for other Contracting Agencies which also receive such service at such plant.

Such a request shall be made in writing and copies thereof shall be delivered to CBMWD and all Contracting Agencies. Upon receipt of any such written request, the Regional Technical Committee shall conduct an investigation and make recommendations to the Regional Policy Committee as to whether or not because of such current and pending Regional

Sewerage System capital improvement projects the Contracting Agency requesting the determination may be allowed to continue to make new connections to its Community Sewer System without affecting the availability of capacity in the Regional Treatment Plant where it receives sewerage service for other Contracting Agencies.

The Regional Policy Committee shall upon the basis of such recommendation determine whether or not the Contracting Agency requesting the determination should be allowed to continue to make new connections to its Community Sewer System and make a recommendation thereon to CBMWD; provided that, CBMWD shall not allow a Contracting Agency requesting such a determination to make new connections to its Community Sewer System at any time after its Capacity Demand exceeds its Forecasted Demand for a fiscal year by more than 15 percent or 100,000 gallons per day, whichever is greater, or if said 15 percent exceeds 200,000 gallons per day, if the Regional Policy Committee recommends against such new connections unless, following a hearing conducted pursuant to the provisions of Section 26A hereof, the Board of Directors of CBMWD determines by resolution containing specific findings that because of such current and pending Regional Sewerage System capital improvement projects the Contracting Agency should be allowed to continue to make new connections to its Community Sewer System. (Added April 12, 1984)

Section 9C. MAJOR CONSTRUCTION CONTRACTS

A. Construction Contracts

CBMWD shall not proceed with the award of a construction contract for a budgeted Regional Sewerage System capital improvement project which will involve an expenditure in excess of $1,000,000 without the approval of the Regional Policy Committee. (Such projects are hereinafter referred to as "Major Projects.") To assist in the Regional Policy Committee's review of Major Projects, CBMWD shall prepare and submit to the Regional Policy Committee a short-term financial forecast for each Major Project which shall cover the anticipated duration of the project. The forecast shall include and consider current building and sewer connection activity as reported by each Contracting Agency, Regional Wastewater Capital Improvement Fund and Capital Capacity Reimbursement Account balances and other relevant data requested by the Regional Policy Committee. The Regional Policy Committee shall meet to approve or disapprove any Major Project within 45 days after receipt of the completed short-term financial forecast therefor. Such approval or disapproval shall be based on the availability of Regional Wastewater Capital Improvement Fund and Capital Capacity Reimbursement Account balances to finance the construction of the project.

B. Design Contracts

1. Prioritized Projects

CBMWD shall not award a contract for the design of any Major Project which has not been prioritized by the Regional Policy Committee pursuant to subpart 3 of part B of Section 9A hereof.

2. Selection of Design Engineers

Before proceeding with the design of any Major Project, CBMWD shall prepare and issue requests for proposals to qualified engineering firms experienced in the design of wastewater facilities. The Regional Technical Committee shall review all proposals received and, within 45 days after receipt thereof, deliver to CBMWD an unranked recommended list of no less than three (3) qualified engineering firms. CBMWD shall select the design engineer from the committee's recommended list. Upon failure of the Regional Technical Committee to deliver such a listing to CBMWD within 45 days after receipt of the proposals for the design of a project, CBMWD may select any qualified engineering firm submitting a proposal as the design engineer.

3. Design Review

CBMWD shall keep the Regional Technical Committee fully informed of the progress and details of design of all Major Projects through three (3) formal meetings with the design engineer and periodic progress reports by CBMWD. The three formal meetings shall occur:

(a) The first meeting shall occur within thirty (30) days after the design engineer is given notice to proceed. At that meeting the general details of design shall be discussed and agreed upon by the committee and the design engineer.

(b) The second meeting shall occur upon the completion of 10 percent of the design work. At that meeting the design engineer shall have completed and submit to the committee an analysis of unit process requirements and sizing, preliminary layouts and flow sheets, and a preliminary estimate of construction cost. Based on the discussion at this meeting, the design engineer shall prepare and deliver to the committee a written report, which shall when agreed to by the committee, serve as the basis for final design.

(c) The third meeting shall occur upon the completion of 60 to 70 percent of the design work and shall be for the purpose of an in depth review by the committee. (Added April 12, 1984)

Section 10. (Deleted April 12, 1984)

Section 11. AVAILABILITY OF REGIONAL SYSTEM; CBMWD'S PERFORMANCE

A. Contracting Agencies

The services and facilities of the Regional Sewerage System shall be available to any property within Improvement District "C," subject to such terms and conditions as may be prescribed by a Contracting Agency for connection to its Community Sewer System.

B. Other Sewage Collection Agencies

CBMWD shall not make the services and facilities of the Regional Sewerage System available, other than on a temporary, emergency basis, to any sewage collection agency which is not a party to a Service Contract until such agency has entered into a service contract. Any Contracting Agency may restrain violations of the provisions of this part B by mandamus, injunction or other appropriate remedy.

C. CBMWD's Performance

CBMWD shall exert every reasonable effort to insure that capital improvement projects necessary to enable the Regional Sewerage System to meet the Forecasted Demands of all Contracting Agencies are planned, designed and constructed in a timely manner and so that the Regional Sewerage System will at all time be able to provide for the Capacity Demands of all Contracting Agencies. The Contracting Agencies recognize that the timing of the planning, design and construction of such capital improvement projects is largely dependent upon the Contracting Agencies making reasonable accurate projections of increased connections to and usage of their Community Sewer Systems. (Amended April 12, 1984)

Section 12. EXTRA-TERRITORIAL SEWER SERVICE

A. Service Outside the Boundaries of CBMWD and Improvement District "C"

1. Upon the Effective Date of a Service Contract

Any Contracting Agency which, upon the effective date

of the Service Contract with that agency, was furnishing sewer service to any territory outside the boundaries of CBMWD and Improvement District "C," may continue to furnish such service and shall be entitled to the services and facilities of the Regional Sewerage System for that purpose. Each Contracting Agency providing sewer service to any such outside territory shall file a map or maps with the secretary of CBMWD showing the boundaries of all such territory.

2. After the Effective Date of a Service Contract

Any Contracting Agency, after the effective date of the Service Contract with that agency, may furnish sewer service to additional territory outside the boundaries of CBMWD and of Improvement District "C." Prior to furnishing such sewer service, the Contracting Agency shall file a written request with CBMWD. Upon receipt of such a written request, CBMWD shall notify all other Contracting Agencies in writing of the receipt of the request. At the written request of any Contracting Agency, CBMWD shall schedule a hearing on the written request for extra-territorial service, and the hearing shall be conducted by CBMWD in accordance with the hearing procedures set forth in Section 26A hereof; provided that such a request for a hearing must be received by CBMWD within thirty (30) days after the date of CBMWD's written notice of the receipt of the request.

The hearing shall be upon the question of authorizing sewer service to the additional territory. Upon the conclusion

of the hearing, the Board of Directors of CBMWD shall by resolution authorize sewer service to all or any part of the additional territory by the applicant or applicants unless it determines that such service is not in the public interest, in which case the resolution of said Board of Directors shall set forth findings in support of that determination.

B. Annual Capital Outlay Charge for Territory Outside CBMWD and Improvement District "C"

In addition to the payment of service charges, each Contracting Agency providing the services and facilities of the Regional Sewerage System to territory outside CBMWD and Improvement District "C" shall be obligated to pay CBMWD special capital outlay charges for such territory, as provided in subpart 1 or 2 of this part B or both such subparts, if both are applicable. Moneys received by CBMWD in payment of special capital outlay charges shall be deposited or credited to the Regional Wastewater Capital Improvement Fund and utilized, together with all interest earned thereon, solely for the purpose of financing the acquisition, improvement and expansion of the Regional Sewerage System.

1. Annual Capital Outlay Charge

The Contracting Agency shall annually pay CBMWD a special capital outlay charge in an amount equivalent to the amount of the property tax and other revenue which CBMWD would have received during the fiscal year if such property were within Improvement District "C." Such charge shall be payable

by the Contracting Agency during each fiscal year in the amounts and at the times specified by CBMWD.

2. Extraordinary Capital Outlay Charge

If any Contracting Agency furnishes sewer service to any additional territory outside of CBMWD and Improvement District "C" pursuant to subpart 2 of part A of this section after the effective date of the Service Contract with that agency, the Contracting Agency shall pay to CBMWD an extraordinary capital outlay charge with respect to such territory. Such charge shall be in an amount equal to the total of (i) all past capital outlay taxes which would have been imposed by CBMWD prior to July 1, 1978 upon taxable property within such territory had it been subject to taxation by CBMWD for capital outlay taxes under the Capital Outlay Ordinance, (ii) an amount equivalent to the total property tax revenue which would have been received by CBMWD pursuant to Sections 96 through 99 of the Revenue and Taxation Code for all fiscal years subsequent to July 1, 1978, and (iii) and an amount equal to all other revenues which CBMWD would have received had such territory been within Improvement District "C." CBMWD may authorize any extraordinary capital outlay charges to be paid in deferred installments plus interest over a period not exceeding 25 years from the commencement of sewer service to the extra-territorial territory or the unexpired term of this contract, whichever may be the shorter.

C. Capital Capacity Reimbursement Account Payments

If any Contracting Agency furnishes sewer service to any additional territory pursuant to subpart 2 of part A of this section after the effective date of the Service Contract with that agency, the Contracting Agency shall deposit or credit to its Capital Capacity Reimbursement Account a Capital Capacity Reimbursement Payment for each new Residential Unit which was or is connected to its Community Sewer System within that territory subsequent to July 1, 1979 and for each newly constructed Commercial Unit or Industrial Unit which was or is connected to the Community Sewer System within that territory subsequent to January 1, 1980, the amount of which shall be determined as provided in subpart 2 of part E of Section 9 hereof. (Amended April 12, 1984)

Section 13. DELIVERY POINTS: CONNECTION COSTS

Each Contracting Agency shall deliver sewage from its Community Sewer System into the Regional Sewerage System at such delivery points as may, from time to time, be requested by the Contracting Agency and approved by CBMWD. CBMWD shall give the Regional Technical Committee not less than 60 days' written notice of its intention to approve any new delivery point. Upon receipt of a favorable report and recommendation from the committee or upon failure of the committee to report within said 60-day period, CBMWD may authorize the new delivery point. If the Regional Technical Committee recommends against a new delivery point for any Contracting Agency, the Contracting Agency may file a written request for a hearing with the

secretary of the Board of Directors of CBMWD. Upon receipt of such a request, said Board of Directors shall schedule and conduct a hearing in accordance with the provisions of Section 26A hereof. All costs and expenses of making the connection between the Regional Sewerage System and the Community Sewer System of any Contracting Agency shall be borne by the Contracting Agency. (Amended April 12, 1984)

Section 14. DETERMINATION OF SEWAGE DELIVERIES: COSTS OF MEASURING EQUIPMENT

CBMWD shall determine the amount of sewage delivered to the Regional Sewerage System by all Contracting Agencies and shall maintain accurate and complete records thereof. The amount of sewage delivered to the Regional Sewerage System by each Contracting Agency shall be determined by CBMWD based on a standard daily measurement or contribution per Equivalent Dwelling Unit agreed to from time to time by CBMWD and the Regional Technical Committee.

If required by CBMWD, after recommendation of the Regional Technical Committee, a Contracting Agency shall install, at its expense, and CBMWD shall maintain and operate at its expense, measuring devices and equipment for measuring the flow of sewage from the Contracting Agency's Community Sewer System into the Regional Sewerage System. Prior to installation, CBMWD shall approve the design of such measuring devices and equipment and shall inspect and approve their installation. Such measuring devices and equipment shall be

examined, tested and serviced regularly, but not less than once a year, by CBMWD to insure their accuracy. At any time CBMWD or any Contracting Agency may inspect any such measuring device and equipment and all records and measurements taken therefrom. (Amended April 12, 1984)

Section 15. CONTROL AND DISPOSITION OF SEWAGE: CONTRACTING AGENCIES RIGHT OF PURCHASE OF TREATED OR RECLAIMED EFFLUENT

A. General

Subject to the provisions of this Section 15 and Section 16, CBMWD shall have total ownership and control of all sewage delivered into the Regional Sewerage System for the purpose of transmission, treatment and disposal thereof; subject to the right of first purchase by any Contracting Agency, the use of all treated effluent from the Regional Sewerage System shall be within the sole discretion of CBMWD. If any Contracting Agency exercises its right of first purchase of treated effluent, then such agency shall have the total ownership and control of all treated effluent delivered to it and the use thereof shall be within the sole discretion of that agency.

B. Right of Purchase of Treated or Reclaimed Effluent

Each Contracting Agency, at its option, shall have the right of first purchase of treated or reclaimed effluent under either of the following two alternatives:

1. Each Contracting Agency shall have the right of first purchase of treated effluent, as provided in Section 16 hereof; or

2. Upon written request by any Contracting Agency, CBMWD shall enter into an agreement, substantially similar to Exhibit G, attached hereto and made a part hereof, for reclamation of treated effluent and the right of first purchase of reclaimed effluent. Upon execution by a Contracting Agency of such an agreement and upon the availability to the Contracting Agency of reclaimed effluent pursuant thereto, all or any portion of the disposal costs of the Regional Sewerage System attributable to the disposal of the treated effluent of the Contracting Agency and to the disposal of reclaimed effluent by CBMWD downstream from any CBMWD reclamation facility or facilities reclaiming the treated effluent of the Contracting Agency shall be excluded from the service charge of the Contracting Agency as determined under Sections 17 and 18 hereof, and shall be financed by CBMWD from sources other than service charges, Improvement District "C" tax revenues and Supplemental Capital Outlay Funds. (Amended April 12, 1984).

Section 16. SALE, BENEFICIAL USE OR DISPOSAL OF TREATED EFFLUENT

A. Purchase of Treated Effluent from CBMWD

1. Contracting Agencies: Right of Purchase

Each Contracting Agency shall have the right of first purchase from CBMWD of treated effluent in a total quantity not

exceeding the base entitlement of the Contracting Agency.

2. Base Entitlement of Contracting Agencies

The total base supply of effluent which is subject to the right of first purchase from CBMWD by the Contracting Agencies receiving sewerage service at any Regional Treatment Plant shall be the total quantity of sewage delivered into the Regional Sewerage System by all such Contracting Agencies, measured at the intake point of the Regional Treatment Plant, less normal processing losses resulting from the treatment of sewage. Sewage exported from the Chino Basin by CBMWD pursuant to Section 8 hereof shall not be part of the total base supply.

Each Contracting Agency, including any Contracting Agency whose sewage is exported pursuant to Section 8 hereof, shall have a base entitlement to a portion of the total base supply of effluent, said portion being in the proportion that the quantity of sewage delivered into the Regional Sewerage System by the Contracting Agency bears to the total quantity of sewage delivered into the Regional Sewerage System by all Contracting Agencies.

3. Delivery Points

Unless otherwise agreed by CBMWD, the delivery point or points of any Contracting Agency exercising its rights of first purchase of treated effluent shall be the discharge point or points of each Regional Treatment Plant or any disposal facility of CBMWD which provides further treatment and disposal of wastewater from any Regional Treatment Plant.

4. Exercise of Base Entitlement at Various Discharge Points

If none of the sewage collected by a Contracting Agency is exported pursuant to Section 8 hereof, the base entitlement of such agency shall be exercised as provided in paragraph a of this subpart 4. If all of the sewage collected by a Contracting Agency is exported, the base entitlement of such agency shall be exercised as provided in paragraph b of this subpart E. If only a portion of the sewage collected by a Contracting Agency is exported, the portion of the base entitlement of such agency represented by nonexported sewage shall be exercised as provided in said paragraph a and the portion represented by exported sewage shall be exercised as provided in said paragraph b.

The base entitlement of each Contracting Agency shall be exercised in quantities and at delivery points determined as follows:

a. If the sewage collected by a Contracting Agency ("agency sewage") is treated:

(1) At a single Regional Treatment Plant, the total base entitlement of such agency shall be exercised from treated effluent discharge from that plant or any disposal facility of CBMWD providing further treatment and disposal of wastewater from that plant.

(2) At two or more Regional Treatment Plants, the base entitlement of such agency shall be exercised from each such plant in the proportion that the total sewage of the particular agency which is treated at that plant bears to the total sewage of all agencies whose sewage is treated at that plant or any disposal facility of CBMWD providing further treatment and disposal of wastewater from that plant.

b. If all of the sewage collected by a Contracting Agency is exported, the base entitlement of such agency shall be exercised from a pro rata share of treated effluent discharged from each of the Regional Treatment Plants, computed as follows:

(1) Based upon the preceding fiscal year, a determination of the ratio of the total quantity of all agency sewage treated by each Regional Treatment Plant to the total quantity of all agency sewage treated by all such plants or all such plants and any disposal facility of CBMWD providing further treatment and disposal of wastewater from any such plant.

(2) The pro rata share of an exporting agency for each Regional Treatment Plant shall be determined by multiplying the ratio for that plant, computed under (1) above, by the base entitlement of such agency.

5. Delivery Facilities and Costs of Delivery of Treated Effluent

Delivery facilities shall consist of any facilities for the delivery of treated effluent from the point of discharge of any Regional Treatment Plant to the point of use of the effluent. This contract and the service charge provided herein shall not apply to any such delivery facilities or to the financing thereof. CBMWD or any Contracting Agency may, at its own expense, acquire, construct, or make a contribution toward the financing of capital costs and maintenance and operation of any delivery facilities. CBMWD, or any Contracting Agency or Agencies or any combination thereof, may provide for delivery facilities by contract entered into between or among themselves or with any other person or public or private entity.

6. Price for Purchase of Treated Effluent

Any Contracting Agency exercising the right of first purchase of treated effluent shall be entitled to take delivery thereof at no cost, except for the costs of delivery, if any, of CBMWD.

7. Use of Purchased Treated Effluent

Any Contracting Agency exercising its right of first purchase of treated effluent may make any lawful use thereof, including beneficial use, sale, or other disposal and shall be entitled to retain all revenues received by it as a result thereof.

8. Contract for Joint Exercise or Transfer of Rights of First Purchase

Subject to the rights of CBMWD hereunder, any or all of the Contracting Agencies may be contract provided for the joint exercise of any of their respective rights of first purchase of treated effluent or for the sale, exchange or transfer of such rights. Certified copies of all such contracts shall be filed with CBMWD by the parties thereto.

B. Disposition by CBMWD of Unclaimed Treated Effluent

To the extent that any of the Contracting Agencies fail to exercise their respective rights of first purchase of treated effluent, CBMWD may make any lawful use of such effluent, including beneficial use, sale or other disposition inside or outside the Chino Basin; provided, that:

1. CBMWD shall not, for a consideration, sell or otherwise dispose of any treated effluent for beneficial use inside the Chino Basin without review and approval by a majority of the Contracting Agencies; and

2. If CBMWD, for a consideration, sells or otherwise disposes of any treated effluent for beneficial use inside or outside the Chino Basin, any portion of the consideration in excess of CBMWD's net audited costs of reclamation and delivery shall be apportioned and credited:

a. 85% to the Regional Sewerage System Maintenance and Operation Fund, and

b. 15% to the Regional Wastewater Capital Improvement Fund.

C. Measurement of Treated Effluent

CBMWD shall install, maintain, and operate measuring devices and equipment for the measurement of deliveries of treated effluent to the Contracting Agencies at a location or locations mutually agreed upon by CBMWD and the Contracting Agencies. The measuring devices and equipment shall be examined, tested and serviced regularly to insure their accuracy. At any time, CBMWD or any Contracting Agency may inspect any measuring devices and equipment and all records and measurements taken therefrom.

D. Notice of Proposed Delivery

Prior to the commencement of each fiscal year, notice of the delivery of treated effluent shall be given as follows:

1. Request by CBMWD

Between the first day of January and the first day of March of each year, CBMWD shall request each Contracting Agency to provide CBMWD with a schedule of the estimated flow and quantity of treated effluent to be delivered to each person or agency during the next fiscal year and the proposed points of delivery. The rates of flow and quantity shall not exceed the delivery capability of the facilities then in operation.

2. Response by Contracting Agencies

Within 30 days of the date of each such request by CBMWD, each Contracting Agency shall provide CBMWD with the schedule requested pursuant to subpart 1 above; provided that if a Contracting Agency does not intend to exercise its right of first purchase, it need not respond in any manner to CBMWD.

3. Allocation of Treated Effluent

On or before the first day of May of each year, CBMWD shall allocate treated effluent to the Contracting Agencies that have submitted schedules pursuant to subpart 2 above.

4. Additional Allocation of Treated Effluent

At any time during the fiscal year and upon 60 days written notice to CBMWD, a Contracting Agency may apply for the delivery of any treated effluent then available at a rate of flow or quantity greater than that allocated pursuant to subpart 3 above. However, the rates of flow and quantity shall not exceed the delivery capability of the treatment facilities then in operation. (Amended April 12, 1984)

Section 17. SERVICE CHARGES FOR MAINTENANCE AND OPERATION OF THE REGIONAL SEWER SYSTEM

All Contracting Agencies shall pay service charges for all sewage delivered to the Regional Sewerage System. Each Contracting Agencies shall pay its pro rata share of all net audited costs incurred by CBMWD in the maintenance and operations of the system. Net audited costs consist of:

A. Costs of maintenance and operation of all transmission and treatment facilities comprising the Regional Sewerage System and all disposal facilities required for the disposition of any treated effluent discharged from that system; and

B. Any other costs reasonably related to the maintenance and operation of the system; and

C. Based upon generally accepted engineering and accounting principles, reasonable reserves for the estimated costs and expenses of:

1. Replacement of any facilities where the costs and expenses of replacement are customarily considered a part of the costs and expenses of extraordinary maintenance which adds to the normal service life of facilities; and

2. Unforeseen contingencies; and

D. Actual costs and expenses incurred by CBMWD for the transmission, treatment and disposal of any sewage delivered by a Contracting Agency through Nonreclaimable Waste Disposal System of CBMWD as provided for in Section 8 hereof.

(Amended April 12, 1984)

Section 18. SERVICE CHARGE RATE

Concurrently with adoption of the Regional Sewerage System budget, the Board of Directors of CBMWD shall fix the service charge rate for the fiscal year. The rate shall be expressed in dollars and cents for each Equivalent Dwelling Unit (EDU) of sewage and shall be computed by subtracting from the

total estimated maintenance and operation expenses of the Regional Sewerage System the amount of any estimated revenues from the sale of effluent or sludge or other such offsetting revenues, and dividing the difference by the total estimated EDU's of sewage to be delivered into the system, all as set forth in the Regional Sewerage System budget adopted for the fiscal year. The estimated EDU's of sewage delivered into the Regional Sewerage System shall be determined based on a standard daily measurement or contribution of sewage per EDU agreed to from time to time by CBMWD and the Regional Technical Committee. (Amended April 12, 1984)

Section 19. REGIONAL SEWERAGE SYSTEM BUDGETS

A. Fiscal Year Budgets

For each fiscal year the Board of Directors of CBMWD shall cause to be prepared and shall adopt a Regional Sewerage System budget.

B. Form and Content of Budgets

The budget for each fiscal year shall contain a plan of financial operations for the Regional Sewerage System for the fiscal year and shall contain an estimate of the requirements for expenditures, including provisions for any reserves, and the means of financing such requirements. The budget shall be itemized and shall show in reasonable detail the nature and purpose of each item of revenue and expense and the actual or estimated amount thereof. The budget shall be in two parts. One part shall consist of a plan of financial operations for the

capital costs of the acquisition and construction of the Regional Sewerage System, and the other part shall consist of a plan of financial operation for the maintenance and operation of the system, prepared as follows:

1. Capital Improvement Fund Budget

The part covering the costs of the acquisition and construction of the Regional Sewerage System shall show:

a. The various items and amounts of capital costs and the total thereof;

b. The total amount in the Regional Wastewater Capital Improvement Fund and the available and unencumbered balance of such fund as of the commencement of the fiscal year and an estimate of the amount therein and the unencumbered balance thereof as of the end of the fiscal year;

c. The amounts, if any, of CBMWD revenues from sources other than Improvement District "C" property taxes which are or will be available for payment of capital costs and the total thereof;

d. The estimated amount of Improvement District "C" property taxes to be received during the fiscal year;

e. The projected amount of Supplemental Capital Outlay Fund contributions required from each Contracting Agency during the fiscal year and the total thereof.

2. Maintenance and Operations Fund Budget

The part covering the maintenance and operation of the Regional Sewerage System shall show:

a. The various items and amounts of maintenance and operation expenses and the total thereof;

b. The total amount in any reserves theretofore established, and the available and unencumbered balance in such reserves as of the commencement and end of the fiscal year;

c. The amount of service charges payable by each Contracting Agency and the total paid or payable by all Contracting Agencies;

d. The amounts, if any, of revenue from sources other than services charges which will be available for payment of maintenance and operation expenses and the total thereof;

e. The total amount required to be raised from service charges for payment of maintenance and operations expenses;

f. The quantity of sewage to be delivered by each Contracting Agency during the fiscal year and the total thereof;

g. The rate of the service charge for the fiscal year;

h. The amount of any surplus of service charges received by CBMWD during the fiscal year preceding the fiscal year the fiscal year then in progress in excess of the cost of maintenance and operation of the Regional Sewerage System for that year which was transferred to the Regional Sewerage System Operation and Maintenance Fund reserve for replacement of Regional Sewerage System facilities as a result of the annual audit for such preceding fiscal year, or the amount, if any, of

any shortage in the amount of service charges received by CBMWD during such preceding fiscal year less than the cost of maintenance and operation of the Regional Sewerage System for that year which was transferred from said reserve during the year then in progress as a result of the annual audit for such preceding fiscal year;

i. The proportionate amount of any such shortage which will be added to the total service charge of each Contracting Agency for the fiscal year next succeeding the fiscal year then in progress.

C. Comparative Data

For comparative purposes, the amounts and rates set forth in budgets shall be shown as follows:

1. On an actual basis for the second fiscal year preceding that to which the budget is to apply;

2. On an estimated or actual basis for the first fiscal year preceding that to which the budget is to apply;

3. On an estimated basis for the fiscal year to which such budget is to apply;

D. Preparation and Approval of Proposed Budgets

Not later than April 1 of each year, the Board of Directors of CBMWD shall direct its General Manager, or such other person or persons as the Board may designate, to prepare and submit to the Board a proposed budget for the next fiscal year. Upon submission of the proposed budget, the Board of Directors may make changes therein and, not

later than May 1 of each year, shall adopt a resolution declaring its intention to adopt the proposed budget and specifying a time, not earlier than June 1 nor later than June 30, and a place at which the Board of Directors will hold a hearing on the question of the adoption of such budget.

E. Notice and Hearing on Proposed Budget

Immediately after adoption of the resolution of intention, the secretary of CBMWD shall mail a copy of the resolution and the proposed budget to each Contracting Agency and to each member of the Regional Policy Committee. The Regional Policy Committee shall review the proposed budget and, not later than 10 days preceding the date fixed for hearing, shall submit its written report and recommendation thereon to the General Manager of CBMWD and to each Contracting Agency.

At the hearing on the proposed budget, the Board of Directors of CBMWD shall consider the report and recommendations of the Regional Policy Committee and the comments of all interested persons. At any time prior to the adoption of the budget, the Board may make such changes in the proposed budget as it deems advisable.

F. Adoption of Budget and Determination of the Service Charge Rate

Not later than June 30 of each year, the Board of Directors of CMBWD shall by resolution adopt the budget and determine the rate of service charge for the fiscal

year. The several amounts of proposed expenditures specified in the adopted budget shall be deemed appropriated for the fiscal year and for the purposes specified in the budget and the Board of Directors of CBMWD shall be authorized to make expenditures and incur obligations in accordance therewith. The Board of Directors shall alter or adopt the budget in accordance with the report and recommendations of the Regional Policy Committee, unless the Board of Directors, based on specific findings in said resolution, determines that such alteration or adoption impairs CBMWD's ability to operate the Regional Sewerage System. Such resolution shall set forth findings in support of the determinations of the Board of Directors.

If the Board of Directors fails to adopt a budget by June 30 of any fiscal year then, until such time as the Board shall adopt such budget, the budget last adopted and the service charge rate determined therein shall constitute the budget and rate for such fiscal year.

G. Capital Improvement Projects

The several amounts of proposed expenditures specified in the adopted budget for any fiscal year for capital improvements shall be deemed appropriated for the fiscal year and for the projects specified in the budget and the Board of Directors shall be authorized to make expenditures and incur obligations in accordance therewith. In the event that subsequent County Auditor estimates of Improvement District "C"

property tax revenues are received which adversely impact the funding of budgeted capital improvement projects, CBMWD shall initiate a budget review through the Regional Policy Committee and amend the budget as necessary. If the Board of Directors fails to adopt a budget by June 30 of any fiscal year then, until such time as the Board shall adopt such budget, funds necessary to complete capital acquisition and improvement projects initiated as a result of the last approved budget shall be considered appropriate and work in progress continued. No new capital improvement projects shall be initiated prior to adoption of the budget. However, the Contracting' Agencies shall continue to be obligated to make Supplemental Capital Outlay Fund payments to CBMWD pursuant to subpart 5 of part E of Section 9 hereof.

H. Adoption of Separate Budgets

Notwithstanding the preceding provisions of this section, the Board of Directors of CBMWD may elect for any fiscal year to separately prepare and adopt a Capital Improvement Fund Budget and a Maintenance and Operation Fund Budget. If said Board elects to so proceed, each such separate budget shall be prepared in accordance with the provisions of this section which are applicable thereto. Both said budgets shall be processed and adopted in accordance with the procedures and pursuant to the time schedule set forth in parts D, E and F of this section. (Amended April 12, 1984)

Section 20. BILLING AND PAYMENT OF SERVICE CHARGES

A. Monthly Statements of Service Charges

Not later than 15 days after the end of each month, CBMWD shall mail a statement of service charges to each Contracting Agency, setting forth the quantity and Equivalent Dwelling Units of sewage delivered during such month from the Contracting Agency's Community Sewer System into the Regional Sewerage System and the total thereof, the service charge rate applicable thereto and the total service charge due and payable to CBMWD for said month. Monthly service charges shall be based on the service charge rate fixed in the Regional Sewerage System budget for the fiscal year then in progress. The Equivalent Dwelling Units (EDU) of sewage delivered by the Contracting Agencies shall be determined based on a standard daily measurement or contribution of sewage per EDU agreed to from time to time by CBMWD and the Regional Technical Committee.

B. Payment of Statements; Interest on Overdue Payments

Each Contracting Agency shall pay the amount of the service charge set forth in any statement on or prior to its due date, namely, the forty-fifth day following the date of the mailing of such statement. Any such amount not paid by the due date shall accrue interest on a monthly basis from the due date at an annual rate equal to the current federal discount rate plus 2 percent.

Interest paid upon any delinquent amount shall be credited to the Regional Sewerage System Maintenance and Operation Fund unless, by reason of such delinquency, CBMWD shall have advanced the amount of the delinquency from other sources, in which case, the interest shall be credited to such fund as the Board Of Directors of CBMWD may designate.

A Contracting Agency shall not be entitled to withhold payment, in whole or in part, of the amount of any statement for service charges pending action pursuant to part D of this Section 20.

C. Adjustment for Net Audited Costs

If, upon completion of the CBMWD annual audit for fiscal year, it is determined that the amount received by CBMWD during such year from service charges is more or less than the cost of maintenance and operation of the Regional Sewerage System for the year, the surplus or shortage, as the case may be, shall be transferred to or made up from the Regional Sewerage System Operation and Maintenance Fund reserve for replacement of Regional Sewerage System facilities (the "Replacement Reserve"). If such an audit results in a surplus being transferred to the Replacement Reserve, an appropriate adjustment shall be made in the budget for the fiscal year next succeeding the fiscal year then in progress and the rate of the service charge for that fiscal year shall be adjusted accordingly. If such an audit results in a shortage being made up out of the Replacement Reserve, an

appropriate adjustment shall be made in the budget for the fiscal year next succeeding the fiscal year then in progress to provide for the reinstatement of the amount of the shortage, and the service charge rate for that fiscal year shall be adjusted accordingly.

D. Adjustment for Overpayment or Underpayment

Upon disagreement between any Contracting Agency and CBMWD over the amount of service charges or the discovery of an error in computation of service charges for a Contracting Agency, which is not resolved within 30 days, CBMWD shall immediately provide written notice of such disagreement or error to the Regional Technical Committee and shall request a recommendation and report from the committee. If such a written report is filed with CBMWD within 60 days of giving notice, CBMWD shall credit or debit any affected Contracting Agency's service charge account for the following month in the manner recommended by the Regional Technical Committee. If such a written report is not filed with CBMWD within 60 days of giving notice, or upon request of the Regional Technical Committee or any Contracting Agency, the Board of Directors of CBMWD shall initiate hearing procedures on said disagreement or error in accordance with Section 26A hereof. Upon the conclusion of the hearing, the Board of Directors of CBMWD shall, by resolution, make its determination on service charge adjustments, due dates and any interest due, and shall provide for the appropriate

credit to or debit of any affected Contracting Agency's service charge account for the following month.

E. Deposit of Payments in Maintenance and Operation Fund

All monies received by CBMWD in payment of service charges shall be deposited in and credited to a separate fund or account in the treasury of CBMWD, to be known as the "Regional Sewerage System Maintenance and Operation Fund." All monies in said fund and interest earned thereon shall be used and expended only for payment of maintenance and operation expenses paid or incurred by CBMWD under the provisions of this contract. (Amended April 12, 1984)

Section 21. (DELETED October 19, 1994) (See Regional Pretreatment Agreement)

Section 22. (DELETED October 19, 1994) (See Regional Pretreatment Agreement)

Section 23. GRANTS AND FINANCIAL ASSISTANCE

CBMWD and the Contracting Agencies shall exercise their best efforts to obtain the maximum amounts of grants and other financial assistance which may be available from any federal, state, local, or other source for defraying all or any part of the capital costs and the maintenance and operation expenses of the Regional Sewerage System. The General Manager of CBMWD, the Regional Policy Committee, and the Regional Technical Committee shall keep each other fully informed of any available grant or financial assistance programs known to any of them.

Prior to undertaking negotiations for a grant or

other financial assistance affecting the Regional Sewerage System, CBMWD shall give the Regional Policy Committee written notice of its intention to do so. Thereupon the committee may designate one representative who shall be entitled to participate with CBMWD in all such negotiations. The representative shall be a person skilled in the design, construction, maintenance, and operation of sewage facilities and may be a member of the Regional Technical Committee. The representative shall keep the Regional Policy Committee and the Regional Technical Committee fully informed concerning the status of the negotiations and the nature and contents ,of any proposed final application or agreement for grant or other financial assistance.

In addition, CBMWD shall annually submit a report to the Regional Policy Committee on any pending or proposed applications for grants or other financial assistance. Such report shall accompany each proposed annual budget and be mailed in the manner provided in part E of Section 19 hereof.

Each Contracting Agency shall be jointly responsible with CBMWD for all conditions, restrictions, or limitations imposed by any agency as a condition for extending a grant or other financial assistance. Any such agency, CBMWD, or any Contracting Agency may restrain any violation of such conditions, restrictions, or limitations by mandamus, injunction or other appropriate remedy.

CBMWD's costs for the acquisition, construction,

maintenance, or operation of the Regional Sewerage System shall be reduced by amounts of any grants or other financial assistance received therefor by CBMWD from the federal or state government. (Amended April 12, 1984)

Section 24. REGIONAL POLICY COMMITTEE

The parties desire to provide for a Regional Policy Committee to advise CBMWD of the needs and views of the Contracting Agencies concerning CBMWD's policies and activities in the financing, acquisition, construction, maintenance and operation of the Regional Sewerage System, to make reports and recommendations with respect thereto, and to fully inform the Contracting Agencies concerning such policies and activities.

Each Contracting Agency shall appoint one regular member and one alternate member to the Regional Policy Committee. Both such members shall be members of the Contracting Agency's governing body. The regular and alternate members so appointed shall serve at the pleasure of the appointing agency. Each Contracting Agency shall give the secretary of CBMWD immediate notice of all appointments and removals made by it and of the name and mailing address of each appointee. CBMWD shall appoint one regular member and one or more alternates to the Regional Policy Committee. The members so appointed shall be members of the Board of Directors of CBMWD and shall serve at the pleasure of CBMWD. The CBMWD member shall be entitled to participate at all regular and special

meetings of the committee but shall have no vote.

Each regular member of the Regional Policy Committee or his alternate, except the member or alternate appointed by CBMWD, shall have one vote.

A majority vote shall be required to carry any matter before the committee. A majority shall consist of members representing a majority of the Contracting Agencies, not including the State of California.

The committee shall hold a regular meeting on or before the second Thursday of every other month and shall meet in special meeting at the call of any member or at the call of CBMWD. The committee may adopt such procedures and rules as it deems advisable concerning its officers, meetings and the manner and method of making its reviews, reports and recommendations on any matter affecting the acquisition, construction, maintenance and operation of the Regional Sewerage System.

CBMWD shall, if requested by the committee, provide the committee with a meeting place and with the services, advice and assistance of members of its staff. All records, reports and other information of CBMWD pertaining to the financing, acquisition, construction, maintenance and operation of the Regional Sewerage System shall be available for inspection by members of the committee. CBMWD agrees to maintain and make available to the committee accurate records of all of its costs, disbursements and receipts with respect to activities under this contract. (Amended April 12, 1984)

Section 25. REGIONAL TECHNICAL COMMITTEE

The parties desire to provide for a Regional Technical Committee. The members and alternate members of the Regional Technical Committee shall be appointed, vote and be governed in the same manner provided in Section 24 hereof for the Regional Policy Committee, except that the members and alternates shall be officers or employees of the Contracting Agencies, or other persons knowledgeable in the design, construction, maintenance and operation of sewage facilities, and that CBMWD shall be entitled to appoint one member and one alternate member with the same right of participation and voting as other members. The committee shall hold a regular bimonthly meeting and shall meet in special meeting at the call of any member.

The committee may, and upon request by the Regional Policy Committee or CBMWD shall, review and make recommendations concerning any of the following technical matters: the acquisition, design, construction, maintenance, operation, or financing of sewer facilities, sewage treatment, reclamation, or disposal facilities, sewage and effluent measuring devices and equipment, Community Sewer Systems and the Regional Sewerage System; sewer user charges; service charges; quality standards for sewage and any effluent; and any other technical matter related to any of the foregoing. (Amended April 12, 1984)

Section 26. INSPECTION OF FACILITIES

Any authorized officer or employee of CBMWD may enter and inspect any part of the Community Sewer System of any Contracting Agency or any member of the Regional Policy Committee or Regional Technical Committee may enter and inspect any part of the Regional Sewerage System. Except during emergencies, such inspections shall be made during normal working hours on regular business days and upon the giving of not less than 24 hours prior notice of the inspection. Any inspecting officer, employee or member of the Regional Policy Committee or Regional Technical Committee shall bear proper credentials of authority and identification. The right of entry and inspection shall be limited to public streets, easements and property within which the systems shall be located. The rights of inspection shall include observation, measurement, sampling and testing. (Amended April 12, 1984)

Section 26A. HEARINGS

The provisions of this section and the procedures herein set forth shall apply to all hearings to be conducted by the Board of Directors of CBMWD with respect to determinations, reports and recommendations of the Regional Policy Committee and protests and complaints of Contracting Agencies with respect to determinations of said committee and CBMWD.

A. Notice of Hearings

The secretary of CBMWD shall give notice of hearings by publication, posting and mailing as specified below:

1. Publication. Notice of hearings shall be published pursuant to Section 6066 of the Government Code in one or more newspapers of general circulation within CBMWD. Publication of notice shall be commenced at least 15 days prior to the date specified therein for hearing.

2. Posting. Notice of hearing shall be posted on or near the door of the meeting room of the Board of Directors of CBMWD. Posted notice shall be commenced at least 15 days prior to the date specified therein for hearing and shall continue to the time of the hearing.

3. Mailing. Mailed notice shall be given to all members of the Regional Policy Committee and to all Contracting Agencies and to all other persons requesting such notice in writing. Mailed notice shall be sent by first class mail and shall be deemed to have given when so deposited in the United States mail postage prepaid.

B. Hearing

Hearings shall be held upon the date and at the time specified in the notice and may be continued from time to time, but not to exceed 60 days from the date specified in the notice. At each hearing, prior to consideration of any protests, objections or evidence, the Board of Directors of CBMWD shall cause to be read aloud or summarized any reports and recommendation made by the Regional Policy Committee and, in the case of annexations, the Local Agency Formation Commission. Thereafter, the Board of Directors of CBMWD shall hear and

receive all oral and written protests, objections and evidence which may be made, presented or filed by any Contracting Agency or any interested person. Any Contracting Agency or person who shall have filed a protest may withdraw the same at any time prior to the conclusion of the hearing.

C. Hearing Resolution

Not later than 30 days after the conclusion of the hearing, the Board of Directors of CBMWD shall by resolution make its determination on the matter being considered. Such resolution shall contain findings in support of the determination and shall be deemed a final administrative action. A certified copy of each such resolution adopted by the Board of Directors of CBMWD shall be mailed by the secretary of CBMWD in the manner provided for in subpart 3 of part A of this section to each Contracting Agency and person who presented or filed a protest, objection or evidence at the hearing within 15 days of the date of the adoption of the resolution. Any Contracting Agency may challenge any such resolution and determination by administrative mandamus, injunctive or other appropriate action or proceeding. (Added April 12, 1984)

Section 27. EFFECTIVE DATE OF CONTRACT

This contract between CBMWD and the undersigned Contracting Agency shall become effective after the occurrence of all of the following events:

(1) The authorization and execution of this contract by CBMWD and the undersigned Contracting Agency.

(2) The acquisition or construction by CBMWD of facilities for the Regional Sewerage System adequate to provide for the transmission, treatment, and disposal of all sewage then collected by the Community Sewer System of the undersigned Contracting Agency.

(3) The initiation and conduct of proceedings for and the completion of the formation of Improvement District "C" (either with or without elections, as provided by law) in substantial conformity with resolution of intention, Exhibit "C" hereof, and with boundaries substantially identical to those specified in Paragraph B of Section 9 hereof.

(4) The adoption by the Board of Directors of CBMWD of a capital outlay ordinance, substantially in the form set forth in Exhibit "B" hereof.

Not later than 15 days following the occurrence of the last such event, CBMWD shall give written notice thereof to the undersigned Contracting Agency. The notice shall specify a date, as determined by CBMWD, which shall be the effective date of this contract. The effective date shall be the first day of any calendar month occurring not sooner than one month nor later than one year after the date of giving the written notice.

Section 28. TERM OF CONTRACT

The term of this contract and any other Service Contract entered into between CBMWD and any sewage collection agency, shall be 50 years from the earliest effective date specified, in the original Service Contract between CBMWD and

any Contracting Agency, said date being January 2, 1973. It is the intent of the parties that all Service Contracts providing for the services and facilities of the Regional Sewerage System shall have the same termination date, without regard to the effective dates of the individual contracts.

In order to provide for a periodic review and update, as necessary, of the provisions of this contract, CBMWD and the Contracting Agencies agree to enter good faith discussions at intervals not exceeding five years or at the request of the majority of the Contracting Agencies. (Amended April 12, 1984)

Section 29. RENEWAL; OPTION FOR CONTINUED SERVICE

No later than two years prior to the end of the term of this contract or any earlier termination or extension of this contract, the parties shall negotiate for the extension or renewal of this contract upon comparable terms and conditions. If the parties have been unable to agree thereon, then any Contracting Agency, by written notice given to CBMWD at least 12 months prior to the expiration of said term, may elect to receive continued service after the expiration of said term upon the following conditions:

A. If, by reason of continued service, no expansion is required in any facilities of the Regional Sewerage System in existence upon the expiration of the term of this contract, the Contracting Agency may deliver sewage into the system in any quantity and at any flow rates. If, by reason of continued service, such expansion shall be required, the annual quantity

and flow rates of sewage to be delivered into the Regional Sewerage System by the Contracting Agency shall not exceed the quantity and flow rates delivered by the agency during the last full fiscal year preceding the expiration of said term.

B. The service charge rate shall be determined as provided in Section 18 hereof.

C. The sewage quality standards shall be in accordance with those in effect during the last full fiscal year preceding the expiration of said term or any higher standards prescribed by any federal, state or regional agency authorized by law to prescribe quality standards for effluent discharges.

D. CBMWD shall maintain and operate the Regional Sewerage System under substantially the same physical conditions of service as prevailed during the last fiscal year preceding the expiration of said term.

Other terms and conditions of continued service shall be reasonable and equitable and shall be mutually agreed upon and, if they provide for continued service for a specified number of years, a Contracting Agency shall have the option to receive further continued service upon the expiration of that and each succeeding period of continued service. (Amended April 12, 1984)

Section 30. AUTHORIZATION AND EXECUTION OF SEWAGE SERVICE AND ACQUISITION CONTRACTS

A. Authorization of Any Sewage Collection Agency

All proposed contracts between CBMWD and any sewage collection agency for the purpose of (i) providing the agency

with the services and facilities of the Regional Sewerage System under a Service Contract, (ii) the acquisition by CBMWD of any existing sewage treatment and disposal plant or interceptor sewer, or (iii) both (i) and (ii), shall be authorized for execution by CBMWD. The agency shall furnish CBMWD with a certified copy of the resolution authorizing execution by the agency, together with a certified copy of the proposed contract referred to therein. The resolution shall contain all restrictions, limitations, and conditions, if any, which may have been imposed on the execution of the contract.

B. Amendment of Any Existing Contract; New Contracts with Subsequent Contracting Agencies

If CBMWD proposes (i) to amend or rescind any existing Service Contract with a Contracting Agency or (ii) to enter a new Service Contract or a contract for the transfer of any existing sewage facilities to CBMWD, as part of the Regional Sewerage System, the Board of Directors of CBMWD shall adopt a resolution declaring its intention to do so and shall specify a time, not sooner than 60 days after the adoption of the resolution, and a place at which the Board will hold a hearing on the question of the proposed amendment, rescission or new contract, as the case may be. Immediately thereafter the secretary of CBMWD shall mail a copy of the resolution, together with a copy of the proposed amendment, rescission or new contract to the clerk or secretary of each Contracting Agency and to each member of the Regional Policy Committee. The

Regional Policy Committee shall review the proposal and, not later than 10 days preceding the date of the hearing, shall submit its written report and recommendation thereon to the general manager of CBMWD and to each Contracting Agency.

At the hearing on the proposal, the Board shall consider the report and recommendation of the Regional Policy Committee and shall hear representatives of any Contracting Agency, members of the committee, and any other interested persons. The Board may modify the proposal and, upon the conclusion of the hearing, order the authorization for execution by CBMWD of the proposed amendment, rescission, or new contract, as the case may be. (Amended April 12, 1984)

Section 31. NOTICE

Notices authorized or required to be given by any provision of this contract shall be deemed to have been given upon delivery, if delivered personally, or upon deposit in the mails, if enclosed in a properly addressed envelope and deposited in the United States mails for delivery by registered or certified mail.

Notice shall be given to the parties by delivery or mailing to the following officers of the parties at the following addresses:

CBMWD Secretary, Chino Basin Municipal Water District
8555 Archibald Avenue
Rancho Cucamonga, California

Undersigned Contracting Agency:

_____
_____
_____
_____

At any time a party may give written notice to the other party of a change in the designated officer or address.

Notice to members of the Regional Policy Committee or the Regional Technical Committee shall be given to the persons and at the addresses designated in the notices of appointment filed with the Secretary of CBMWD.

Section 32. PARTIAL INVALIDITY

The invalidity of any provision of this contract shall not affect the validity of the remainder thereof which can be given effect without such invalid provision.

Date of Execution

November 28, 1994

CHINO BASIN MUNICIPAL WATER DISTRICT

By: Bill Hues
President of the Board of Directors

ATTEST:
John L. Anderson
Secretary of the Board of Directors

Date of Execution

12/25/94

CITY OF CHINO

By: Eunice M. Ulloa
Mayor

ATTEST:
City Clerk

Date of Execution

October 31, 1994

CITY OF CHINO HILLS

By: _____
Mayor

ATTEST:

_____
City Clerk (Sept. 27, 1994)

Date of Execution

November 18, 1994

CUCAMONGA COUNTY WATER DISTRICT

By: _____
President of the Board of Directors

ATTEST:

_____
Secretary of the Board of Directors

Date of Execution

_____

CITY OF FONTANA

By: _____
Mayor

ATTEST:

_____
City Clerk

Date of Execution

_____

CITY OF CHINO HILLS

By: _____
Mayor

ATTEST:

_____
City Clerk

Date of Execution

_____

CUCAMONGA COUNTY WATER DISTRICT

By: _____
President of the Board of Directors

ATTEST:

_____
Secretary of the Board of Directors

Date of Execution

November 15, 1994

CITY OF FONTANA

By: _____
Mayor

ATTEST:

_____
Linda S. Nunn, CMC
Deputy City Clerk

Date of Execution

October 24, 1994

CITY OF MONTCLAIR

By: _____
Mayor

ATTEST:

_____
City Clerk

Date of Execution

October 25, 1994

CITY OF ONTARIO

By: _____
Mayor

ATTEST:

_____
City Clerk

CITY OF ONTARIO INCORPORATED DECEMBER 1891 CALIFORNIA

Date of Execution

October 27, 1994

CITY OF UPLAND

By: _____
Mayor

ATTEST:

_____
City Clerk

STETSON
ENGINEERS INC.

861 Village Oaks Drive, Suite 100 • Covina , California 91724
Phone: (626) 967-6202 • Fax: (626) 331-7065 • Website: www.stetsonengineers.com
Northern California • Southern California • Arizona • Colorado • Oregon

Reply to: Covina

MEMORANDUM

TO: **Mr. Bryant Marroquin**
Fontana Water Company

FROM: **Stetson Engineers Inc.**

SUBJECT: **Supplement to the Water Supply Assessment**
Speedway Commerce Center II Project

JOB NO.: **2048-18.1**

DATE: **June 17, 2022**

Introduction

This Technical Memorandum is a Supplement to the Water Supply Assessment (WSA) prepared in December 2021 by Stetson Engineers Inc. (Stetson) for San Gabriel Valley Water Company (San Gabriel) regarding the proposed Speedway Commerce Center II Project (Project). The proposed Project is located in the western portion of Fontana Water Company's (FWC) certificated service area as authorized by the California Public Utilities Commission (CPUC). The submitted WSA included a discussion of additional water infrastructure required to meet the industrial, commercial, and irrigation water demands for the proposed Project. The submitted WSA recommended additional water storage infrastructure for the proposed Project. The purpose of this Technical Memorandum is to provide additional information and analysis regarding the recommended additional water storage infrastructure requirements of the proposed Project.

Proposed Project Description

As described in the December 2021 WSA, the proposed Project is located east of Etiwanda Avenue, south of Whittram Avenue, north of San Bernardino Avenue, and west of Cherry Avenue. The proposed Project is located on a portion of the existing Auto Club Speedway site within an unincorporated area of San Bernardino County. It is anticipated the existing Auto Club Speedway race track will be reconfigured into a "short track" (i.e. the existing race track will be reduced in size). As a result, portions of the proposed Project will replace the remaining areas of the existing race track. The proposed Project will include seven buildings with a total of approximately 6,480,000 square feet (sf) of warehouse floor space and 120,000 sf of office floor space, for a total of 6,600,000 sf. The Project will also include approximately 4,497,483 sf (103.25 acres) of surrounding parking areas (pavement) and approximately 1,250,003 sf (28.70 acres) of landscaping on a Project site of approximately 522.22 acres. However, the proposed Project is separate from the Auto Club Speedway and will not include the reduced race track area (i.e. proposed short track).

Proposed Project Water Demands

The December 2021 WSA previously estimated the total water demand for the proposed Project, which includes commercial and industrial water demands (594 acre-feet per year, or AFY) and landscape irrigation (124 AFY), at approximately 718 AFY. The commercial and industrial water demands were previously based on a water use rate of 3,500 gallons per day (gpd) per acre derived from average recorded water use data for large industrial warehouse buildings within FWC's service area. However, pursuant to further review of the water demand for buildings of similar size and use in the vicinity, the water use rate was adjusted to 2,843 gpd per acre for the proposed Project. As a result, the updated commercial and industrial water demands are approximately 482 AFY, and the total updated water demand is approximately 606 AFY (including 124 AFY of landscape irrigation demand). However, in order for FWC to provide 606 AFY to the Project site,

FWC will need to produce water supplies which account for water losses within its water distribution system. Accounting for average system water losses (approximately 7.8 percent), FWC would need to produce approximately 657 AFY of water in order to supply 606 AFY to the Project site.

In order to determine the additional water storage infrastructure requirements of the proposed Project (discussed in the following sections), it is necessary to determine the Maximum Day Demand (MDD) and Peak Hour Demand (PHD) to account for fluctuations in water demands on a seasonal or hourly basis. The MDD and PHD are determined based on "peaking factors" relative to the Average Day Demand (ADD). Pursuant to historical water production records, FWC's "*2021 Water System Master Plan*" determined that a peaking factor of 1.7 (multiplied by the ADD) should be used to calculate the MDD, and that a peaking factor 1.6 (multiplied by the MDD) should be used to calculate the PHD. These peaking factors are consistent with the California Code of Regulations (§ 64554. New and Existing Source Capacity[1]) based on the following requirements: "*If daily water usage data are available, identify the day with the highest usage during the past ten years to obtain MDD; determine the average hourly flow during MDD and multiply by a peaking factor of at least 1.5 to obtain the PHD.*"

Based on an annual water requirement of 657 AFY for the proposed Project, the ADD is approximately 0.59 million gallons per day (MGD). Pursuant to the peaking factors identified above, the MDD is approximately 1.0 MGD and the PHD is approximately 0.07 million gallons per hour (MGH).

[1] https://govt.westlaw.com/calregs/Document/I09869AC5E2E24845946DA6392BB8ED5F?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

Reservoir Storage Capacity Analysis

The total reservoir storage required for the proposed Project is based on the following three (3) components:

1) Operational Storage;
2) Fire Storage; and
3) Emergency Storage.

These three required storage components are discussed in more detail below, and are based on design criteria from the following documents:

- California Code of Regulations (§ 64554)
- CPUC's General Order 103-A (September 2009)
- FWC's "*2021 Water System Master Plan*".
- American Water Works Association "M32 Computer Modeling of Water Distribution Systems" (2017)

Operational Storage

Operation storage (or equalization storage) is the amount of water required to meet demands in excess of the production and delivery capabilities of a water system. It is necessary to coordinate the production rates of water sources and the available storage capacity in a water system to provide a continuous flow of treated water supply. Water systems are often designed to have the capacity to supply the average flow on the day of maximum demand (i.e. MDD). The peak hour demand will be met by both the designed water production capacity (MDD) and outflow from the operational storage. This operational storage is continuously replenished throughout the day to maintain water quality.

Pursuant to the California Code of Regulations (§ 64554), large water systems (including FWC) are required to meet four hours of PHD with source capacity and storage capacity during the MDD. In addition, pursuant to the CPUC's General Order 103-A, dated September 2009, "*If a system provides potable water for fire protection service, new portions of the system shall have supply and storage facilities that are designed to meet MDD plus the required fire flow at the time of design*". As a result, an operational storage requirement equal to 100 percent of the MDD (or 1.0 MG) has been estimated for the proposed Project. This operation storage requirement is also consistent with the criteria identified in FWC's "*2021 Water System Master Plan*".

Fire Flow Storage

Fire storage is the volume of storage water reserved for firefighting. The fire storage volume is determined by multiplying the required fire flow rate by the required time duration. It is assumed that no more than one fire event would occur in any pressure zone at one time. The 2020 San Bernardino County Fire Code adopts the 2019 California Fire Code, which sets fire flow requirements based upon the building material (combustible or non-combustible), building size, and occupancy to determine the required fire flow and duration. Pursuant to the 2019 California Fire Code, the minimum fire flow requirements can range from 1,500 gallons per minute (gpm) (with 2 hours duration), for building sizes less than 3,600 sf, to 8,000 gpm (with 4 hours duration), for building sizes greater than 85,101 sf. Based on FWC's past experience, the maximum fire flow requirement for buildings similar in the size to the proposed Project is 4,000 gpm over a 4 hour duration[2]. This fire flow rate is equivalent with a reservoir storage requirement of 0.96 MG and is also consistent with criteria identified in FWC's "*2021 Water System Master Plan*".

[2] According to the largest building size in the proposed Project, the maximum fire flow requirement would be 6,000 gpm over a 4 hour duration based on the 2019 California Fire Code. The estimated fire flow storage here would be conservative on the low side.

Emergency Storage

Emergency storage provides water during emergencies. Emergencies cover a wide range of rare but probable events, such as pipeline failures, equipment failures, power outages, pumping system failures, water treatment plant failures, raw water contamination events, and natural disasters. The volume of water that is needed during an emergency is usually based on the estimated amount of time expected to elapse before the disruptions caused by the emergency are corrected. The occurrence and magnitude of emergencies are difficult to predict.

Pursuant to the American Water Works Association (AWWA) "M32 Computer Modeling of Water Distribution Systems", dated 2017, "*The amount of emergency storage is based on an assessment of the risk of failures and the desired degree of system dependability. As an example, a system operator may desire a full day of emergency storage in order to provide enough storage in the event of a system-wide power failure. An assessment must be made as to the type and nature of the emergency condition, including the frequency, intensity, and duration. In general, a vulnerability analysis, as described in AWWA Manual M19 {2001), should be used to determine emergency storage requirements. Some state or provincial regulations indicate the minimum emergency storage required for the community based on the average or maximum daily demands. In addition, water quality should be a part of the equation when determining the amount of emergency storage to provide. The utility may relax its minimum pressure requirements under emergency conditions as long as negative pressures are avoided.*

Although the California Code of Regulations does not have a defined requirement for emergency storage, the emergency storage criteria used in FWC's "*2021 Water System Master Plan*" is 50 percent of the MDD (or 0.50 MG). FWC's facilities depend on electrical utility services to operate. Disruption of electrical service may be caused by grid/distribution failures, natural hazards, or intentional power disruptions. Southern California Edison (SCE) provides electrical service to all FWC facilities. Due to the recent wildfire history in California, the State's investor-owned electric utilities, including SCE,

have implemented intentional de-energizations, or public safety power shutoffs (PSPS) during high-risk wildfire conditions. For example, the regional-wide power shutoff in October 2019 lasted about 3 to 5 days. FWC has dedicated backup generators at many critical facilities. However, pursuant to an analysis conducted in FWC's "*2021 Water System Master Plan*", there could be a shortage of about 50 percent of the MDD over a 5 day emergency period. The 0.50 MG volume of emergency storage ensures that FWC will have water available to distribute to the proposed Project during such an extended period.

Required Reservoir Storage Capacity

As discussed above, the total reservoir storage required for the proposed Project is based on Operational Storage (1.0 MG), Fire Storage (0.96 MG); and Emergency Storage (0.50 MG) components and totals approximately 2.5 MG. The tabulation below summarizes the total reservoir storage.

Projected Water Demand	657	AFY
Average Day Demand (ADD)	0.59	MGD
Maximum Day Demand (MDD, or 1.7 x ADD)	1.00	MGD
Peak Hour Demand (PHD, or 1.6 x MDD)	0.07	MGH
Reservoir Storage Components		
(1) Operation Storage (100 Percent of the MDD)	1.00	MG
(2) Fire Flow Storage (4,000 gpm over 4 hours)	0.96	MG
(3) Emergency Storage (50 percent of the MDD)	0.50	MG
Total Required Storage	**2.46**	**MG**

Appendix C – Design Criteria from Fontana Water Company Division 2021 Water System Master Plan

Appendix C – Design Criteria from Fontana Water Company Division 2021 Water System Master Plan

Table 7.1 Summary of Performance and Design Criteria for San Gabriel's Fontana Division Water Distribution System

Component	Performance Criteria for Existing System Evaluation	Design Criteria for New or Expanded Systems
Maximum Pressure[1]		
ADD	125 psi	125 psi
Minimum Hour Demand	150 psi	150 psi
Minimum Pressure[1]		
MDD	40 psi	40 psi
PHD	30 psi	40 psi
MDD + Fire Flow[2]	20 psi	20 psi
Fire Flow Requirements[2]		
MDD	Single Family Residential: 1,000 gpm for 1 hour. Multi-Family Residential: 2,500 gpm for 2 hours. Commercial/ Industrial/Governmental: 4,000 gpm for 4 hours.	The same criteria as in the 2020 San Bernardino County Fire Code (which adopts the 2019 California Fire Code, Appendix B.) (or current fire code) for individual structures.
Pipeline Velocity and Head Loss[3]		
Maximum Velocity under PHD	6 fps	6 fps
Maximum Velocity under MDD plus Fire Flow	10 fps	10 fps
Maximum Head Loss under PHD for Small Pipes (< 16")	5 ft per 1,000 ft	5 ft per 1,000 ft
Maximum Head Loss under PHD for Large Pipes (≥ 16")	3 ft per 1,000 ft	3 ft per 1,000 ft
Water Supply Capacity[4], [5]		
MDD	*In pressure zones with storage:* • Provide firm supply capacity (largest well or treatment component out of service) equal to MDD; meet PHD and fire flow requirement from a combination of supply sources and storage. *In pressure zones without storage:* • Provide firm supply capacity equal to PHD or MDD plus fire flow, whichever is greater.	*In system with storage:* • Provide firm supply capacity (largest well or treatment component out of service) equal to MDD; meet PHD and fire flow requirement from a combination of supply sources and storage. *In system without storage:* • Provide firm supply capacity equal to PHD or MDD plus fire flow, whichever is greater.
Storage Capacity		
Operational Storage[4]	In pressure zones with continuous water supply: • 4 hours of PHD. In pressure zones without continuous water supply: • 100% MDD	In system with continuous water supply: • 4 hours of PHD In system without continuous water supply: • 100% MDD
Fire Storage	Fire flow demand for the most severe fire recommended in the pressure zone multiplied by the recommended duration	Fire flow demand for the most severe fire for the individual structure required in the system multiplied by the required duration
Emergency Storage[3]	50% MDD (based on the assessment of public safety power shutoffs (PSPS) during high-risk wildfire conditions and the water system's dedicated backup generators)	50% MDD (based on the assessment of public safety power shutoffs (PSPS) during high-risk wildfire conditions and the water system's dedicated backup generators)
Total water storage capacity	Equalization Storage + Fire storage + Emergency Storage	Equalization Storage + Fire storage + Emergency Storage
Booster Pumping Capacity		
MDD	*In pressure zones with gravity storage:* • Provide firm pumping capacity (largest pump out of service) equal to MDD. *In pressure zones without gravity storage:* • Provide firm pumping capacity equal to MDD plus fire flow or PHD, whichever is greater.	*In system with gravity storage:* • Provide firm pumping capacity (largest pump out of service) equal to MDD. *In system without gravity storage:* • Provide firm pumping capacity equal to MDD plus fire flow or PHD, whichever is greater.
Minimum Size for Pipeline Replacement and New Mains[6]		
Minimum Size for Pipeline Replacement and New Mains	Not Applicable	6 inches

(1) California Public Utilities Commission (CPUC) General Order 103-A, VII.6.A and VII.6.B (CPUC, 2009).
(2) San Bernardino County Fire Code (2020) which adopts California Fire Code (2019).
(3) AWWA, M32 (2017, fourth edition).
(4) California Code of Regulations, Title 22, § 64554 (CCR, 2018).
(5) CPUC General Order 103-A, II.2.B.3.b (CPUC, 2009).
(6) CPUC General Order 103-A, III.3.C (CPUC, 2009).

Appendix D– Model Output – Junctions and Pipelines

Hydraulic Model - Junction Output

			Average Day Demand			Max Day Demand			Peak Hour Demand			Fire Flow			
Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Available Fire Flow at 20 psi Residual Pressure (gpm)	Required Fire Flow (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J112194	1,108.50	Juniper	51.000	1,246.18	59.57	86.630	1,241.86	57.70	138.630	1,223.13	49.59	6774.750	4,000.00	1,241.79	57.67
J-2946	1,106.00	Juniper	51.000	1,246.99	61.00	86.630	1,243.40	59.45	138.630	1,227.67	52.64	8588.620	4,000.00	1,243.68	59.57
J-2950	1,096.00	Juniper	51.000	1,246.84	65.26	86.630	1,243.00	63.60	138.630	1,226.81	56.59	7073.170	4,000.00	1,243.17	63.67
J-2951	1,087.00	Juniper	51.000	1,246.44	68.98	86.630	1,242.24	67.17	138.630	1,224.51	59.50	7280.180	4,000.00	1,242.28	67.18
J-2958	1,084.00	Juniper	51.000	1,246.33	70.23	86.630	1,242.07	68.39	138.630	1,223.94	60.54	5673.020	4,000.00	1,242.06	68.39
J-2966	1,110.24	Juniper	51.000	1,246.21	58.83	86.630	1,241.90	56.96	138.630	1,223.30	48.91	5981.740	4,000.00	1,241.85	56.94
J-2967	1,115.80	Juniper	51.000	1,246.43	56.52	86.630	1,242.23	54.70	138.630	1,224.46	47.01	6360.610	4,000.00	1,242.25	54.71
J-2968	1,125.00	Juniper	51.000	1,246.89	52.74	86.630	1,243.04	51.07	138.630	1,227.15	44.19	6471.270	4,000.00	1,243.20	51.14
J109156	1,116.50	Juniper	0.000	1,247.09	56.50	0.000	1,243.66	55.02	0.000	1,228.22	48.34	9874.970	4,000.00	1,243.99	55.16
J109148	1,145.40	Juniper	0.000	1,247.96	44.37	0.000	1,244.77	42.99	0.000	1,233.57	38.15	7601.860	4,000.00	1,245.02	43.10
J-2961	1,083.00	Juniper	0.000	1,246.27	70.64	0.000	1,241.99	68.79	0.000	1,223.62	60.84	6049.490	4,000.00	1,241.96	68.77
			Total Demand	408	gpm	**Total Demand**	693.04	gpm	**Total Demand**	1109.04	gpm				
			Max Pressure	70.64	psi	**Max Pressure**	68.79	psi	**Max Pressure**	60.84	psi		**Max Pressure**	68.77	psi
			Min Pressure	44.37	psi	**Min Pressure**	42.99	psi	**Min Pressure**	38.15	psi		**Min Pressure**	43.1	psi
			Max HGL	1,247.96	ft	**Max HGL**	1,244.77	ft	**Max HGL**	1,233.57	ft		**Max HGL**	1,245.02	ft
			Min HGL	1,246.18	ft	**Min HGL**	1,241.86	ft	**Min HGL**	1,223.13	ft		**Min HGL**	1,241.79	ft

Hydraulic Model - Pipeline Output

					Average Day Demand			Max Day Demand			Peak Hour Demand		
Label	Description	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
MA-7919-095	Existing Transmission Main	592	16	109	490.64	0.78	0.0002	420.30	0.67	0.0002	1,338.67	2.14	0.0015
MA-7919-039	Existing Transmission Main	15	16	109	490.64	0.78	0.0002	420.30	0.67	0.0002	1,338.67	2.14	0.0015
MA-7919-038	Existing Transmission Main	20	16	109	753.62	1.2	0.0005	863.30	1.38	0.0007	2,012.34	3.21	0.0032
MA-7919-037	Existing Transmission Main	15	16	109	262.97	0.42	0.0001	443.00	0.71	0.0002	673.66	1.07	0.0004
MA-7919-036	Existing Distribution Pipe	947	16	109	262.94	0.42	0.0001	442.95	0.71	0.0002	673.58	1.07	0.0004
MA-7919-035	Existing Distribution Pipe	13	16	109	262.94	0.42	0.0001	442.95	0.71	0.0002	673.58	1.07	0.0004
MA-7919-034	Existing Distribution Pipe	15	16	109	262.94	0.42	0.0001	442.95	0.71	0.0002	673.58	1.07	0.0004
MA-7919-033	Existing Distribution Pipe	15	16	109	262.94	0.42	0.0001	442.95	0.71	0.0002	673.58	1.07	0.0004
MA-7919-024	Existing Transmission Main	62	16	109	753.62	1.2	0.0005	863.30	1.38	0.0007	2,012.34	3.21	0.0032
MA-7919-019	Existing Transmission Main	495	16	109	753.62	1.2	0.0005	863.30	1.38	0.0007	2,012.34	3.21	0.0032
MA-7919-016	Existing Transmission Main	84	16	109	753.62	1.2	0.0005	863.30	1.38	0.0007	2,012.34	3.21	0.0032
MA-7919-009	Existing Transmission Main	614	16	109	753.62	1.2	0.0005	863.30	1.38	0.0007	2,012.34	3.21	0.0032
MA-7918-248	Existing Transmission Main	418	16	109	753.62	1.2	0.0005	863.30	1.38	0.0007	2,012.34	3.21	0.0032
MA-7918-177	Existing Transmission Main	418	16	109	-1,153.36	1.84	0.0011	-1,382.78	2.21	0.0016	-3,065.86	4.89	0.0069
MA-7918-174	Existing Transmission Main	69	16	109	1,153.36	1.84	0.0011	1,382.78	2.21	0.0016	3,065.86	4.89	0.0069
MA-7918-169	Existing Transmission Main	250	16	109	-1,153.36	1.84	0.0011	-1,382.78	2.21	0.0016	-3,065.86	4.89	0.0069
MA-7918-160	Existing Transmission Main	15	16	109	-1,153.36	1.84	0.0011	-1,382.78	2.21	0.0016	-3,065.86	4.89	0.0069
MA-7918-159	Existing Transmission Main	10	16	109	-1,183.31	1.89	0.0012	-1,192.72	1.9	0.0012	-2,388.41	3.81	0.0043
MA-7718-014	Existing Distribution Pipe	10	16	109	-254.69	0.41	0.0001	-269.43	0.43	0.0001	-618.10	0.99	0.0004
MA-7718-013	Existing Distribution Pipe	175	16	109	-254.69	0.41	0.0001	-269.43	0.43	0.0001	-618.10	0.99	0.0004
MA-7718-012	Existing Distribution Pipe	153	16	109	254.69	0.41	0.0001	269.43	0.43	0.0001	618.10	0.99	0.0004
MA-7718-011	Existing Distribution Pipe	27	16	109	250.18	0.4	0.0001	261.77	0.42	0.0001	605.85	0.97	0.0003
MA-7718-010	Existing Distribution Pipe	27	16	109	250.18	0.4	0.0001	261.77	0.42	0.0001	605.85	0.97	0.0003
MA-7718-009	Existing Distribution Pipe	26	16	109	250.18	0.4	0.0001	261.77	0.42	0.0001	605.85	0.97	0.0003
MA-7718-008	Existing Distribution Pipe	96	16	109	250.18	0.4	0.0001	261.77	0.42	0.0001	605.85	0.97	0.0003
MA-7718-006	Existing Distribution Pipe	205	16	109	250.18	0.4	0.0001	261.77	0.42	0.0001	605.85	0.97	0.0003
MA-7718-005	Existing Distribution Pipe	15	16	109	250.18	0.4	0.0001	261.77	0.42	0.0001	605.85	0.97	0.0003
MA-7718-004	Existing Distribution Pipe	48	16	109	238.07	0.38	0.0001	241.18	0.38	0.0001	572.91	0.91	0.0003
MA-7718-003	Existing Distribution Pipe	15	16	109	238.07	0.38	0.0001	241.18	0.38	0.0001	572.91	0.91	0.0003
MA-7718-002	Existing Distribution Pipe	117	16	109	234.98	0.37	0.0001	235.92	0.38	0.0001	564.49	0.9	0.0003
MA-7618-031	Existing Distribution Pipe	188	16	109	233.03	0.37	0.0001	232.61	0.37	0.0001	559.19	0.89	0.0003
MA-7618-030	Existing Distribution Pipe	82	16	109	233.03	0.37	0.0001	232.61	0.37	0.0001	559.19	0.89	0.0003
MA-7618-029	Existing Distribution Pipe	55	16	109	233.03	0.37	0.0001	232.61	0.37	0.0001	559.19	0.89	0.0003
MA-7618-028	Existing Distribution Pipe	10	16	109	233.03	0.37	0.0001	232.61	0.37	0.0001	559.19	0.89	0.0003
MA-7618-027	Existing Distribution Pipe	10	16	109	233.03	0.37	0.0001	232.61	0.37	0.0001	559.19	0.89	0.0003
MA-7618-026	Existing Distribution Pipe	14	16	109	233.03	0.37	0.0001	232.61	0.37	0.0001	559.19	0.89	0.0003
MA-7618-025	Existing Distribution Pipe	10	16	109	224.87	0.36	0	218.74	0.35	0.0001	537	0.86	0.0003
MA-7618-024	Existing Distribution Pipe	14	16	109	224.87	0.36	0.0001	218.74	0.35	0	537	0.86	0.0003
MA-7618-023	Existing Distribution Pipe	211	16	109	224.87	0.36	0.0001	218.74	0.35	0.0001	537.00	0.86	0.0003
MA-7618-022	Existing Distribution Pipe	15	16	109	224.87	0.36	0	218.74	0.35	0	537.00	0.86	0.0003
MA-7618-021	Existing Distribution Pipe	15	16	109	224.87	0.36	0.0001	218.74	0.35	0.0001	537.00	0.86	0.0003
MA-7618-020	Existing Distribution Pipe	90	16	109	224.87	0.36	0.0001	218.74	0.35	0.0001	537.00	0.86	0.0003
MA-7618-018	Existing Distribution Pipe	325	16	109	224.87	0.36	0.0001	218.74	0.35	0.0001	537.00	0.86	0.0003
MA-7618-017	Existing Distribution Pipe	10	16	109	224.87	0.36	0.0001	218.74	0.35	0	537.00	0.86	0.0003
MA-7718-007(1)	Existing Distribution Pipe	190	16	109	250.18	0.4	0.0001	261.77	0.42	0.0001	605.85	0.97	0.0003
MA-7718-007(2)	Existing Distribution Pipe	190	16	109	250.18	0.4	0.0001	261.77	0.42	0.0001	605.85	0.97	0.0003
MA-7618-019(1)	Existing Distribution Pipe	147	16	109	224.87	0.36	0.0001	218.74	0.35	0.0001	537.00	0.86	0.0003
MA-7618-019(2)	Existing Distribution Pipe	159	16	109	224.87	0.36	0.0001	218.74	0.35	0.0001	537.00	0.86	0.0003
MA-7618-032(1)	Existing Distribution Pipe	150	16	109	234.98	0.37	0.0001	235.92	0.38	0.0001	564.49	0.9	0.0003
MA-7618-032(2)	Existing Distribution Pipe	149	16	109	233.03	0.37	0.0001	232.61	0.37	0.0001	559.19	0.89	0.0003
MA-7718-001(1)	Existing Distribution Pipe	19	16	109	234.98	0.37	0.0001	235.92	0.38	0.0001	564.49	0.9	0.0003
MA-7718-001(2)	Existing Distribution Pipe	19	16	109	234.98	0.37	0.0001	235.92	0.38	0.0001	564.49	0.9	0.0003
MA-7819-008(1)	Existing Distribution Pipe	329	16	109	262.94	0.42	0.0001	442.95	0.71	0.0002	673.58	1.07	0.0004
P-705	New Distribution Pipe	257	12	135	211.94	0.6	0.0001	356.33	1.01	0.0003	534.96	1.52	0.0007
P-706	New Distribution Pipe	113	12	135	211.94	0.6	0.0001	356.33	1.01	0.0003	534.96	1.52	0.0007
P-707	New Distribution Pipe	183	12	135	211.94	0.6	0.0001	356.33	1.01	0.0003	534.96	1.52	0.0007
P-708	New Distribution Pipe	605	12	135	211.94	0.6	0.0001	356.33	1.01	0.0003	534.96	1.52	0.0007
P-709	New Distribution Pipe	2,298	12	135	244.92	0.69	0.0002	344.30	0.98	0.0003	627.78	1.78	0.001
P-710	New Distribution Pipe	747	12	135	159.44	0.45	0.0001	214.93	0.61	0.0001	407.57	1.16	0.0004
P-711	New Distribution Pipe	82	12	135	159.44	0.45	0.0001	214.93	0.61	0.0001	407.57	1.16	0.0004
P-712	New Distribution Pipe	91	12	135	159.44	0.45	0.0001	214.93	0.61	0.0001	407.57	1.16	0.0004
P-713	New Distribution Pipe	88	12	135	159.44	0.45	0.0001	214.93	0.61	0.0001	407.57	1.16	0.0004
P-714	New Distribution Pipe	71	12	135	159.44	0.45	0.0001	214.93	0.61	0.0001	407.57	1.16	0.0004
P-715	New Distribution Pipe	137	12	135	159.44	0.45	0.0001	214.93	0.61	0.0001	407.57	1.16	0.0004
P-716	New Distribution Pipe	70	12	135	159.44	0.45	0.0001	214.93	0.61	0.0001	407.57	1.16	0.0004
P-717	New Distribution Pipe	1,027	12	135	108.44	0.31	0	128.30	0.36	0.0001	268.94	0.76	0.0002
P-718	New Distribution Pipe	380	12	135	108.44	0.31	0	128.30	0.36	0.0001	268.94	0.76	0.0002
P-719	New Distribution Pipe	134	12	135	108.44	0.31	0	128.30	0.36	0.0001	268.94	0.76	0.0002
P-720	New Distribution Pipe	418	12	135	399.75	1.13	0.0004	519.48	1.47	0.0007	1,053.52	2.99	0.0026
P-721	New Distribution Pipe	285	12	135	399.75	1.13	0.0004	519.48	1.47	0.0007	1,053.52	2.99	0.0026
P-723	New Distribution Pipe	343	12	135	248.25	0.7	0.0002	314.38	0.89	0.0003	626.41	1.78	0.001
P-724	New Distribution Pipe	278	12	135	248.25	0.7	0.0002	314.38	0.89	0.0003	626.41	1.78	0.001
P-725	New Distribution Pipe	268	12	135	197.25	0.56	0.0001	227.75	0.65	0.0002	487.79	1.38	0.0006
P-722(2)	New Distribution Pipe	553	12	135	248.25	0.7	0.0002	314.38	0.89	0.0003	626.41	1.78	0.001
P-722(1)(1)	New Distribution Pipe	1,766	12	135	399.75	1.13	0.0004	519.48	1.47	0.0007	1,053.52	2.99	0.0026
P-722(1)(2)	New Distribution Pipe	2,295	12	135	264.77	0.75	0.0002	358.25	1.02	0.0004	683.45	1.94	0.0012

Label	Description	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-730	New Transmission Pipe	3,908	16	135	1,183.31	1.89	0.0008	1,192.72	1.9	0.0008	2,388.41	3.81	0.0029
P-729(2)(2)	New Transmission Pipe	328	16	135	1,183.31	1.89	0.0008	1,192.72	1.9	0.0008	2,388.41	3.81	0.0029
P-727(2)	New Distribution Pipe	345	12	135	-83.98	0.24	0	-74.60	0.21	0	-231.44	0.66	0.0002
P-727(1)(1)	New Distribution Pipe	1,379	12	135	-83.98	0.24	0	-74.60	0.21	0	-231.44	0.66	0.0002
P-727(1)(2)	New Distribution Pipe	424	12	135	-83.98	0.24	0	-74.60	0.21	0	-231.44	0.66	0.0002
P-726(1)	New Distribution Pipe	1,787	12	135	34.47	0.1	0	42.75	0.12	0	81.58	0.23	0
P-726(2)	New Distribution Pipe	381	12	135	34.47	0.1	0	42.75	0.12	0	81.58	0.23	0
P-745	New Distribution Pipe	334	12	135	108.44	0.31	0	128.30	0.36	0.0001	268.94	0.76	0.0002
P-746	New Distribution Pipe	390	12	135	108.44	0.31	0	128.30	0.36	0.0001	268.94	0.76	0.0002
P-747	New Distribution Pipe	377	12	135	108.44	0.31	0	128.30	0.36	0.0001	268.94	0.76	0.0002
P-748	New Distribution Pipe	472	12	135	108.44	0.31	0	128.30	0.36	0.0001	268.94	0.76	0.0002
P-749	New Distribution Pipe	421	12	135	108.44	0.31	0	128.30	0.36	0.0001	268.94	0.76	0.0002
P-750	New Distribution Pipe	181	12	135	108.44	0.31	0	128.30	0.36	0.0001	268.94	0.76	0.0002
P-751	New Distribution Pipe	169	12	135	108.44	0.31	0	128.30	0.36	0.0001	268.94	0.76	0.0002
					Max Velocity	1.89	0.0012	Max Velocity	2.21	0.0016	Max Velocity	4.89	0.0069
					Min Velocity	0.1	0	Min Velocity	0.12	0	Min Velocity	0.23	0

Available Fire Flow Results under Ultimate Phase Build Out (Phase 1a + 1b + 2)

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?	
J112194	Juniper	4	TRUE	4,000.00	6,774.75	4,086.63	6,861.38	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J109156	Juniper	4	TRUE	4,000.00	9,874.97	4,000.00	9,874.97	20	20.01	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	These are at the intersection of Cherry and the Development
J109148	Juniper	4	TRUE	4,000.00	7,601.86	4,000.00	7,601.86	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2968	Juniper	4	TRUE	4,000.00	6,471.27	4,086.63	6,557.90	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2967	Juniper	4	TRUE	4,000.00	6,360.61	4,086.63	6,447.24	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2966	Juniper	3	TRUE	4,000.00	5,981.74	4,086.63	6,068.37	20	24.4	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2961	Juniper	4	TRUE	4,000.00	6,049.49	4,000.00	6,049.49	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2958	Juniper	3	TRUE	4,000.00	5,673.02	4,086.63	5,759.65	20	26.67	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	Lowest Available FF within the Development
J-2951	Juniper	4	TRUE	4,000.00	7,280.18	4,086.63	7,366.81	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2950	Juniper	3	TRUE	4,000.00	7,073.17	4,086.63	7,159.80	20	29.27	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2946	Juniper	4	TRUE	4,000.00	8,588.62	4,086.63	8,675.25	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	Highest Available FF within the Development

Max Available Fire Flow @ 20 psi Residual Pressure: 8,588.62 gpm
Min Available Fire Flow @ 20 psi Residual Pressure: 5,673.02 gpm

MDD: 693.04 gpm

Available Fire Flow Results under Phase 1a + 1b

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?	
J112194	Juniper	4	TRUE	4,000.00	5,776.60	4,086.63	5,863.23	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J109156	Juniper	4	TRUE	4,000.00	9,814.31	4,000.00	9,814.31	20	20.01	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	These are at the intersection of Cherry and the Development
J109148	Juniper	4	TRUE	4,000.00	7,678.25	4,000.00	7,678.25	20	20.01	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2968	Juniper	4	TRUE	4,000.00	6,515.81	4,086.63	6,602.44	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2967	Juniper	3	TRUE	4,000.00	5,386.50	4,086.63	5,473.13	20	20.04	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	Lowest Available FF within the Development
J-2966	Juniper	4	TRUE	4,000.00	5,634.06	4,086.63	5,720.69	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2961	Juniper	(N/A)	(N/A)	4,000.00	(N/A)	(N/A)	(N/A)	20	(N/A)	-300	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	These hydrants are not active in this phase
J-2958	Juniper	(N/A)	(N/A)	4,000.00	(N/A)	(N/A)	(N/A)	20	(N/A)	-300	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	
J-2951	Juniper	(N/A)	(N/A)	4,000.00	(N/A)	(N/A)	(N/A)	20	(N/A)	-300	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	
J-2950	Juniper	3	TRUE	4,000.00	5,944.00	4,086.63	6,030.63	20	32.71	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2946	Juniper	4	TRUE	4,000.00	8,272.35	4,086.63	8,358.98	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	Highest Available FF within the Development

Max Available Fire Flow @ 20 psi Residual Pressure: 8,272.35 gpm
Min Available Fire Flow @ 20 psi Residual Pressure: 5,386.50 gpm

MDD: 519.78 gpm

Available Fire Flow Results under Phase 1a Only

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?	
J112194	Juniper	(N/A)	(N/A)	4,000.00	(N/A)	(N/A)	(N/A)	20	(N/A)	-300	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	
J109156	Juniper	4	TRUE	4,000.00	9,521.98	4,000.00	9,521.98	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	These are at the intersection of Cherry and the Development
J109148	Juniper	4	TRUE	4,000.00	7,350.40	4,000.00	7,350.40	20	20	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2968	Juniper	3	TRUE	4,000.00	5,273.32	4,086.63	5,359.95	20	20.01	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	Lowest Available FF within the Development
J-2967	Juniper	(N/A)	(N/A)	4,000.00	(N/A)	(N/A)	(N/A)	20	(N/A)	-300	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	These hydrants are not active in this phase
J-2966	Juniper	(N/A)	(N/A)	4,000.00	(N/A)	(N/A)	(N/A)	20	(N/A)	-300	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	
J-2961	Juniper	(N/A)	(N/A)	4,000.00	(N/A)	(N/A)	(N/A)	20	(N/A)	-300	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	
J-2958	Juniper	(N/A)	(N/A)	4,000.00	(N/A)	(N/A)	(N/A)	20	(N/A)	-300	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	
J-2951	Juniper	(N/A)	(N/A)	4,000.00	(N/A)	(N/A)	(N/A)	20	(N/A)	-300	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	
J-2950	Juniper	3	TRUE	4,000.00	5,469.88	4,086.63	5,556.51	20	33.42	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	
J-2946	Juniper	3	TRUE	4,000.00	7,881.08	4,086.63	7,967.71	20	20.16	-300	-209.87	U7072_NU	(N/A)	-293.57	U7028_NU	TRUE	Highest Available FF within the Development

Max Available Fire Flow @ 20 psi Residual Pressure: 7,881.08 gpm
Min Available Fire Flow @ 20 psi Residual Pressure: 5,273.32 gpm

MDD: 259.89 gpm

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)	Comment
47625	MA-7919-095	592	J109160	HY-7920-0	16	GWMR	109	FALSE	0	-1,641.49	2.62	0.0022	FALSE	592	
47681	MA-7919-039	15	J109156	J109160	16	GWMR	109	FALSE	0	-1,641.49	2.62	0.0022	FALSE	15	
47682	MA-7919-038	20	J109152	J109156	16	GWMR	109	FALSE	0	307.96	0.49	0.0001	FALSE	15	
47683	MA-7919-037	15	J109156	J109158	16	GWMR	109	FALSE	0	1,949.45	3.11	0.003	FALSE	15	
47684	MA-7919-036	947	J109158	HY-7919-0	16	GWMR	109	FALSE	0	1,949.40	3.11	0.003	FALSE	947	
47685	MA-7919-035	13	HY-7919-0	J111550	16	GWMR	109	FALSE	0	1,949.40	3.11	0.003	FALSE	13	
47686	MA-7919-034	15	J111550	J111548	16	GWMR	109	FALSE	0	1,949.40	3.11	0.003	FALSE	15	
47687	MA-7919-033	15	J111548	J111544	16	GWMR	109	FALSE	0	1,949.40	3.11	0.003	FALSE	15	
47696	MA-7919-024	62	HY-7919-0	J109152	16	GWMR	109	FALSE	0	307.96	0.49	0.0001	FALSE	62	
47701	MA-7919-019	495	J109154	HY-7919-0	16	GWMR	109	FALSE	0	307.96	0.49	0.0001	FALSE	495	
47704	MA-7919-016	84	J109146	J109154	16	GWBR	109	FALSE	0	307.96	0.49	0.0001	FALSE	84	
47711	MA-7919-009	614	HY-7919-0	J109146	16	GWMR	109	FALSE	0	307.96	0.49	0.0001	FALSE	614	
47740	MA-7918-248	418	J109148	HY-7919-0	16	GWMR	109	FALSE	0	307.96	0.49	0.0001	FALSE	418	
47811	MA-7918-177	418	J109148	J115810	16	GWMR	109	FALSE	0	-2,618.45	4.18	0.0051	FALSE	418	
47814	MA-7918-174	69	J115808	J115810	16	GWMR	109	FALSE	0	2,618.45	4.18	0.0051	FALSE	69	
47819	MA-7918-169	250	J115808	J115812	16	GWMR	109	FALSE	0	-2,618.45	4.18	0.0051	FALSE	250	
47828	MA-7918-160	15	J115812	J115814	16	GWMR	109	FALSE	0	-2,618.45	4.18	0.0051	FALSE	15	
47829	MA-7918-159	10	J115814	J115816	16	GWMR	109	FALSE	0	-1,245.30	1.99	0.0013	FALSE	10	
51674	MA-7718-014	10	J113312	J112194	16	GWBR	109	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	10	
51675	MA-7718-013	175	J113314	J113312	16	GWBR	109	FALSE	0	0.00	0	0	FALSE	175	lowest velocity
51676	MA-7718-012	153	J113314	J113316	16	GWMR	109	FALSE	0	0.00	0	0	FALSE	143	
51677	MA-7718-011	27	J113316	J113328	16	GWMR	109	FALSE	0	-7.66	0.01	0	FALSE	15	
51678	MA-7718-010	27	J113328	J113326	16	GWMR	109	FALSE	0	-7.66	0.01	0	FALSE	15	
51679	MA-7718-009	26	J113326	J113322	16	GWMR	109	FALSE	0	-7.66	0.01	0	FALSE	15	
51680	MA-7718-008	96	J113322	HY-7718-0	16	GWMR	109	FALSE	0	-7.66	0.01	0	FALSE	84	
51682	MA-7718-006	205	HY-7718-0	J113324	16	GWMR	109	FALSE	0	-7.66	0.01	0	FALSE	205	
51683	MA-7718-005	15	J113324	J113310	16	GWMR	109	FALSE	0	-7.66	0.01	0	FALSE	15	
51684	MA-7718-004	48	J113310	J113308	16	GWMR	109	FALSE	0	-28.25	0.05	0	FALSE	48	
51685	MA-7718-003	15	J113308	J113306	16	GWMR	109	FALSE	0	-28.25	0.05	0	FALSE	15	
51686	MA-7718-002	117	J113306	HY-7718-0	16	GWMR	109	FALSE	0	-33.51	0.05	0	FALSE	117	
52645	MA-7618-031	188	HY-7618-0	J113580	16	GWMR	109	FALSE	0	-36.82	0.06	0	FALSE	186	
52646	MA-7618-030	82	J113580	J113582	16	GWBR	109	FALSE	0	-36.82	0.06	0	FALSE	82	
52647	MA-7618-029	55	J113582	J113584	16	GWMR	109	FALSE	0	-36.82	0.06	0	FALSE	51	
52648	MA-7618-028	10	J113584	J113608	16	GWMR	109	FALSE	0	-36.82	0.06	0	FALSE	10	
52649	MA-7618-027	10	J113608	J113610	16	GWMR	109	FALSE	0	-36.82	0.06	0	FALSE	10	
52650	MA-7618-026	14	J113610	J113612	16	GWMR	109	FALSE	0	-36.82	0.06	0	FALSE	10	
52651	MA-7618-025	10	J113612	J113590	16	GWMR	109	FALSE	0	-50.69	0.08	0	FALSE	10	
52652	MA-7618-024	14	J113590	HY-7618-0	16	GWMR	109	FALSE	0	-50.69	0.08	0	FALSE	14	
52653	MA-7618-023	211	HY-7618-0	J113588	16	GWMR	109	FALSE	0	-50.69	0.08	0	FALSE	211	
52654	MA-7618-022	15	J113588	J113614	16	GWMR	109	FALSE	0	-50.69	0.08	0	FALSE	15	
52655	MA-7618-021	15	J113614	J113606	16	GWMR	109	FALSE	0	-50.69	0.08	0	FALSE	15	
52656	MA-7618-020	90	J113606	HY-7618-0	16	GWMR	109	FALSE	0	-50.69	0.08	0	FALSE	83	
52658	MA-7618-018	325	HY-7618-0	J113602	16	GWMR	109	FALSE	0	-50.69	0.08	0	FALSE	325	
52659	MA-7618-017	10	J113602	J113616	16	GWMR	109	FALSE	0	-50.69	0.08	0	FALSE	10	
82455	MA-7718-007(1)	190	HY-7718-0	LGY_Mode	16	GWMR	109	FALSE	0	-7.66	0.01	0	FALSE	190	
82456	MA-7718-007(2)	190	LGY_Mode	HY-7718-0	16	GWMR	109	FALSE	0	-7.66	0.01	0	FALSE	190	
82495	MA-7618-019(1)	147	HY-7618-0	LGY_Mode	16	GWMR	109	FALSE	0	-50.69	0.08	0	FALSE	146	
82496	MA-7618-019(2)	159	LGY_Mode	HY-7618-0	16	GWMR	109	FALSE	0	-50.69	0.08	0	FALSE	146	
83353	MA-7618-032(1)	150	HY-7718-0	LGY_Mode	16	GWMR	109	FALSE	0	-33.51	0.05	0	FALSE	138	
83354	MA-7618-032(2)	149	LGY_Mode	HY-7618-0	16	GWMR	109	FALSE	0	-36.82	0.06	0	FALSE	138	
83895	MA-7718-001(1)	19	HY-7718-0	LGY_Mode	16	GWMR	109	FALSE	0	-33.51	0.05	0	FALSE	19	
83896	MA-7718-001(2)	19	LGY_Mode	HY-7718-0	16	GWMR	109	FALSE	0	-33.51	0.05	0	FALSE	19	
86441	MA-7819-008(1)	329	J111544	J-2946	16	GWMR	109	FALSE	0	1,949.40	3.11	0.003	FALSE	1,503	
86444	P-705	257	J-2946	J-2947	12	GWMR	135	FALSE	0	1,862.77	5.28	0.0075	FALSE	629	
86446	P-706	113	J-2947	J-2948	12	GWMR	135	FALSE	0	1,862.77	5.28	0.0075	FALSE	629	
86448	P-707	183	J-2948	J-2949	12	GWMR	135	FALSE	0	1,862.77	5.28	0.0075	FALSE	629	
86450	P-708	605	J-2949	J-2950	12	GWMR	135	FALSE	0	1,862.77	5.28	0.0075	FALSE	629	
86452	P-709	2,298	J-2950	J-2951	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86454	P-710	747	J-2951	J-2952	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86456	P-711	82	J-2952	J-2953	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86458	P-712	91	J-2953	J-2954	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86460	P-713	88	J-2954	J-2955	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86462	P-714	71	J-2955	J-2956	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86464	P-715	137	J-2956	J-2957	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86466	P-716	70	J-2957	J-2958	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86468	P-717	1,027	J-2958	J-2959	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86470	P-718	380	J-2959	J-2960	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86472	P-719	134	J-2960	J-2961	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86474	P-720	418	J109148	J-2962	12	GWMR	135	FALSE	0	2,310.49	6.55	0.0111	FALSE	629	
86476	P-721	285	J-2962	J-2963	12	GWMR	135	FALSE	0	2,310.49	6.55	0.0111	FALSE	629	
86480	P-723	343	J-2964	J-2965	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86482	P-724	278	J-2965	J-2966	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86483	P-725	268	J-2966	J112194	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86486	P-722(2)	553	J-2967	J-2964	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	75	
86489	P-722(1)(1)	1,766	J-2963	J-2968	12	GWMR	135	FALSE	0	2,310.49	6.55	0.0111	FALSE	241	highest velocity
86490	P-722(1)(2)	2,295	J-2968	J-2967	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	313	

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)	Comment
86503	P-730	3,908	J-2970	J115816	16	GWMR	135	FALSE	0	1,245.30	1.99	0.0009	FALSE	629	
86513	P-729(2)(2)	328	J-2976	J-2970	16	GWMR	135	FALSE	0	1,245.30	1.99	0.0009	TRUE	10	
86550	P-727(2)	345	J-2982	J-2968	12	GWMR	135	FALSE	0	1,776.14	5.04	0.0068	FALSE	629	
86552	P-727(1)(1)	1,379	J-2950	J-2983	12	GWMR	135	FALSE	0	1,776.14	5.04	0.0068	FALSE	629	
86553	P-727(1)(2)	424	J-2983	J-2982	12	GWMR	135	FALSE	0	1,776.14	5.04	0.0068	FALSE	629	
86555	P-726(1)	1,787	J-2951	J-2984	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86556	P-726(2)	381	J-2984	J-2967	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86559	P-745	334	J-2961	J-2986	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86561	P-746	390	J-2986	J-2987	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86563	P-747	377	J-2987	J-2988	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86565	P-748	472	J-2988	J-2989	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86567	P-749	421	J-2989	J-2990	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86569	P-750	181	J-2990	J-2991	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86570	P-751	169	J-2991	J112194	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	

Max Velocity (fps): 6.55
Min Velocity (fps): 0.00

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)	Comments
47625	MA-7919-095	592	J109160	HY-7920-0	16	GWMR	109	FALSE	0	-215.43	0.34	0.0001	FALSE	592	lowest velocity
47681	MA-7919-039	15	J109156	J109160	16	GWMR	109	FALSE	0	-215.43	0.34	0	FALSE	15	
47682	MA-7919-038	20	J109152	J109156	16	GWMR	109	FALSE	0	955.37	1.52	0.0008	FALSE	15	
47683	MA-7919-037	15	J109156	J109158	16	GWMR	109	FALSE	0	1,170.80	1.87	0.0012	FALSE	15	
47684	MA-7919-036	947	J109158	HY-7919-0	16	GWMR	109	FALSE	0	1,170.75	1.87	0.0012	FALSE	947	
47685	MA-7919-035	13	HY-7919-0	J111550	16	GWMR	109	FALSE	0	1,170.75	1.87	0.0012	FALSE	13	
47686	MA-7919-034	15	J111550	J111548	16	GWMR	109	FALSE	0	1,170.75	1.87	0.0012	FALSE	15	
47687	MA-7919-033	15	J111548	J111544	16	GWMR	109	FALSE	0	1,170.75	1.87	0.0012	FALSE	15	
47696	MA-7919-024	62	HY-7919-0	J109152	16	GWMR	109	FALSE	0	955.37	1.52	0.0008	FALSE	62	
47701	MA-7919-019	495	J109154	HY-7919-0	16	GWMR	109	FALSE	0	955.37	1.52	0.0008	FALSE	495	
47704	MA-7919-016	84	J109146	J109154	16	GWBR	109	FALSE	0	955.37	1.52	0.0008	FALSE	84	
47711	MA-7919-009	614	HY-7919-0	J109146	16	GWMR	109	FALSE	0	955.37	1.52	0.0008	FALSE	614	
47740	MA-7918-248	418	J109148	HY-7919-0	16	GWMR	109	FALSE	0	955.37	1.52	0.0008	FALSE	418	
47811	MA-7918-177	418	J109148	J115810	16	GWMR	109	FALSE	0	-2,372.30	3.79	0.0043	FALSE	418	
47814	MA-7918-174	69	J115808	J115810	16	GWMR	109	FALSE	0	2,372.30	3.79	0.0043	FALSE	69	
47819	MA-7918-169	250	J115808	J115812	16	GWMR	109	FALSE	0	-2,372.30	3.79	0.0043	FALSE	250	
47828	MA-7918-160	15	J115812	J115814	16	GWMR	109	FALSE	0	-2,372.30	3.79	0.0043	FALSE	15	
47829	MA-7918-159	10	J115814	J115816	16	GWMR	109	FALSE	0	-1,234.08	1.97	0.0013	FALSE	10	
51674	MA-7718-014	10	J113312	J112194	16	GWBR	109	FALSE	0	1,932.09	3.08	0.0029	FALSE	10	
51675	MA-7718-013	175	J113314	J113312	16	GWBR	109	FALSE	0	1,932.09	3.08	0.0029	FALSE	175	
51676	MA-7718-012	153	J113314	J113316	16	GWMR	109	FALSE	0	-1,932.09	3.08	0.0029	FALSE	143	
51677	MA-7718-011	27	J113316	J113328	16	GWMR	109	FALSE	0	-1,939.76	3.1	0.003	FALSE	15	
51678	MA-7718-010	27	J113328	J113326	16	GWMR	109	FALSE	0	-1,939.76	3.1	0.003	FALSE	15	
51679	MA-7718-009	26	J113326	J113322	16	GWMR	109	FALSE	0	-1,939.76	3.1	0.003	FALSE	15	
51680	MA-7718-008	96	J113322	HY-7718-0	16	GWMR	109	FALSE	0	-1,939.76	3.1	0.003	FALSE	84	
51682	MA-7718-006	205	HY-7718-0	J113324	16	GWMR	109	FALSE	0	-1,939.76	3.1	0.003	FALSE	205	
51683	MA-7718-005	15	J113324	J113310	16	GWMR	109	FALSE	0	-1,939.76	3.1	0.003	FALSE	15	
51684	MA-7718-004	48	J113310	J113308	16	GWMR	109	FALSE	0	-1,960.34	3.13	0.003	FALSE	48	
51685	MA-7718-003	15	J113308	J113306	16	GWMR	109	FALSE	0	-1,960.34	3.13	0.003	FALSE	15	
51686	MA-7718-002	117	J113306	HY-7718-0	16	GWMR	109	FALSE	0	-1,965.60	3.14	0.003	FALSE	117	
52645	MA-7618-031	188	HY-7618-0	J113580	16	GWMR	109	FALSE	0	-1,968.91	3.14	0.003	FALSE	186	
52646	MA-7618-030	82	J113580	J113582	16	GWBR	109	FALSE	0	-1,968.91	3.14	0.003	FALSE	82	
52647	MA-7618-029	55	J113582	J113584	16	GWMR	109	FALSE	0	-1,968.91	3.14	0.003	FALSE	51	
52648	MA-7618-028	10	J113584	J113608	16	GWMR	109	FALSE	0	-1,968.91	3.14	0.003	FALSE	10	
52649	MA-7618-027	10	J113608	J113610	16	GWMR	109	FALSE	0	-1,968.91	3.14	0.003	FALSE	10	
52650	MA-7618-026	14	J113610	J113612	16	GWMR	109	FALSE	0	-1,968.91	3.14	0.003	FALSE	10	
52651	MA-7618-025	10	J113612	J113590	16	GWMR	109	FALSE	0	-1,982.78	3.16	0.0031	FALSE	10	
52652	MA-7618-024	14	J113590	HY-7618-0	16	GWMR	109	FALSE	0	-1,982.78	3.16	0.0031	FALSE	14	
52653	MA-7618-023	211	HY-7618-0	J113588	16	GWMR	109	FALSE	0	-1,982.78	3.16	0.0031	FALSE	211	
52654	MA-7618-022	15	J113588	J113614	16	GWMR	109	FALSE	0	-1,982.78	3.16	0.0031	FALSE	15	
52655	MA-7618-021	15	J113614	J113606	16	GWMR	109	FALSE	0	-1,982.78	3.16	0.0031	FALSE	15	
52656	MA-7618-020	90	J113606	HY-7618-0	16	GWMR	109	FALSE	0	-1,982.78	3.16	0.0031	FALSE	83	
52658	MA-7618-018	325	HY-7618-0	J113602	16	GWMR	109	FALSE	0	-1,982.78	3.16	0.0031	FALSE	325	
52659	MA-7618-017	10	J113602	J113616	16	GWMR	109	FALSE	0	-1,982.78	3.16	0.0031	FALSE	10	
82455	MA-7718-007(1)	190	HY-7718-0	LGY_Mode	16	GWMR	109	FALSE	0	-1,939.76	3.1	0.003	FALSE	190	
82456	MA-7718-007(2)	190	LGY_Mode	HY-7718-0	16	GWMR	109	FALSE	0	-1,939.76	3.1	0.003	FALSE	190	
82495	MA-7618-019(1)	147	HY-7618-0	LGY_Mode	16	GWMR	109	FALSE	0	-1,982.78	3.16	0.0031	FALSE	146	
82496	MA-7618-019(2)	159	LGY_Mode	HY-7618-0	16	GWMR	109	FALSE	0	-1,982.78	3.16	0.0031	FALSE	146	
83353	MA-7618-032(1)	150	HY-7718-0	LGY_Mode	16	GWMR	109	FALSE	0	-1,965.60	3.14	0.003	FALSE	138	
83354	MA-7618-032(2)	149	LGY_Mode	HY-7618-0	16	GWMR	109	FALSE	0	-1,968.91	3.14	0.003	FALSE	138	
83895	MA-7718-001(1)	19	HY-7718-0	LGY_Mode	16	GWMR	109	FALSE	0	-1,965.60	3.14	0.003	FALSE	19	
83896	MA-7718-001(2)	19	LGY_Mode	HY-7718-0	16	GWMR	109	FALSE	0	-1,965.60	3.14	0.003	FALSE	19	
86441	MA-7819-008(1)	329	J111544	J-2946	16	GWMR	109	FALSE	0	1,170.75	1.87	0.0012	FALSE	1,503	
86444	P-705	257	J-2946	J-2947	12	GWMR	135	FALSE	0	1,084.12	3.08	0.0027	FALSE	629	
86446	P-706	113	J-2947	J-2948	12	GWMR	135	FALSE	0	1,084.12	3.08	0.0027	FALSE	629	
86448	P-707	183	J-2948	J-2949	12	GWMR	135	FALSE	0	1,084.12	3.08	0.0027	FALSE	629	
86450	P-708	605	J-2949	J-2950	12	GWMR	135	FALSE	0	1,084.12	3.08	0.0027	FALSE	629	
86452	P-709	2,298	J-2950	J-2951	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86454	P-710	747	J-2951	J-2952	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86456	P-711	82	J-2952	J-2953	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86458	P-712	91	J-2953	J-2954	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86460	P-713	88	J-2954	J-2955	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86462	P-714	71	J-2955	J-2956	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86464	P-715	137	J-2956	J-2957	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86466	P-716	70	J-2957	J-2958	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86468	P-717	1,027	J-2958	J-2959	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86470	P-718	380	J-2959	J-2960	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86472	P-719	134	J-2960	J-2961	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86474	P-720	418	J109148	J-2962	12	GWMR	135	FALSE	0	1,416.94	4.02	0.0045	FALSE	629	
86476	P-721	285	J-2962	J-2963	12	GWMR	135	FALSE	0	1,416.94	4.02	0.0045	FALSE	629	
86480	P-723	343	J-2964	J-2965	12	GWMR	135	FALSE	0	-1,758.83	4.99	0.0067	FALSE	629	
86482	P-724	278	J-2965	J-2966	12	GWMR	135	FALSE	0	-1,758.83	4.99	0.0067	FALSE	629	
86483	P-725	268	J-2966	J112194	12	GWMR	135	FALSE	0	-1,845.46	5.24	0.0074	FALSE	629	
86486	P-722(2)	553	J-2967	J-2964	12	GWMR	135	FALSE	0	-1,758.83	4.99	0.0067	FALSE	75	
86489	P-722(1)(1)	1,766	J-2963	J-2968	12	GWMR	135	FALSE	0	1,416.94	4.02	0.0045	FALSE	241	
86490	P-722(1)(2)	2,295	J-2968	J-2967	12	GWMR	135	FALSE	0	2,327.80	6.6	0.0113	FALSE	313	highest velocity

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)	Comments
86503	P-730	3,908	J-2970	J115816	16	GWMR	135	FALSE	0	1,234.08	1.97	0.0009	FALSE	629	
86513	P-729(2)(2)	328	J-2976	J-2970	16	GWMR	135	FALSE	0	1,234.08	1.97	0.0009	TRUE	10	
86550	P-727(2)	345	J-2982	J-2968	12	GWMR	135	FALSE	0	997.49	2.83	0.0024	FALSE	629	
86552	P-727(1)(1)	1,379	J-2950	J-2983	12	GWMR	135	FALSE	0	997.49	2.83	0.0024	FALSE	629	
86553	P-727(1)(2)	424	J-2983	J-2982	12	GWMR	135	FALSE	0	997.49	2.83	0.0024	FALSE	629	
86555	P-726(1)	1,787	J-2951	J-2984	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86556	P-726(2)	381	J-2984	J-2967	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86559	P-745	334	J-2961	J-2986	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86561	P-746	390	J-2986	J-2987	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86563	P-747	377	J-2987	J-2988	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86565	P-748	472	J-2988	J-2989	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86567	P-749	421	J-2989	J-2990	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86569	P-750	181	J-2990	J-2991	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	
86570	P-751	169	J-2991	J112194	12	GWMR	135	FALSE	0	(N/A)	(N/A)	(N/A)	FALSE	629	

Max Velocity (fps): 6.6
Min Velocity (fps): 0.34

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)	Comments
47625	MA-7919-095	592	J109160	HY-7920-0	16	GWMR	109	FALSE	0	-664.38	1.06	0.0004	FALSE	592	
47681	MA-7919-039	15	J109156	J109160	16	GWMR	109	FALSE	0	-664.38	1.06	0.0004	FALSE	15	
47682	MA-7919-038	20	J109152	J109156	16	GWMR	109	FALSE	0	1,035.40	1.65	0.0009	FALSE	15	
47683	MA-7919-037	15	J109156	J109158	16	GWMR	109	FALSE	0	1,699.78	2.71	0.0023	FALSE	15	
47684	MA-7919-036	947	J109158	HY-7919-0	16	GWMR	109	FALSE	0	1,699.73	2.71	0.0023	FALSE	947	
47685	MA-7919-035	13	HY-7919-0	J111550	16	GWMR	109	FALSE	0	1,699.73	2.71	0.0023	FALSE	13	
47686	MA-7919-034	15	J111550	J111548	16	GWMR	109	FALSE	0	1,699.73	2.71	0.0023	FALSE	15	
47687	MA-7919-033	15	J111548	J111544	16	GWMR	109	FALSE	0	1,699.73	2.71	0.0023	FALSE	15	
47696	MA-7919-024	62	HY-7919-0	J109152	16	GWMR	109	FALSE	0	1,035.40	1.65	0.0009	FALSE	62	
47701	MA-7919-019	495	J109154	HY-7919-0	16	GWMR	109	FALSE	0	1,035.40	1.65	0.0009	FALSE	495	
47704	MA-7919-016	84	J109146	J109154	16	GWBR	109	FALSE	0	1,035.40	1.65	0.0009	FALSE	84	
47711	MA-7919-009	614	HY-7919-0	J109146	16	GWMR	109	FALSE	0	1,035.40	1.65	0.0009	FALSE	614	
47740	MA-7918-248	418	J109148	HY-7919-0	16	GWMR	109	FALSE	0	1,035.40	1.65	0.0009	FALSE	418	
47811	MA-7918-177	418	J109148	J115810	16	GWMR	109	FALSE	0	-2,459.62	3.92	0.0046	FALSE	418	
47814	MA-7918-174	69	J115808	J115810	16	GWMR	109	FALSE	0	2,459.62	3.92	0.0046	FALSE	69	
47819	MA-7918-169	250	J115808	J115812	16	GWMR	109	FALSE	0	-2,459.62	3.92	0.0046	FALSE	250	
47828	MA-7918-160	15	J115812	J115814	16	GWMR	109	FALSE	0	-2,459.62	3.92	0.0046	FALSE	15	
47829	MA-7918-159	10	J115814	J115816	16	GWMR	109	FALSE	0	-1,238.14	1.98	0.0013	FALSE	10	
51674	MA-7718-014	10	J113312	J112194	16	GWBR	109	FALSE	0	1,569.09	2.5	0.002	FALSE	10	
51675	MA-7718-013	175	J113314	J113312	16	GWBR	109	FALSE	0	1,569.09	2.5	0.002	FALSE	175	
51676	MA-7718-012	153	J113314	J113316	16	GWMR	109	FALSE	0	-1,569.09	2.5	0.002	FALSE	143	
51677	MA-7718-011	27	J113316	J113328	16	GWMR	109	FALSE	0	-1,576.75	2.52	0.002	FALSE	15	
51678	MA-7718-010	27	J113328	J113326	16	GWMR	109	FALSE	0	-1,576.75	2.52	0.002	FALSE	15	
51679	MA-7718-009	26	J113326	J113322	16	GWMR	109	FALSE	0	-1,576.75	2.52	0.002	FALSE	15	
51680	MA-7718-008	96	J113322	HY-7718-0	16	GWMR	109	FALSE	0	-1,576.75	2.52	0.002	FALSE	84	
51682	MA-7718-006	205	HY-7718-0	J113324	16	GWMR	109	FALSE	0	-1,576.75	2.52	0.002	FALSE	205	
51683	MA-7718-005	15	J113324	J113310	16	GWMR	109	FALSE	0	-1,576.75	2.52	0.002	FALSE	15	
51684	MA-7718-004	48	J113310	J113308	16	GWMR	109	FALSE	0	-1,597.33	2.55	0.0021	FALSE	48	
51685	MA-7718-003	15	J113308	J113306	16	GWMR	109	FALSE	0	-1,597.33	2.55	0.0021	FALSE	15	
51686	MA-7718-002	117	J113306	HY-7718-0	16	GWMR	109	FALSE	0	-1,602.60	2.56	0.0021	FALSE	117	
52645	MA-7618-031	188	HY-7618-0	J113580	16	GWMR	109	FALSE	0	-1,605.91	2.56	0.0021	FALSE	186	
52646	MA-7618-030	82	J113580	J113582	16	GWBR	109	FALSE	0	-1,605.91	2.56	0.0021	FALSE	82	
52647	MA-7618-029	55	J113582	J113584	16	GWMR	109	FALSE	0	-1,605.91	2.56	0.0021	FALSE	51	
52648	MA-7618-028	10	J113584	J113608	16	GWMR	109	FALSE	0	-1,605.91	2.56	0.0021	FALSE	10	
52649	MA-7618-027	10	J113608	J113610	16	GWMR	109	FALSE	0	-1,605.91	2.56	0.0021	FALSE	10	
52650	MA-7618-026	14	J113610	J113612	16	GWMR	109	FALSE	0	-1,605.91	2.56	0.0021	FALSE	10	
52651	MA-7618-025	10	J113612	J113590	16	GWMR	109	FALSE	0	-1,619.78	2.58	0.0021	FALSE	10	
52652	MA-7618-024	14	J113590	HY-7618-0	16	GWMR	109	FALSE	0	-1,619.78	2.58	0.0021	FALSE	14	
52653	MA-7618-023	211	HY-7618-0	J113588	16	GWMR	109	FALSE	0	-1,619.78	2.58	0.0021	FALSE	211	
52654	MA-7618-022	15	J113588	J113614	16	GWMR	109	FALSE	0	-1,619.78	2.58	0.0021	FALSE	15	
52655	MA-7618-021	15	J113614	J113606	16	GWMR	109	FALSE	0	-1,619.78	2.58	0.0021	FALSE	15	
52656	MA-7618-020	90	J113606	HY-7618-0	16	GWMR	109	FALSE	0	-1,619.78	2.58	0.0021	FALSE	83	
52658	MA-7618-018	325	HY-7618-0	J113602	16	GWMR	109	FALSE	0	-1,619.78	2.58	0.0021	FALSE	325	
52659	MA-7618-017	10	J113602	J113616	16	GWMR	109	FALSE	0	-1,619.78	2.58	0.0021	FALSE	10	
82455	MA-7718-007(1)	190	HY-7718-0	LGY_Mode	16	GWMR	109	FALSE	0	-1,576.75	2.52	0.002	FALSE	190	
82456	MA-7718-007(2)	190	LGY_Mode	HY-7718-0	16	GWMR	109	FALSE	0	-1,576.75	2.52	0.002	FALSE	190	
82495	MA-7618-019(1)	147	HY-7618-0	LGY_Mode	16	GWMR	109	FALSE	0	-1,619.78	2.58	0.0021	FALSE	146	
82496	MA-7618-019(2)	159	LGY_Mode	HY-7618-0	16	GWMR	109	FALSE	0	-1,619.78	2.58	0.0021	FALSE	146	
83353	MA-7618-032(1)	150	HY-7718-0	LGY_Mode	16	GWMR	109	FALSE	0	-1,602.60	2.56	0.0021	FALSE	138	
83354	MA-7618-032(2)	149	LGY_Mode	HY-7618-0	16	GWMR	109	FALSE	0	-1,605.91	2.56	0.0021	FALSE	138	
83895	MA-7718-001(1)	19	HY-7718-0	LGY_Mode	16	GWMR	109	FALSE	0	-1,602.60	2.56	0.0021	FALSE	19	
83896	MA-7718-001(2)	19	LGY_Mode	HY-7718-0	16	GWMR	109	FALSE	0	-1,602.60	2.56	0.0021	FALSE	19	
86441	MA-7819-008(1)	329	J111544	J-2946	16	GWMR	109	FALSE	0	1,699.73	2.71	0.0023	FALSE	1,503	
86444	P-705	257	J-2946	J-2947	12	GWMR	135	FALSE	0	1,613.10	4.58	0.0057	FALSE	629	
86446	P-706	113	J-2947	J-2948	12	GWMR	135	FALSE	0	1,613.10	4.58	0.0057	FALSE	629	
86448	P-707	183	J-2948	J-2949	12	GWMR	135	FALSE	0	1,613.10	4.58	0.0057	FALSE	629	
86450	P-708	605	J-2949	J-2950	12	GWMR	135	FALSE	0	1,613.10	4.58	0.0057	FALSE	629	
86452	P-709	2,298	J-2950	J-2951	12	GWMR	135	FALSE	0	1,610.68	4.57	0.0057	FALSE	629	
86454	P-710	747	J-2951	J-2952	12	GWMR	135	FALSE	0	2,504.75	7.11	0.0129	FALSE	629	highest velocity
86456	P-711	82	J-2952	J-2953	12	GWMR	135	FALSE	0	2,504.75	7.11	0.0129	FALSE	629	
86458	P-712	91	J-2953	J-2954	12	GWMR	135	FALSE	0	2,504.75	7.11	0.0129	FALSE	629	
86460	P-713	88	J-2954	J-2955	12	GWMR	135	FALSE	0	2,504.75	7.11	0.0129	FALSE	629	
86462	P-714	71	J-2955	J-2956	12	GWMR	135	FALSE	0	2,504.75	7.11	0.0129	FALSE	629	
86464	P-715	137	J-2956	J-2957	12	GWMR	135	FALSE	0	2,504.75	7.11	0.0129	FALSE	629	
86466	P-716	70	J-2957	J-2958	12	GWMR	135	FALSE	0	2,504.75	7.11	0.0129	FALSE	629	
86468	P-717	1,027	J-2958	J-2959	12	GWMR	135	FALSE	0	-1,581.88	4.49	0.0055	FALSE	629	
86470	P-718	380	J-2959	J-2960	12	GWMR	135	FALSE	0	-1,581.88	4.49	0.0055	FALSE	629	
86472	P-719	134	J-2960	J-2961	12	GWMR	135	FALSE	0	-1,581.88	4.49	0.0055	FALSE	629	
86474	P-720	418	J109148	J-2962	12	GWMR	135	FALSE	0	1,424.22	4.04	0.0045	FALSE	629	
86476	P-721	285	J-2962	J-2963	12	GWMR	135	FALSE	0	1,424.22	4.04	0.0045	FALSE	629	
86480	P-723	343	J-2964	J-2965	12	GWMR	135	FALSE	0	186.05	0.53	0.0001	FALSE	629	
86482	P-724	278	J-2965	J-2966	12	GWMR	135	FALSE	0	186.05	0.53	0.0001	FALSE	629	
86483	P-725	268	J-2966	J112194	12	GWMR	135	FALSE	0	99.42	0.28	0	FALSE	629	
86486	P-722(2)	553	J-2967	J-2964	12	GWMR	135	FALSE	0	186.05	0.53	0.0001	FALSE	75	
86489	P-722(1)(1)	1,766	J-2963	J-2968	12	GWMR	135	FALSE	0	1,424.22	4.04	0.0045	FALSE	241	
86490	P-722(1)(2)	2,295	J-2968	J-2967	12	GWMR	135	FALSE	0	1,253.38	3.56	0.0036	FALSE	313	

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)	Comments
86503	P-730	3,908	J-2970	J115816	16	GWMR	135	FALSE	0	1,238.14	1.98	0.0009	FALSE	629	
86513	P-729(2)(2)	328	J-2976	J-2970	16	GWMR	135	FALSE	0	1,238.14	1.98	0.0009	TRUE	10	
86550	P-727(2)	345	J-2982	J-2968	12	GWMR	135	FALSE	0	-84.21	0.24	0	FALSE	629	lowest velocity
86552	P-727(1)(1)	1,379	J-2950	J-2983	12	GWMR	135	FALSE	0	-84.21	0.24	0	FALSE	629	
86553	P-727(1)(2)	424	J-2983	J-2982	12	GWMR	135	FALSE	0	-84.21	0.24	0	FALSE	629	
86555	P-726(1)	1,787	J-2951	J-2984	12	GWMR	135	FALSE	0	-980.70	2.78	0.0023	FALSE	629	
86556	P-726(2)	381	J-2984	J-2967	12	GWMR	135	FALSE	0	-980.70	2.78	0.0023	FALSE	629	
86559	P-745	334	J-2961	J-2986	12	GWMR	135	FALSE	0	-1,581.88	4.49	0.0055	FALSE	629	
86561	P-746	390	J-2986	J-2987	12	GWMR	135	FALSE	0	-1,581.88	4.49	0.0055	FALSE	629	
86563	P-747	377	J-2987	J-2988	12	GWMR	135	FALSE	0	-1,581.88	4.49	0.0055	FALSE	629	
86565	P-748	472	J-2988	J-2989	12	GWMR	135	FALSE	0	-1,581.88	4.49	0.0055	FALSE	629	
86567	P-749	421	J-2989	J-2990	12	GWMR	135	FALSE	0	-1,581.88	4.49	0.0055	FALSE	629	
86569	P-750	181	J-2990	J-2991	12	GWMR	135	FALSE	0	-1,581.88	4.49	0.0055	FALSE	629	
86570	P-751	169	J-2991	J112194	12	GWMR	135	FALSE	0	-1,581.88	4.49	0.0055	FALSE	629	

Max Velocity (fps): 7.11
Min Velocity (fps): 0.24

Appendix E– 2009 California Public Utilities Commission - General Order 103-A

ATTACHMENT 1

GENERAL ORDER 103-A

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA
EFFECTIVE SEPTEMBER 10, 2009

RULES GOVERNING WATER SERVICE, INCLUDING MINIMUM STANDARDS FOR OPERATION, MAINTENANCE, DESIGN AND CONSTRUCTION

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I. General

1. Intent

A. Purpose

The purpose of these rules is to establish minimum standards to be followed in the design, construction, location, maintenance and operation of the facilities of water and wastewater utilities operating under the jurisdiction of the Commission. Each of these rules is subject to active oversight and enforcement by the Commission.

B. Limits of Order

These rules do not supersede the effective tariff rules of the water and wastewater utilities or any other subsequent Commission order.

C. Expiration of Economic Life

Nothing contained in these rules shall be construed to require the replacement or abandonment of facilities in use at the time of adoption of these rules, prior to the expiration of their economic life, unless the Commission orders the abandonment or replacement of particular facilities found to be inadequate for the provision of proper public utility service.

D. Absence of Civil Liability

These rules are adopted by the Commission to establish minimum standards in the design, construction, maintenance and operation of water and wastewater utilities operating under the jurisdiction of the Commission. Such rules shall not impose upon these utilities, and these utilities shall not be subject to, any civil liability for damages, if liability would not exist had these rules not been adopted.

E. Applicability

The following rules relating to the construction, reconstruction, maintenance, and operation of water and wastewater facilities shall be observed in this state unless otherwise authorized or directed by the Commission. The sections of these rules applicable to wastewater utilities are specified in Appendices A and B.

2. Definitions

A. Bill. Any invoice for water or wastewater service including final invoices and invoices for maintenance or repair service.

B. Commission. The Public Utilities Commission of the State of California.

C. Complaint. A request requiring an investigation or action on the part of the utility to address an alleged problem, deficiency, or inadequacy in the utility's provision, pricing, or billing for its service. An inquiry to the utility not requiring an investigation or action is not a complaint.

D. County Health Department. The county agency governing water quality for the county.

E. Customer. Any person, firm, association, corporation or governmental agency supplied or entitled to be supplied with water or wastewater service for compensation by a utility.

F. Customer Service Lateral. All pipe, tubing, valves and fittings connecting a customer sewer system to the point where the lateral enters the public right of way including all pipe, fittings and valves necessary to make the connection.

G. Department. The Division of Drinking Water and Environmental Management of the Department of Public Health of the State of California, or its successor; or the County Health Department, that has jurisdiction over the utility.

H. Distribution System. All physical parts of the water system, including, but not limited to pipes, valves, pumping stations, storage tanks or reservoirs, and service lines that are located between the water treatment plant or the source if there is no treatment, and the consumer's service connection.

I. Maximum Day Demand. The actual, estimated or projected amount of water utilized by consumers during the highest day of use, midnight to midnight, excluding fire flow as defined in Waterworks Standards, CCR Title 22, Section 64551.30.

J. Normal Business Hours. 8 a.m. to 5 p.m., Monday through Friday, excluding utility holidays, unless otherwise posted at the utility's office.

K. Peak Hour Demand. The amount of water utilized by consumers during the highest hour of use during the maximum day, excluding fire flow as defined in Waterworks Standards, CCR Title 22, Section 64551.35.

L. Pressure Zone. Sections of the water system that are segregated by a controlled change in the hydraulic grade line.

M. Regional Board. The Regional Water Quality Control Board that has jurisdiction over the specific wastewater or reclamation facilities.

N. Recycled water system. Water recycling, also known as reclamation or reuse, is an umbrella term encompassing the process of treating wastewater, and then storing, distributing, and using the recycled water. Recycled water is defined in California Water Code Section 13050(n) to mean "water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur." A recycled water system includes all real estate, fixtures, and personal property owned, controlled, operated, or managed in connection with or to facilitate the collection, treatment, creation, development, storage, supply, distribution, sale, furnishing, carriage, apportionment, or measurement of recycled water.

O. Service Line. All the pipe, tubing, valves and fittings connecting a water main to an individual water meter or service connection, including all pipe, fittings and valves necessary to make the connection.

P. Source Capacity. The total amount of water supply available expressed as a flow from all active sources permitted for use by the water system, including approved surface water, groundwater, and purchased water. (Waterworks Standards, CCR Title 22, Section 64551.40.)

Q. State Board. State Water Resources Control Board

R. Storage Capacity. The total volume of water supply available from used and useful storage tanks or reservoirs approved by the Department as an active part of the utility's water system.

S. Sewer system. As defined in Public Utilities Code Section 230.5, all real estate, fixtures, and personal property owned, controlled, operated, or managed in connection with or to facilitate sewage collection, treatment, and disposition for sanitary or drainage purposes. Sewer system(s) include any and all trunk lines and connecting sewers, interceptors, outfall lines and sanitary sewage treatment or disposal plants or works, and any and all drains, conduits, and outlets for surface or storm waters, and any and all other works, property or structures necessary or convenient for the collection or disposal of sewage, industrial waste, or surface or storm waters.

T. Tariff Rule. A Rule in the tariffs that has been approved by the Commission.

U. Urban Water Management Plan. A plan prepared in response to California Water Code Sections 10610 through 10656.

V. Utility. A person, a sole proprietorship, a partnership, a limited liability corporation, a company, an association, or a joint stock association that provides water or sewer service and is under Commission jurisdiction. As used in this order, a utility includes the lessees, trustees, receivers or trustees appointed by any court whatsoever, of the corporation.

W. Utility Service Lateral. All the pipe, tubing, valves and fittings connecting a customer service lateral to the sewer main.

X. Wastewater Meter. Any device used for the purpose of measuring the quantity of wastewater produced.

Y. Wastewater system. Any sewer service system or recycled water system subject to the Commission's regulation. The wastewater system does not include the service lateral from the premise to the entrance into the public right-of-way for eventual connection to the utility system.

Z. Wastewater utility. Any corporation or person owning, controlling, operating, or managing any wastewater system subject to the Commission's regulation. A sewer system utility as defined in Public. Utility Code Section 230.5 is a wastewater utility.

AA. Water Main. Any pipeline, except for user service lines, within the distribution system.

AB. Water Meter. Any device used for the purpose of measuring the quantity of water delivered.

AC. Water Service Connection. The point of connection from a service line or ditch owned by the utility or from the outlet connection of a utility water meter assembly or other measurement device, or the service connection point, to the customer's piping or ditch.

AD. Water System. The interconnected reservoirs, pipes, sources of supply, real estate, and facilities used to provide water service to a particular set of customers.

AE. Water Treatment Plant. A group or assemblage of structures, equipment, and processes that treat or condition the water supply of a public water system for the purpose of meeting drinking water standards, consistent with the definition of Water Treatment Facility in the Department's CCR Title 22, Chapter 13 (Operator Certification).

AF. Waterworks Standards. Regulations adopted by the Department that take cognizance of the latest available "Standards of Minimum Requirements for Safe Practice in the Production and Delivery of Water for Domestic Use" adopted by the California section of the American Water Works Association (Section 116275 of the Health and Safety Code.) The Waterworks Standards may be found in California Code of Regulations, Title 22, Division 4, Chapter 16.

AG. Water Utility. Any corporation or person owning, controlling, operating or managing any water system subject to the Commission's regulation.

3. Abbreviations and Acronyms:

A. AWWA. American Water Works Association.

B. WEF. Water Environment Federation.

C. CCR. California Code of Regulations.

D. DPH. Department of Public Health of the State of California.

E. MDD. Maximum Day Demand.

F. PHD. Peak Hour Demand.

G. BOD. Biochemical Oxygen Demand.

H. TSS. Total Suspended Solids.

I. TDS. Total Dissolved Solids.

J. PDC. Peak Daily Capacity.

K. MGD. Million Gallons per Day.

L. mg/L. milligrams per liter.

M. psi. Pressure measurement of "pounds per square inch" as registered on a gauge.

N. US EPA. United States Environmental Protection Agency.

O. UWMP. Urban Water Management Plan.

4. Information Available to Public

The utility shall maintain and make available for public inspection at one or more of the utility's commercial offices, in structure and languages to properly inform the customer, information regarding the service rendered, including the following:

A. A description in writing of the utility services provided;

B. Copies of all active Tariffs including rates, general rules of the utility, service area maps and forms of contracts and applications applicable to the territory served from that office;

C. Information about the utility's method of reading meters;

D. Bill Analysis. A statement of the past readings of the meters serving a customer's own premises for a period of two years;

E. Consumer Confidence Report. Each utility operating a potable water system must annually mail or deliver a copy of the Consumer Confidence Report to each customer;

F. Conservation programs and opportunities;

G. Low-income ratepayer assistance programs;

H. Customer rights and obligations;

I. Information on obtaining emergency assistance; and

J. How customers can make suggestions or complaints.

This information, except for items (B), (D), and (E) above shall be made available in language(s), other than English, that are predominantly spoken in each utility's service territory. In addition, this information, except for item (D) above, shall be available in electronic form on the company's website, if a website is maintained. All Class A and B water utilities shall maintain a website with the above listed information, except for item (D).

5. Access to Property

A. When

The utility shall at all reasonable hours have safe access to meters, service connections, customer service laterals and any utility-owned property located on the customer's premises for the purposes of installation, maintenance, operation, or removal.

B. Secure Access

The utility may request the customer to secure any animals to ensure the safety of the utility's representative or the utility may enlist the aid of appropriate agencies, if required, to ensure safe access, particularly when animals on the customer's premises prevent access in times of an emergency.

C. Proper Identification

(1) Any utility representative whose duties require entering the customer's premises shall wear a distinguishing uniform or other insignia, identifying the utility representative as an employee of the utility, or carry other identification such as a badge to verify employment by the utility, to be shown by the utility representative upon request.

(2) The utility shall inform the customer in such a manner that the utility can prove the customer was aware of impending access to utility-owned property, except in events associated with the safety of the water supply. This requirement includes language barriers or issues covered by the Americans with Disabilities Act.

6. Accidents/Acts of Terror

A. The utility shall cooperate with the Commission to promote a reduction in hazards within the industry and to the public.

B. The utility shall keep a record of any accident endangering the public in general, its employees, or disrupting the facilities for supplying water or wastewater service to the public which may have caused substantial property damage, personal injury or death. This information shall be available for inspection by the Commission for the period prescribed by the California Code of Civil Procedure, or as prescribed by the Federal Department of Homeland Security, or for five years, whichever is greater. The utility shall fully cooperate with the Commission in the event of an investigation by the Commission staff.

7. Reports and Notifications to the Commission

A. The utility shall furnish to the Commission staff, at such times and in such form as the staff may require results or summaries of any tests required by these rules and any information concerning the utility's facilities or operations which the Commission may request for assessing the practices of the utility.

B. Reports and notifications to the Commission required by this General Order shall be filed with the Division of Water and Audits, or its successor, with a copy sent to the Division of Ratepayer Advocates (DRA), or its successor. Class C and D utilities are not required to provide copies of the reports required by this General Order to DRA.

8. Exemptions or Variances from These Rules

A. This General Order may be amended to ensure consistency with applicable statutes, Commission orders and industry standards. The Commission may adopt the amendments by resolution, with such modification as the Commission deems appropriate, following notice and opportunity to comment on the proposed amendments. After being amended, the text of this General Order will be published at the Commission's Internet site.

B. A utility may request exemption from the requirements of this General Order by application. Any utility that proposes an exemption or variance from this General Order must explain to the Commission any effects the proposed exemption or variance would have on public health risks, service quality, or rates and must bear the burden of justifying any adverse effect.

C. Where exceptions to this General Order are requested that are of minor importance or temporary in nature, the utility may file a request and showing of necessity for relief by an Advice Letter, in accordance with General Order 96-B.

9. Preemption of Local Authority

Local agencies acting pursuant to local authority are preempted from regulating water production, storage, treatment, transmission, distribution, or other facilities (including the location of such facilities) constructed or installed by water or wastewater utilities subject to the Commission's jurisdiction. However, in locating such projects, the utility should consult with local agencies regarding land use matters.

II. Standards of Service

1. General

A. Subject to the Commission's oversight, each utility shall operate its system so as to deliver reliable, high quality service to its customers at reasonable cost.

B. Each water utility shall ensure that it complies with the Department's permit requirements and all applicable drinking water regulations.

C. Each wastewater utility shall ensure that it complies with the State Board, Regional Board, and County Health Department permit requirements and all applicable regulations.

2. Water Quality and Supply Requirements

A. Quality of Water

(1) General. Any utility serving water for human consumption shall provide water that is not harmful or dangerous to health and, insofar as practicable, free from objectionable odors, taste, color and turbidity.

(2) The utility shall comply with applicable state and federal laws pertaining to water quality, and with related regulations of the Department and US EPA and all additional requirements of the Commission.

(3) If the Department or US EPA finds a utility to be out of compliance with the water quality regulations specified in section II.2.A(2), the utility shall promptly notify the Commission, by telephone or e-mail, with confirmation in writing. Any report submitted to the Department or US EPA in such circumstances shall be submitted concurrently to the Commission.

(4) If a utility notifies its customers of a water quality event, it shall simultaneously provide such notice to the Commission, by telephone or e-mail, with confirmation in writing.

(5) Each utility shall have representative samples of its water analyzed by a Department accredited laboratory, as required pursuant to California Health and Safety Code Sections 116390 and 100825-100920, at intervals specified by the Department.

(6) It is not intended that any rule contained in this General Order shall supersede or conflict with the regulations of the Department or US EPA. Compliance by a utility with the regulations of the Department or US EPA on a particular subject matter shall constitute compliance with such of these rules as relate to the same subject matter except as otherwise ordered by the Commission.

(7) In accordance with the Commission's Decision 07-05-062 or subsequent order, in each general rate case of a Class A water utility, the Presiding Officer shall appoint a water quality expert to assist the Commission in making specific findings and recommendations concerning the Class A water utilities' water quality compliance, unless good cause exists to forego such appointment.

(8) Appointment of a water expert may not be necessary if the utility has met all sampling and testing requirements, and has no test results on facilities in active service that exceed the maximum contaminant levels (MCLs) established by the Department, and no party raises concerns of merit.

(9) Recycled water shall meet the Department's recycled water requirements of Article 4, Chapter 7, Part 12 of Division 104 of the California Health and Safety Code.

(10) Any unauthorized waste discharge (as defined in the utility's tariff rules) into a utility's wastewater system shall be grounds for disconnection at the customer service lateral from the utility's system.

B. Quantity of Water

(1) Source

All water supplied by the water utility shall be:

(a) Obtained from a permitted source;

(b) Obtained from a source or sources reasonably adequate to provide a reliable supply of water; or

(c) Produced from a source or sources described in the utility's Urban Water Management Plan (UWMP) that has been reviewed by the Commission in its most recent general rate case or in an

amendment to such UWMP that the utility has submitted by advice letter for review by the Division of Water and Audits, or its successor.

(2) Operation of Supply System

(a) The potable water supply system, including wells, reservoirs, pumping equipment, treatment and filtration works, mains, meters and service pipes shall be free from sanitary defects.

(b) No physical connection between the distribution system of a public potable water supply and that of any other water supply shall be permitted except in compliance with the Regulations Relating to Cross Connections of the Department contained in the CCR, Title 17, Division 1, Chapter 5, Subchapter 1, Group 4, Articles 1 and 2, or its successor.

(c) Production from groundwater and surface water sources shall comply with relevant Waterworks Standards and, in the case of a utility that has submitted a UWMP for Commission review, shall be conducted in accordance with a UWMP that has been reviewed by the Commission in the utility's most recent general rate case or in accordance with an amendment to such UWMP that the utility has submitted by advice letter for review by the Division of Water and Audits, or its successor.

(3) Potable Water System Capacity

(a) A system's facilities shall have the capacity to meet the source capacity requirements as defined in the Waterworks Standards, CCR Title 22, Section 64554, or its successor. If, at any time, the system does not have this capacity, the utility shall request a service connection moratorium until such time as it can demonstrate the source capacity has been increased to meet system requirements.

(b) If a system provides potable water for fire protection service, new portions of the system shall have supply and storage facilities that are designed to meet MDD plus the required fire flow at the time of design. *See*, Section VI of this General Order for fire flow guidelines.

(c) The system's MDD and PHD shall be determined in accordance with Waterworks Standards, CCR Title 22, Section 64554, or its successor.

(4) Sewer System Capacity

Once use of a utility sewer system's facilities has reached 80 % of design average daily flow as specified in the permit as issued by the Regional Board, the utility shall request a service connection moratorium until such time as it can demonstrate the system capacity has been increased to meet system requirements.

3. Continuity of Service

A. Emergency Interruptions

(1) Each utility shall make all reasonable efforts to prevent interruptions to service and when such interruptions occur shall reestablish service with the shortest possible delay consistent with the safety of its customers, its employees, and the general public.

(2) If an emergency interruption of service affects the service to any public fire protection device, within 120 minutes of discovery of the interruption by the utility, the utility shall notify the Fire Chief or other public official responsible for fire protection of such interruption and of subsequent restoration of normal service.

B. Scheduled Interruptions

(1) Whenever any utility finds it necessary to schedule an interruption to its service, it shall notify all customers to be affected by the interruption, stating the approximate time and anticipated duration of the interruption. Scheduled interruptions shall be made at such hours as will provide the least inconvenience to the customers consistent with reasonable operations.

(2) Where public fire protection is provided by the facilities affected by the interruptions, the utility shall report to the Fire Chief or other officials responsible for fire protection when the interruption is scheduled, the approximate time, and anticipated duration. In addition, the Fire Chief or other official responsible for fire protection shall be notified within 60 minutes upon restoration of service.

C. Minimum Standards for Repairs

All repairs associated with a utility's water and wastewater system shall include, as a minimum:

(1) a determination whether temporary service can be provided;

(2) the proper used of road hazard signs, traffic cones, and barriers;

(3) a call to the regional underground service alert center to identify buried utilities in the area;

(4) hydrostatic testing per applicable AWWA pipe standard, and bacteriological testing according to AWWA C651;

(5) disinfection of mains, and the Department's or County Health's permission to return the line to service;

(6) backfill and pipe bedding shall be per applicable AWWA pipe installation standard;

(7) ground surface shall be repaired to at least its original condition.

D. Records of Interruptions

Each utility shall keep a complete record of all interruptions, both emergency and scheduled, when more than 10 service connections are interrupted. These records of interruptions shall include the information listed in Appendix C to this General Order and shall be kept with the utility's records in accordance with the retention schedule listed in Appendix C.

E. Reports to Commission

All emergency interruptions involving an entire system, an entire separately operated system of a multi-system utility or a major portion of an entire or separately operated system shall be reported to the Commission by the utility as soon as possible after occurrence, by telephone or e-mail stating the cause, date, time, estimated duration, location, approximate number of customers affected and remedial steps being taken to restore service.

4. Water Supply Measurement

A. Measuring Devices

Measuring devices known as source flow meters are required for each water system source, except at any inactive source. In accordance with Waterworks Standards, CCR Title 22, Section 64561, the utility shall, for each water system:

(1) Install a flow meter at a location between each water source and the entry point to the distribution system;

(2) Meter the quantity of water flow from each source to determine total production; and

(3) Each month, determine and record the total monthly production from each source.

B. Records

The yearly water supply totals by type of source shall be recorded in the appropriate service territory or rate-making district, and transmitted annually to the Commission as provided in the utility's annual reports to the Commission.

III. Standards of Design and Construction

1. General

A. The design and construction of the utility's water or wastewater system(s) shall conform to acceptable engineering standards and practices. Each system shall be designed and operated so as to provide reasonably adequate and safe service to its customers and shall conform to the requirements of the Department and this General Order.

(1) A professional Civil, Mechanical, or Electrical engineer registered in the State of California shall approve all design and construction documents of a utility's water or wastewater system(s) as required by the California Business and Professions Code Sections 6700 – 6799, or its successor.

(2) The design and construction of distribution reservoirs must conform to the requirements of the DPH's Waterworks Standards, CCR Title 22, Section 64585 with reference to sanitation and potability of water.

(3) All new mains, pumps, tanks, wells and other facilities for handling potable water and repaired mains and other facilities shall be thoroughly disinfected before being connected to the system. The method of disinfection shall be conducted in accordance with Waterworks Standards, CCR Title 22, Sections 64580, 64582, and 64583, or their successors.

B. For systems applying for federal funds, under the Drinking Water State Revolving Fund or its successors, applicants must describe the design basis of all new facilities to be constructed using the criteria contained in the technical, managerial, and financial requirements of Waterworks Standards, CCR Title 22, Chapter 12, Sections 63026, 63027, and 63028, or their successors.

2. Materials and Specifications

A. Suitability

(1) Materials used to construct component parts of a water system including, but not limited to, conduits, pipes, couplings, caulking materials, protective linings and coatings, services, valves, hydrants, pumps, tanks, backflow devices, and reservoirs, shall be capable of withstanding the internal and external forces to which they may be subjected in service per applicable AWWA Standards.

(a) No person shall use any pipe, plumbing fitting or fixture, solder, or flux that is not “lead free” in the installation or repair of any water system, except when necessary for the repair of leaded joints of cast iron pipes.

For the purposes of this section, "lead free" means in compliance with California Health and Safety Code Section 116875, as amended by Stats. 2006 Ch. 853 or a subsequent enactment.

(b) Materials and equipment shall be selected to mitigate corrosion, electrolysis and deterioration.

(2) Materials used to construct component parts of wastewater system(s) including, but not limited to, conduits, pipes, couplings, caulking materials, protective linings and coatings, valves, pumps, tanks, backflow devices, and reservoirs, shall be capable of withstanding the internal and external forces to which they may be subjected in service per applicable standards.

B. Specification

Materials and equipment shall be specified by a properly qualified person.

C. Newly Developed Materials and Equipment

The Commission does not intend to prevent the use of newly developed materials and equipment that otherwise meet the requirements described above.

3. Distribution System

A. Mains

(1) Water mains shall be installed below the frost line or be otherwise protected to prevent freezing and shall have no less than 30-inches of cover over the top of the pipe in public streets or alleys except when it is necessary to avoid underground obstructions or rocky or hardpan conditions where such depth is not feasible.

(2) All pipe and service lines that are not electrically continuous and installed using the open cut method shall be installed with continuous tracer tape or wire.

B. Layout of Water Mains

Water mains shall be laid out only in segmented grids and looped, and should be located within streets, where practical. Dead-end water mains shall be installed only if:

(1) Looping or gridding is impractical due to topography, geology, pressure zone boundaries, unavailability of easements or locations of users; or

(2) The main is to be extended in the near future and the planned extension will eliminate the dead-end conditions.

C. Minimum Pipe Sizes

(1) The distribution system shall be of adequate size, and designed in conjunction with related facilities to maintain the minimum flow and pressure requirements of this General Order.

(2) In no event shall the minimum pipe size for new mains be less than six inches in diameter when used in conjunction with a fire protection system. Otherwise, the minimum pipe size for new mains shall be no less than four inches in diameter.

D. Water Main Separations

The minimum separation distances shall be as set forth in the DPH's Waterworks Standards, CCR Title 22, Section 64572, or its successor.

E. Water Main Valves

(1) Sufficient valves shall be provided on water mains in accordance with the DPH's Waterworks Standards, CCR Title 22, Sections 64577 and 64578, or their successors.

(2) A flushing valve or blowoff shall be provided at the end of each newly installed dead-end water main (per Waterworks Standards, CCR Title 22, Section 64575.)

4. Materials Standards for Water Mains

All new water main materials used in the distribution system shall comply with the Department's Waterworks Standards, CCR Title 22, Section 64570, or its successor. The utility shall consider the cost effectiveness, for the intended application, of the material it selects.

5. Service Connection Pipe and Fittings

A. General

(1) Service connection pipe and fittings shall be designed for cold water working pressures of not less than 150 psi.

(2) Copper tubing shall be commercial designation of type K or L. Plastic tubing and fittings shall be products tested and certified as suitable for use in potable water piping systems by the National Sanitary Foundation, the Canadian Standards Association Testing Laboratory, or another testing agency acceptable to the Department.

B. Conditions for Adding Service Connections

(1) New service connections shall not be added to a water distribution system if the additional connections will cause system pressures or water supply to be reduced below the standards set forth in this General Order.

(2) New service connections shall not be added to a wastewater distribution system if the additional connections will cause the system to exceed the capacity requirements set forth in this General Order.

C. Size of Water Service Line

The size, design, material and installation of the water service line shall conform to the reasonable requirements of the utility, provided, however, that the minimum size of the pipe shall not be less than ¾-inch nominal size. The utility may require the customer to provide such data as may be necessary for the utility to properly size a service larger than ¾-inch nominal size consistent with the requirements of fire flow.

D. Depth of Water Service Line

Except in unusual conditions all service pipes shall be laid at a depth sufficient to prevent freezing, except where services are not intended for use during freezing weather and are drained prior to such weather, and at a depth of not less than 18 inches except at its termination in connecting with the meter or customer's piping.

6. Distribution Reservoirs

Distribution reservoirs (as defined in Waterworks Standards, CCR Title 22, Section 64551.10) shall meet the criteria specified in the DPH's Waterworks Standards, CCR Title 22, Section 64585.

7. Recycled Water and Reservoirs

No utility may use a reservoir that is directly augmented with recycled water as a source of supply, unless approved by the Department.

8. Reliability for Water Facilities

A. Surface Water Treatment Facilities shall meet the reliability standards set forth in the DPH's Waterworks Standards, CCR Title 22, Section 64659, or its successor.

B. All other critical equipment not addressed above shall have adequate redundancy and reliability, including fixed or portable backup power, incorporated as determined by the utility and approved by the Commission to meet the requirements of this General Order.

9. Sewer Systems

A. Mains and Submains

(1) Sewer mains shall be sized for the ultimate development of the area, and shall be designed for an average daily per capita flow of sewage of not less than 100 gallons per day.

(2) The minimum size for mains and submains shall be eight inches in diameter.

(3) Submains shall be designed to carry, when running full, not less than 400 gallons daily per capita contributions of sewage.

(4) New sewer mains shall be installed at least 10 feet horizontally from, and at least one foot vertically below, any parallel pipeline conveying potable water.

B. Utility Service Laterals

(1) Utility service laterals shall be designed to carry, when running full, not less than 400 gallons daily per capita contributions of sewage.

(2) The minimum size for a service lateral shall be 4 inches.

(3) Utility service laterals shall maintain a 2% minimum and 4% maximum slope.

IV. Measurement of Service

1. Method of Measuring Service

A. Metering

Consistent with the requirements of Public Utilities Code Section 781, which generally requires the Commission to hold a hearing and make certain findings before customers who were unmetered on January 1, 1979 can be required to have a meter, all water provided by a utility shall be metered, except that the utility may, after authorization has been obtained from the Commission, provide flat rate or estimated service.

B. Registration of Meter

All meters used for metered sales excluding sales from irrigation systems or other irrigation sales must have registration devices indicating the volume of water in either cubic feet or United States gallons or multiples

thereof. Where a constant or multiplier is necessary to convert the meter reading to cubic feet or gallons, the constant must be indicated on the meter or on the meter-reading sheet.

C. Irrigation Meters

Irrigation service may be provided with meters that measure in acre-feet or miner's inch days. This service may also be rendered on a volume basis by the use of a calibrated orifice such as the miner's inch box, by the use of weirs or otherwise measured as provided in applicable tariff schedules.

D. Report on Meter Readings to the Commission

All utilities that have metered service connections shall read each customer's meter according to the utility's tariff schedules. All utilities shall make a summary of quantities used, by classification of service, in the appropriate service territory or rate-making district, and include the summary in the annual report submitted to the Commission.

2. Meter Test Facilities and Equipment

A. Test Facilities

Each utility furnishing metered water or wastewater service shall*:*

(1) Have the necessary standard facilities, instruments and other equipment for testing its meters in compliance with these rules, or

(2) Arrange to have its meters tested by another entity equipped to test meters in compliance with these rules.

B. Shop Equipment

The meter test shop shall be provided with the necessary equipment to test up through 2-inch meters including a quick acting valve for controlling the starting and stopping of the test and a device for regulating the flow of water through the meter under test. The accuracy of the test equipment and test procedures shall be sufficient to enable shop test of the meter type used by the utility with an error not to exceed the applicable AWWA standard (M6 or its successor).

C. Test Measurement Standards

Measuring devices for test of meters shall consist of calibrated tanks for volumetric measurement, tanks mounted upon scales for gravimetric measurement or standard meters.

(1) Basic Standards

(a) When a volumetric tank is used, it shall be accompanied by a certificate of accuracy acceptable to the Commission from a County Department of Weights and Measures or other acceptable entity.

(b) When a gravimetric standard is used, the scales shall be tested and calibrated at least once every year by such approved laboratory, or County Office of Weights and Measures and a record maintained of the results of the test.

(c) Standard meters may be used for field tests of meter accuracy provided they are tested and calibrated to permit the test of meters within the limits of accuracy required by these rules, either by the utility with its volumetric or gravimetric standard equipment or by an approved laboratory at least once every 180 days while the standard meter is in use and a record of such tests shall be kept by the utility for a period of not less than five years.

(2) Basic Standards for Meter Testing

(a) The minimum requirement for testing meters from 5/8 x ¾-inch through 2-inch shall include a 10 and a 1 cubic-foot tank for meters registering in cubic feet or a 100- and a 10-gallon tank for meters registering in gallons.

3. Accuracy Requirements of Water Meters

A. General

All meters used for measuring quantities of water delivered to customers shall be in good mechanical condition, shall be adequate in size and designed for the type of service measured and shall be accurate to within generally accepted standards. The standards of accuracy for meters are set forth in paragraphs B and C, following.

B. Test Flows

For determination of minimum test flow and normal test flow limits, the Commission adopts as a guide the appropriate standard specifications of the applicable AWWA standard (M6 or its successor.)

When bench testing, the small meters (5/8 x ¾-inch through 2-inch) a multi-jet meter and a positive displacement meter should not be tested in-line.

C. Determination of Accuracy

(1) Meters shall be tested at three or more test flows per the applicable AWWA standard (M6 or its successor):

(2) A meter shall not be placed in service unless the meter test meets or exceeds the applicable AWWA standard (M6 or its successor)

D. Sealing of Meter

Upon completion of adjustment and test of any water meter under the provisions of these rules, the utility shall affix a suitable seal in such a manner that adjustment or registration of the meter cannot be altered without breaking the seal, where applicable.

E. Record of Test

(1) A complete record of all meter tests, including data sufficient to allow verification of test calculations, shall be recorded by the meter tester.

(2) Such record shall include: the identifying number of the meter; the type and size of the meter; the constant of the meter; the date and kind of test made; the reading of the meter before making any test and after the test; the test volume; and the error as found at each test.

(3) The complete record of test of each meter shall be retained for at least five years.

4. Initial Tests of Meters

Every water meter shall be tested as required by these rules prior to its installation either by the manufacturer, the utility or a reliable organization equipped for meter testing.

5. Repaired or Tested Meters

All water meters removed from service for repair or test in accordance with these rules shall be restored to the prescribed limits of accuracy as required by these rules before being placed back in service.

6. Periodic Tests of Water Meters

A. Maximum Time Periods for Meters in Service

(1) No meter shall be allowed to remain in service without retesting for any more than the number of years indicated in the following tabulation:

Size of Meter	Maximum Period
Smaller than 1 – inch	20 years
1 – inch	15 years
Larger than 1 – inch	10 years

(2) Requests to extend the maximum period may be made by advice letter based on relevant economic factors and meter accuracy.

B. Frequency of Periodic Tests

Nothing in these rules shall be construed to mean that such periodic tests may not be made more frequently than the maximum period specified.

C. Report of Periodic Tests of Meters

Each utility shall make a summary of all periodic tests of meters made each calendar year as required by these rules and shall submit such summary concurrently with, or as part of, the utility's Annual Report to the Commission for that year.

7. Meter Records

A. Contents and Retention of Meter Records

(1) Each utility shall keep records for each meter owned and used by it for any purpose including the identification number, name of manufacturer, serial number, type, size and the dates of installation and removal. These records shall also give condensed information, including dates, concerning all tests.

(2) When changing out a meter, the utility shall retain the written record of the date of the change, meter readings on the day of the change-out and the serial numbers of the old and the new meter. This information will be available to the customer upon request.

(3) Meter records shall be maintained for the useful life of the meter.

V. Rates and Billing

1. Filing of Tariffs

The utility shall file with the Commission its tariff schedules containing all tariff sheets in accordance with the procedure prescribed by the Commission.

2. Information on Bills

The utility shall render a bill to each customer for each billing period. All bills must show the time period, price per unit delivered, date bill is due, date when any late fee can be applied and the Commission's policy on late fees. Bills for metered service must include all the information shown in Appendix D.

3. Sewer Service

A. For billing purposes, except as determined by the utility, the customer is always the property owner.

B. Each sewer bill must show the time period, date bill is due, date when any late fee can be applied and the Commission's policy on late fees.

VI. Fire Protection Standards

1. Design Requirements

The flow standards for public fire protection purposes set forth below are those the Commission considers appropriate on an average statewide basis.

A. Standards of Local Fire Protection Agencies Govern

The Commission recognizes that there are widely varying conditions bearing on fire protection throughout the urban, suburban, and rural areas of California. Therefore, the standards prescribed by the local fire protection agency or other prevailing local governmental agency shall govern.

B. Application of the Utility's Main Extension Rule

Such local flow standards shall be followed whether greater or lesser than those set forth in this chapter. Mains designed for and capable of

providing flows in excess of the fire flow requirements referenced in this General Order, shall be considered mains providing excess flow for the purpose of the application of the utility's main extension rule.

2. Initial Construction, Extension, or Modification

In the initial construction, extension, or modification of a water system required to serve a new applicant or a change in use, the facilities constructed, extended, or modified shall be designed to be capable of providing, for a minimum of two hours, at a minimum of 20 psi, the flows specified in the 2007 California Fire Code, Appendix B, or its successor.

3. Replacement of Mains

A. Changes to Fire Code

The utility shall not be responsible for modifying or replacing at its expense any existing facilities, which are otherwise adequate, in order to provide increased fire flow or duration due to changes in the standards after the initial construction.

B. Replacement for Other Reasons

When a main requires replacement for other reasons, the new main, if used or useful for fire protection purposes, shall be sized to accommodate the governing fire flow standard.

4. Fire Hydrants

Fire hydrants shall be attached to the distribution system at the locations and spacing designated by the agency responsible for their use for fire fighting purposes.

5. Fire Hydrant Service Agreement

A. Charges for furnishing water to entities providing fire protection services to others shall be pursuant to written agreement in accordance with Public Utilities Code Section 2713, or its successor.

B. Each water utility shall make all reasonable efforts to form or renew agreements with entities providing fire protection services that are beneficial to the utility and its customers.

C. When such written agreement is entered into between the utility and the fire protection agency which requires the utility to be responsible for all or any portion of the capital expenditures or maintenance costs associated with providing fire hydrant service, such expenditures and costs may be included by the utility in its general plant accounts and operating expenses for ratemaking purposes.

D. The utility may bill the fire protection agency for fire hydrant service charges only under written agreement with the agency that it will pay such charges. Fire hydrant charges made under written agreement will also be included in revenues for ratemaking purposes.

E. In the absence of any written agreement between the utility and the fire protection agency, the utility will be responsible for maintaining fire hydrant service to the extent of its means. All cost associated with providing this service may be included for ratemaking purposes.

F. Fire hydrant service agreements between the fire protection agency and the utility shall be submitted by advice letter in accordance with General Order 96-B.

VII. Operation and Maintenance

1. Operation and Maintenance (O&M) Plans

A. Water Quality Procedures for Water Utilities

Each water utility shall have a set of O&M plans that includes sampling protocols used in water quality testing and describes the normal operating procedures of the Utility and its facilities.

B. Contents of O&M Plan for Water Utilities

The O&M Plan shall include, as applicable:

(1) The operations and maintenance schedule for each unit process for each treatment plant;

(2) The operations and maintenance schedule for each groundwater source and unit process;

(3) The operations and maintenance schedule for each purchased water connection;

(4) The schedule and procedure for flushing dead end mains and the distribution system, and the procedures for disposal of the flushed water, including dechlorination;

(5) The schedule for routine inspection of reservoirs, and the procedures for cleaning reservoirs;

(6) The schedule and procedures for inspecting, repairing, and replacing water mains;

(7) The plan for responding to emergencies as described in Section VII.3 of this General Order;

(8) The training protocols for use by employees for interacting with customers;

(9) The schedule and procedures for either testing backflow prevention assemblies or notifying customers of their obligation to test backflow prevention assemblies;

(10) The schedule and procedures for routine maintenance of water main valves, combination air vacuum release valves, fire hydrants, and valves;

(11) The schedule and program for maintenance and calibration of source flow meters;

(12) The qualifications and training of operating personnel including water treatment and cross connection certification; and

(13) The program for bio-film control in water mains.

C. Submission of Summary of O&M Plan for Water Utilities to the Commission

(1) Each water utility shall have on file a summary of its current O&M plan(s), electronically or in hard copy form, with the Division of Water and Audits, or its successor. The submission of these O&M plans shall be subject to the protections against unauthorized disclosure as provided by Public Utilities Code Section 583 and the corresponding exclusion from public inspection provided by General Order 66-C, Section 2.2.

(2) When these O&M plans change substantially and at least every five years, the water utility shall file updated summaries.

D. Submission of Department O&M Plans for Water Utilities to the Commission

Any water utility that has prepared an O&M Plan for the Department shall submit a copy of such O&M Plan to the Commission. The submission of an O&M Plan shall be subject to the protections against unauthorized disclosure as provided by Public Utilities Code Section 583 and the corresponding exclusion from public inspection provided by General Order 66-C, Section 2.2.

E. Submission of O&M Plans for Wastewater System Utilities to the Commission

Each wastewater utility shall submit to the Commission a copy of the O&M Plan required by the State Board General Order 0003-2006 (May 1, 2006, or its successor.) The submission of the O&M Plan shall be subject to the protections against unauthorized disclosure as provided by Public Utilities Code Section 583 and the corresponding exclusion from public inspection provided by General Order 66-C, Section 2.2.

F. Availability of O&M Plan for Commission Review

The latest O&M plans shall be available for Commission review. In its Annual Reports, each water utility shall identify the location(s) of or the method for accessing (e.g., the website) its O&M plan.

2. Asset Management Requirements

A. Due to the water and wastewater industries' long lived infrastructure and high fixed costs, the effective management of the planning, construction, maintenance and operation of assets is a critical component in delivering good customer service and ensuring the ongoing viability of services.

B. Effective asset management helps achieve or maintain service and other business performance requirements, manage risks, and improve efficiency. To support the asset management system requirements all utilities shall conduct regular reviews of their asset management system, employing either internal or external resources, as appropriate. Utilities shall report to the Commission on any major plans to retrofit existing facilities, use of cathodic protection programs, and other efforts to minimize deterioration and extend service life. The Commission may determine whether additional third-party review of a utility's asset management plan, as a recoverable cost, is warranted.

C. Wastewater systems shall maintain their sanitary sewer management plan according to the State Board General Order GO-0003, 2006, or its successor.

3. Emergency/Disaster Response Plan

A. Each water utility shall have an Emergency Response Plan pursuant to the Department's requirements, as set by the US EPA, Government Code Section 8607.2, or its successor.

B. Each wastewater system shall have an Emergency Response Plan pursuant to the State Board GO-0003, 2006, or its successor.

4. Records and Reports

See Appendix C for retention schedules.

A. System Plans, Maps, Drawings and Other Records

All water and wastewater system utilities shall have on file at their principal or local office plans, maps, drawings or other records of all system facilities. The plans, maps, drawings or other records shall be clear and legible. At a minimum these records will include:

(1) Location of all pumping stations, diversion works, water or sewer treatment plants, sources of supply, storage facilities, size, type of material and location of all mains (including recycled water mains) and ditches, including valves and sluice gates, gauges, interconnections with other systems and fire hydrants;

(2) Location, size and material of each service line;

(3) A schematic drawing or map of all pumping stations, water or wastewater treatment plants to show the size and location of all major equipment, pipelines, connections, valves and other equipment; and

(4) The date of construction of all plant.

B. Updates and Review

(1) The water and wastewater system(s) plans, maps, drawings and other records shall be updated as significant changes occur, and maintained until replaced or superseded by updated plans or drawings.

(2) The most current plans, drawings, maps, and other records shall be available for Commission review.

C. Underground Damage Prevention

The utility shall comply with all California regulations on underground damage prevention.

5. Water Treatment and Water Distribution Operators

A. General

The utility shall ensure that all water treatment and water distribution facilities are operated by personnel appropriately certified by the Department. Water treatment and water distribution certification are governed by Articles 1 through 5 of Title 22, Division 4, Chapter 13, and Article 2 of Title 22, Division 4, Chapter 15, or its successor.

B. Treatment Facility Operator Certification

All treatment facility operators shall be certified by the Department for the functions they perform.

C. Distribution System Operator Certification

All distribution system operators shall be certified by the Department for the functions they perform.

D. Cross-Connection Operator Certification

All cross-connection operators shall be certified by the California/Nevada AWWA, or equivalent organization.

E. Wastewater Treatment and Wastewater Distribution Operators

All wastewater treatment and wastewater distribution operators shall be certified by the State Water Resources Control Board, Office of Operator Certification.

6. Pressures

A. Variations in Pressure

Each potable water distribution system shall be operated in a manner to assure that the minimum operating pressure at each service connection throughout the distribution system is not less than 40 psi nor more than 125 psi, except that during periods near PHD the pressure may not be less than 30 psi and that during periods of hourly minimum demand the

pressure may be not more than 150 psi. Subject to the minimum pressure requirements of 40 psi, variations in pressures under normal operation shall not exceed 50% of the average operating pressure.

The average operating pressure shall be determined by computing the arithmetical average of at least 24 consecutive hourly pressure readings.

B. New Systems

Each new distribution system shall be designed to provide a minimum operating pressure at each service connection of not less than 40 psi during PHD. If a utility cannot meet this requirement as a result of cost and/or system limitation, the utility must request an exemption in accordance with Section I.8.A of this General Order.

C. Changes to Existing Distribution Systems

Changes shall be designed to maintain an operating pressure at each service connection of not less than 40 psi during PHD. If a utility cannot meet this requirement as a result of cost and/or system limitation, the utility must request an exemption in accordance with Section I.8.A of this General Order.

D. Pressure Requirement Exceptions

A water utility may furnish service to a customer at less than the pressure requirement specified in this General Order, if the customer is fully advised of the conditions under which service will be provided, and a customer agreement is secured in writing. The limited nature of the service shall also be recorded as a deed restriction on the property. The properties receiving service at other than specified operating pressures specified in this General Order shall be identified on the utility's service area map.

E. Pressure Recorders

Each utility shall maintain one or more pressure recorders for each separately operated system for the purpose of making pressure surveys as required by these rules. These recorders shall be able to record the pressure experienced on such a system and shall be able to record a continuous 24-hour test. Each utility serving 1000 or more customers in a separately operated system or 1000 or more customers in any separately operated system of a multi-system utility shall maintain one

or more of these pressure recorders in service at some representative points, as determined by the utility.

F. Pressure Surveys

(1) At regular intervals, but not less than once each year, each utility shall make a survey of pressures in its distribution system of sufficient magnitude to indicate the pressures maintained at representative points on its system. Such surveys should be made at or near the period of PHD and MDD. The pressure records for these surveys shall show the date and time of beginning and end of the test and the location at which the test was made.

(2) Records of these pressure surveys shall be maintained by the utility for a period of at least three years or after the next general rate case filing, whichever is longer, and shall be made available to representatives, agents or employees of the Commission upon request.

VIII. Customer Service and Reporting Standards for Water and Wastewater Utilities

1. General

Consumers expect and should receive service that is consistently adequate, reliable, and in compliance with applicable water quality standards. Standardized reporting requirements and regular reporting are necessary for regulators to be able to monitor service quality and changes in performance. Reporting requirements should be carefully designed to yield accurate data that is uniform and consistent.

2. Reporting

When a utility is required to report the following information it shall do so in accordance with Appendix E of this General Order or the utility's tariffs.

(A) Performance results including meter reading and work completion standards shall be aggregated quarterly, and shall be reported annually to the Commission in the utility's annual report.

(B) Reports on company-wide performance shall be made in conjunction with each utility's annual report to the Commission's Division of Water and Audits (or its successor), with copies provided to the DRA (or its successor).

(C) Reports shall include both annual and quarterly averages. Annual averages shall be derived from raw data, not by averaging quarterly averages.

(D) Where quarterly performance is substantially out of compliance with an applicable standard (defined in the context of each performance measure), the utility shall within 30 days of the end of the quarter in which this provision is triggered, submit a plan to Division of Water and Audits, or its successor, indicating how it will remedy the deficiency.

(E) Performance shall be evaluated and reported as a percentage to one decimal place for all performance areas unless otherwise specified. Actual performance shall be rounded up when the relevant decimal place is 5 or more. The utility shall retain all of its reports that support the results for each of the performance areas for a period of not less than 36 months after the results are reported. The utility shall provide these reports upon request to the Commission.

(F) The utility shall explain in its annual report any change to the utility's measurement protocol or to the internal reporting methods that are used to obtain the data measured.

(G) The utility's annual report shall identify any missing data or events that could reasonably affect the quality of the data reported.

(H) The utility may seek a variance from any applicable performance standard in accordance with Section I.8.A of this General Order. A variance may be granted for demonstrated good cause, such as where the circumstances causing the failure were beyond the utility's control, and the utility can demonstrate that its level of preparedness and response was reasonable in light of the cause of the failure.

3. Telephone Performance Standards

Each utility shall provide emergency telephone access, including after-hours access, for its customers. If a telephone complaint pertains to an urgent service issue presenting health or safety concerns, the utility shall respond within 24 hours. Class A and B water utilities shall comply with telephone performance standards set forth in Appendix E of this General Order.

4. Billing Performance Standards

(A) Class A and B water utilities shall establish billing performance standards as set forth in Appendix E of this General Order.

(B) Performance results shall be reported in accordance with Section VIII.B.

5. Meter Reading Performance Standards

(A) Class A and B water utilities shall establish meter reading performance standards in accordance with Appendix E of this General Order.

(B) Each utility shall report their performance results in accordance with Section VIII.B.

6. Work Completion Performance Standards

(A) When scheduling appointments, the utility will provide the customer with a four-hour period during which the utility representative will be at the customer's premises. The utility must attempt to notify the customer as soon as it is aware that the meeting time must be changed. Class A and B water utilities shall determine the performance of the scheduled appointment in accordance with Appendix E of this General Order.

(B) Class A and B water utilities shall determine the percentage of customer-requested work not completed on or before the scheduled date in accordance with Appendix E of this General Order.

(C) The utility must correct all problems that result from the flooding of sewers for which it is responsible within 48 hours of being informed of the flooding event. Extreme precipitation events, such as 100 or 500 year floods, shall be addressed on a best efforts basis by the utility.

7. Response to Customer and Regulatory Complaint Performance Standards

(A) Upon complaint to the utility by a customer communicated to the utility's office, by letter, by telephone, or by email or to the utility's internet web page if it supplies a site for customer service, the utility shall make every reasonable effort to contact the customer within three business days to acknowledge receipt of the complaint.

(B) The utility shall provide, within 10 business days of receipt, a substantive response to customer complaints expressed directly to the utility by any method of contact.

(C) The utility shall provide a substantive response to informal customer complaints to the Commission within 20 business days after the complaint has been forwarded to the utility by the Commission.

(D) If the utility needs additional time to respond fully to a complaint received directly from a customer or indirectly by way of the Commission, the utility shall within the initial response period request a specific additional

time for response and shall provide a final response within the requested additional time.

(E) The utility shall keep a record of each complaint, categorized by the nature of the complaint, that shows the name and address of the complainant, the date and nature of the complaint, and the nature and date of adjustment or disposition, for a period lasting from the time the complaint is filed with the utility until issuance of the principal decision in its next general rate case.

(F) After issuance of the general rate case final decision subsequent to the filing of the complaint, the utility shall retain, at its option, either the original complaints or a summary of such complaints. Inquiries with reference to rates or charges, which require no further action by the utility, need not be recorded. Complaints that are determined to be out of the direct control of the utility (including but not limited to complaints relating to natural disasters) may be recorded in a summary list only.

(G) Class A and B water utilities shall establish a customer and regulatory complaint performance measure as set forth in Appendix E.

APPENDIX A
NON POTABLE WATER SYSTEMS

Sections of Rules Governing Water Service Including Minimum Standards for Design and Construction which shall be applicable to utility water systems supplying water not intended or claimed to be potable from ditches, canals or other conduits.

Section I – General

All paragraphs of this section, except Paragraph 4, (1) and (5)

Section II – Standards of Service

Paragraphs 2 B. (1) and (8), 3 and 4 of this section, except that paragraph 3C. shall not apply to scheduled interruptions as provided in applicable tariffs.

Section III – Standards of Design and Construction

None.

Section IV – Measurement of Service

All paragraphs of the section, except when sales are measured by other than displacement meters as provided in applicable tariff schedules only paragraphs 1C, 3A and 3E, 5, 6A, and 7 shall apply.

Section V – Rates and Billing

All paragraphs of the section.

APPENDIX A
NON-POTABLE WATER SYSTEMS

Section VI – Fire Protection Standards

None

Section VII – Operations and Maintenance, Records and Reports

Paragraphs 1, 2, 3 A (1) and 3 C.

Section VIII - Customer Service and Reporting Standards

Paragraphs 1, 2, 3, 4, 5, 6 A through C and 7 A through G.

(END OF APPENDIX A)

APPENDIX B
SEWER SYSTEMS

Sections of Rules Governing Water Service Including Minimum Standards for Design and Construction which shall NOT be applicable to sewer system utilities.

Section I – General

Paragraph 3, (1), (2), (6), (7) and (8)

Section II – Standards of Service

Paragraphs 2 A. (1) through (7)

Paragraphs 2 B. (1) through (5)

Section III – Standards of Design and Construction

Paragraphs 1 A. (3) and B

Paragraphs 2 A. (1)

Paragraphs 3 through 7

Section IV – Measurement of Service

Paragraphs 1 A and C

Paragraphs 2 B and C

Paragraphs 3, 5, and 6

Section V – Rates and Billing

Paragraph 2

Section VI – Fire Protection Standards

(ALL)

APPENDIX B
SEWER SYSTEMS

Section VII – Operations and Maintenance, Records and Reports

Paragraphs 1 A and B

Paragraphs 2 A and B

Paragraphs 3 A

Paragraphs 4 A (2)

Paragraphs 5 A through D

Paragraphs 7 and 8 (all)

Section VIII - Customer Service and Reporting Standards

Paragraph 7 G

(END OF APPENDIX B)

APPENDIX C
RECORDS RETENTION SCHEDULES
(Resolution No. A-4691, July 12, 1977)

PUBLIC UTILITIES COMMISSION
REGULATIONS TO GOVERN THE PRESERVATION OF RECORDS OF WATER UTILITIES, CLASSES A, B & C

GENERAL INSTRUCTIONS

SCOPE OF THIS PART

The regulations in this part apply to all records prepared by or on behalf of water utilities, Classes A, B and C.

The regulations in this part shall not be construed as excusing compliance with any other lawful requirement for the preservation of records for periods longer than those prescribed herein.

DESIGNATION OF SUPERVISORY OFFICIAL

Each water utility subject to the regulations herein shall designate one or more persons and positions with official responsibility to supervise the utility's program for preservation and the authorized destruction of its records.

PROTECTION AND STORAGE OF RECORDS

The water utility shall provide reasonable protection for records subject to the regulations herein. Records shall be arranged in such a manner as to be easily identifiable and accessible to representatives of this Commission.

MICROFILM AND TAPE CERTIFICATION

All microfilm and tape records shall contain labels including the title, date prepared, name of official responsible for validating the data, date of completion,

and certification that the records are true and accurate reproductions of the original records.

All film stock shall be approved operationally-permanent record microcopying type, which meets the current specifications of the National Bureau of Standards.

RETENTION PERIODS

The retention periods specified in these regulations are minimum periods. The utility may retain records for longer periods when appropriate.

PREMATURE DESTRUCTION OR LOSS OF RECORDS

When records are destroyed or lost before the expiration of the prescribed period of retention, a certified statement listing the records destroyed and prescribing the circumstances of accidental or other premature destruction or loss shall be filed with the Commission within sixty (60) days from the date of discovery of such destruction.

RECORDS OF SERVICES PERFORMED BY AFFILIATE

The water utilities to which the regulations herein apply shall assure the availability of records of services performed by associated and affiliated companies for the periods indicated herein, as are necessary, to support the cost of services rendered to it by an associated or affiliated company.

RECORDS OF INTERRUPTIONS

Records of interruption shall be maintained by the utility for a period of 4 years or after the next general rate case filing, whichever period is longer.

APPENDIX C
RECORDS RETENTION SCHEDULES

Water Quality Records Retention

Results of water quality testing, including tests conducted in connection with disinfection of new or repaired mains and disinfection of reservoirs or wells, records of flushing of mains, and records of reservoir inspections and cleaning, shall be maintained for at least three years.

APPENDIX C
RECORDS RETENTION SCHEDULES

SCHEDULE OF RECORDS AND PERIODS OF RETENTION

Description	Retention Period
CORPORATE AND GENERAL	
1. Capital stock records:	6 years after cancellation or other closing of accounts.
2. Proxies and voting lists:	3 years.
3. Annual reports or formal communications or statements to stockholders:	Life of corporation.
4. Debt security records:	6 years after redemption, payment or cancellation.
5. Filings with and authorizations by the Commission:	25 years or until all securities covered are retired, whichever is shorter.
6. Corporate organizational documents:	Life of corporation, with the exception of permits, deeds and title documents which shall be retained for 6 years after termination or disposition of property.
7. Contracts and agreements (except contracts provided for elsewhere):	6 years with the following exceptions:
(a) Contracts or agreements for the acquisition or disposition of investments (excluding temporary cash investments):	25 years after disposition.
(b) Memoranda essential to clarifying or explaining provisions of contracts listed above:	For the same periods as contracts to which they relate.

APPENDIX C
RECORDS RETENTION SCHEDULES

SCHEDULE OF RECORDS AND PERIODS OF RETENTION

Description	Retention Period
CORPORATE AND GENERAL, continued	
(c) Card or book records of contract, leases, and agreements made, showing dates of expirations and of renewals, memoranda of receipts and payments under such contacts, etc.:	For the same periods as contracts to which they relate
8. Accountants' and auditors' reports, internal and external:	7 years after date of report or Commission audit, whichever comes last
9. Automatic data processing records:	Retain original source data for the periods prescribed elsewhere in the schedule; retain all other data as long as part of active program
10. General and subsidiary ledgers and journals; journal vouchers, journal entries (including supporting detail), vouchers and voucher registers:	50 years
11. Trial balance sheets of general and subsidiary ledgers:	3 years
12. Cash books, general and subsidiary or auxiliary books:	10 years after close of fiscal year

APPENDIX C
RECORDS RETENTION SCHEDULES

SCHEDULE OF RECORDS AND PERIODS OF RETENTION

Description	Retention Period
CORPORATE AND GENERAL, continued	
13. Accounts receivable and supporting records:	3 years
14. Records of securities owned, in treasury, or with custodians (excluding temporary investment of cash):	6 years after disposition of investment
15. Payroll records and insurance records:	6 years, except where information transferred to other records
16. Assignments, attachments, and garnishments:	None
17. Records of injuries and damages:	2 years after settlement or other disposition

APPENDIX C
RECORDS RETENTION SCHEDULES

SCHEDULE OF RECORDS AND PERIODS OF RETENTION

Description	Retention Period
OPERATIONS AND MAINTENANCE	
18. Production records of sources of supply, pumping, transmission, and distribution:	15 years, except as follows:
(a) Water reports showing purchases and exchanges:	25 years
(b) Water treatment records:	10 years
(c) Daily dispatch logs:	1 year
(d) Customer service records:	5 years
(e) Maintenance work and job orders:	6 years
(f) Equipment repair records:	Life of equipment
19. Personnel records including employees' benefit and pension records, and operating and procedural instructions issued by the company to employees:	3 years after termination of employment, plan or instructions
20. Plant and depreciation records, including plant inventory, drilling, appraisals, engineering records, construction records and contracts relating to above.	50 years

APPENDIX C
RECORDS RETENTION SCHEDULES

SCHEDULE OF RECORDS AND PERIODS OF RETENTION

Description	Retention Period
MISCELLANEOUS	
21. All purchase and supply records:	6 years
22. All revenue, accounting and collecting records:	10 years, except as follows:
(a) Where refunds required:	6 years after refund
(b) Documents relating to donations and contributions:	50 years
(c) Published rates and service schedule:	50 years
23. Tax records:	7 years after settlement
24. Treasury records (funds, deposits, receipts and disbursements):	Completion of annual audit by independent accountants
25. All annual reports to the Commission and special reports relating to plant and utility property:	Life of corporation
26. All other reports and documents:	Fulfillment of regulatory requirements

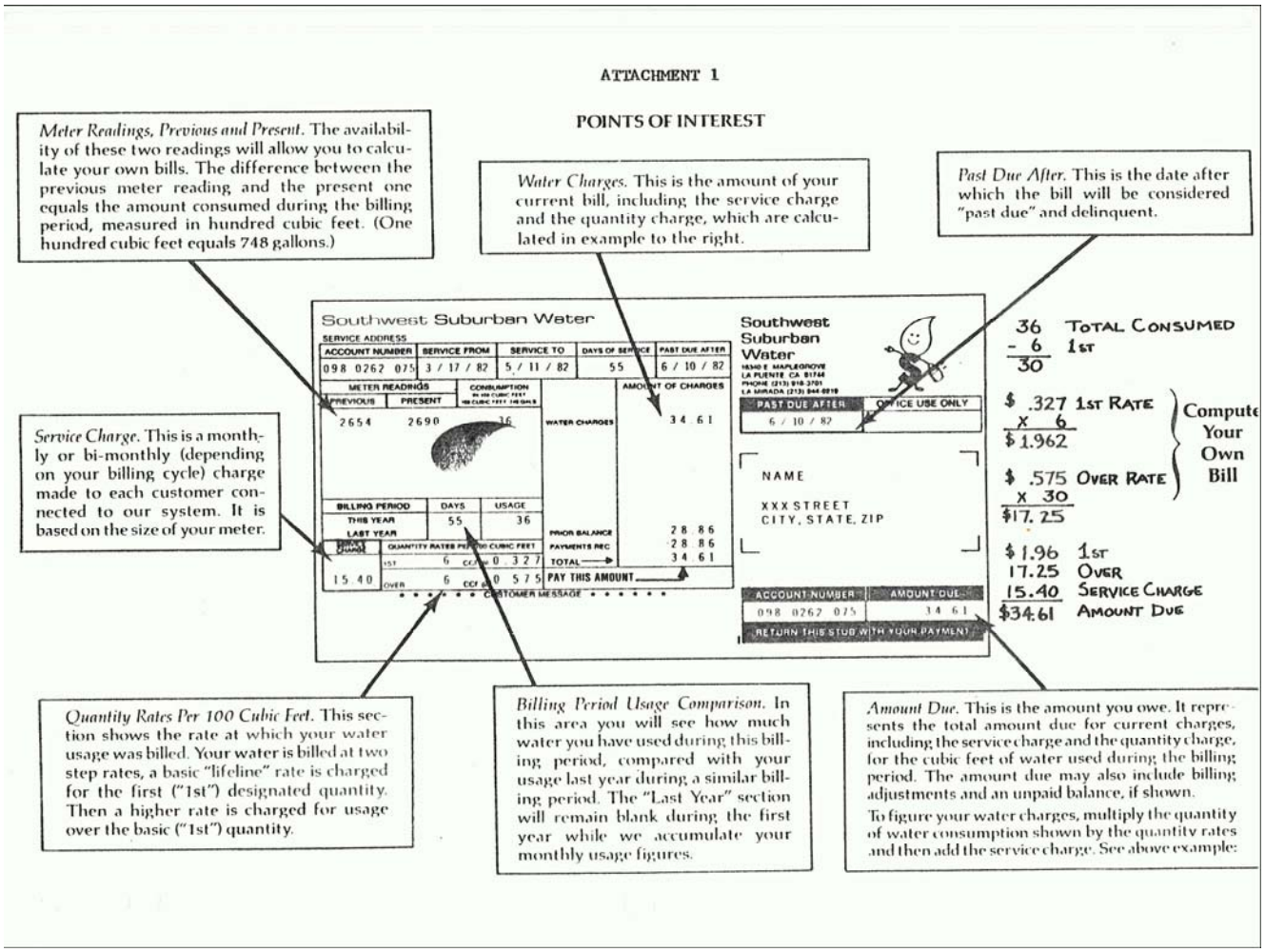
27.	Life or mortality study data for depreciation purposes:	Life of corporation

(END OF APPENDIX C)

APPENDIX D
REPORT CARD BILLING

This Appendix explains the minimum amount of information that must be included with the bill to the customer.

Meter Readings: Previous and Present; Service Charge; Commodity Charge; Past due after date; Quantity per billing unit (Hundred Cubic Feet, thousand Gallons etc.); Billing period; Usage Comparison; Amount Due.



(END OF APPENDIX D)

APPENDIX E
CUSTOMER SERVICE AND REPORTING STANDARDS FOR CLASS A AND B WATER UTILITIES THAT EMPLOY AUTOMATED CALL DISTRIBUTION SYSTEMS

1. Telephone Performance Standards

To ensure that customer inquiries have timely responses during normal business hours, all water utilities which employ automated call distribution systems (ACD) shall comply with telephone performance standards and reporting criteria as follows:

(A) Call answer performance measures

Call Answering Service Level: Percentage of customers reaching a utility representative during normal business hours within 30 seconds after requesting to speak with a customer service representative (CSR)

Performance shall be calculated as follows:

Number of calls reaching a utility representative within 30 seconds divided by number of attempts to reach a utility representative.

Performance measure: greater than or equal to 80%

For this performance measure, substantially out of compliance is deemed to be less than 60%

Source of data: data obtained from the utility's ACD system. The data will include all calls reaching the ACD during the normal business hours.

(B) Abandoned call rate performance measure

Abandoned call rate during normal business hours: Percentage of calls abandoned before reaching a utility representative (requested by the customer) during normal business.

Performance shall be calculated as follows:

Number of calls abandoned/Number of attempts to reach a utility representative

Abandoned call rate performance measure: less than or equal to 5%.

Source of data: The standard shall be measured by using data obtained from the utility's ACD system during normal business hours

2. Billing Performance Standards

(A) Bill rendering performance measure

Percentage of bills rendered (mailed) within seven calendar days of the scheduled billing date. Performance shall be calculated as follows:

Number of bills not rendered within seven calendar days of the scheduled billing date/Total number of bills scheduled to be rendered.

Exclusions: The measurement will exclude accounts that were activated within 10 calendar days prior to the normal billing cycle; accounts that are scheduled to receive a final bill within 10 calendar days after the normal billing cycle; off-system sales; utility use accounts; periods during which rates are changed.

Bill rendering performance measure: greater than or equal to 99%

Source of data: This standard shall be measured by using data obtained from the utility's Customer Information System, or equivalent records. Results shall be reported to one decimal place.

(B) Bill accuracy performance measure

Bills found inaccurate: Percentage of bills found inaccurate after being sent to customers, brought to a utility's attention either as result of customer complaints and/or by the utility's own efforts. Performance shall be calculated as follows:

Number of bills rendered inaccurately for the cycle/Total number of bills rendered for the billing cycle

Exclusions: This standard does not include bills found to be inaccurate strictly as result of estimation, bills where the inaccuracy does not affect the calculation of the bill, or where the fault does not lie with the utility.

Percentage of inaccurate bills performance measure: less than or equal to 3.0%

Source of data: This standard shall be measured by using data obtained from the utility's Customer Information System or equivalent records. Results shall be reported to the second decimal place.

(C) Payment posting error performance measure

Payment posting errors: Percentage of customer payments posted incorrectly due to the utility's error. Performance shall be calculated as follows:

Number of payment posting errors/Total number of payments posted

Payment posting error performance measure*:* less than or equal to 1.0 %

Source of data: This Standard shall be measured by using data obtained from the utility's Customer Information System or equivalent manual records.

(D) Final Read and Final Bill

The utility is required to read the customer's meter on the day the customer specifies so long as five (5) calendar days notice is given by the customer. The utility will provide a final bill within 14 calendar days of the meter read.

APPENDIX E
CUSTOMER SERVICE AND REPORTING STANDARDS
FOR CLASS A AND B UTILITIES

3. Meter Reading Performance Standard

(A) Percentage of actual meter readings per billing cycle: Percentage of meters not read each cycle in relation to the numbers that were scheduled to be read, exclusive of meters covered by AMR. Performance shall be calculated as follows:

Number of scheduled meters not read/Number of meter readings scheduled

Meter reading performance measure: less than or equal to 3.0%

Source of data: Data shall be obtained from the utility's Customer Information System.

4. Work Completion Performance Standards

(A) Scheduled appointments performance measure

Keeping Scheduled Appointments: When scheduling appointments, the utility will provide the customer with a four-hour period during which the utility representative will be at the customer's premises. The utility must attempt to notify the customer as soon as it is aware that the meeting time must be changed. Performance shall be calculated as follows:

Number of scheduled appointments missed/Number of scheduled appointments

Scheduled appointments performance measure: less than or equal to 5.0%

(B) Customer requested work completion performance measure

Percentage of customer-requested work not completed on or before the scheduled date: The percentage of jobs resulting from customer requests for meter turn-ons, meter read-over, disconnects and reconnects (collectively "customer orders") that are not completed on or before the scheduled date. Performance shall be calculated as follows:

Number of customer orders not completed on or before the scheduled date/Total number of customer orders scheduled and completed in the reporting month.

Exclusions: When an event outside of the utility's control occurs resulting in the work not being completed as promised, utility will renegotiate the scheduled date with the customer.

Customer requested work performance measure: less than or equal to 5%

Source of data: For all customer orders, data shall be obtained from the utility's Customer Information System or equivalent record.

When a customer calls for included work, a service request is created for the date promised to the customer. Reports are generated monthly of all meter orders closed during the prior month and are reviewed for the following exclusions: (1) delayed at the customer's request or because the customer was not ready for the work to be performed, (2) meter order request not the result of a customer request but rather an internal request for meter order work, (3) non-regulated business activities.

5. Response to Customer and Regulatory Complaints Performance Standard

(A) Rate of complaints to the Commission's Consumer Affairs Branch (CAB): Percentage of customers who file complaints with the Commission's CAB. Performance shall be calculated as follows:

Number of complaints reported annually to the utility by the CAB/Total number of customers

Performance measure: less than or equal to 0.1%

Source of data: Data shall be obtained from the quarterly reports provided by the Commission to the utility from the Commission's Consumer Affairs Tracking System. Results shall be reported to the second decimal place.

APPENDIX E
CUSTOMER SERVICE AND REPORTING STANDARDS
FOR CLASS A AND B UTILITIES

6. Service Interruption

Each Utility shall keep a complete record of all interruptions, both emergency and scheduled, when more than 10 service connections are interrupted. These records of interruptions are to be kept with the utility's permanent records and shall include:

1. Date and time of service interruption
2. Date and time service is restored
3. Number of service connections affected
4. Equipment that operated or failed
5. Cause of interruption
6. Actions required to restore service
7. Identification of person reporting
8. Steps taken to prevent recurrence

(END OF APPENDIX E)

Appendix F – 2019 California Code of Regulations Title 22, Section 64554

Cal. Code Regs. Tit. 22, § 64554 - New and Existing Source Capacity

Current through Register 2021 Notice Reg. No. 52, December 24, 2021

(a) At all times, a public water system's water source(s) shall have the capacity to meet the system's maximum day demand (MDD). MDD shall be determined pursuant to subsection (b).

(1) For systems with 1,000 or more service connections, the system shall be able to meet four hours of peak hourly demand (PHD) with source capacity, storage capacity, and/or emergency source connections.

(2) For systems with less than 1,000 service connections, the system shall have storage capacity equal to or greater than MDD, unless the system can demonstrate that it has an additional source of supply or has an emergency source connection that can meet the MDD requirement.

(3) Both the MDD and PHD requirements shall be met in the system as a whole and in each individual pressure zone.

(b) A system shall estimate MDD and PHD for the water system as a whole (total source capacity and number of service connections) and for each pressure zone within the system (total water supply available from the water sources and interzonal transfers directly supplying the zone and number of service connections within the zone), as follows:

(1) If daily water usage data are available, identify the day with the highest usage during the past ten years to obtain MDD; determine the

average hourly flow during MDD and multiply by a peaking factor of at least 1.5 to obtain the PHD.

(2) If no daily water usage data are available and monthly water usage data are available:

(A) Identify the month with the highest water usage (maximum month) during at least the most recent ten years of operation or, if the system has been operating for less than ten years, during its period of operation;

(B) To calculate average daily usage during maximum month, divide the total water usage during the maximum month by the number of days in that month; and

(C) To calculate the MDD, multiply the average daily usage by a peaking factor that is a minimum of 1.5; and

(D) To calculate the PHD, determine the average hourly flow during MDD and multiply by a peaking factor that is a minimum of 1.5.

(3) If only annual water usage data are available:

(A) Identify the year with the highest water usage during at least the most recent ten years of operation or, if the system has been operating for less than ten years, during its years of operation;

(B) To calculate the average daily use, divide the total annual water usage for the year with the highest use by 365 days; and

(C) To calculate the MDD, multiply the average daily usage by a peaking factor of 2.25.

(D) To calculate the PHD, determine the average hourly flow during MDD and multiply by a peaking factor that is a minimum of 1.5.

(4) If no water usage data are available, utilize records from a system that is similar in size, elevation, climate, demography, residential property size, and metering to determine the average water usage per service connection. From the average water usage per service connection, calculate the average daily demand and follow the steps in paragraph (3) to calculate the MDD and PHD.

(c) Community water systems using only groundwater shall have a minimum of two approved sources before being granted an initial permit The system shall be capable of meeting MDD with the highest-capacity source off line.

(d) A public water system shall determine the total capacity of its groundwater sources by summing the capacity of its individual active sources. If a source is influenced by concurrent operation of another source, the total capacity shall be reduced to account for such influence. Where the capacity of a source varies seasonally, it shall be determined at the time of MDD.

(e) The capacity of a well shall be determined from pumping data existing prior to March 9, 2008 or in accordance with subsection (f) or (g). Prior to conducting a well capacity test pursuant to subsection (g), a system shall submit the information listed below to the State Board for review and approval. For well capacity tests conducted pursuant to subsection (f), the information shall be submitted to the State Board if requested by the State Board.

(1) The name and qualifications of the person who will be conducting the test;

(2) The proposed test's pump discharge rate, based on the design rate determined during well development and/or a step-drawdown test.

(3) A copy of a United States Geological Survey 7 1/2-minute topographic map of the site at a scale of 1:24,000 or larger (1 inch equals 2,000 feet or 1 inch equals less than 2,000 feet) or, if necessary, a site sketch at a scale providing more detail, that clearly indicates;

(A) The well discharge location(s) during the test, and

(B) The location of surface waters, water staff gauges, and other production wells within a radius of 1000 feet;

(4) A well construction drawing, geologic log, and electric log, if available;

(5) Dates of well completion and well development, if known;

(6) Specifications for the pump that will be used for the test and the depth at which it will draw water from the well;

(7) A description of the methods and equipment that will be used to measure and maintain a constant pumping rate;

(8) A description of the water level measurement method and measurement schedule;

(9) For wells located in or having an influence on the aquifer from which the new well will draw water, a description of the wells' operating schedules and the estimated amount of groundwater to be extracted, while the new well is tested and during normal operations prior to and after the new well is in operation;

(10) A description of the surface waters, water staff gauges, and production wells-shown in (3)(B);

(11) A description of how the well discharge will be managed to ensure the discharge doesn't interfere with the test;

(12) A description of how the initial volume of water in the well's casing, or bore hole if there is no casing at the time, will be addressed to ensure it has no impact on the test results; and

(13) A written description of the aquifer's annual recharge.

(f) To determine the capacity of a well drilled in alluvial soils when there is no existing data to determine the capacity, a water system shall complete a constant discharge (pumping rate) well capacity test and determine the capacity as follows:

(1) Take an initial water level measurement (static water level) and then pump the well continuously for a minimum of eight hours, maintaining the pump discharge rate proposed in subsection (e)(2);

(2) While pumping the well, take measurements of the water level drawdown and pump discharge rates for a minimum of eight hours at a frequency no less than every hour;

(3) Plot the drawdown data versus the time data on semi-logarithmic graph paper, with the time intervals on the horizontal logarithm axis and the drawdown data on the vertical axis;

(4) Steady-state is indicated if the last four hours of drawdown measurements and the elapsed time yield a straight line in the plot developed pursuant to subsection (3). If steady-state is not achieved, the pump discharge rate shall be continued for a longer period of time or adjusted, with paragraphs (2) and (3) above repeated, until steady-state is achieved.

(5) Discontinue pumping and take measurements of the water level drawdown no less frequently than every 15 minutes for the first two hours and every hour thereafter for at least six hours or until the test is complete; and

(6) To complete the test, the well shall demonstrate that, within a length of time not exceeding the duration of the pumping time of the well capacity test, the water level has recovered to within two feet of the static water level measured at the beginning of the test or to a minimum of ninety-five percent of the total drawdown measured during the test, whichever is more stringent.

(7) The capacity of the well shall be the pump discharge rate determined by a completed test.

(g) The capacity of a well whose primary production is from a bedrock formation, such that the water produced is yielded by secondary permeability features (e.g., fractures or cracks), shall be determined pursuant to either paragraph (1) or (2) below.

(1) The public water system shall submit a report, for State Board review and approval, proposing a well capacity based on well tests and the evaluation and management of the aquifer from which the well draws water. The report shall be prepared and signed by a California registered geologist with at least three years of experience with groundwater hydrology, a California licensed engineer with at least five years of experience with groundwater hydrology, or a California certified hydrogeologist. Acceptance of the proposed well capacity by the State Board shall, at a minimum, be based on the State Board's review and approval of the following information presented in the report in support of the proposed well capacity:

(A) The rationale for the selected well test method and the results;

(B) The geological environment of the well;

(C) The historical use of the aquifer;

(D) Data from monitoring of other local wells;

(E) A description of the health risks of contaminants identified in a source water assessment, as defined in section 64401.57 of Title 22, and the likelihood of such contaminants being present in the well's discharge;

(F) Impacts on the quantity and quality of the groundwater;

(G) How adjustments were made to the estimated capacity based on drawdown, length of the well test, results of the wells test, discharge options, and seasonal variations and expected use of the well; and

(H) The well test(s) results and capacity analysis.

(2) During the months of August, September, or October, conduct either a 72-hour well capacity test or a 10-day well capacity test, and determine the well capacity using the following procedures:

(A) Procedures for a 72 hour well capacity test:

1. For the purpose of obtaining an accurate static water level value, at least twelve hours before initiating step 2., pump the well at the pump discharge rate proposed in subsection (e)(2) for no more than two hours, then discontinue pumping;

2. Measure and record the static water level and then pump the well continuously for a minimum of 72 hours starting at the pump discharge rate proposed in (e)(2);

3. Measure and record water drawdown levels and pump discharge rate:

a. Every thirty minutes during the first four hours of pumping,

b. Every hour for the next four hours, and

c. Every four hours thereafter until the water drawdown level is constant for at least the last four remaining measurements, and;

4. Plot the drawdown and pump discharge rate data versus time data on semi-logarithmic graph paper, with the time intervals on the horizontal logarithmic axis and the drawdown and pump discharge rate data on the vertical axis.

(B) Procedures for a 10 day well capacity test:

1. For the purpose of obtaining an accurate static water level value, at least twelve hours before initiating step 2., pump the well at the pump discharge rate proposed in subsection (e)(2) for no more than two hours, then discontinue pumping;

2. Measure and record the static water level and then pump the well continuously for a minimum of 10 days starting at the pump discharge rate proposed in (e)(2);

3. Measure and record water drawdown levels and pumping rate:

a. Every thirty minutes during the first four hours of pumping,

b. Every hour for the next four hours,

c. Every eight hours for the remainder of the first four days,

d. Every 24 hours for the next five days, and

e. Every four hours thereafter until the water drawdown level is constant for at least the last four remaining measurements, and;

4. Plot the drawdown and pump discharge rate data versus time data on semi-logarithmic graph paper, with the time intervals on the horizontal logarithmic axis and the drawdown and pump discharge rate data on the vertical axis.

(C) To complete either the 72-hour or 10-day well capacity test the well shall demonstrate that, within a length of time not exceeding the duration of the pumping time of the well capacity test, the water level has recovered to within two feet of the static water level measured at the beginning of the well capacity test or to a minimum of ninety-five percent of the total drawdown measured during the test, whichever is more stringent. If the well recovery does not meet these criteria, the well capacity cannot be determined pursuant to subsection (g)(2) using the proposed pump rate. To demonstrate meeting the recovery criteria, the following water level data in the well shall be measured, recorded, and compared with the criteria:

1. Every 30 minutes during the first four hours after pumping stops,

2. Hourly for the next eight hours, and

3. Every 12 hours until either the water level in the well recovers to within two feet of the static water level measured at the beginning of the well capacity test or to a at least ninety-five percent of the total drawdown measured during the test, which ever occurs first.

(D) Following completion of a 72-hour or 10-day well capacity test, the well shall be assigned a capacity no more than:

1. For a 72-hour test, 25 percent of the pumping rate at the end of a completed test's pumping.

2. For a 10-day test, 50 percent of the pumping rate at the end a completed test's pumping.

(h) The public water system shall submit a report to the State Board that includes all data and observations associated with a well capacity test conducted pursuant to subsection (f) or (g), as well as the estimated capacity determination methods and calculations. The data collected during pumping and recovery phases of the well capacity tests shall be submitted in an electronic spreadsheet format in both tabular and graphic files.

(i) An assigned well capacity may be revised by the State Board if pumping data collected during normal operations indicates that the assigned well capacity was not representative of the actual well capacity.

(j) If directed by the State Board to do so, based on adverse conditions that may lead or may have led to a regional aquifer's inability to meet a water system's demand on such an aquifer, the water system shall submit a report to the State Board that includes regional aquifer recharge estimates and a water balance analysis. The report shall be prepared and signed by a California registered geologist with at least three years of experience with groundwater hydrology, a California licensed engineer with at least five years of experience with groundwater hydrology, or a California certified hydrogeologist.

(k) The source capacity of a surface water supply or a spring shall be the lowest anticipated daily yield based on adequately supported and documented data.

(l) The source capacity of a purchased water connection between two public water systems shall be included in the total source capacity of the purchaser if the purchaser has sufficient storage or standby source capacity to meet user requirements during reasonable foreseeable shutdowns by the supplier.

Notes

Cal. Code Regs. Tit. 22, § 64554
Note: Authority cited: Sections 116271, 116350 and 116375, Health and Safety Code. Reference: Sections 116275, 116375, 116540 and 116555, Health and Safety Code.

1. New section filed 2-8-2008; operative 3-9-2008 (Register 2008, No. 6).
2. Change without regulatory effect amending subsections (e), (g)(1) and (h)-(j) and amending Note filed 6-2-2015 pursuant to section 100, title 1, California Code of Regulations (Register 2015, No. 23).
3. Amendment of subsection (g)(1)(E) filed 6-17-2021; operative 7-1-2021 pursuant to Government Code section 11343.4(b)(3) (Register 2021, No. 25). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20.

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Appendix G – FWC 2021 WMP - Existing System Design Capacity Tables

Table 8.1 Existing System Water Supply Capacity Analysis

Discharge Pressure Zone	Zone with Storage?	Existing Supply Source	Supply Capacity		ADD	MDD[3]	Existing PHD[4]	Maximum Zone Fire Flow (MFF)	Governing Size Criteria	Total Required Capacity	Supply Balance	Firm Supply Balance	Zone Transfer Description/ Recommended Supply[5]	Zone Transfer	Proposed Well Capacity	Surplus with Recommendations and Transfers
			Available Capacity[1]	Firm Supply Capacity[2]												
			(gpm)	(gpm)	(gpm)	(gpm)	gpm	gpm		gpm	(gpm)	(gpm)		(gpm)	(gpm)	(gpm)
Alder	Yes	*Well F4A*	*O.O.S (1,900)*	*O.O.S*	7,288	12,390	19,823	4,000	MDD				*Activate Well F4A (Packer or Blended at Plant F10)*		1,900	
		Well F18A	*O.O.S (2,400)*	*O.O.S*												
		Well F2A	*O.O.S (2,321)*	*O.O.S*									*Activate Well F2A (Packer)*		2,321	
		Well F44A	2,232	2,232												
		Well F44B	2,300	2,300									*Bring Already Drilled Well F31B Online*		1,500	
		Well F44C	2,438	largest out									*New Well F31C*		1,500	
		Well F31A	1,268	1,268												
Alder Reduced	No				119	202	324	4,000	MDD+FF							
Alder Zone Grouped Subtotal			**8,238**	**5,800**	**7,407**	**12,592**	**20,147**	**4,000**	**MDD**	**12,592**	**-4,354**	**-6,792**		**0**	**7,221**	**429**
Baseline	Yes				1,988	3,380	5,407	4,000	MDD							
		Well F7A	2,369	2,369												
		Well F7B	2,501	largest out												
		Well F22A	*O.O.S (1,843)*	*O.O.S*									*Install New Well F30B to Replace Inactive Well F30A*		2,000	
		Well F30A	*O.O.S (1,017)*	*O.O.S*												
Baseline Zone Subtotal			**4,870**	**2,369**	**1,988**	**3,380**	**5,407**	**4,000**	**MDD**	**3,380**	**1,490**	**-1,011**		**0**	**2,000**	**989**
Juniper	Yes	Well F17B	2,132	2,132	4,806	8,170	13,072	4,000	MDD							
		Well F17C	2,955	largest out												
		Well F21B	2,384	2,384									*New Well F21C to Replace Well F18A*		2,500	
		Well F23A	1,215	1,215									*New Wells F23B and F23C at or near Plant F23*		4,000	
Juniper Reduced	No				2,054	3,492	5,587	4,000	MDD+FF							
Juniper Zone Grouped Subtotal			**8,686**	**5,731**	**6,860**	**11,662**	**18,659**	**4,000**	**MDD**	**11,662**	**-2,976**	**-5,931**		**0**	**6,500**	**569**
Highland	Yes	Well F24A	1,829	1,829	2,029	3,449	5,519	4,000	MDD							
		Well F26A	1,915	1,915												
		Well F28A	834	834												
		Well F29A	699	699												
		Well F32A	624	624												
		Well F34A	116	116												
		Well F36A	1,000	1,000												
		Well F40A	303	303												
		Well F54A	1,022	1,022												
		Summit WTP	8,000	largest out												
Highland Reduced	No	Well F10B	1,107	1,107	1,594	2,710	4,336	4,000	MDD+FF							
		Well F10C	725	725									*Destroy F10C*		-725	
		Well F10D	1,362	1,362	1,026	1,744	2,791	4,000	MDD+FF				*Install new Well F10E to Replace Well F10C*		1,750	
Renaissance	Yes	Well F13A	1,487	1,487												
		Well F13B	1,829	1,829									*Transfer to F19 from Summit WTP via F58*	-4,600		
		Well F49A	1,473	1,473												
Highland Zone Grouped Subtotal			**24,325**	**16,325**	**4,649**	**7,903**	**12,645**	**4,000**	**MDD**	**7,903**	**16,422**	**8,422**		**-4,600**	**1,025**	**4,847**
F19	Yes	Well F15A	1,377	largest out	333	566	906	4,000	MDD							
		Well F27A	210	210									*Destroy Well F27A*		-210	
		Well F33A	310	310									*Install New Well F59A to Replace Well F27A*		1,000	
F19 Reduced - F46	Yes	Well F42A	398	398	1,289	2,191	3,506	4,000	MDD							
F46 Reduced	No				981	1,668	2,668	4,000	MDD+FF				*Transfer from Summit WTP via F58*	4,600		
F46 Special Reduced	No				163	277	443	4,000	MDD+FF							
F47	Yes				110	187	299	4,000	MDD							
F48	No				17	29	46	4,000	MDD+FF							
F48 Reduced	Yes				38	65	103	4,000	MDD							
F19 Zone Grouped Subtotal			**2,295**	**918**	**2,931**	**4,983**	**7,972**	**4,000**	**MDD**	**4,983**	**-2,688**	**-4,065**		**4,600**	**790**	**1,325**
GRAND TOTALS			**48,414**	**31,143**	**23,835**	**40,520**				**40,520**	**7,895**	**-9,377**		**0**	**17,536**	**8,160**

Notes:

(1) Source: 2020 CPUC Report Attachment 1 to Schedule D-1.

(2) Firm capacity assumes largest unit is out of service. The capacities and largest units are based on 2020 data.

(3) MDD to ADD Peaking factor is 1.7.

(4) PHD to MDD Peaking factor is 1.6.

(5) The blue items are recommendations for near-term (2022-2025) improvements.

O.O.S: Out of service

Table 8.3 Existing System Storage Capacity Analysis

Pressure Zone	Existing Storage Facilities	Gravity or Pumped	Usable Storage Capacity (MG)	Existing ADD (mgd)	Existing MDD[1] (mgd)	Existing PHD[2] (mgd)	Operational Storage[3] (MG)	Emergency Storage[4] (MG)	Maximum Fire Flow Required In Zone (gpm)	Fire Flow Duration (hours)	Fire Storage (MG)	Total Storage Required (MG)	Zone Deficit (-)/ Surplus (+) (MG)	Zone Transfer Description/ *Recommended Storage*[5]	Zone Transfer (MG)	Proposed Storage Capacity (MG)	Surplus with Recommendations and Transfers (MG)
F48	F48W	Gravity	0.15	0.02	0.03	0.05	0.01	0.02	1,000	1				*New Reservoir on Land nearby Plant F47*		*0.70*	
	F48E	Gravity	0.39														
F48 Reduced				0.06	0.10	0.16	0.03	0.05	2,500	2							
F47	F47	Gravity	0.19	0.16	0.27	0.44	0.07	0.14	4,000	4							
F48 Zone Grouped Subtotal			***0.73***	***0.24***	***0.41***	***0.65***	***0.11***	***0.20***	***4,000***	***4***	***0.96***	***1.27***	***-0.54***		***0.00***	**0.70**	**0.16**
F19	F19	Gravity	2.08	0.47	0.80	1.28	0.21	0.40	4,000	4				*New Reservoir at Plant F59*		*1.50*	
F19 Reduced - F46	F46	Gravity	1.45	1.86	3.16	5.06	0.84	1.58	4,000	4				*New Second Reservoir at Plant F59*		*2.50*	
F46 Reduced				1.41	2.40	3.84	0.64	1.20	4,000	4							
F46 Special Reduced				0.24	0.41	0.65	0.11	0.20	4,000	4							
F19 Zone Grouped Subtotal			***3.53***	***3.98***	***6.77***	***10.83***	***1.80***	***3.38***	***4,000***	***4***	***0.96***	***6.15***	***-2.62***		**0.00**	**4.00**	**1.38**
Renaissance	F53E	Gravity	1.05	1.48	2.52	4.03	0.67	1.26	4,000	4							
	F53W	Pumped	1.05														
	F58N	Gravity	0.57														
	F58S	Gravity	0.57														
Renaissance Zone Subtotal			***3.24***	***1.48***	***2.52***	***4.03***	***0.67***	***1.26***	***4,000***	***4***	***0.96***	***2.89***	***0.35***		**0.00**	**0.00**	**0.35**
Highland	F10	Pumped	1.97	2.92	4.96	7.94	1.32	2.48	4,000	4							
	F15E	Gravity	3.43														
	F16E	Pumped	0.34											*Demolish Existing Reservoir F10*		*-1.97*	
	F16W	Pumped	0.28											*New Reservoir F10W*		*1.90*	
														New Second Reservoir F10E		*1.90*	
Highland Reduced				2.30	3.91	6.26	1.04	1.96	4,000	4							
Highland Zone Grouped Subtotal			***6.02***	***5.22***	***8.87***	***14.20***	***2.37***	***4.44***	***4,000***	***4***	***0.96***	***7.76***	***-1.74***		**0.00**	**1.83**	**0.09**
Alder	F13W	Gravity	3.49	10.50	17.85	28.56	4.76	8.93	4,000	4				*New Second Reservoir F44W*		*1.00*	
	F13E	Gravity	2.17											*New Second Reservoir F31S*		*0.67*	
	F44	Pumped	0.34											*New Reservoir at Plant F49*		*3.50*	
	F31N	Pumped	0.67											*New Reservoir F13SW*		*3.10*	
Alder Reduced				0.17	0.29	0.46	0.08	0.14	4,000	4							
Alder Zone Grouped Subtotal			***6.67***	***10.67***	***18.14***	***29.02***	***4.84***	***9.07***	***4,000***	***4***	***0.96***	***14.87***	***-8.20***		**0.00**	**8.27**	**0.07**
Baseline	F2	Pumped	0.95	2.86	4.86	7.78	1.30	2.43	4,000	4				*Demolish Existing Reservoir F2*		*-0.95*	
	F7	Pumped	0.96											*New Reservoir F2*		*2.00*	
														New Second Reservoir at Plant F7		*1.73*	
Baseline Zone Subtotal			***1.91***	***2.86***	***4.86***	***7.78***	***1.30***	***2.43***	***4,000***	***4***	***0.96***	***4.69***	***-2.78***		**0.00**	**2.78**	**0.00**
Juniper	F9	Gravity	0.37	6.92	11.76	18.82	3.14	5.88	4,000	4				*New Second Reservoir F20N*		*1.10*	
	F17	Pumped	1.97											*New Second Reservoir F21E*		*0.50*	
	F20	Gravity	3.42											*New Second Reservoir at Plant F43*		*1.50*	
	F21	Pumped	0.53											*Demolish Existing Reservoir F9*		*-0.37*	
	F23N	Pumped	0.37											*New Reservoir at Plant F9*		*2.50*	
	F23S	Pumped	0.36														
	F43	Pumped	1.65														
Juniper Reduced				2.96	5.03	8.05	1.34	2.52	4,000	4							
Juniper Zone Grouped Subtotal			***8.67***	**9.88**	**16.80**	**26.87**	**4.48**	**8.40**	***4,000***	***4***	***0.96***	***13.84***	***-5.17***		**0.00**	**5.23**	**0.06**
Grand Total			**30.77**	**34.33**	**58.36**	**93.38**	**15.56**	**29.18**	**N/A**	**N/A**	**6.72**	**51.46**	-20.69		**0.00**	**22.81**	**2.12**

Notes:

(1) MDD peaking factor assumed to be 1.7.

(2) PHD peaking factor assumed to 1.6

(3) Operational Storage is calculated as 4 hours of PHD.

(4) Emergency Storage is calculated as 50% MDD.

(5) The blue items are recommendations for near-term (2022-2025) improvements.

Table 8.4 - Existing System Booster Pump Station Capacity Analysis

Discharge Pressure Zone	Zone with Gravity Storage?	Existing PS	Available Capacity[1]	Firm Pump Station Capacity[2]	Existing ADD	Existing MDD[3]	Existing PHD[4]	Maximum Zone Fire Flow (MFF)	Governing Size Criteria	Total Required Capacity	Existing Capacity Balance	Recommended Improvement	Zone Transfer	Increased Firm Capacity	Zone Deficit/Surplus with Improvements
			gpm	gpm	gpm	gpm	gpm	gpm		gpm	gpm		gpm	gpm	gpm
Juniper	Yes	PS F21	4,460	2,978	4,806	8,170	13,072	4,000	MDD						
		PS F23	5,791	3,984											
		PS F43	15,549	12,820											
		PS F17	13,311	10,864											
Juniper Reduced	No				2,054	3,492	5,587	4,000	MDD+FF						
Juniper Zone Grouped Subtotal			**39,111**	**30,646**	**6,860**	**11,662**	**18,659**	**4,000**	**MDD**	**11,662**	**18,984**		**0**	**0**	**18,984**
Alder	Yes	PS F9	10,482	8,307	7,288	12,390	19,823	4,000	MDD						
		PS F44	15,045	12,483											
		PS F7A	4,220	2,728											
		PS F2A	5,092	3,415											
		PS F10W	3,922	1,946											
Alder Reduced	No				119	202	324	4,000	MDD+FF						
Alder Zone Grouped Subtotal			**38,761**	**28,879**	**7,407**	**12,592**	**20,147**	**4,000**	**MDD**	**12,592**	**16,287**		**0**	**0**	**16,287**
Baseline	No	PS F7B	4,604	2,923	1,988	3,380	5,407	4,000	MDD+FF			*New Booster Station in Baseline*		*4,300*	
		PS F2B	2,305	1,057											
Baseline Zone Subtotal			**6,909**	**3,980**	**1,988**	**3,380**	**5,407**	**4,000**	**MDD+FF**	**7,380**	**-3,400**		**0**	**4,300**	**900**
Highland	Yes	PS F10E	5,340	3,760	2,029	3,449	5,519	4,000	MDD						
		PS F13	13,257	10,593											
		PS F16	13,346	11,089											
Highland Reduced	No				1,594	2,710	4,336	4,000	MDD+FF						
Highland Zone Grouped Subtotal			**31,943**	**25,442**	**3,623**	**6,159**	**9,855**	**4,000**	**MDD**	**6,159**	**19,283**		**0**	**0**	**19,283**
Renaissance	Yes	PS F53	9,500	7,000	1,026	1,744	2,791	4,000	MDD						
Renaissance Zone Subtotal			**9,500**	**7,000**	**1,026**	**1,744**	**2,791**	**4,000**	**MDD**	**1,744**	**5,256**		**0**	**0**	**5,256**
F19	Yes	PS F15	9,403	7,531	333	566	906	4,000	MDD						
F19 Reduced - F46	Yes				1,289	2,191	3,506	4,000	MDD						
F46 Reduced	No				981	1,668	2,668	4,000	MDD+FF						
F46 Special Reduced	No				163	277	443	4,000	MDD+FF						
F19 Zone Grouped Subtotal			**9,403**	**7,531**	**2,766**	**4,702**	**7,524**	**4,000**	**MDD**	**4,702**	**2,829**		**0**	**0**	**2,829**
F47	Yes	PS F46	1,545	551	110	187	299	4,000	MDD						
F47 Zone Subtotal			**1,545**	**551**	**110**	**187**	**299**	**4,000**	**MDD**	**187**	**364**		**0**	**0**	**364**
F48	No	PS F48	459	299	17	29	46	1,000	MDD+FF			*1 New Fire Pump and 1 Standby Pump at 800 gpm each*		960	
F48 Zone Subtotal			**459**	**299**	**17**	**29**	**46**	**1,000**	**MDD+FF**	**1,029**	**-730**		**0**	**960**	**230**
F48 Reduced	Yes	PS F47	551	275	38	65	103	2,500	MDD						
F48 Reduced Zone Subtotal			**551**	**275**	**38**	**65**	**103**	**2,500**	**MDD**	**65**	**210**		**0**	**0**	**210**
Total			**138,182**	**104,603**	**23,835**	**40,520**	**64,831**	**N/A**	**N/A**	**45,520**	**59,084**		**0**	**5,260**	**64,344**

Notes:
(1) Available capacity obtained from recent SCE pump tests.
(2) Firm capacity assumes largest unit is out of service.
(3) MDD to ADD peaking factor is 1.7.
(4) PHD to MDD peaking factor is 1.6.

Appendix 4.3 Speedway Commerce Center II Specific Plan Traffic Study

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Traffic Study

for:

Speedway Commerce Center II Specific Plan

In the County of San Bernardino

Prepared by:

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August 2022

Kimley»Horn

TRAFFIC STUDY
FOR THE PROPOSED
SPEEDWAY COMMERCE CENTER II SPECIFIC PLAN PROJECT
IN THE COUNTY OF SAN BERNARDINO

Prepared by:

Kimley-Horn and Associates, Inc.

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Orange, California 92868
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August 2022

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TRAFFIC STUDY
FOR THE PROPOSED
SPEEDWAY COMMERCE CENTER II SPECIFIC PLAN PROJECT
IN THE COUNTY OF SAN BERNARDINO

INTRODUCTION

Purpose and Study Objectives

This traffic study has been prepared to address the traffic-related issues associated with the proposed Speedway Commerce Center II Specific Plan (SCCIISP) project in unincorporated San Bernardino County. This traffic study has been conducted in accordance with the traffic study requirements of the County of San Bernardino and with the San Bernardino Association of Governments (SANBAG) Congestion Management Program (CMP).

This report includes a description of existing traffic conditions in the surrounding area, estimated project trip generation and distribution, and future traffic growth. Where necessary, circulation system improvements have been identified to address future traffic condition needs at the study locations. It should be noted that this LOS-based traffic study is not a CEQA-required document and does not identify impacts or mitigation.

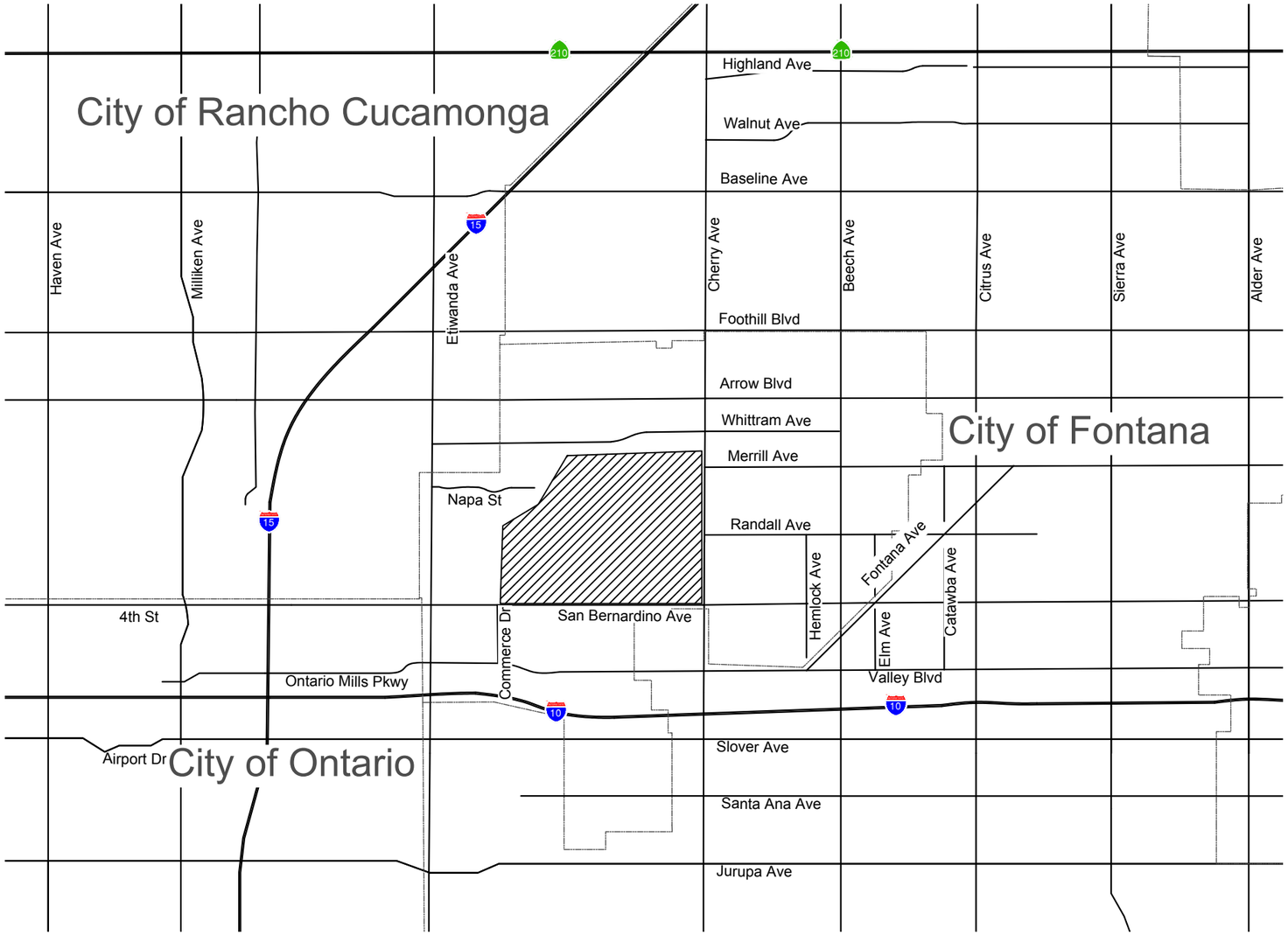
PROJECT DESCRIPTION

Project Overview

The project site is located north of the San Bernardino Freeway (I-10) and San Bernardino Avenue in unincorporated San Bernardino County and within the City of Fontana Sphere of Influence (SOI). The project site is bounded by Cherry Avenue to the east, the Burlington Northern and Santa Fe (BNSF) Railroad to the north, the West Valley Materials Recycling Facility to the west, and California Steel Industries to the south and would surround the Auto Club Speedway (ASC) generally on three sides. The site is shown in its regional setting on Figure 1.

The Project encompasses approximately 433 acres of the approximately 522-acre site that is currently developed with the Auto Club Speedway (ACS), formerly California Speedway, in the County. The Project proposes conceptual land uses that include, but are not limited to, approximately 6.6 million square feet (SF) of high cube warehouse and e-commerce uses with approximately 12 acres (261,360 SF) of accessory commercial uses[1]. The Project site would also be developed with greenbelts, public roads, other support amenity features, and water detention areas. Construction of the Project, including recordation of final subdivision map(s) and design review may be progressively implemented in stages, provided that vehicular access, public facilities, and infrastructure are constructed to adequately service the development, or as needed for public health and safety. However, the actual phasing sequence and timeframe may vary depending on market conditions. A copy of the project site plan is provided on Figure 2.

[1] The Project would be developed in two phases. Phase 1 including E-Commerce and Truck Storage, and Phase 2 including High-Cube Short-Term Storage, High-Cube Cold Storage, and Commercial. Additional information can be found on Page 46 of this report.



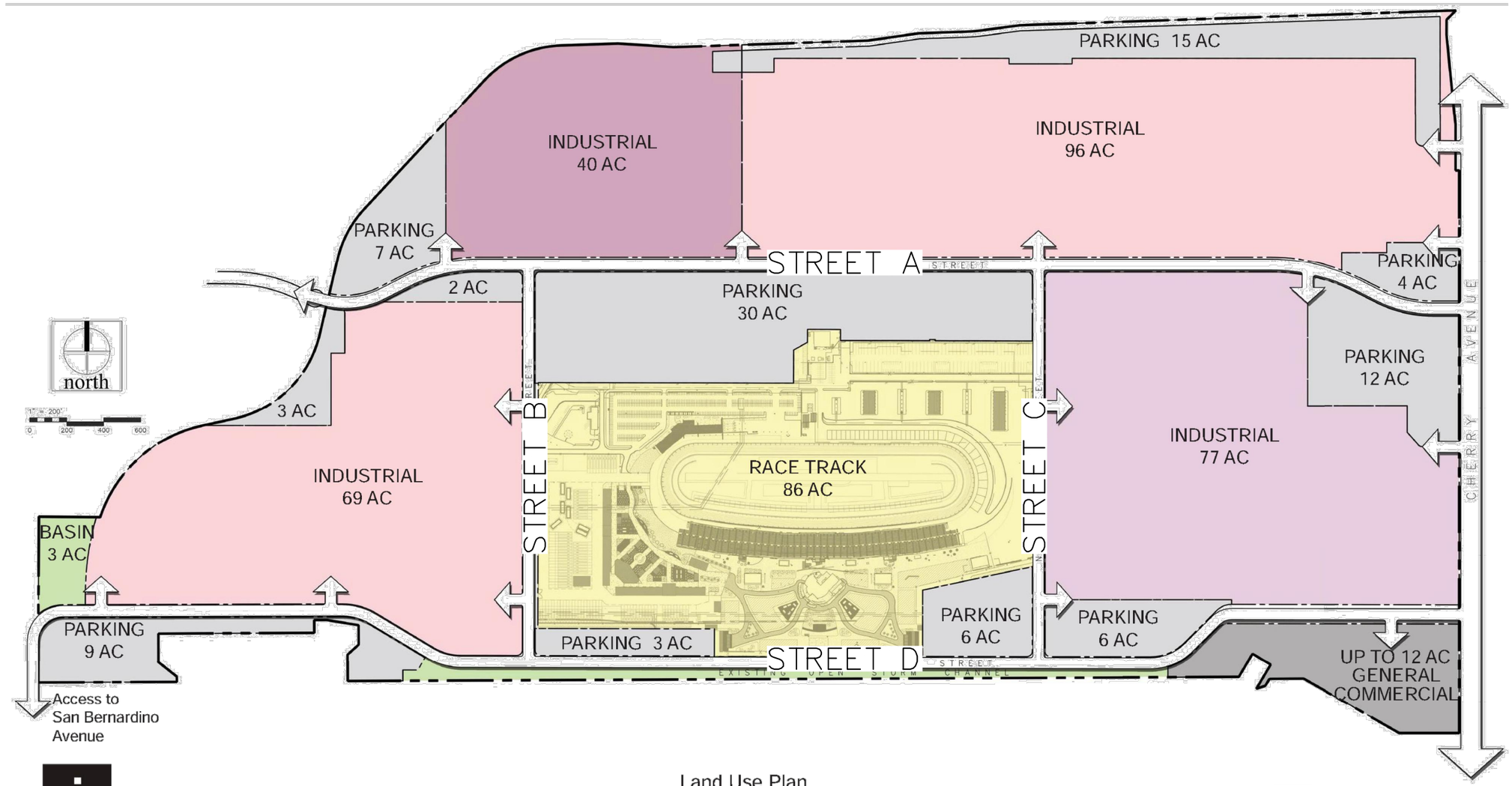
NOT TO SCALE

LEGEND:

= Project Site

FIGURE 1
VICINITY MAP

NOT TO SCALE



Land Use Plan

Speedway Commerce Center II

FIGURE 2
SITE PLAN

PROPOSED SITE CIRCULATION

The Project site currently has access at Merrill Avenue, Rancho Vista Drive, and Randall Avenue off of Cherry Avenue on the site's eastern edge, and Napa Street and VIP Road on the site's western edge. The access at Randall Avenue is signalized.

Internal circulation currently includes Perimeter Road, Calabash Avenue, Back Strait Road, VIP Road, Entry Road, and Rancho Vista Drive. These internal roads may be modified or enhanced to accommodate the traffic trips anticipated with the Project. Private drives aisles are proposed to connect individual buildings within the Project area. Drive aisles would be located and sized at the time of review.

Vehicular Circulation

Four new public roads would be constructed to provide access to the Specific Plan's land uses and ACS. Vehicular circulation improvements proposed as part of the Project are as follows:

Cherry Avenue – Cherry Avenue is an existing roadway for which no improvements are proposed.

Street "A" - Street "A" is a proposed east-west public roadway which would be designed as a collector roadway. It would connect Cherry Avenue on the Project's eastern edge with existing Napa Street on the west. It would form an intersection with Rancho Vista Drive to the east of Cherry Avenue. Street "A" improvements would consist of a 96-foot right-of-way with four travel lanes, a 14-foot-wide painted median, and pedestrian walkways and parkway plantings. A 10-foot-wide multi-use pathway is proposed on the northern edge of the street. It is anticipated that the intersections of Street "A" at Street "B" and Street "A" at Street "C" would be signalized.

Street "D" - Street "D" is a proposed east-west public roadway which would be designed as a collector roadway. Street "D" would connect Cherry Avenue on the Project area's eastern edge and existing VIP Road on its western edge. The cross section for Street "D" is variable, with several different conditions and rights-of-way. See the Specific Plan for further details. It is anticipated that the intersections of Street "D" at Street "B" and Street "D" at Street "C" would be unsignalized.

VIP Access Road - VIP Access Road is an existing street which connects Street "D" (the existing southern perimeter road) to San Bernardino Avenue to the south. Improvements to VIP Road include a 50-foot right-of-way with two southbound travel lanes and one northbound travel lane.

Street's "B" and "C" - Street's "B" and "C" are proposed north-south public roadway which would be designed as collector roadways. They would serve as internal circulation routes and connect Street's "A" and "D". These streets would also serve as a pedestrian connection between the ACS and the seasonal Metrolink transit stop. Improvements for Streets "B" and "C" include a 60-foot right-of-way with two travel lanes, a 12-foot painted median, and six-foot sidewalks.

Transit/Rail

There are no existing public transit routes or stops adjacent to the Project area. The closest Omnitrans Transit System routes are Route 66 along W. Foothill Boulevard and Route 61 along San Bernardino Avenue. As the Project develops, the Transit System may assess the potential demand for these facilities in the area and may establish new or extended routes in the area. Coordination with Omnitrans would be required as the Project builds out to determine the need for future bus service to the Project site.

Metrolink is a commuter rail system serving Southern California region including Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties, as well as to Oceanside in San Diego County. Metrolink has an existing rail line adjacent to the Project area's northern boundary. The closest Metrolink stops are located approximately 3.5 miles east and west of the project site.

Bike/Pedestrian Facilities

Sidewalks would be provided on all street sections within the Project area. For Street "A", a 10-foot-wide multi-purpose trail would be provided for internal connectivity.

ANALYSIS SCENARIOS AND METHODOLOGY

Analysis Scenarios

In accordance with the traffic study requirements of the County of San Bernardino, the project will be evaluated in the morning and evening peak hours for the following conditions:

- Existing Conditions
- Opening Year 2024
- Opening Year 2024 Plus Phase 1
- Opening Year 2027
- Opening Year 2027 Plus Project (Phases 1 and 2)
- Horizon Year 2040
- Horizon Year 2040 Plus Project

Study Locations

The study locations were established in consultation with County staff through the Scoping Agreement process. A copy of the approved Scope of Study Form is provided in *Appendix A*.

Study Intersections:

1. Cherry Ave at SR-210 WB Ramps
2. Citrus Ave at SR-210 WB Ramps
3. Sierra Ave at SR-210 WB Ramps
4. Cherry Ave at SR-210 EB Ramps
5. Citrus Ave at SR-210 EB Ramps
6. Sierra Ave at SR-210 EB Ramps
7. Beech Ave at Highland Ave
8. Citrus Ave at Highland Ave
9. Sierra Ave at Highland Ave
10. Etiwanda Ave at Base Line Rd
11. I-15 SB Ramps at Base Line Rd
12. I-15 NB Ramps at Baseline Ave
13. Cherry Ave at Baseline Ave
14. Beech Ave at Baseline Ave
15. Citrus Ave at Baseline Ave
16. Sierra Ave at Baseline Ave
17. Etiwanda Ave at Church St/Miller Ave
18. I-15 SB Ramps at Foothill Blvd
19. I-15 NB Ramps at Foothill Blvd
20. Etiwanda Ave at Foothill Blvd
21. Cherry Ave at Foothill Blvd
22. Beech Ave at Foothill Blvd
23. Citrus Ave at Foothill Blvd
24. Sierra Ave at Foothill Blvd
25. Etiwanda Ave at Arrow Rte
26. Cherry Ave at Arrow Rte
27. Beech Ave at Arrow Rte
28. Citrus Ave at Arrow Rte
29. Sierra Ave at Arrow Rte
30. Etiwanda Ave at Whittram Ave
31. Cherry Ave at Whittram Ave
32. Beech Ave at Whittram Ave
33. Etiwanda Ave at Napa St
34. Cherry Ave at Merrill Ave
35. Beech Ave at Merrill Ave
36. Citrus Ave at Merrill Ave
37. Sierra Ave at Merrill Ave
38. Citrus Ave at Fontana Ave
39. Cherry Ave at Randall Ave
40. Beech Ave at Randall Ave
41. Fontana Ave/Catawba Ave at Randall Ave
42. Citrus Ave at Randall Ave
43. Sierra Ave at Randall Ave
44. I-15 SB Ramps/Ontario Mills Dr at Fourth St
45. I-15 NB Ramps at Fourth St
46. Etiwanda Ave at Fourth St/San Bernardino Ave
47. Commerce Dr at San Bernardino Ave
48. VIP Rd at San Bernardino Ave
49. Cherry Ave at San Bernardino Ave
50. Beech Ave at San Bernardino Ave
51. Fontana Ave/Elm Ave at San Bernardino Ave
52. Citrus Ave at San Bernardino Ave
53. Sierra Ave at San Bernardino Ave
54. Beech Ave at Fontana Ave
55. Etiwanda Ave at Valley Blvd
56. Commerce Dr/I-10 Ramps at Valley Blvd
57. Cherry Ave at Valley Blvd
58. Fontana Ave/Hemlock Ave at Valley Blvd
59. Beech Ave at Valley Blvd
60. Citrus Ave at Valley Blvd
61. Sierra Ave at Valley Blvd
62. Etiwanda Ave at I-10 WB-Ramps
63. Cherry Ave at I-10 WB Ramps
64. Citrus Ave at I-10 WB Ramps
65. Etiwanda Ave at I-10 EB Ramps
66. Cherry Ave at I-10 EB Ramps
67. Citrus Ave at I-10 EB Ramps
68. Sierra Ave at I-10 EB/WB Ramps
69. Milliken Ave at Arrow Rte
70. Rochester Ave at Arrow Rte
71. Cherry Ave at Slover Ave
72. Cherry Ave at Santa Ana Ave

Existing lane configurations and traffic control at the study intersections are shown on Figure 3.

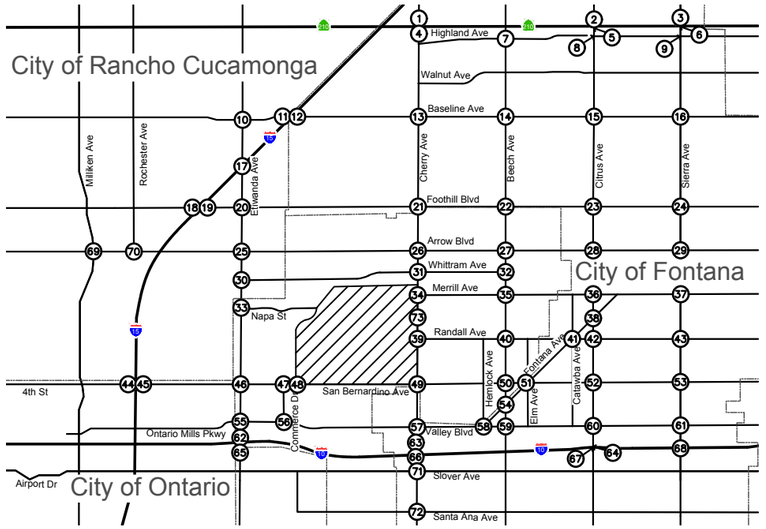
Intersection Analysis – HCM Methodology

Peak hour intersection operations were evaluated using the methodology outlined in the Highway Capacity Manual (HCM), consistent with the requirements of the County of San Bernardino and the San Bernardino County CMP. The intersection analysis was conducted using the Vistro software program and using the input parameters specified in the San Bernardino County CMP.

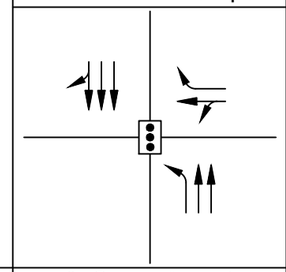
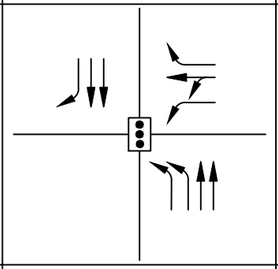
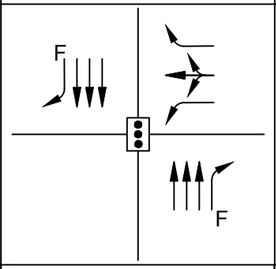
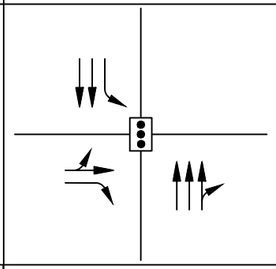
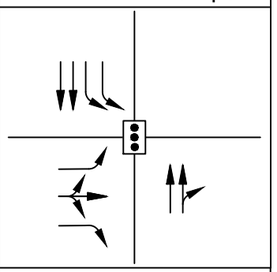
Per the HCM Methodology, Level of Service (LOS) for signalized intersections is defined in terms of average vehicle delay. Specifically, LOS criteria are stated in terms of the average control delay per vehicle during the peak hours. The average control delay includes initial deceleration delay, queue move-up time, and final acceleration time in addition to the stop delay.

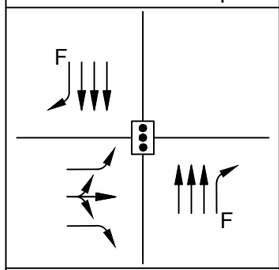
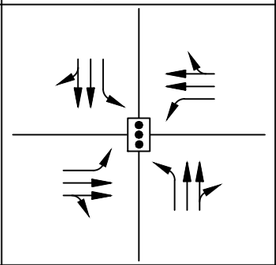
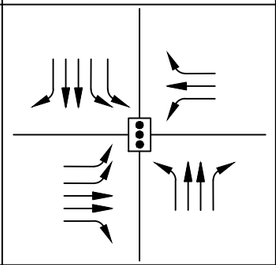
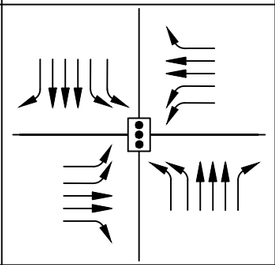
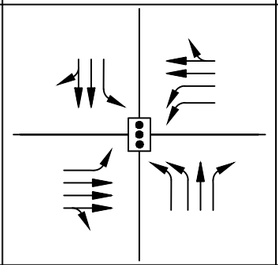
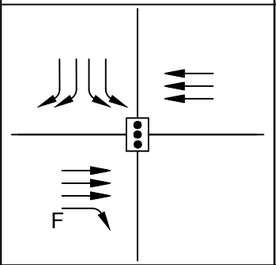
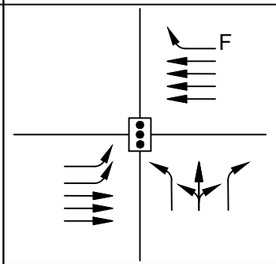
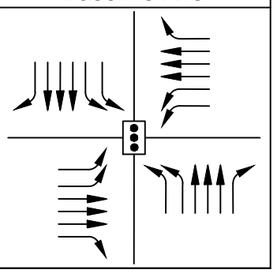
The procedure for unsignalized intersection analysis determines the average total delay, expressed in seconds of delay per vehicle for left turns from the major street and from the stop-controlled minor street traffic stream for a two-way stop controlled (TWSC) intersection. Delay values are calculated based on the relationship between traffic on the major street and the availability of acceptable "gaps" in this stream through which conflicting traffic movements can be made. For TWSC intersections the Level of Service is based on the turning movement with the highest average delay. For an all-way stop controlled (AWSC) intersection the Level of Service is based on the overall intersection delay.

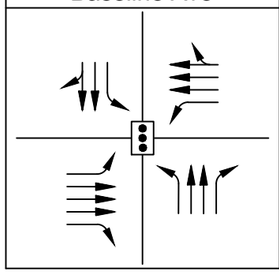
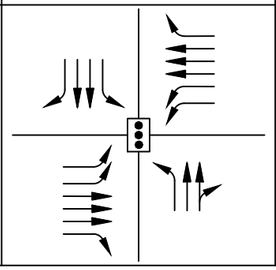
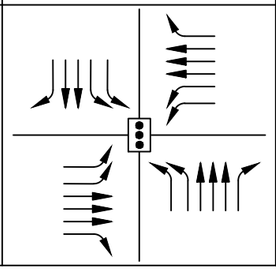
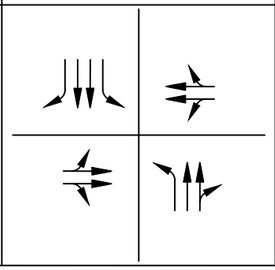
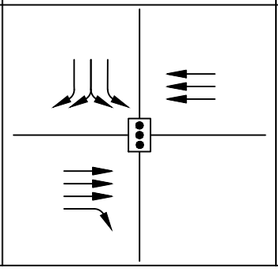
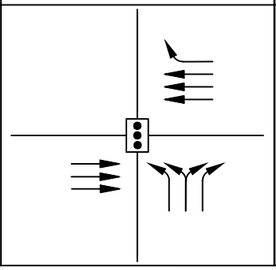
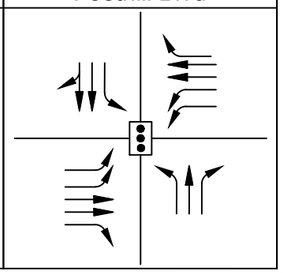
The chart on the following page provides a description of the operating characteristics of each Level of Service and average seconds of delay for signalized and unsignalized intersections.



NOT TO SCALE

1. Cherry Ave at SR-210 WB Ramps	2. Citrus Ave at SR-210 WB Ramps	3. Sierra Ave at SR-210 WB Ramps	4. Cherry Ave at SR-210 EB Ramps	5. Citrus Ave at SR-210 EB Ramps
				

6. Sierra Ave at SR-210 EB Ramps	7. Beech Ave at Highland Ave	8. Citrus Ave at Highland Ave	9. Sierra Ave at Highland Ave	10. Etiwanda Ave at Base Line Rd	11. I-15 SB Ramps at Base Line Rd	12. I-15 NB Ramps at Base Line Rd	13. Cherry Ave at Baseline Ave
							

14. Beech Ave at Baseline Ave	15. Citrus Ave at Baseline Ave	16. Sierra Ave at Baseline Ave	17. Etiwanda Ave at Church St/Miller Ave	18. I-15 SB Ramps at Foothill Blvd	19. I-15 NB Ramps at Foothill Blvd	20. Etiwanda Ave at Foothill Blvd
						

LEGEND:

- X = Study Intersection
- = Turn or Through Lane
- = Signal
- = Stop Sign
- STOP = All Way Stop
- F = Free Right Turn

FIGURE 3A
EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

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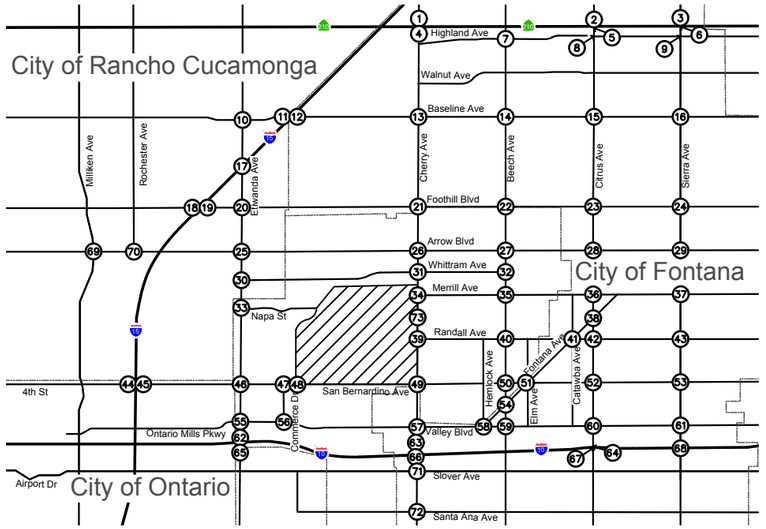

NOT TO SCALE

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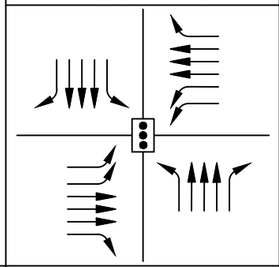	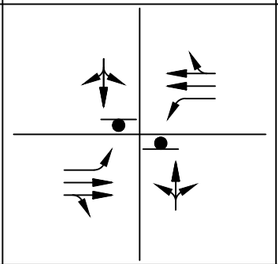	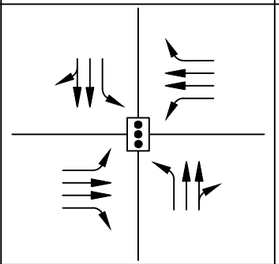	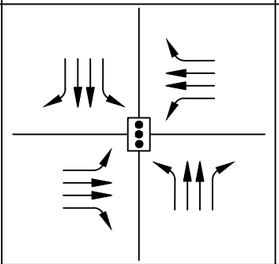	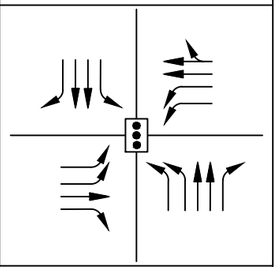

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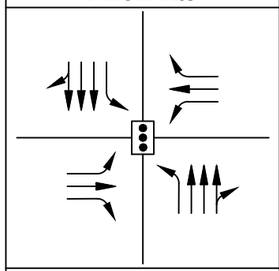
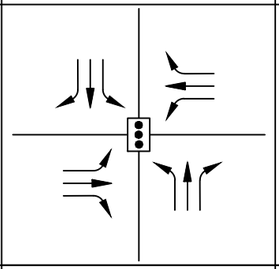
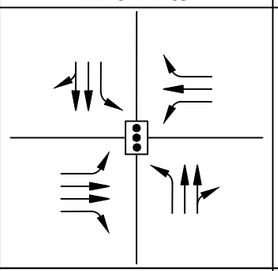
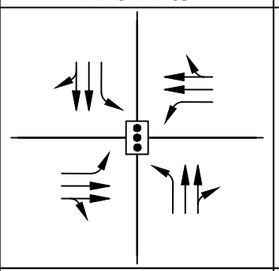
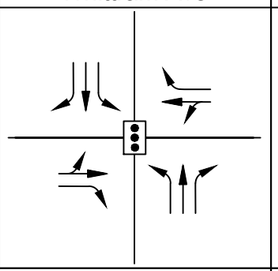
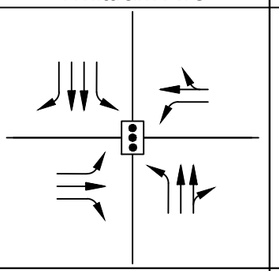
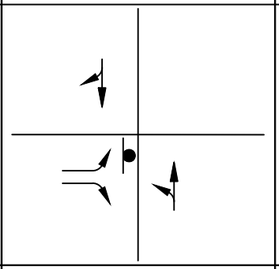
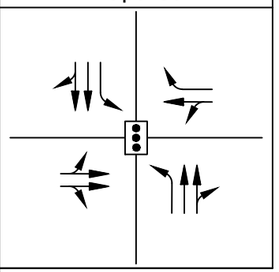
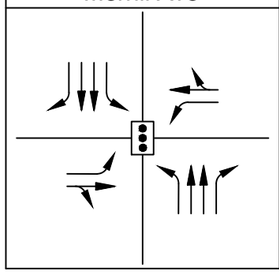
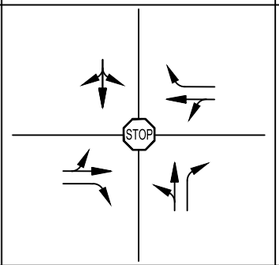
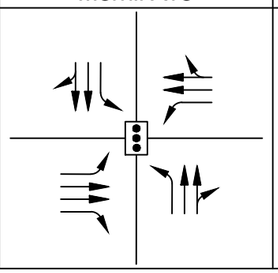
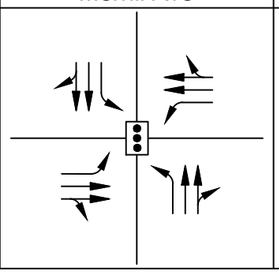
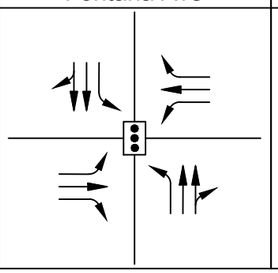
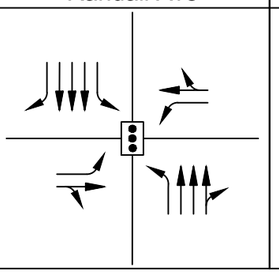
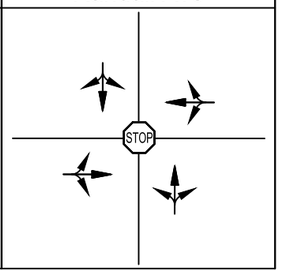
							

34. Cherry Ave at Merrill Ave	35. Beech Ave at Merrill Ave	36. Citrus Ave at Merrill Ave	37. Sierra Ave at Merrill Ave	38. Citrus Ave at Fontana Ave	39. Cherry Ave at Randall Ave	40. Beech Ave at Randall Ave
						

LEGEND:

- X = Study Intersection
- = Turn or Through Lane
- = Signal
- = Stop Sign
- STOP = All Way Stop
- F = Free Right Turn

FIGURE 3B
EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

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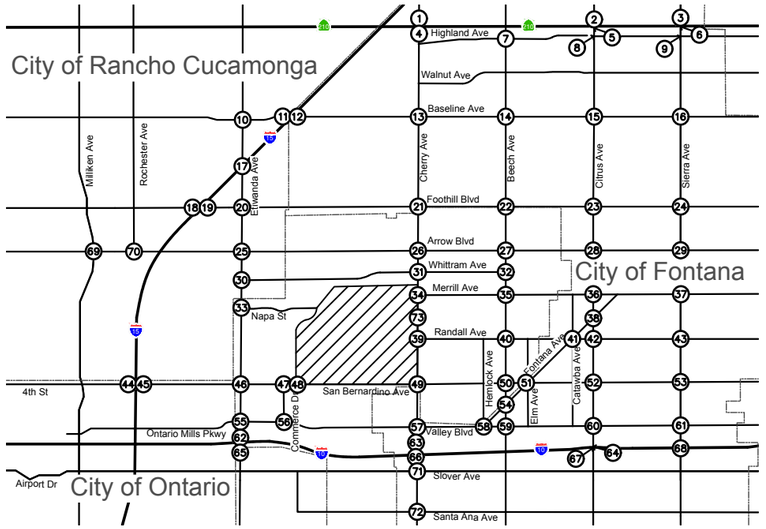
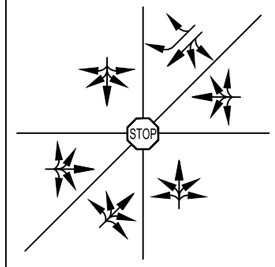
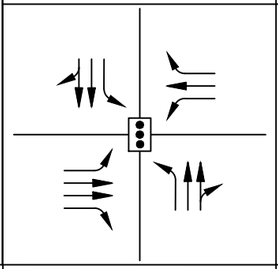


NOT TO SCALE

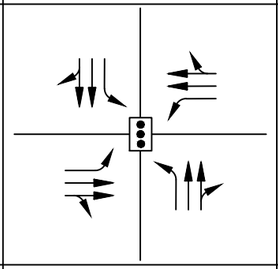
41. Fontana Ave/ Catawba Ave at Randall Ave



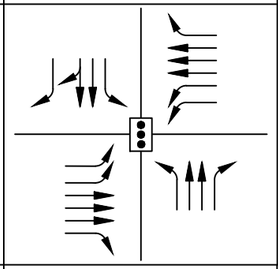
42. Citrus Ave at Randall Ave



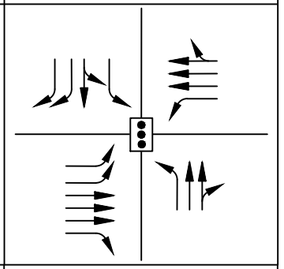
43. Sierra Ave at Randall Ave



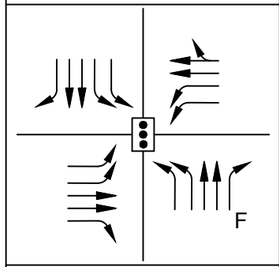
44. I-15 SB Ramps/ Ontario Mills Dr at Fourth St



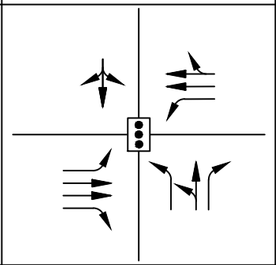
45. I-15 NB Ramps at Fourth St



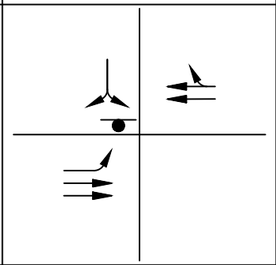
46. Etiwanda Ave at Fourth St/San Bernardino Ave



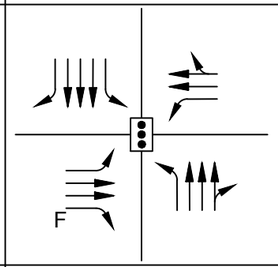
47. Commerce Dr at San Bernardino Ave



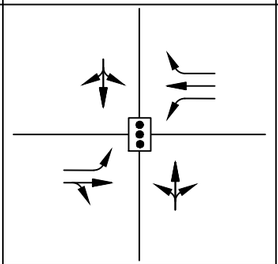
48. Vip Rd at San Bernardino Ave



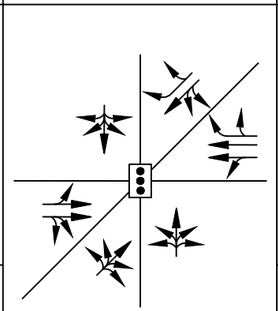
49. Cherry Ave at San Bernardino Ave



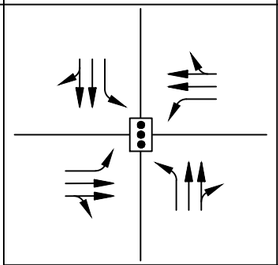
50. Beech Ave at San Bernardino Ave



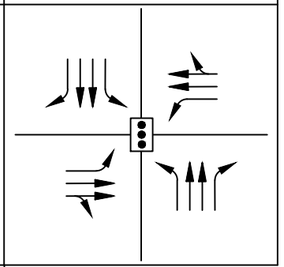
51. Fontana Ave/Elm St at San Bernardino Ave



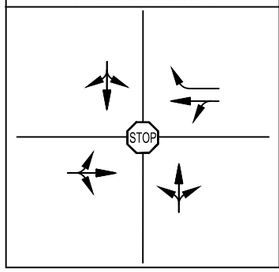
52. Citrus Ave at San Bernardino Ave



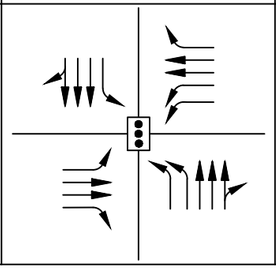
53. Sierra Ave at San Bernardino Ave



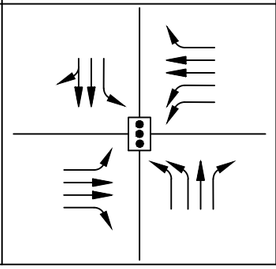
54. Beech Ave at Fontana Ave



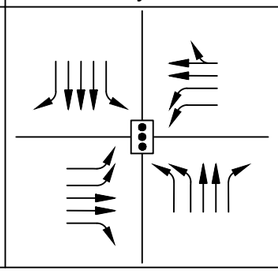
55. Etiwanda Ave at Valley Blvd



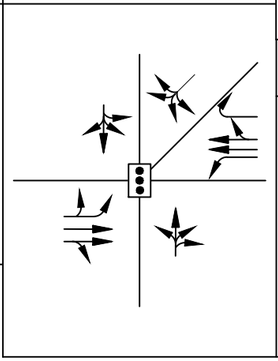
56. Commerce Dr/ I-15 Ramps at Valley Blvd



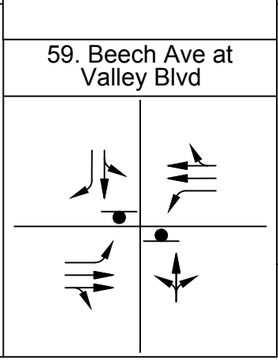
57. Cherry Ave at Valley Blvd



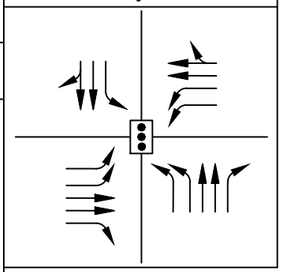
58. Fontana Ave/ Hemlock Ave at Valley Blvd



59. Beech Ave at Valley Blvd



60. Citrus Ave at Valley Blvd

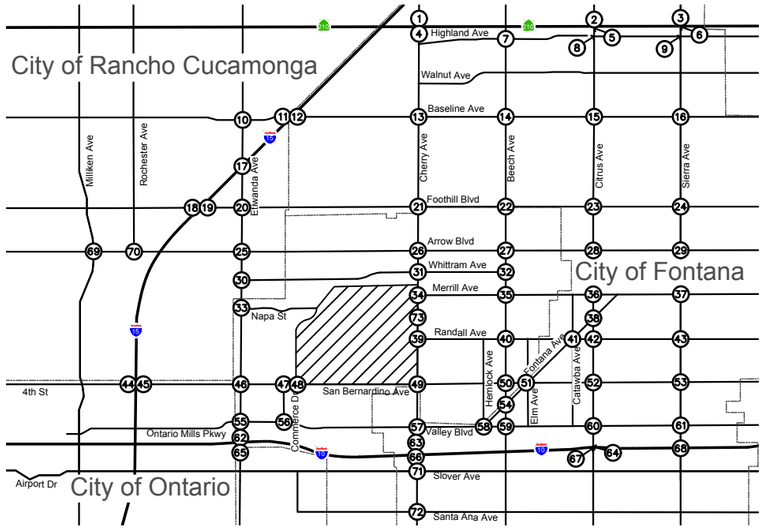


LEGEND:

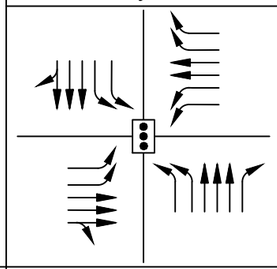
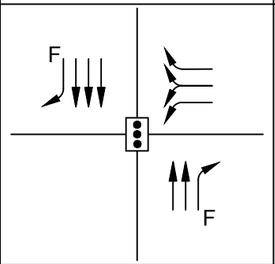
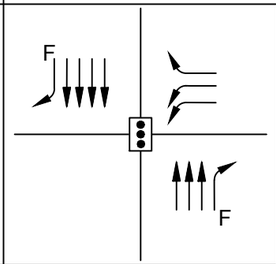
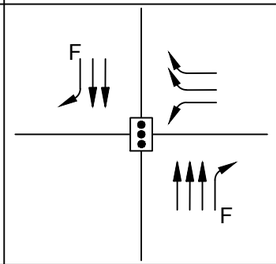
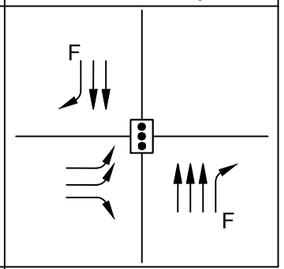
- (X) = Study Intersection
- = Turn or Through Lane
- = Signal
- = Stop Sign
- STOP = All Way Stop
- F = Free Right Turn

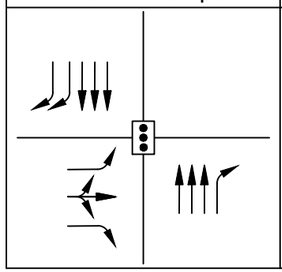
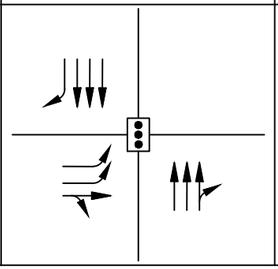
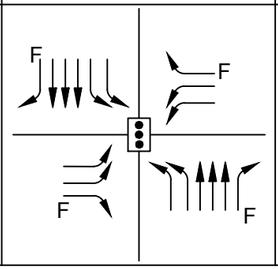
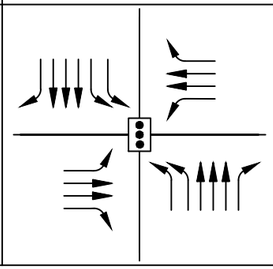
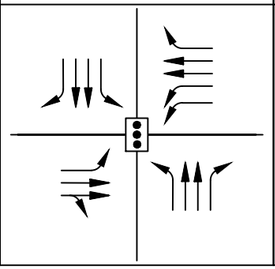
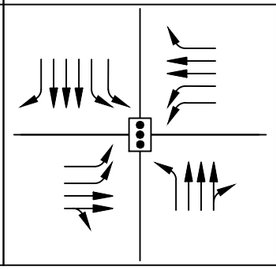
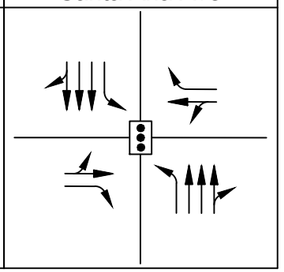
FIGURE 3C
EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

Kimley»Horn



NOT TO SCALE

61. Sierra Ave at Valley Blvd	62. Etiwanda Ave at I-10 WB Off-Ramps	63. Cherry Ave at I-10 WB Ramps	64. Citrus Ave at I-10 WB Ramps	65. Etiwanda Ave at I-10 EB Ramps
				

66. Cherry Ave at I-10 EB Ramps	67. Citrus Ave at I-10 EB Ramps	68. Sierra Ave at I-10 EB/WB Ramps	69. Milliken Ave at Arrow Rte	70. Rochester Ave at Arrow Rte	71. Cherry Ave at Slover Ave	72. Cherry Ave at Santa Ana Ave
						

LEGEND:

- (X) = Study Intersection
- = Turn or Through Lane
- = Signal
- = Stop Sign
- STOP = All Way Stop
- F = Free Right Turn

FIGURE 3D
EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

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LEVEL OF SERVICE DEFINITIONS	
Level of Service	Description
A	No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turns are made easily and nearly all drivers find freedom of operation.
B	This service level represents stable operation, where an occasional approach phase is fully utilized, and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.
C	This level still represents stable operating conditions. Occasionally drivers may have to wait through more than one red signal indication, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted but not objectionably so.
D	This level encompasses a zone of increasing restriction, approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak period; however, enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive backups.
E	Capacity occurs at the upper end of this service level. It represents the most vehicles that any particular intersection approach can accommodate. Full utilization of every signal cycle is seldom attained no matter how great the demand.
F	This level describes forced flow operations at low speeds, where volumes exceed capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially, and stoppages may occur for short or long periods of time due to the congestion. In the extreme case, both speed and volume can drop to zero.

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED AND UNSIGNALIZED INTERSECTIONS		
Level of Service [1]	Signalized Intersections (Average delay per vehicle, in seconds) [2]	Unsignalized Intersections (Average delay per vehicle, in seconds) [3]
A	≤ 10	0 – 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

[1] Per the San Bernardino County CMP, intersections will be considered deficient (LOS F) if the critical v/c ratio equals or exceeds 1.0.
[2] Source: Highway Capacity Manual (HCM 6th Edition), Exhibit 18-4.
[3] Source: Highway Capacity Manual (HCM 6th Edition), Exhibits 19-1 and 20-2.

Level of Service Standards and Measure of Significance

Below are the LOS standards and measures of significance to determine project-related effects by jurisdiction. It should be noted that for study intersections to which the project contributes less than 50 peak hour trips, the project-related effect is considered to be less than significant.

San Bernardino County

The County of San Bernardino minimum Level of Service standards require that intersections in the Valley regions operate at LOS D or better during the morning and evening peak hours.

Traffic effects at signalized intersections are considered locally significant when any of the following occurs between the "without project" and the "plus project" conditions:

- Any signalized study intersection in the Valley region that is operating at an acceptable LOS D or better without project traffic in which the addition of project traffic causes the intersection to degrade to an LOS E or F shall identify improvements to improve operations to LOS D or better.
- Any signalized study intersection in the Valley region that is operating at LOS E or F without project traffic where the project increases delay by 5.0 or more seconds shall identify improvements to offset the increase in delay.

Unsignalized intersections will require operational improvements if the study determines either section a) or both sections b) and c) occur:

a) The addition of project-related traffic causes the intersection to degrade from an LOS D or better to an LOS E or worse in the Valley region.
b) The project adds 5.0 seconds or more of delay to an intersection that is already projected to operate without project traffic at an LOS E or F in the Valley region.
c) One or both of the following conditions are met:
    i. The project adds ten (10) or more trips to any minor street approach
    ii. The intersection meets the peak hour traffic signal warrant after the addition of project traffic.

New development is required to identify improvements at intersections that show a locally significant project effect as shown above and operate at LOS E or worse under "Plus Project" conditions. The Level of Service must be improved to LOS D or better for study intersections.

City of Fontana

The City of Fontana *Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment* (June 2020) establishes minimum Level of Service standards, which require that intersections operate at LOS C or better during the morning and evening peak hours.

Traffic effects are considered significant when the LOS between the "without project" and "plus project" increases by the following thresholds:

With Project LOS	Significance Threshold
A/B	10.0 Seconds
C	8.0 Seconds
D	5.0 Seconds
E	3.0 Seconds
F	1.0 Second

City of Rancho Cucamonga

The City of Rancho Cucamonga *Traffic Impact Analysis Guidelines* (June 2020) establishes minimum Level of Service standards which require that intersections operate at LOS D or better during the morning and evening peak hours. Consistent with the San Bernardino County guidelines, a project-related effect at signalized intersections within the City of Rancho Cucamonga are considered to be locally significant when any of the following occurs between the "without project" and the "plus project" conditions:

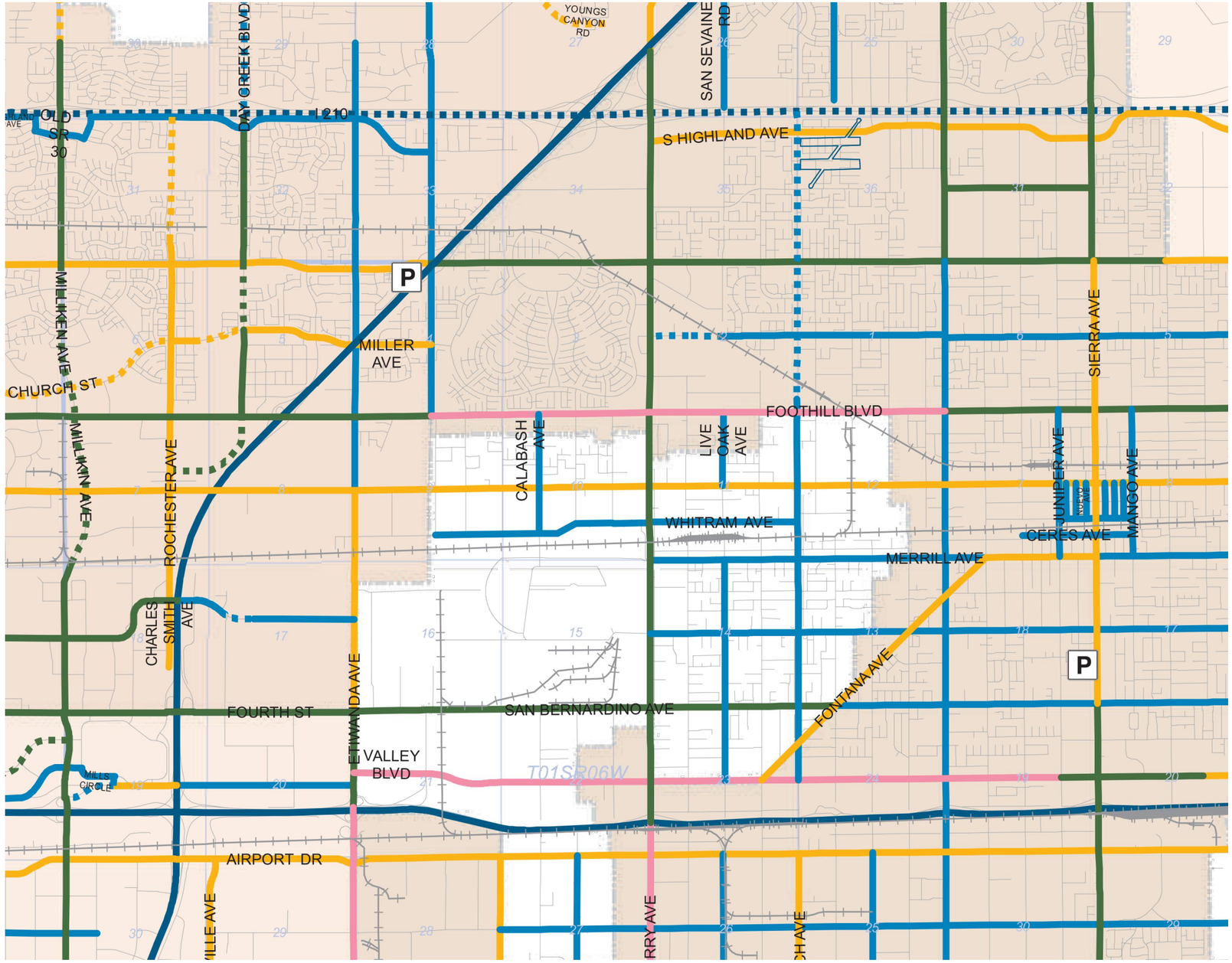
- Any signalized study intersection that is operating at an acceptable LOS D or better without project traffic in which the addition of project traffic causes the intersection to degrade to an LOS E or F shall identify improvements to improve operations to LOS D or better.
- Any signalized study intersection that is operating at LOS E or F without project traffic where the project increases delay by 5.0 or more seconds shall identify improvements to offset the increase in delay.

State-Controlled Intersections (Caltrans)

For State-controlled intersections, if an existing State highway facility is operating at less than LOS D, the existing MOE (measure of effectiveness) should be maintained.

General Plan Circulation Maps

The San Bernardino County General Plan Circulation and Transportation map, the City of Fontana Hierarchy of Streets map, and the City of Rancho Cucamonga Layered Roadway Network map provide roadway designations for the roadway system serving the Specific Plan area and the surrounding vicinity. A copy of the Circulation Maps for San Bernardino County, the City of Fontana, and the City of Rancho Cucamonga, are provides in Figures 4A, 4B, and 4C, respectively.



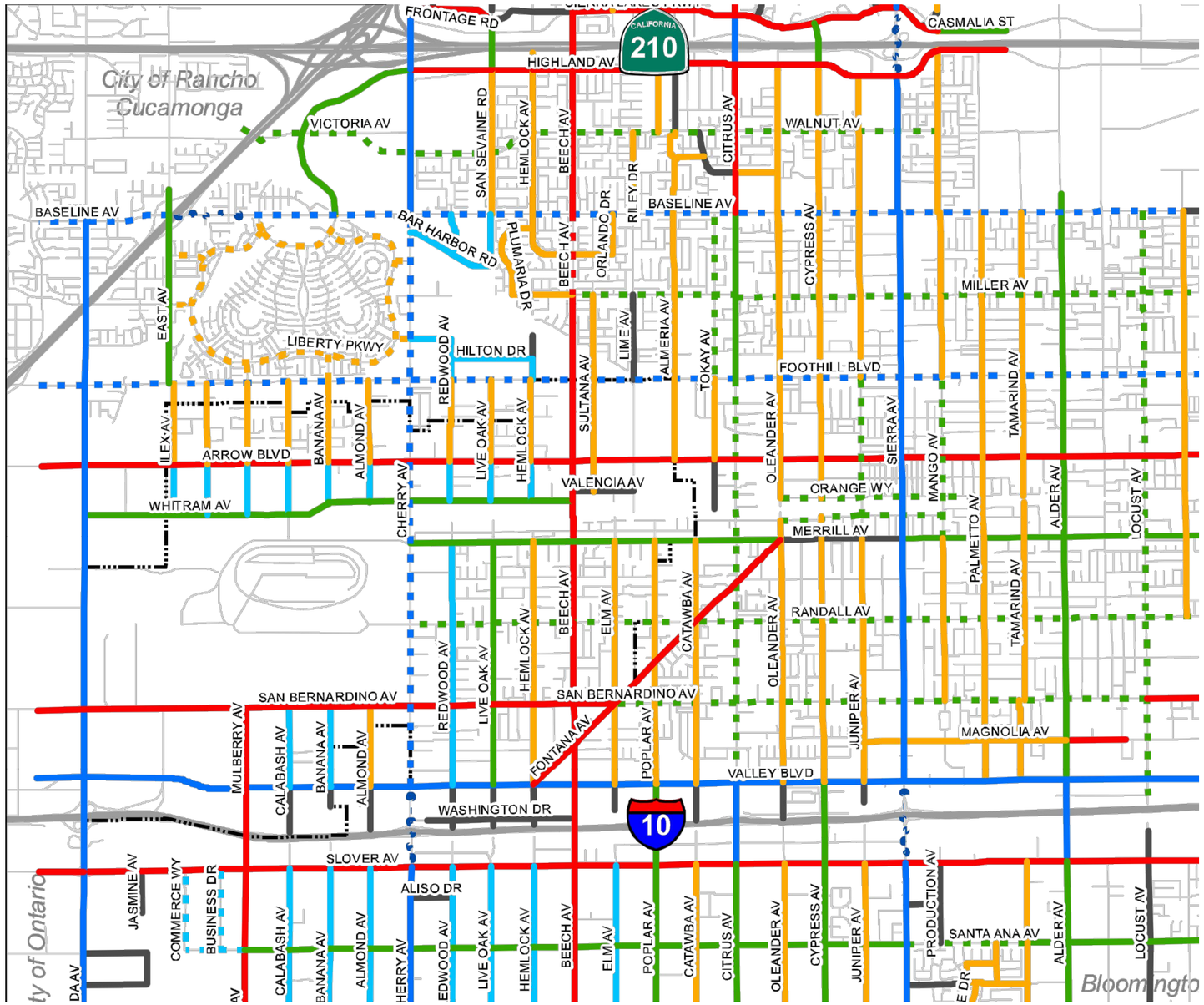
NOT TO SCALE

Legend

Existing	Proposed	
		Freeway
		Major Divided Highway
		Major Arterial Highway
		Major Highway
		Secondary Highway
		Controlled/Limited Access Collector
		Mountain Major Highway
		Mountain Secondary Highway
		State Highway (Special Standards or Conditions)

P Park & Ride — Railroad — × Airport / Airfield

FIGURE 4A
CIRCULATION MAP - SAN BERNARDINO COUNTY



NOT TO SCALE

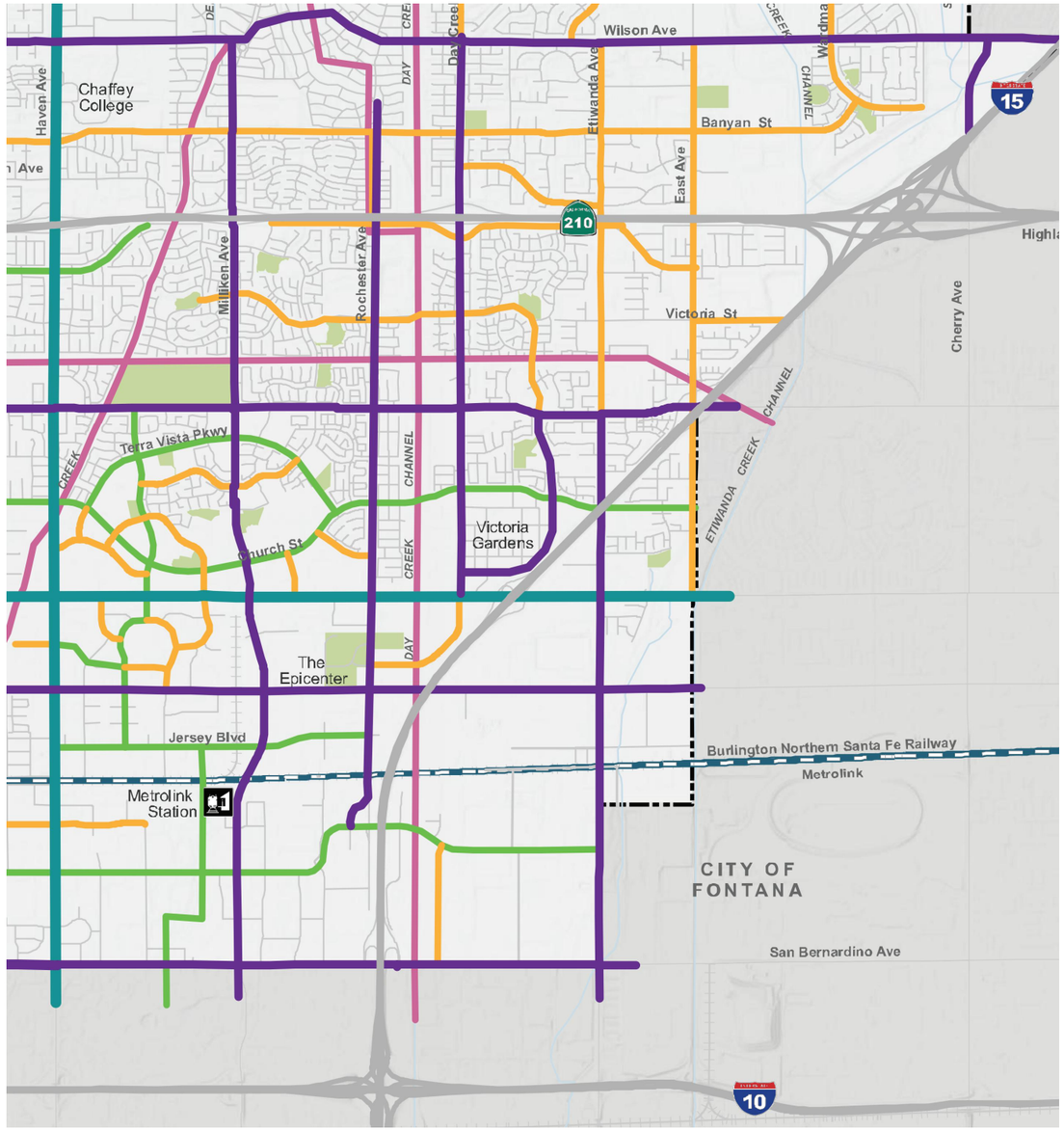
Legend

Roadway Functional Class

- To be determined
- 8 lane major Highway
- Major Highway
- Modified Major Highway
- Primary Highway
- Modified Primary Highway
- Secondary Highway
- Modified Secondary Highway
- Industrial Collector
- Modified Industrial Collector
- Collector Street
- Modified Collector Street
- Fontana Sphere of Influence

FIGURE 4B
CIRCULATION MAP - CITY OF FONTANA

Kimley»Horn



NOT TO SCALE

- Freeway
- Arterial Roadway
- Boulevard
- Collector Street
- Bicycle Corridor
- Multi-Use Trail
- Local Streets

FIGURE 4C
CIRCULATION MAP - CITY OF RANCHO CUCAMONGA

EXISTING TRAFFIC CONDITIONS

Existing Street System

Regional access to the site is provided primarily by the Interstate 10 (I-10) Freeway, located approximately 1.5 mile south of the project site; Interstate 15 (I-15) Freeway, located approximately 2.5 miles west of the project site; and State Route 210 (SR-210), located approximately 3.5 miles north of the project site. The following provides a description of the roadways surrounding the project site.

Cherry Avenue is a north-south roadway with 3 lanes in each direction that connects to the I-10 and SR-210 freeway ramps. In the project vicinity, Cherry Avenue forms the eastern project boundary. The posted speed limit is 40 miles per hour, and on-street parking is prohibited on both sides. In the San Bernardino County General Plan, Cherry Avenue is designated as a Major Highway north of I-15, a Major Divided Highway between I-15 and I-10, and a Major Arterial Highway south of I-10. Cherry Avenue is designated in the City of Fontana Circulation Element as a Primary Highway north of SR-210 and south of Jurupa Avenue, and a Major Highway between SR-210 and Jurupa Avenue, as well as an 8-Lane Major Highway near the I-10 interchange.

Beech Avenue is a north-south roadway with 2 lanes in each direction north of Foothill Boulevard, and 1 lane in each direction south of Foothill Boulevard. Beech Avenue connects to the I-10 and SR-210 freeway ramps. The posted speed limit is 40 mph, and on-street parking is permitted on both sides. In the San Bernardino County General Plan, Beech Avenue is designated as a Secondary Highway within the project vicinity. Beech Avenue is designated in the City of Fontana Circulation Element as a Primary Highway.

Citrus Avenue is a north-south roadway with 2 lanes in each direction that connects to the I-10 and SR-210 freeway ramps. The posted speed limit is 40 mph, and on-street parking is prohibited on both sides. In the San Bernardino County General Plan, Citrus Avenue is designated as a Major Divided Highway north of Baseline Avenue and a Secondary Highway south of Baseline Avenue. Citrus Avenue is designated in the City of Fontana Circulation Element as a Primary Highway north of Baseline Avenue and south of Jurupa Avenue; a Secondary Highway between Baseline Avenue and Jurupa Avenue; as well as a Major Highway at the SR-210 and I-10 interchanges.

Sierra Avenue is a north-south roadway with 3 lanes in each direction that connects to the I-10 and SR-210 Ramps. The posted speed limit is 50 mph, and on-street parking is prohibited on both sides. In the San Bernardino County General Plan, Sierra Avenue is designated as a Major Divided Highway north of Baseline Avenue, a Major Highway between Baseline Avenue and San Bernardino Avenue, and a Major Divided Highway south of San Bernardino Avenue. Sierra Avenue is designated in the City of Fontana Circulation Element as a Primary Highway north of I-15 and south of Jurupa Avenue; a Major Highway between I-15 and Jurupa Avenue; as well as an 8-Lane Major Highway at the SR-210 and I-10 interchanges.

Highland Avenue is an east-west roadway with 2 lanes in each direction. The posted speed limit is 45 mph, and on-street parking is prohibited on both sides. In the San Bernardino County General Plan, Highland Avenue is designated as a Major Highway. Highland Avenue is designated in the City of Fontana Circulation Element as a Primary Highway.

Baseline Avenue is an east-west roadway with 3 lanes in each direction that connects to the I-15 freeway ramps. The posted speed limit is 45 mph, and on-street parking is prohibited on both sides. In the San Bernardino County General Plan, Baseline Avenue is designated as a Major Highway west of I-15 and a Major Divided Highway east of I-15. Baseline Avenue is designated in the City of Fontana Circulation Element as a Modified Major Highway and an 8-Lane Major Highway at the I-15 interchange. In the City of Rancho Cucamonga Circulation Element, Base Line Road is designated as an Arterial Roadway within the study area.

Foothill Boulevard is an east-west roadway with 3 lanes in each direction that connects to the I-15 freeway ramps. The posted speed limit is 50 mph, and on-street parking is prohibited on both sides. In the San Bernardino County General Plan, Foothill Boulevard is designated as a Major Divided Highway west of East Street, a Major Arterial Highway between East Street and Citrus Avenue, and a Major Divided Highway east of Citrus Avenue. Foothill Boulevard is designated in the City of Fontana Circulation Element as a Modified Major Highway. In the City of Rancho Cucamonga Circulation Element, Foothill Boulevard is designated as a Boulevard.

Arrow Route is an east-west roadway with 1 lane in each direction. The posted speed limit is 45 mph, and on-street parking is prohibited on both sides. In the San Bernardino County General Plan, Arrow Route is designated as a Major Highway. Arrow Route is designated in the City of Fontana Circulation Element as a Primary Highway. In the City of Rancho Cucamonga Circulation Element, Arrow Highway is designated as an Arterial Roadway.

Whittram Avenue is an east-west roadway with 1 lane in each direction. In the project vicinity, Whittram Avenue forms the northern project boundary. The posted speed limit is 40 mph, and on-street parking is permitted on both sides. In the San Bernardino County General Plan, Whittram Avenue is designated as a Secondary Highway. Whittram Avenue is designated in the City of Fontana Circulation Element as a Secondary Highway.

Merrill Avenue is an east-west roadway with 1 lane in each direction. The posted speed limit is 40 mph, and on-street parking is permitted on both sides. In the San Bernardino County General Plan, Merrill Avenue is designated as a Secondary Highway west of Fontana Avenue, a Major Highway between Fontana Avenue and Sierra Avenue, and a Secondary Highway east of Sierra Avenue. Merrill Avenue is generally designated in the City of Fontana Circulation Element as a Secondary Highway.

Randall Avenue is an east-west roadway with 1 lane in each direction. The posted speed limit is 40 mph, and on-street parking is prohibited on both sides. In the San Bernardino County General Plan, Randall Avenue is designated as a Secondary Highway. Randall Avenue is generally designated in the City of Fontana Circulation Element as a Modified Secondary Highway.

San Bernardino Avenue/4th Street is an east-west roadway with 2 lanes in each direction that connects to the I-15 freeway ramps. The posted speed limit is 55 mph, and on-street parking is prohibited on both sides. In the San Bernardino County General Plan, San Bernardino Avenue is designated as a Major Divided Highway west of Fontana Avenue and a Secondary Highway east of Fontana Avenue. San Bernardino Avenue is designated in the City of Fontana Circulation Element as a Primary Highway west of Elm Avenue and east of Locust Avenue, and a Modified Secondary Highway between Elm Avenue and Locust Avenue. In the City of Rancho Cucamonga Circulation Element, San Bernardino Avenue/4th Street is designated as an Arterial Roadway.

Valley Boulevard is an east-west roadway with 3 lanes in each direction that connects to the I-10 freeway ramps. The posted speed limit is 50 mph, and on-street parking is prohibited on both sides. In the San Bernardino County General Plan, Valley Boulevard is designated as a Major Arterial Highway west of Sierra Avenue and a Major Divided Highway east of Sierra Avenue. Valley Boulevard is designated in the City of Fontana Circulation Element as a Major Highway.

Existing Transit Service

Transit service to the project area is provided by OmniTrans, which serves the City of San Bernardino and surrounding cities. The OmniTrans bus stop closest to the project site is a Route 61 stop, located on the south east corner of the intersection of Cherry Avenue and San Bernardino Avenue. A description of the bus routes serving the project area are provided below.

OmniTrans Route 61 operates in the County of San Bernardino, traveling along San Bernardino Avenue. Route 61 operates on weekdays from approximately 4:35 AM to 8:45 PM with approximately 20-minute headways (the time between bus arrivals) during peak hours and 30-minute headways during off-peak hours, Saturdays from approximately 5:20 AM to 9:10 PM with approximately 30-minute headways, and Sundays from approximately 5:35 AM to 6:10 PM with approximately 30-minute headways.

OmniTrans Route 66 operates in the County of San Bernardino, traveling along Foothill Boulevard. Route 66 operates on weekdays from approximately 4:10 AM to 10:35 PM with approximately 20-minute headways during peak hours and 30-minute headways during off-peak hours, Saturdays from approximately 5:45 AM to 9:20 PM with approximately 30-minute headways, and Sundays from approximately 6:50 AM to 6:30 PM with approximately 50-minute headways.

The Metrolink is also accessible by the project site with the Fontana Metrolink Station located approximately 3.5 miles east of the project site near Sierra Avenue and the Rancho Cucamonga Metrolink Station located approximately 3.5 miles west of the project site near Milliken Avenue.

Existing Traffic Volumes

Morning and evening peak hour turning movement counts for the study intersections were obtained in August and September 2021, while school was in session. Existing morning and evening peak hour intersection volumes are presented on Figure 5. Copies of the traffic data collection worksheets are provided in *Appendix B*.

The traffic counts included vehicle classifications for passenger cars, 2-axle trucks, 3-axle trucks, and 4+-axle trucks. The vehicle classification data was used to develop Passenger Car Equivalent (PCE) volumes by applying a PCE factor of 1.5 PCE for 2-axle trucks, 2.0 PCE for 3-axle trucks, and 3.0 for 4+-axle trucks. PCE worksheets are provided in *Appendix C*.

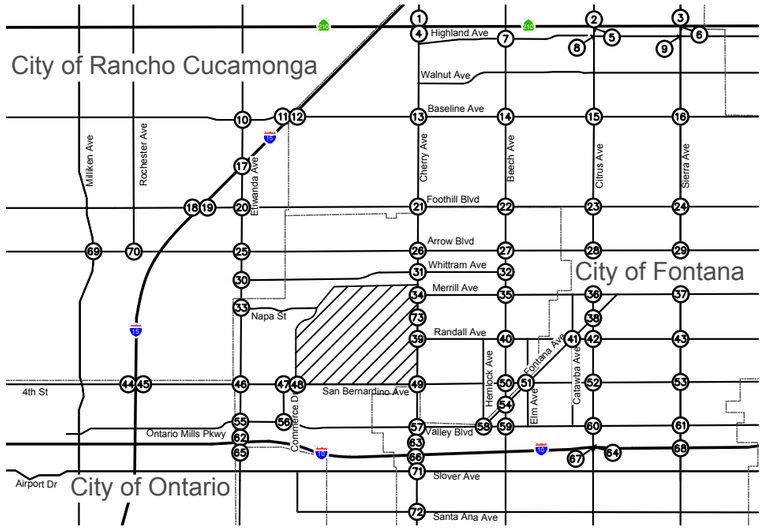
Existing Peak-Hour Operating Conditions

Intersection Level of Service analysis was conducted for the morning and evening peak hours using the analysis procedures and assumptions described previously in this report. The results are shown on Table 1.

Review of this table indicates that the following study intersections currently operate at an unacceptable Level of Service:

- #22 – Beech Ave at Foothill Blvd: AM – LOS F; PM – LOS F
- #32 – Beech Ave at Whittram Ave: PM – LOS E
- #59 – Beech Ave at Valley Blvd: AM – LOS F; PM – LOS F
- #72 – Cherry Ave at Santa Ana Ave: AM – LOS F; PM – LOS F

Copies of the intersection analysis worksheets are provided in *Appendix D*.



NOT TO SCALE

1. Cherry Ave at SR-210 WB Ramps	2. Citrus Ave at SR-210 WB Ramps	3. Sierra Ave at SR-210 WB Ramps	4. Cherry Ave at SR-210 EB Ramps	5. Citrus Ave at SR-210 EB Ramps
200/146 ← 712/461 → 252/135 ← 4/0 ← 360/287	355/395 ← 822/732 → 309/332 ← 1/0 ← 421/341	1079/1172 ← 291/400 ← 510/297	805/673 ← 160/72	931/682 ← 302/204
166/302 → 303/571 ←	302/323 → 906/1038 ←	792/1132 →	153/193 → 5/2 → 296/359 ↘ 427/687 ← 319/307 ←	411/496 → 3/3 → 402/344 ↘ 817/1043 ← 408/269 ←

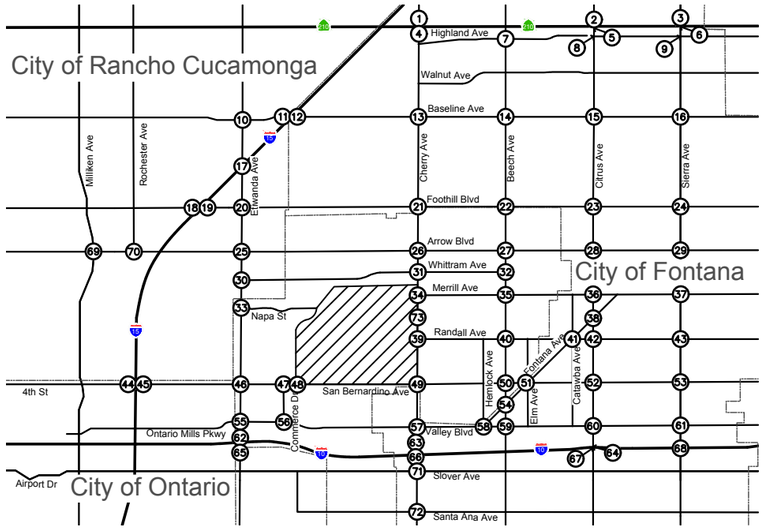
6. Sierra Ave at SR-210 EB Ramps	7. Beech Ave at Highland Ave	8. Citrus Ave at Highland Ave	9. Sierra Ave at Highland Ave	10. Etiwanda Ave at Base Line Rd	11. I-15 SB Ramps at Base Line Rd	12. I-15 NB Ramps at Base Line Rd	13. Cherry Ave at Baseline Ave
26/41 ← 1265/1189	93/54 ← 502/386 ← 55/100 ↖ 61/82 ← 208/185 ← 90/68	150/106 ← 942/625 ← 337/294 ↖ 246/363 ← 197/296 ← 91/124	403/241 ← 1191/973 ← 219/357 ↖ 199/354 ← 252/171 ← 16/69	257/61 ← 286/94 ← 147/49 ↖ 236/46 ← 1112/620 ← 172/128	567/250 ← 367/258 ↖ 946/558	179/162 ← 1595/798 ↖	410/86 ← 828/435 ← 69/107 ↖ 66/61 ← 1336/590 ← 414/292
160/193 → 553/409 ↘ 946/1417 ← 463/643 ←	117/65 → 199/324 → 75/60 ↘ 37/26 ← 570/384 ← 67/87 ←	215/192 → 192/300 → 53/54 ↘ 75/62 ← 725/750 ← 72/75 ←	291/426 → 252/251 → 173/51 ↘ 160/59 ← 919/1316 ← 38/65 ←	107/74 → 507/991 → 78/115 ↘ 113/102 ← 268/163 ← 102/206 ←	537/1047 → 236/169 ↘	354/439 → 565/912 → 278/276 ← 2/0 ← 306/514 ←	232/305 → 502/1060 → 139/81 ↘ 63/154 ← 529/926 ← 155/338 ←

14. Beech Ave at Baseline Ave	15. Citrus Ave at Baseline Ave	16. Sierra Ave at Baseline Ave	17. Etiwanda Ave at Church St/Miller Ave	18. I-15 SB Ramps at Foothill Blvd	19. I-15 NB Ramps at Foothill Blvd	20. Etiwanda Ave at Foothill Blvd
197/90 ← 239/191 ← 94/131 ↖ 82/121 ← 589/552 ← 45/65	237/106 ← 771/443 ← 124/127 ↖ 102/58 ← 659/526 ← 156/160	104/55 ← 1054/510 ← 220/226 ↖ 139/235 ← 492/640 ← 90/92	121/93 ← 282/224 ← 76/23 ↖ 69/30 ← 464/256 ← 94/42	849/536 ← 150/167 ↖ 1435/1348	197/292 ← 1219/1114 ↖	230/155 ← 341/209 ← 50/62 ↖ 115/47 ← 1200/748 ← 342/104
132/211 → 419/979 → 37/73 ↘ 65/94 ← 239/250 ← 13/24 ←	274/299 → 346/720 → 109/115 ↘ 120/95 ← 571/607 ← 733/69 ←	94/136 → 405/597 → 109/90 ↘ 157/104 ← 629/974 ← 56/61 ←	87/137 → 249/439 → 108/167 ↘ 141/133 ← 239/256 ← 145/98 ←	520/1898 → 798/934 ↘	441/1092 → 873/731 ← 494/465 ←	100/236 → 448/931 → 210/176 ↘ 153/260 ← 199/348 ← 67/189 ←

Note: Volumes reflect PCE adjustments.
See PCE Worksheets in Appendix C.

LEGEND:
= Project Site
= Study Intersection
XX/YY = AM/PM Volumes

FIGURE 5A
EXISTING TRAFFIC VOLUMES



NOT TO SCALE

21. Cherry Ave at Foothill Blvd	22. Beech Ave at Foothill Blvd	23. Citrus Ave at Foothill Blvd	24. Sierra Ave at Foothill Blvd	25. Etiwanda Ave at Arrow Rte
203/195 ↙ 793/634 ← 164/281 ↖ 98/123 ← 1138/567 ↖ 284/135 183/247 → 414/860 → 153/100 ↘ 214/276 ↑ 404/828 ↑ 115/230	← 1526/760 ← 198/104 621/1326 → 36/54 ↘ 21/60 ↑ 102/118	162/71 ↙ 724/551 ← 132/131 ↖ 78/119 ← 797/553 ↖ 235/287 149/256 → 428/837 → 114/177 ↘ 143/138 ↑ 515/673 ↑ 78/87	126/119 ↙ 814/488 ← 192/153 ↖ 125/162 ← 611/501 ↖ 151/200 211/200 → 375/689 → 100/134 ↘ 79/103 ↑ 436/798 ↑ 79/135	392/114 ↙ 324/235 ← 120/127 ↖ 133/144 ← 699/360 ↖ 141/100 93/349 → 245/622 → 148/387 ↘ 325/163 ↑ 161/520 ↑ 36/116

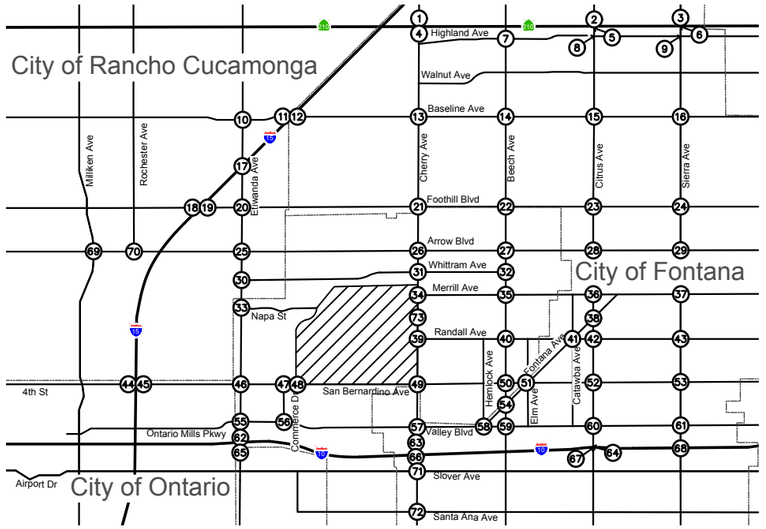
26. Cherry Ave at Arrow Rte	27. Beech Ave at Arrow Rte	28. Citrus Ave at Arrow Rte	29. Sierra Ave at Arrow Rte	30. Etiwanda Ave at Whittram Ave	31. Cherry Ave at Whittram Ave	32. Beech Ave at Whittram Ave	33. Etiwanda Ave at Napa St
95/93 ↙ 1008/777 ← 53/69 ↖ 59/59 ← 601/542 ↖ 154/116 70/84 → 390/606 → 93/98 ↘ 103/138 ↑ 671/1069 ↑ 122/219	84/22 ↙ 154/141 ← 14/18 ↖ 22/27 ← 598/429 ↖ 140/90 41/31 → 337/636 → 58/65 ↘ 83/96 ↑ 127/151 ↑ 114/218	141/67 ↙ 791/729 ← 96/138 ↖ 131/92 ← 437/309 ↖ 226/144 73/78 → 255/565 → 105/168 ↘ 208/175 ↑ 617/861 ↑ 205/169	69/77 ↙ 717/507 ← 58/108 ↖ 55/53 ← 527/311 ↖ 69/64 67/101 → 402/475 → 82/89 ↘ 87/85 ↑ 511/770 ↑ 35/56	572/515 ↙ 65/196 ↖ 137/88 ← 234/201 418/664 ↑ 151/283	89/56 ↙ 1068/688 ← 35/38 ↖ 68/73 ← 136/67 ↖ 150/122 30/87 → 30/141 → 200/294 ↘ 186/143 ↑ 806/1366 ↑ 132/112	111/39 ↙ 261/314 57/80 → 66/165 ↘ 134/88 ↑ 290/400	1/0 ↙ 753/571 ← 49/95 ↖ 40/49 ← 174/191 0/5 → 2/30 ↘ 1/0 ↑ 551/907 ↑ 201/60

34. Cherry Ave at Merrill Ave	35. Beech Ave at Merrill Ave	36. Citrus Ave at Merrill Ave	37. Sierra Ave at Merrill Ave	38. Citrus Ave at Fontana Ave	39. Cherry Ave at Randall Ave	40. Beech Ave at Randall Ave
0/1 ↙ 1237/841 ← 130/199 ↖ 253/206 ← 145/107 0/1 → 3/1 ↑ 813/1458 ↑ 117/200	76/40 ↙ 145/172 ← 56/118 ↖ 153/129 ← 230/148 ↖ 67/32 103/129 → 129/224 → 56/33 ↘ 51/30 ↑ 162/215 ↑ 58/48	92/100 ↙ 902/735 ← 61/78 ↖ 103/136 ← 206/195 ↖ 43/29 147/139 → 156/250 → 48/53 ↘ 51/45 ↑ 676/922 ↑ 27/34	42/56 ↙ 877/696 ← 33/64 ↖ 43/46 ← 370/270 ↖ 134/111 50/75 → 340/453 → 93/101 ↘ 57/113 ↑ 568/833 ↑ 91/164	122/106 ↙ 871/681 ← 23/34 ↖ 31/20 ← 78/83 ↖ 74/42 103/136 → 90/178 → 11/9 ↘ 20/18 ↑ 645/868 ↑ 75/69	9/2 ↙ 1207/882 ← 156/160 ↖ 109/124 ← 214/165 0/5 → 1/2 → 0/5 ↘ 10/16 ↑ 838/1461 ↑ 104/163	82/31 ↙ 194/162 ← 6/34 ↖ 39/42 ← 173/113 ↖ 31/10 55/62 → 115/171 → 18/22 ↘ 17/15 ↑ 193/213 ↑ 42/12

Note: Volumes reflect PCE adjustments.
See PCE Worksheets in Appendix C.

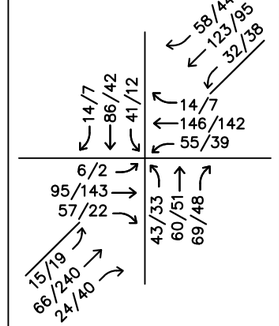
LEGEND:
= Project Site
= Study Intersection
XX/YY = AM/PM Volumes

FIGURE 5B
EXISTING TRAFFIC VOLUMES

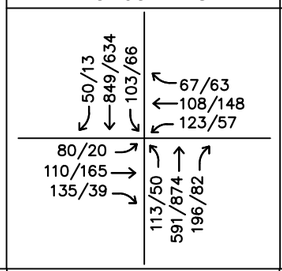


NOT TO SCALE

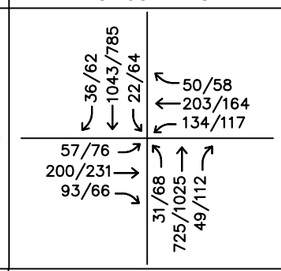
41. Fontana Ave/ Catawba Ave at Randall Ave



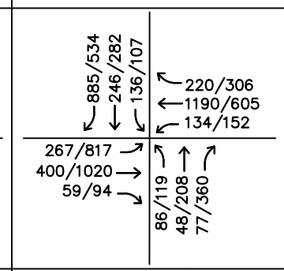
42. Citrus Ave at Randall Ave



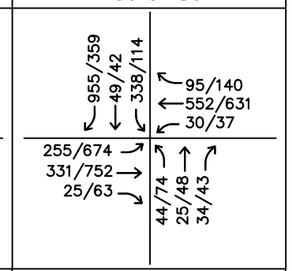
43. Sierra Ave at Randall Ave



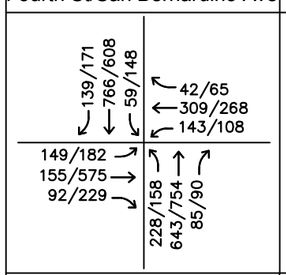
44. I-15 SB Ramps/ Ontario Mills Dr at Fourth St



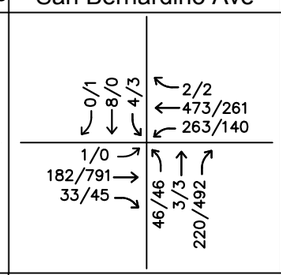
45. I-15 NB Ramps at Fourth St



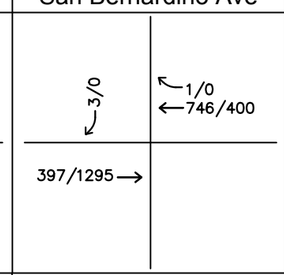
46. Etiwanda Ave at Fourth St/San Bernardino Ave



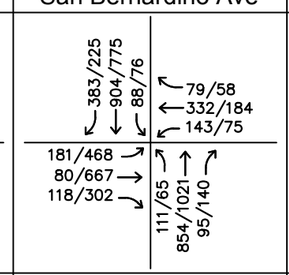
47. Commerce Dr at San Bernardino Ave



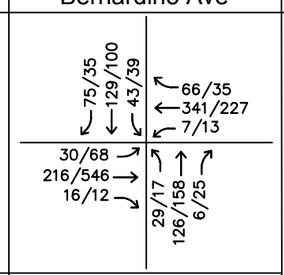
48. Vip Rd at San Bernardino Ave



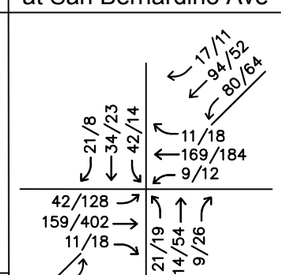
49. Cherry Ave at San Bernardino Ave



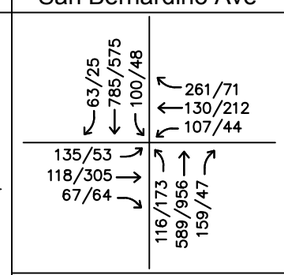
50. Beech Ave at San Bernardino Ave



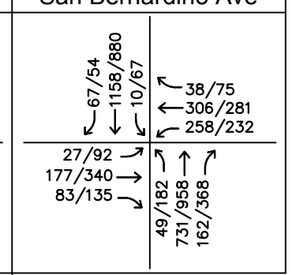
51. Fontana Ave/Elm St at San Bernardino Ave



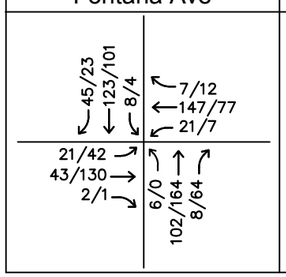
52. Citrus Ave at San Bernardino Ave



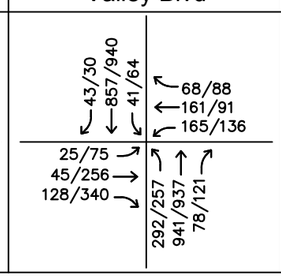
53. Sierra Ave at San Bernardino Ave



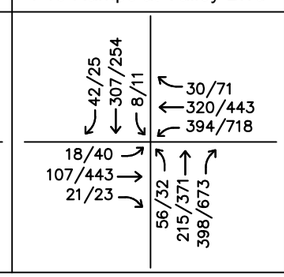
54. Beech Ave at Fontana Ave



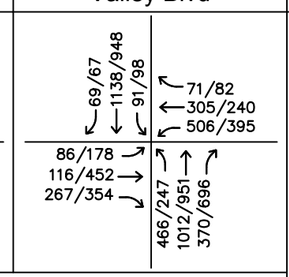
55. Etiwanda Ave at Valley Blvd



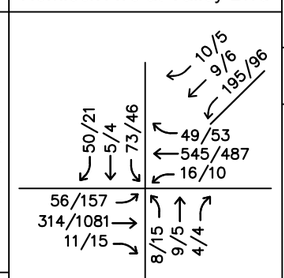
56. Commerce Dr/ I-15 Ramps at Valley Blvd



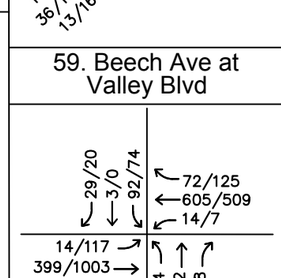
57. Cherry Ave at Valley Blvd



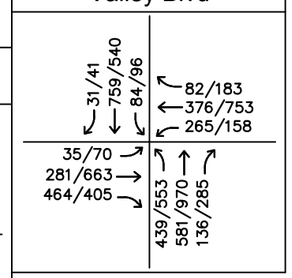
58. Fontana Ave/ Hemlock Ave at Valley Blvd



59. Beech Ave at Valley Blvd



60. Citrus Ave at Valley Blvd



Note: Volumes reflect PCE adjustments.
See PCE Worksheets in Appendix C.

LEGEND:

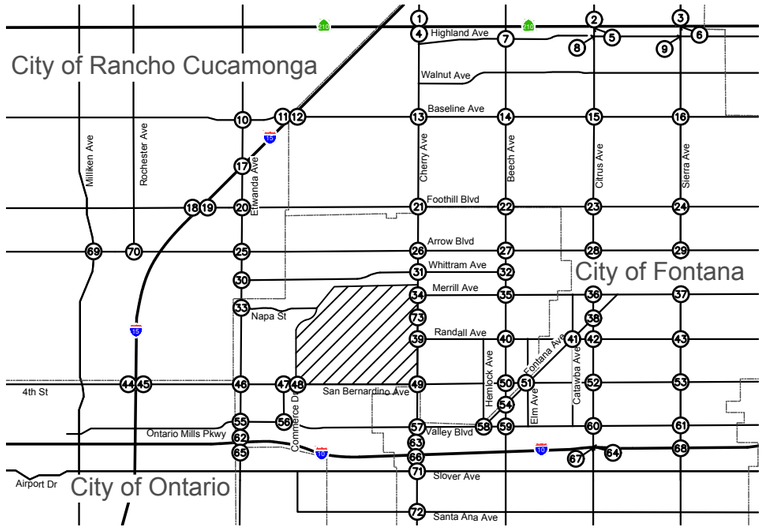
= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

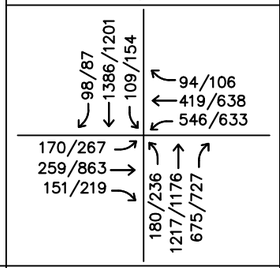
FIGURE 5C
EXISTING TRAFFIC VOLUMES

Kimley»Horn

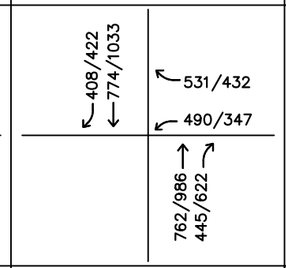


NOT TO SCALE

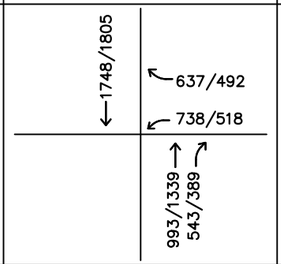
61. Sierra Ave at Valley Blvd



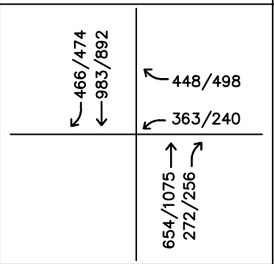
62. Etiwanda Ave at I-10 WB Off-Ramps



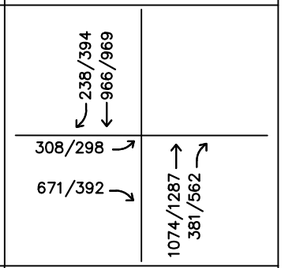
63. Cherry Ave at I-10 WB Ramps



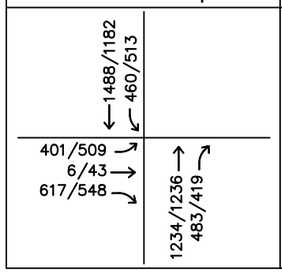
64. Citrus Ave at I-10 WB Ramps



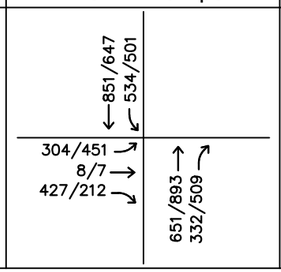
65. Etiwanda Ave at I-10 EB Ramps



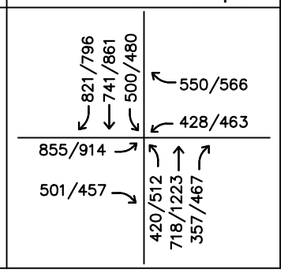
66. Cherry Ave at I-10 EB Ramps



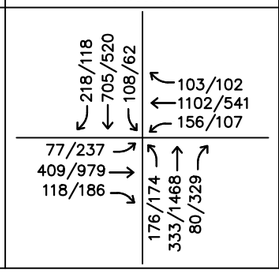
67. Citrus Ave at I-10 EB Ramps



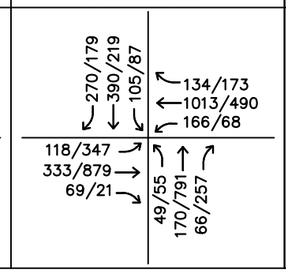
68. Sierra Ave at I-10 EB/WB Ramps



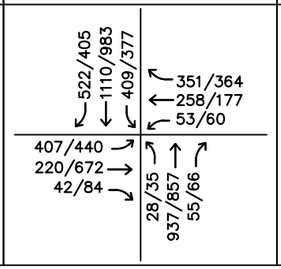
69. Milliken Ave at Arrow Rte



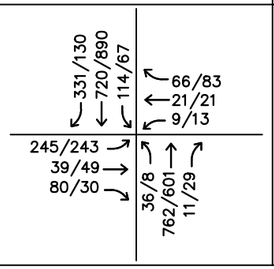
70. Rochester Ave at Arrow Rte



71. Cherry Ave at Slover Ave



72. Cherry Ave at Santa Ana Ave



73. Cherry Ave at Street A

FUTURE INTERSECTION

Note: Volumes reflect PCE adjustments.
See PCE Worksheets in Appendix C.

LEGEND:
= Project Site
(X) = Study Intersection
XX/YY = AM/PM Volumes

FIGURE 5D
EXISTING TRAFFIC VOLUMES

Kimley»Horn

TABLE 1
SUMMARY OF INTERSECTION OPERATION
EXISTING CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
1	Cherry Ave at SR-210 WB Ramps	C	S	28.6	C	27.8	C
2	Citrus Ave at SR-210 WB Ramps	C	S	25.0	C	25.2	C
3	Sierra Ave at SR-210 WB Ramps	C	S	19.4	B	16.4	B
4	Cherry Ave at SR-210 EB Ramps	C	S	22.7	C	22.2	C
5	Citrus Ave at SR-210 EB Ramps	C	S	27.6	C	28.7	C
6	Sierra Ave at SR-210 EB Ramps	C	S	17.3	B	14.0	B
7	Beech Ave at Highland Ave	F	S	31.3	C	34.7	C
8	Citrus Ave at Highland Ave	F	S	35.2	D	38.5	D
9	Sierra Ave at Highland Ave	F	S	31.1	C	41.0	D
10	Etiwanda Ave at Base Line Rd	RC	S	47.3	D	40.8	D
11	I-15 SB Ramps at Base Line Rd	C	S	21.4	C	15.0	B
12	I-15 NB Ramps at Baseline Ave	C	S	31.7	C	34.6	C
13	Cherry Ave at Baseline Ave	F	S	37.1	D	37.4	D
14	Beech Ave at Baseline Ave	F	S	40.0	D	43.6	D
15	Citrus Ave at Baseline Ave	F	S	41.4	D	39.4	D
16	Sierra Ave at Baseline Ave	F	S	33.0	C	35.0	C
17	Etiwanda Ave at Church St/Miller Ave	RC	S	45.9	D	43.4	D
18	I-15 SB Ramps at Foothill Blvd	C	S	26.7	C	19.3	B
19	I-15 NB Ramps at Foothill Blvd	C	S	25.0	C	21.5	C
20	Etiwanda Ave at Foothill Blvd	RC	S	39.3	D	41.1	D
21	Cherry Ave at Foothill Blvd	F/SB	S	39.8	D	40.1	D
22	Beech Ave at Foothill Blvd	F/SB	U	>180	F	>180	F
23	Citrus Ave at Foothill Blvd	F	S	44.3	D	46.6	D
24	Sierra Ave at Foothill Blvd	F	S	40.4	D	40.5	D
25	Etiwanda Ave at Arrow Rte	RC	S	42.4	D	39.2	D
26	Cherry Ave at Arrow Rte	SB	S	39.4	D	43.2	D
27	Beech Ave at Arrow Rte	SB	S	30.0	C	24.5	C
28	Citrus Ave at Arrow Rte	F	S	41.8	D	39.0	D
29	Sierra Ave at Arrow Rte	F	S	36.5	D	35.7	D

TABLE 1
SUMMARY OF INTERSECTION OPERATION
EXISTING CONDITIONS

30	Etiwanda Ave at Whittram Ave	RC	S	23.5	C	24.5	C
31	Cherry Ave at Whittram Ave	SB	S	33.3	C	36.1	D
32	Beech Ave at Whittram Ave	SB	U	30.5	D	35.2	E
33	Etiwanda Ave at Napa St	SB	S	15.2	B	21.5	C
34	Cherry Ave at Merrill Ave	SB	S	23.0	C	25.0	C
35	Beech Ave at Merrill Ave	SB	U	21.8	C	31.1	D
36	Citrus Ave at Merrill Ave	F	S	28.4	C	29.2	C
37	Sierra Ave at Merrill Ave	F	S	39.3	D	41.4	D
38	Citrus Ave at Fontana Ave	F	S	19.4	B	22.1	C
39	Cherry Ave at Randall Ave	SB	S	18.9	B	18.8	B
40	Beech Ave at Randall Ave	SB	U	15.8	C	12.2	B
41	Fontana Ave/Catawba Ave at Randall Ave	F	U	14.7	B	15.4	C
42	Citrus Ave at Randall Ave	F	S	29.4	C	22.8	C
43	Sierra Ave at Randall Ave	F	S	26.0	C	28.1	C
44	I-15 SB Ramps/Ontario Mills Dr at Fourth St	C	S	42.1	D	45.3	D
45	I-15 NB Ramps at Fourth St	C	S	43.5	D	33.9	C
46	Etiwanda Ave at Fourth St/San Bernardino A	RC/SB	S	31.8	C	35.4	D
47	Commerce Dr at San Bernardino Ave	SB	S	31.2	C	39.0	D
48	Vip Rd at San Bernardino Ave	SB	U	11.1	B	0.0	
49	Cherry Ave at San Bernardino Ave	SB	S	30.7	C	37.2	D
50	Beech Ave at San Bernardino Ave	SB	S	33.2	C	35.4	D
51	Fontana Ave/Elm Ave at San Bernardino Ave	F/SB	S	31.8	C	27.0	C
52	Citrus Ave at San Bernardino Ave	F	S	35.9	D	30.1	C
53	Sierra Ave at San Bernardino Ave	F	S	28.4	C	36.2	D
54	Beech Ave at Fontana Ave	F/SB	U	9.6	A	9.6	A
55	Etiwanda Ave at Valley Blvd	SB	S	26.3	C	33.0	C
56	Commerce Dr/I-10 Ramps at Valley Blvd	C	S	30.8	C	46.2	D
57	Cherry Ave at Valley Blvd	F/SB	S	38.3	D	39.1	D
58	Fontana Ave/Hemlock Ave at Valley Blvd	F/SB	S	26.9	C	14.8	B
59	Beech Ave at Valley Blvd	F	U	50.7	F	>180	F
60	Citrus Ave at Valley Blvd	F	S	45.3	D	43.1	D

TABLE 1
SUMMARY OF INTERSECTION OPERATION
EXISTING CONDITIONS

61	Sierra Ave at Valley Blvd	F	S	32.3	C	42.9	D
62	Etiwanda Ave at I-10 WB Off-Ramps	C	S	23.5	C	18.8	B
63	Cherry Ave at I-10 WB Ramps	C	S	27.1	C	21.2	C
64	Citrus Ave at I-10 WB Ramps	C	S	20.6	C	18.2	B
65	Etiwanda Ave at I-10 EB Ramps	C	S	29.3	C	18.7	B
66	Cherry Ave at I-10 EB Ramps	C	S	30.8	C	30.2	C
67	Citrus Ave at I-10 EB Ramps	C	S	31.5	C	28.8	C
68	Sierra Ave at I-10 EB/WB Ramps	C	S	23.9	C	29.1	C
69	Milliken Ave at Arrow Rte	RC	S	37.4	D	37.5	D
70	Rochester Ave at Arrow Rte	RC	S	36.4	D	37.3	D
71	Cherry Ave at Slover Ave	F	S	31.6	C	34.4	C
72	Cherry Ave at Santa Ana Ave	F	S	>180	F	>180	F

Notes:
- Bold values indicate intersections operating at an unacceptable Level of Service
- Delay values for unsignalized intersections represent the average vehicle delay on the worst (highest delay) intersection approach.

F = Fontana; SB = San Bernardino County; RC = Rancho Cucamonga; C = Caltrans

OPENING YEAR 2024 CONDITIONS

The project Opening Year for Phase 1 is anticipated to be Year 2024. Opening Year 2024 Base traffic forecasts have been developed by adding an ambient growth factor of 2.0 percent per to existing traffic volumes at the study intersections.

Cumulative Projects

In addition to ambient growth, traffic volumes from Cumulative Projects in the Project vicinity are added to develop Opening Year 2024 forecasts. Cumulative Projects consist of any project that has been approved and is not yet occupied, and projects that are in various stages of the application and approval process but have not yet been approved. The locations of the Cumulative Projects are shown on Figure 6.

Information regarding Cumulative Projects in the area was obtained from San Bernardino County and the Cities of Fontana, Ontario, and Rancho Cucamonga staff. A summary of the Cumulative Projects, including the associated trip generation is provided on Table 2. The trip generation estimates for the Cumulative Projects were developed by Kimley-Horn.

Trip distribution and assignment for the Cumulative Projects were developed by Kimley-Horn. Traffic volumes associated with the Cumulative Projects were compiled for each of the study intersections and are shown on Figure 7. The Cumulative Projects traffic volumes were added to the Opening Year 2024 Base traffic volumes to develop Opening Year 2024 forecasts, which are shown on Figure 8.

Peak Hour Operating Conditions

Intersection Level of Service analysis was conducted for Opening Year 2024 conditions, and the results are shown on Table 3. Intersection analysis worksheets for this scenario are provided in *Appendix D*. Review of this table indicates that, with the addition of ambient growth and Cumulative Project traffic, the following intersections would operate at an unacceptable Level of Service under Opening Year 2024 conditions:

- #10 – Etiwanda Ave at Base Line Rd: AM – LOS E
- #22 – Beech Ave at Foothill Blvd: AM – LOS F; PM – LOS F
- #32 – Beech Ave at Whittram Ave: AM – LOS E; PM – LOS E
- #35 – Beech Ave at Merrill Ave: PM – LOS E
- #40 – Beech Ave at Randall Ave: AM – LOS F
- #59 – Beech Ave at Valley Blvd: AM – LOS F; PM – LOS F
- #72 – Cherry Ave at Santa Ana Ave: AM – LOS F; PM – LOS F

TABLE 2
SUMMARY OF CUMULATIVE PROJECTS

Proj #	Description	Land Use	Quantity	Units	Trip Generation Estimates						
						AM Peak Hour			PM Peak Hour		
					Daily	In	Out	Total	In	Out	Total
City of Fontana											
1	Single Family Residential	Single-Family Detached Housing	200	DU	1,888	37	111	148	125	73	198
2	Citrus Crossroads	Shopping Center	40.100	KSF	1,514	23	14	37	73	79	152
3	Fontana CDRJ	Automobile Sales (New)	44.625	KSF	1,242	61	23	84	43	65	108
4	Fontana Hyundai	Automobile Sales (New)	26.083	KSF	726	36	13	49	25	38	63
5	Walnut Village Senior Housing	Senior Adult Housing-Attached	93	Occ. DU	320	6	12	18	13	9	22
6	Providence II Amendment	Single-Family Detached Housing	96	DU	906	18	53	71	60	35	95
7	Victoria Homes Tract 20229	Single-Family Detached Housing	193	DU	1,822	36	107	143	120	71	191
8	Foothill Apartments	Multifamily Housing (Low-Rise)	24	DU	176	3	8	11	8	5	13
		Shopping Center	3.100	KSF	117	2	1	3	6	6	12
9	Taco Bell Cherry Ave	Fast-Food Restaurant w/ Drive-thru	2.077	KSF	978	43	41	84	35	33	68
10	Courtyard at Cherry	Shopping Center	66.470	KSF	2,509	39	24	63	122	132	254
11	Hilton Logistics Center	Warehousing	80.000	KSF	139	10	3	13	4	11	15
12	Happy Senior Apartments	Senior Adult Housing-Attached	78	Occ. DU	268	5	10	15	11	7	18
13	Lime Avenue Development	Single-Family Detached Housing	18	DU	170	3	10	13	11	7	18
14	Almeria Senior Housing	Senior Adult Housing-Attached	72	Occ. DU	248	5	9	14	10	7	17
15	Miller Villas	Single-Family Detached Housing	11	DU	104	2	6	8	7	4	11
16	Kingston Meadow	Single-Family Detached Housing	19	DU	179	4	11	15	12	7	19
17	Baseline Apartments	Multifamily Housing (Low-Rise)	54	DU	395	6	19	25	19	11	30
18	Multi-Family Project	Multifamily Housing (Low-Rise)	60	DU	439	6	21	27	21	12	33
19	Malaga Apartments	Multifamily Housing (Low-Rise)	18	DU	0	0	0	0	6	4	10
20	Cypress Multifamily	Multifamily Housing (Mid-Rise)	106	DU	0	10	28	38	28	18	46
21	Building Apartments	Multifamily Housing (Low-Rise)	14	DU	102	1	5	6	5	3	8
22	Valencia Apartments	Multifamily Housing (Low-Rise)	8	DU	59	1	3	4	3	2	5
23	Industrial Building	General Light Industrial	11.990	KSF	59	7	1	8	1	7	8
24	Downtown Mixed-Use Project	Shopping Center	3.252	KSF	123	2	1	3	6	6	12
		Multifamily Housing (Low-Rise)	28	DU	205	3	10	13	10	6	16
25	Foothill Starbucks	Coffee/Donut Shop w/ D.T.	2.300	KSF	1,887	104	100	204	50	50	100
26	United Gas Station	Gasoline/Service Station	8.000	FP	1,376	41	41	82	56	56	112
27	Fontana Citrus and Ceres	Fast-Food Restaurant w/ Drive-thru	2.400	KSF	1,130	49	47	96	41	38	79
28	Fontana Evergreen Senior Living	Senior Adult Housing-Attached	72	Occ. DU	248	5	9	14	10	7	17
29	47 Single Family Lots	Single-Family Detached Housing	47	DU	444	9	26	35	29	17	46
30	Unical 76 Automated Car Wash	Automated Car Wash	2.800	KSF	457	16	9	25	20	20	40
		Shopping Center	2.700	KSF	102	2	1	3	5	5	10
31	Fountain City Villas	Multifamily Housing (Low-Rise)	10	DU	73	1	4	5	4	2	6
32	Cypress Apartment Complex	Multifamily Housing (Low-Rise)	14	DU	102	1	5	6	5	3	8
33	Huibi Development Juniper	Single-Family Detached Housing	6	DU	57	1	3	4	4	2	6
34	Badiola Sierra Offices	General Office Building	4.100	KSF	40	4	1	5	1	4	5
35	Sierra Beauty Salon	Hair Salon	2.378	KSF	3	0	0	0	1	3	4
36	Assembly Hall	Synagogue	6.260	KSF	33	10	6	16	10	8	18
37	Oleander Nine Lots	Single-Family Detached Housing	9	DU	85	2	5	7	6	3	9
38	Chantry 9 Homes	Single-Family Detached Housing	9	DU	85	2	5	7	6	3	9
39	Northgate Commercial	Fast-Food Restaurant w/ Drive-thru	59.385	KSF	27,967	1,217	1,169	2,386	1,009	931	1,940

TABLE 2
SUMMARY OF CUMULATIVE PROJECTS

Proj #	Description	Land Use	Quantity	Units	Trip Generation Estimates						
						AM Peak Hour			PM Peak Hour		
					Daily	In	Out	Total	In	Out	Total
40	Valley Truck & Trailer	Automobile Parts and Service Center	28.843	KSF	470	41	15	56	26	39	65
41	Elizabeth's Insurance	Small Office Building	7.297	KSF	118	12	2	14	6	12	18
42	East Coast Truck & Auto Sale	Automobile Parts and Service Center	10.035	KSF	163	14	5	19	9	14	23
43	Baseline Apartments 2	Multifamily Housing (Low-Rise)	54	DU	395	6	19	25	19	11	30
44	9885 Sierra Avenue	Shopping Center	9.915	KSF	374	6	4	10	18	20	38
45	Almond Commerce Center	High-Cube Parcel Hub Warehouse	210.400	KSF	1,631	74	74	148	92	43	135
46	Cherry Valley Retail Center	Coffee/Donut Shop w/ D.T.	2.500	KSF	2,051	113	109	222	54	54	108
		Automobile Parts Sales	7.381	KSF	408	11	9	20	17	19	36
47	Oakmont Live Oak	Warehousing	240.750	KSF	419	32	9	41	12	33	45
48	Patriot Partners on Live Oak	Warehousing	177.660	KSF	309	23	7	30	9	25	34
49	Fontana Corporate Center	Warehousing	352.454	KSF	613	46	14	60	18	49	67
50	13860 Santa Ana	Trailer Storage Yard	13	Acres	940	12	20	32	34	17	51
51	Fontana Trailer Storage	Trailer Storage Yard	4.38	Acres	317	4	7	11	12	6	18
52	Santa Ana and Calabash	Warehousing	129.378	KSF	225	17	5	22	7	18	25
53	Cabot Commerce Center	Warehousing	159.618	KSF	278	21	6	27	8	22	30
54	10840 Cherry Ave	Warehousing	174.280	KSF	303	23	7	30	9	24	33
55	Black Creek Fontana	Warehousing	190.000	KSF	331	25	7	32	10	26	36
56	Santa Ana Warehouse	Warehousing	49.660	KSF	86	7	2	9	3	7	10
57	Duke Warehouse	Warehousing	298.210	KSF	519	39	12	51	15	41	56
58	Truck Repair	Automobile Parts and Service Center	3.530	KSF	57	5	2	7	3	5	8
59	Warehouse	Warehousing	192.794	KSF	335	25	8	33	10	27	37
60	Alvarez Car Repair	Automobile Parts and Service Center	12.000	KSF	195	17	6	23	11	16	27
61	Clover Industrial Property	Warehousing	146.843	KSF	256	19	6	25	7	20	27
62	Boyle Industrial Property	Warehousing	126.655	KSF	220	17	5	22	6	18	24
63	Boyle West Warehouse	Warehousing	88.984	KSF	155	12	3	15	5	12	17
64	Rivas Trailers	Small Office Building	1.256	KSF	20	2	0	2	1	2	3
65	Citrus & Slover Warehouse	Warehousing	194.212	KSF	338	25	8	33	10	27	37
66	Duke Realty Slover & Oleander	Warehousing	205.949	KSF	358	27	8	35	11	29	40
67	Duke Warehouse	Warehousing	623.460	KSF	1,085	82	24	106	32	87	119
68	Slover Industrial Warehouse	Warehousing	95.600	KSF	166	13	4	17	5	13	18
69	Sierra Business Center	Warehousing	705.735	KSF	1,228	92	28	120	36	98	134
70	Transwestern - Boyle Ave Bldg 2	High-Cube Parcel Hub Warehouse	77.460	KSF	600	27	27	54	34	16	50
71	Transwestern - Boyle Ave Bldg 1	High-Cube Parcel Hub Warehouse	178.142	KSF	1,381	62	62	124	77	37	114
72	Slover Ave Warehouse	Warehousing	41.000	KSF	71	5	2	7	2	6	8
73	La Quinta Inn	Hotel	104	Room	869	29	20	49	32	31	63
74	Townplace Suites, Fontana	Hotel	116	Room	970	32	22	54	35	34	69
75	Calabash Industrial Building	Warehousing	64.692	KSF	113	8	3	11	3	9	12
76	Jurupa Warehosue	Warehousing	279.859	KSF	487	37	11	48	14	39	53
77	MG Home International Warehouse	Warehousing	15.570	KSF	27	2	1	3	1	2	3
78	Henean Trucking Fontana	Warehousing	2.670	KSF	5	0	0	0	0	0	0
79	Citrus Industrial Building	Warehousing	49.987	KSF	87	7	2	9	3	7	10

TABLE 2
SUMMARY OF CUMULATIVE PROJECTS

Proj #	Description	Land Use	Quantity	Units	Trip Generation Estimates						
						AM Peak Hour			PM Peak Hour		
					Daily	In	Out	Total	In	Out	Total
San Bernardino County											
80	PROJ-2020-00160	Automobile Care Center	18.295	KSF	98	27	14	41	27	30	57
81	PROJ-2020-00200	Gasoline/Service Station	8.000	KSF	1,376	41	41	82	56	56	112
82	PROJ-2020-00179	Trailer Storage Yard	0.4	Acres	29	0	1	1	1	1	2
83	PRAA-2020-00038	Warehousing	6.133	KSF	11	1	0	1	0	1	1
84	PROJ-2019-00037	Warehousing	48.882	KSF	85	6	2	8	2	7	9
85	PROJ-2019-00070	Warehousing	12.500	KSF	22	2	0	2	1	2	3
86	PROJ-2019-00082	Trailer Storage Yard	4	Acre	289	4	6	10	11	5	16
87	PROJ-2020-00025	Warehousing	5.000	KSF	9	1	0	1	0	1	1
88	PROJ-2020-00061	Warehousing	4.200	KSF	7	1	0	1	0	1	1
89	PROJ-2020-00217	Warehousing	209.600	KSF	365	27	8	35	11	29	40
90	PROJ-2020-00227	Automobile Care Center	9.000	KSF	48	13	7	20	13	15	28
91	PROJ-2020-00230	Single-Family Detached Housing	112	DU	1,057	21	62	83	70	41	111
92	PROJ-2020-00235	Warehousing	195.960	KSF	341	26	8	34	10	27	37
City of Ontario											
93	PDEV19-021	Hotel	138.000	Room	1,154	38	27	65	42	41	83
94	PDEV21-029	General Light Industrial	15.132	KSF	75	9	1	10	1	8	9
95	PDEV19-070	Automated Car Wash	4.446	KSF	725	25	15	40	32	32	64
City of Rancho Cucamonga											
96	East Avenue Villa	Single-Family Detached Housing	12	DU	113	2	7	9	7	4	11
97	DRC2019-00558	Single-Family Detached Housing	10	DU	94	2	6	8	6	4	10
98	The Resort	Multifamily Housing (Mid-Rise)	296	DU	1,610	28	79	107	79	51	130
		Multifamily Housing (Low-Rise)	135	DU	988	14	48	62	48	28	76
		Multifamily Housing (Low-Rise)	80	DU	586	8	28	36	28	17	45
		Multifamily Housing (High-Rise)	867	DU	3,858	64	205	269	191	121	312
99	Bayan Avenue 9	Single-Family Detached Housing	9	DU	85	2	5	7	6	3	9
100	Manning Homes 17	Single-Family Detached Housing	17	DU	160	3	9	12	11	6	17
101	8281 Utica Office	General Office Building	12.000	KSF	117	12	2	14	2	12	14
102	Station 178	Fire and Rescue Station	12.363	KSF	0	0	0	0	2	4	6
103	Siamak Coffee House	Coffee/Donut Shop w/o D.T.	1.000	KSF	137	52	50	102	18	18	36
104	Hickory and Arrow Industrial	Warehousing	33.067	KSF	58	4	1	5	2	5	7
105	Milliken and Jersey Industrial	Warehousing	143.014	KSF	249	19	6	25	7	20	27
106	Hillwood - 2 Industrial Warehouses	Warehousing	651.000	KSF	1,133	85	25	110	33	90	123
107	Bernell Hydraulics	General Light Industrial	22.000	KSF	109	14	2	16	2	12	14
108	Westbury	Multifamily Housing (Low-Rise)	133	DU	974	14	47	61	47	28	75
109	Haven and 26th	Multifamily Housing (Mid-Rise)	207	DU	1,126	19	55	74	55	36	91
		Shopping Center	14.300	KSF	540	8	5	13	26	28	54
110	Alta Cuvee	Multifamily Housing (Mid-Rise)	260	DU	1,414	24	69	93	70	45	115
111	Harvest at Terra Vista	Multifamily Housing (High-Rise)	660	DU	2,937	49	156	205	145	92	237
112	Haven and Arrow	Multifamily Housing (Mid-Rise)	240	DU	1,306	23	64	87	64	41	105
Total Project Trips					91,035	3,592	3,621	7,213	3,883	3,787	7,670

DU = Dwelling Unit, KSF = 1,000 square feet, FP = Fueling Position

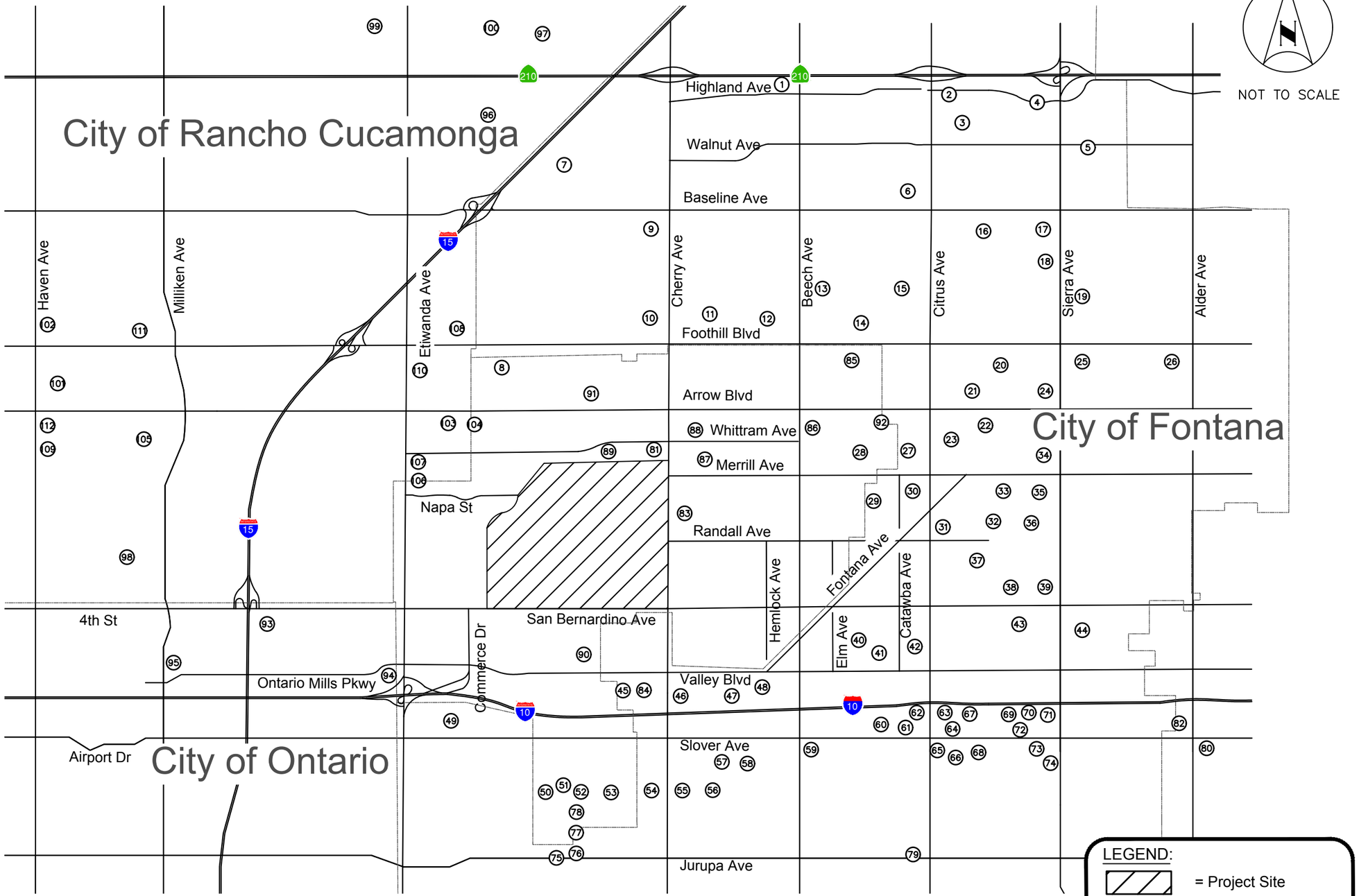
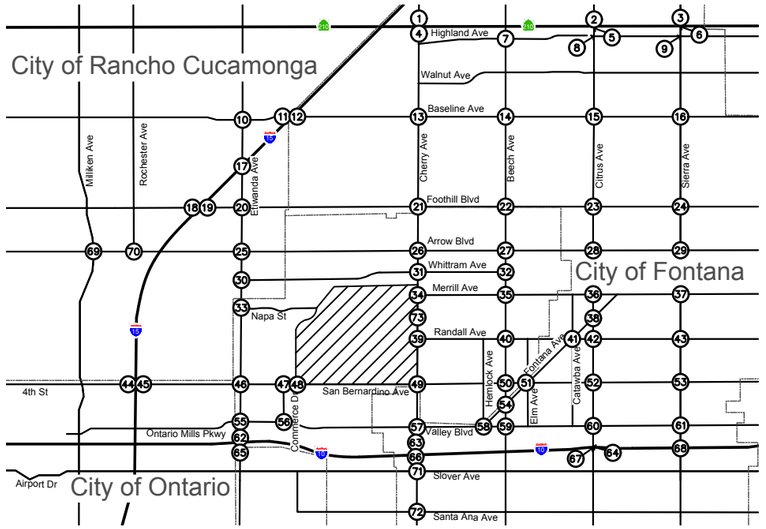


FIGURE 6
LOCATION OF CUMULATIVE PROJECTS



NOT TO SCALE

1. Cherry Ave at SR-210 WB Ramps	2. Citrus Ave at SR-210 WB Ramps	3. Sierra Ave at SR-210 WB Ramps	4. Cherry Ave at SR-210 EB Ramps	5. Citrus Ave at SR-210 EB Ramps
←4/8 ←17/26 14/15 → 6/5 →	←4/8 ←5/7 6/5 →	←4/8 ←2/4 6/5 →	←21/34 12/16 → 20/20 → 22/22 →	←9/15 6/5 → 7/7 →

6. Sierra Ave at SR-210 EB Ramps	7. Beech Ave at Highland Ave	8. Citrus Ave at Highland Ave	9. Sierra Ave at Highland Ave	10. Etiwanda Ave at Base Line Rd	11. I-15 SB Ramps at Base Line Rd	12. I-15 NB Ramps at Base Line Rd	13. Cherry Ave at Baseline Ave
←6/12 6/5 →		←9/15 13/12 →	←6/12 9/8 →	←4/8 4/8 → 6/5 → 6/5 →			←32/50 ←33/63 42/42 → 45/39 →

14. Beech Ave at Baseline Ave	15. Citrus Ave at Baseline Ave	16. Sierra Ave at Baseline Ave	17. Etiwanda Ave at Church St/Miller Ave	18. I-15 SB Ramps at Foothill Blvd	19. I-15 NB Ramps at Foothill Blvd	20. Etiwanda Ave at Foothill Blvd
←27/54 38/33 →	←9/15 ←14/30 2/1 11/10 → 21/18 → 2/2 → 2/2 →	←6/14 ←4/6 ←4/8 10/9 → 6/5 → 5/4 →	←8/16 ←0/1 12/10 → 1/0 →	←26/42 ←16/16 12/16 →	←36/35 ←16/16 38/58 →	←8/17 ←0/1 38/58 → 52/51 → 13/10 → 1/0 →

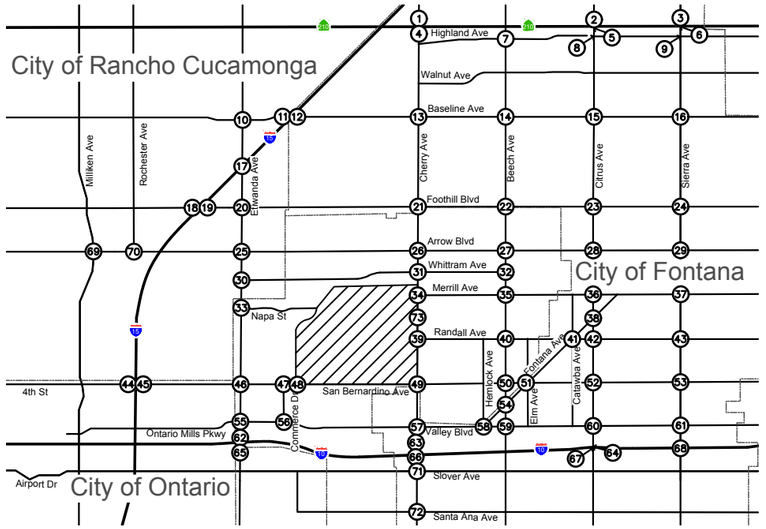
LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 7A
CUMULATIVE PROJECT TRAFFIC VOLUMES



NOT TO SCALE

21. Cherry Ave at Foothill Blvd	22. Beech Ave at Foothill Blvd	23. Citrus Ave at Foothill Blvd	24. Sierra Ave at Foothill Blvd	25. Etiwanda Ave at Arrow Rte
←0/1 ←72/120 ←19/36 1/0 → ↑91/87 ↑29/26	←19/36 ←2/1 29/26 → ↑1/1	←2/1 ←15/28 23/21 → ↑4/4	←2/5 ←8/10 ←9/15 ←3/1 3/3 → 14/13 → ↑9/7 ↑2/3	←46/76 12/24 → ↑18/15 ↑66/61

26. Cherry Ave at Arrow Rte	27. Beech Ave at Arrow Rte	28. Citrus Ave at Arrow Rte	29. Sierra Ave at Arrow Rte	30. Etiwanda Ave at Whittram Ave	31. Cherry Ave at Whittram Ave	32. Beech Ave at Whittram Ave	33. Etiwanda Ave at Napa St
←91/156 ←13/30 ↑121/113 ↑20/18	←2/1 ←13/30 ←2/3 20/18 → ↑1/1 ↑3/2	←2/1 ←7/17 ←2/3 11/10 → ↑4/4 ↑3/2	←11/11 ←2/5 ←2/3 3/3 → ↑11/10 ↑3/2	←58/100 84/76 →	←104/186 ←1/2 140/131 →	←1/2 ←3/2 4/3 →	←58/100 ←84/76 ←9/9 73/88 →

34. Cherry Ave at Merrill Ave	35. Beech Ave at Merrill Ave	36. Citrus Ave at Merrill Ave	37. Sierra Ave at Merrill Ave	38. Citrus Ave at Fontana Ave	39. Cherry Ave at Randall Ave	40. Beech Ave at Randall Ave
	←3/2 ←7/17 11/10 → ↑4/3	←4/4 ←7/17 ←1/1 11/10 → ↑7/6 ↑1/1	←12/17 ←5/5 ←4/8 15/12 → 6/5 → 2/2 → ↑1/4 ↑5/5	←2/1 ←3/4 ←5/2 ←5/10 6/5 → 12/9 → ↑2/2	←97/116 123/106 → 96/93 → ↑117/144	←3/2 ←102/144 4/3 → 129/135 → 8/6 → ↑4/8

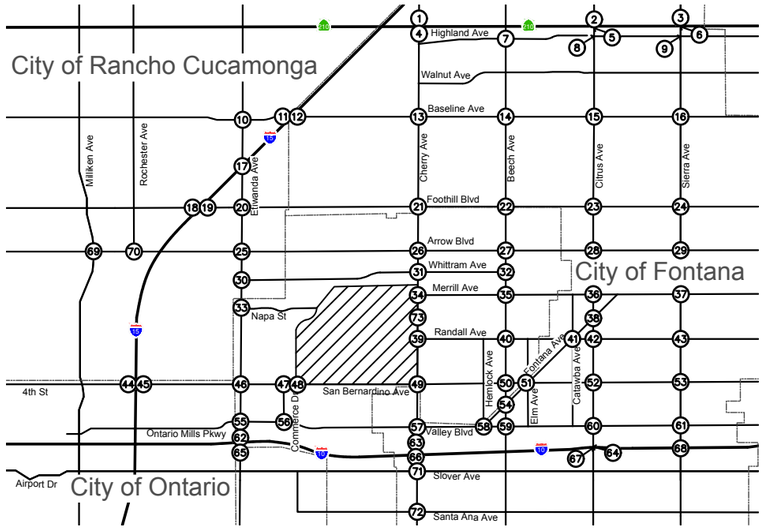
LEGEND:

= Project Site

Ⓧ = Study Intersection

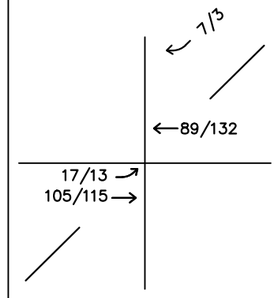
XX/YY = AM/PM Volumes

FIGURE 7B
CUMULATIVE PROJECT TRAFFIC VOLUMES

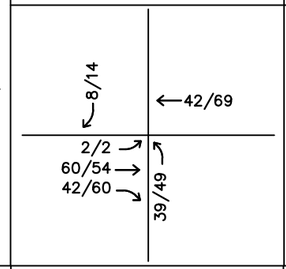


NOT TO SCALE

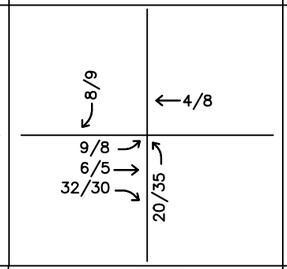
41. Fontana Ave/ Catawba Ave at Randall Ave



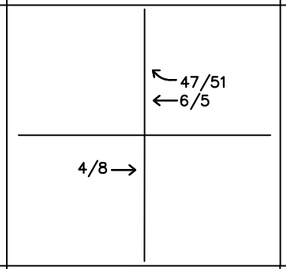
42. Citrus Ave at Randall Ave



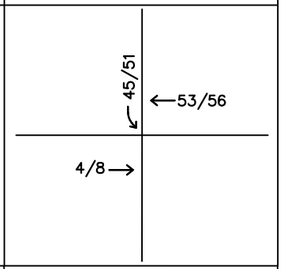
43. Sierra Ave at Randall Ave



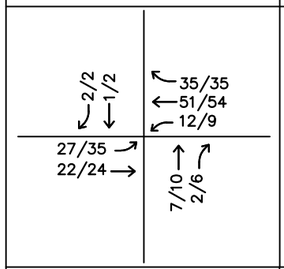
44. I-15 SB Ramps/ Ontario Mills Dr at Fourth St



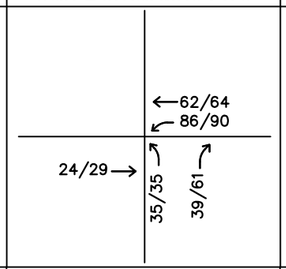
45. I-15 NB Ramps at Fourth St



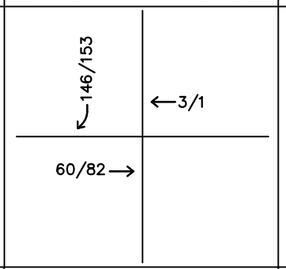
46. Etiwanda Ave at Fourth St/San Bernardino Ave



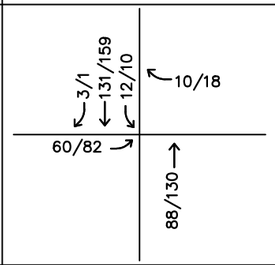
47. Commerce Dr at San Bernardino Ave



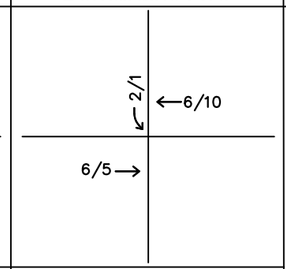
48. Vip Rd at San Bernardino Ave



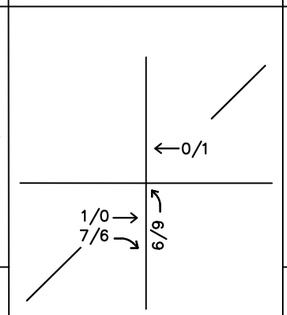
49. Cherry Ave at San Bernardino Ave



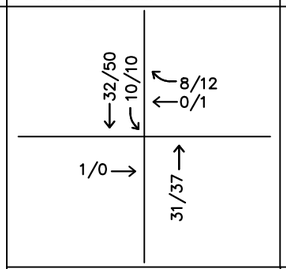
50. Beech Ave at San Bernardino Ave



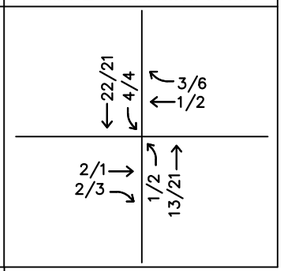
51. Fontana Ave/Elm St at San Bernardino Ave



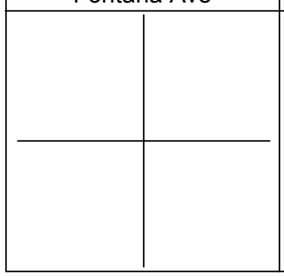
52. Citrus Ave at San Bernardino Ave



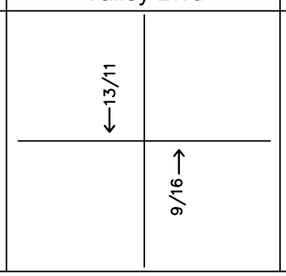
53. Sierra Ave at San Bernardino Ave



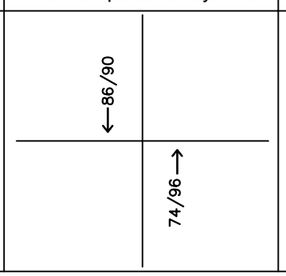
54. Beech Ave at Fontana Ave



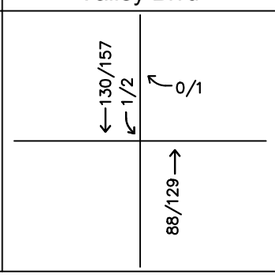
55. Etiwanda Ave at Valley Blvd



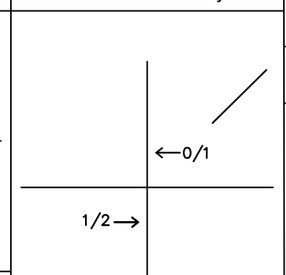
56. Commerce Dr/ I-15 Ramps at Valley Blvd



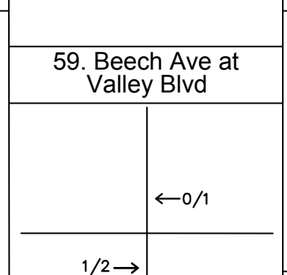
57. Cherry Ave at Valley Blvd



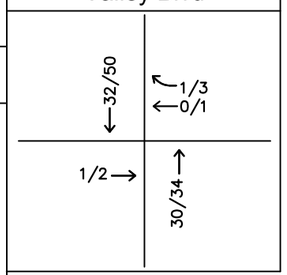
58. Fontana Ave/ Hemlock Ave at Valley Blvd



59. Beech Ave at Valley Blvd



60. Citrus Ave at Valley Blvd



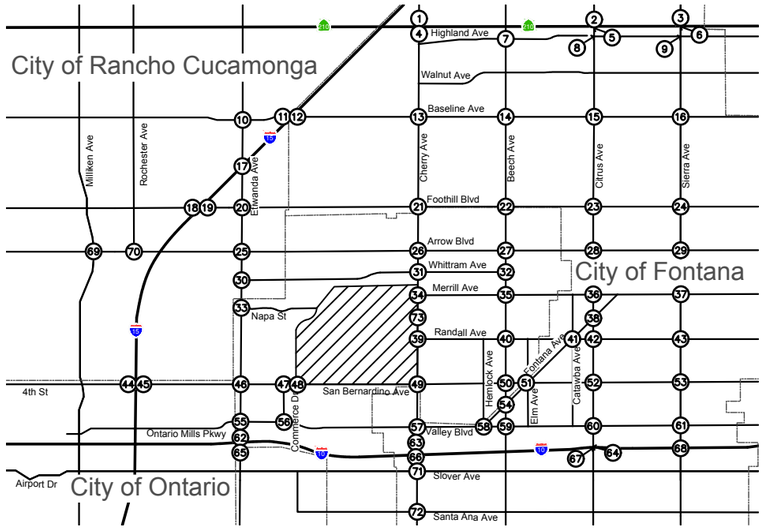
LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 7C
CUMULATIVE PROJECT TRAFFIC VOLUMES



NOT TO SCALE

61. Sierra Ave at Valley Blvd	62. Etiwanda Ave at I-10 WB Off-Ramps	63. Cherry Ave at I-10 WB Ramps	64. Citrus Ave at I-10 WB Ramps	65. Etiwanda Ave at I-10 EB Ramps
←18/18, ←6/5, ↖4/8	↖7/6, ←6/5	←124/150, ↖62/82	←32/50, ↖26/26	←6/5
1/2↘, 1/4→, 10/15→	→9/16	→26/47	→4/8	0/8→, →4/8

66. Cherry Ave at I-10 EB Ramps	67. Citrus Ave at I-10 EB Ramps	68. Sierra Ave at I-10 EB/WB Ramps	69. Milliken Ave at Arrow Rte	70. Rochester Ave at Arrow Rte	71. Cherry Ave at Slover Ave	72. Cherry Ave at Santa Ana Ave	73. Cherry Ave at Street A
←32/28, ←92/123	←6/5, ←26/45	←6/5, ←13/16, ↖7/11	←4/8, ←6/5, ←6/5, ↖6/5	←18/15	↖6/5, ←26/23	↖6/5, ←6/5, ←14/13, ↖9/15	FUTURE INTERSECTION
5/7↘, →21/39	→4/8	→4/8	4/8→, →4/8	12/24→	4/8↘, →17/31	4/8↘, →4/8	

LEGEND:

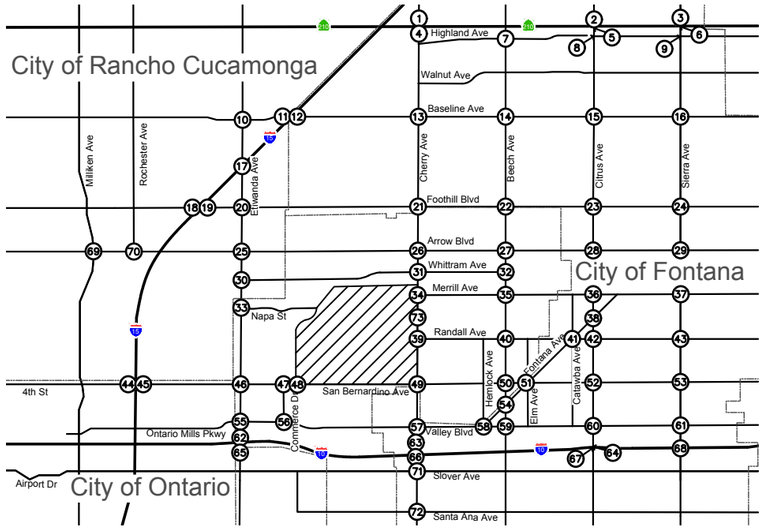
= Project Site

Ⓧ = Study Intersection

XX/YY = AM/PM Volumes

FIGURE 7D
CUMULATIVE PROJECT TRAFFIC VOLUMES

Kimley»Horn



NOT TO SCALE

1. Cherry Ave at SR-210 WB Ramps	2. Citrus Ave at SR-210 WB Ramps	3. Sierra Ave at SR-210 WB Ramps	4. Cherry Ave at SR-210 EB Ramps	5. Citrus Ave at SR-210 EB Ramps
212/155 759/497 267/143 4/0 399/330 190/335 327/610	376/419 875/784 328/352 1/0 451/368 320/342 966/1105	1148/1250 308/424 543/319 846/1205	874/747 170/76 162/205 5/2 326/397 473/748 360/347	996/738 320/216 436/526 3/3 426/365 872/1111 439/292

6. Sierra Ave at SR-210 EB Ramps	7. Beech Ave at Highland Ave	8. Citrus Ave at Highland Ave	9. Sierra Ave at Highland Ave	10. Etiwanda Ave at Base Line Rd	11. I-15 SB Ramps at Base Line Rd	12. I-15 NB Ramps at Base Line Rd	13. Cherry Ave at Baseline Ave
26/41 1347/1272 170/205 586/434 1009/1507 491/682	99/57 532/409 58/106 65/87 220/196 95/72 124/69 211/343 80/64 39/28 604/407 71/92	159/112 1008/678 357/312 261/385 209/314 96/131 228/204 204/318 56/57 80/66 782/807 76/80	427/255 1268/1043 232/378 211/375 267/181 17/73 308/452 267/266 183/54 170/63 983/1403 40/69	272/65 307/108 156/52 250/49 1179/657 182/136 113/78 537/1050 87/130 126/113 290/178 108/218	601/265 389/273 1003/591 569/1110 250/179	190/172 1691/846 375/465 599/967 295/293 2/0 324/545	435/91 910/511 73/113 70/65 1416/625 472/373 246/323 532/1124 147/86 67/163 603/1024 209/397

14. Beech Ave at Baseline Ave	15. Citrus Ave at Baseline Ave	16. Sierra Ave at Baseline Ave	17. Etiwanda Ave at Church St/Miller Ave	18. I-15 SB Ramps at Foothill Blvd	19. I-15 NB Ramps at Foothill Blvd	20. Etiwanda Ave at Foothill Blvd
209/95 253/202 100/139 87/128 651/639 48/69 140/224 482/1071 39/77 69/100 253/265 14/25	260/127 817/470 131/135 108/61 713/588 167/171 301/327 388/781 116/122 127/101 607/645 779/75	116/72 1121/547 233/240 147/249 526/686 95/98 110/153 435/638 116/95 166/110 672/1036 59/65	128/99 307/253 81/24 73/32 492/271 100/46 92/145 264/465 114/177 149/141 265/281 155/104	900/568 185/219 1537/1445 563/2028 846/990	245/345 1308/1197 505/1216 925/775 524/493	244/164 369/239 53/66 122/50 1272/793 363/111 106/250 475/987 261/245 214/327 224/379 72/200

Note: Volumes reflect PCE adjustments.

LEGEND:

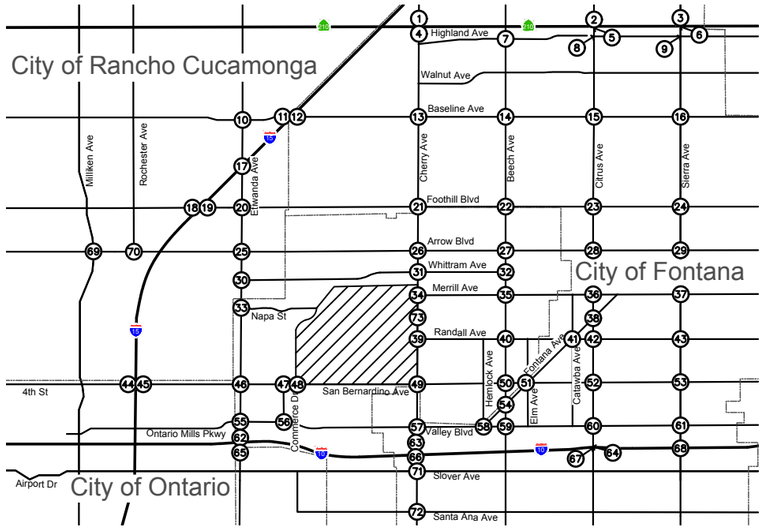
= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 8A
OPENING YEAR 2024 TRAFFIC VOLUMES

Kimley»Horn



NOT TO SCALE

21. Cherry Ave at Foothill Blvd	22. Beech Ave at Foothill Blvd	23. Citrus Ave at Foothill Blvd	24. Sierra Ave at Foothill Blvd	25. Etiwanda Ave at Arrow Rte
215/208 ↖ 913/792 ← 174/298 ↖	← 1637/842 ← 212/111	172/75 ↖ 769/585 ← 140/139 ↖	136/131 ↖ 871/527 ← 204/162 ↖	416/121 ↖ 389/325 ← 127/135 ↖
104/130 ← 1206/601 ← 320/179		83/126 ← 860/614 ← 249/304	133/172 ← 657/546 ← 163/213	141/153 ← 741/382 ← 149/106
195/262 → 439/912 → 162/106 ↘	687/1432 → 38/57 ↘	158/271 → 477/908 → 121/188 ↘	227/215 → 412/743 → 106/142 ↘	99/370 → 260/659 → 169/434 ↘
227/293 ↑ 519/965 ↑ 151/270 ↑	22/64 ↑ 109/126 ↑	152/146 ↑ 550/717 ↑ 83/92 ↑	84/109 ↑ 471/853 ↑ 86/146 ↑	363/188 ↑ 237/612 ↑ 38/123 ↑

26. Cherry Ave at Arrow Rte	27. Beech Ave at Arrow Rte	28. Citrus Ave at Arrow Rte	29. Sierra Ave at Arrow Rte	30. Etiwanda Ave at Whittram Ave	31. Cherry Ave at Whittram Ave	32. Beech Ave at Whittram Ave	33. Etiwanda Ave at Napa St
101/99 ↖ 1159/980 ↓ 56/73 ↘	89/23 ↖ 165/150 ↓ 15/19 ↘	149/71 ↖ 840/774 ↓ 102/146 ↘	73/82 ↖ 771/548 ↓ 61/114 ↘	664/646 ↖ 69/208 ↘	94/59 ↖ 1236/915 ↓ 37/40 ↘	119/43 ↖ 280/335	1/0 ↖ 798/605 ↓ 110/201 ↘
63/63 ← 637/575 ← 176/153	23/29 ← 647/485 ← 150/98	139/98 ← 470/345 ← 242/156	58/56 ← 561/335 ← 75/71	145/93 ← 248/213	72/77 ← 144/71 ← 160/131		126/128 ← 193/211
74/89 → 413/642 → 99/104 ↘	43/33 → 377/692 → 61/69 ↘	77/83 → 281/609 → 111/178 ↘	71/107 → 429/507 → 87/94 ↘	527/780 ↑ 160/300 ↑	32/92 → 32/149 → 212/312 ↘	60/85 → 70/175 ↘	0/5 → 2/32 ↘
109/146 ↑ 832/1246 ↑ 149/250 ↑	88/102 ↑ 136/161 ↑ 124/233 ↑	220/186 ↑ 658/917 ↑ 220/181 ↑	92/90 ↑ 553/826 ↑ 40/61 ↑	197/152 ↑ 994/1579 ↑ 140/119 ↑	142/93 ↑ 311/427 ↑	1/0 ↑ 584/961 ↑ 286/152 ↑	

34. Cherry Ave at Merrill Ave	35. Beech Ave at Merrill Ave	36. Citrus Ave at Merrill Ave	37. Sierra Ave at Merrill Ave	38. Citrus Ave at Fontana Ave	39. Cherry Ave at Randall Ave	40. Beech Ave at Randall Ave
0/1 ↖ 1237/841 ↓ 138/211 ↘	81/42 ↖ 157/184 ↓ 59/125 ↘	98/106 ↖ 960/783 ↓ 65/83 ↘	57/76 ↖ 935/743 ↓ 35/68 ↘	131/113 ↖ 926/726 ↓ 24/36 ↘	9/2 ↖ 1207/882 ↓ 156/160 ↘	90/35 ↖ 206/172 ↓ 6/36 ↘
268/218 ← 145/107	162/137 ← 251/174 ← 71/34	109/144 ← 225/224 ← 47/32	46/49 ← 396/294 ← 142/118	33/21 ← 88/90 ← 83/55	109/124 ← 97/116 ← 227/175	41/45 ← 285/264 ← 33/11
0/1 →	109/137 → 148/247 → 59/35 ↘	156/147 → 176/275 → 51/56 ↘	68/92 → 366/485 → 101/109 ↘	115/149 → 107/198 → 12/10 ↘	0/5 → 124/108 → 96/98 ↘	62/69 → 251/316 → 27/29 ↘
3/1 ↑ 813/1458 ↑ 117/200 ↑	54/32 ↑ 176/231 ↑ 61/51 ↑	54/48 ↑ 724/983 ↑ 30/37 ↑	61/124 ↑ 607/888 ↑ 96/174 ↑	21/19 ↑ 686/922 ↑ 80/73 ↑	128/161 ↑ 838/1461 ↑ 110/173 ↑	22/24 ↑ 205/226 ↑ 45/13 ↑

Note: Volumes reflect PCE adjustments.

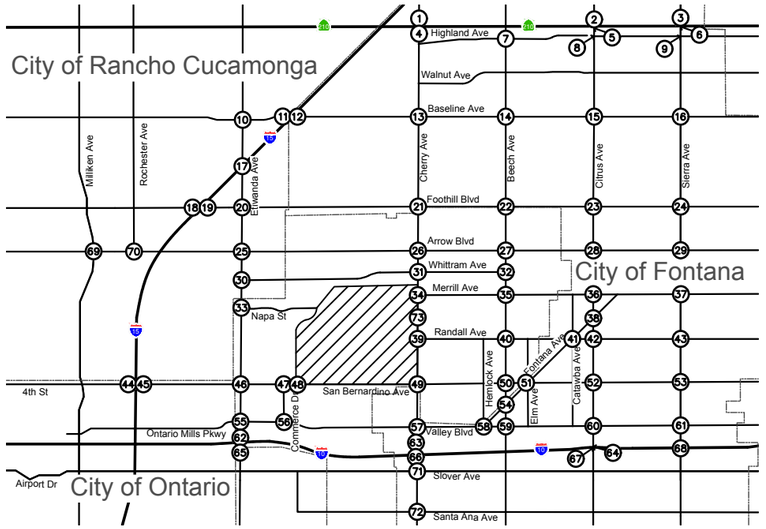
LEGEND:

= Project Site

Ⓧ = Study Intersection

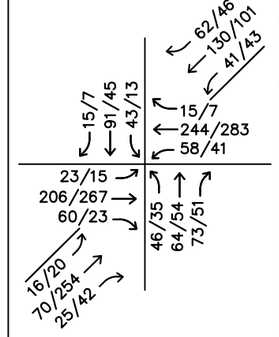
XX/YY = AM/PM Volumes

FIGURE 8B
OPENING YEAR 2024 TRAFFIC VOLUMES

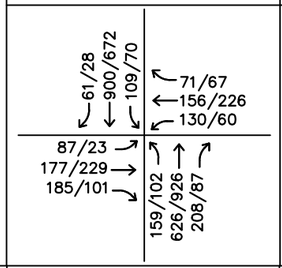


NOT TO SCALE

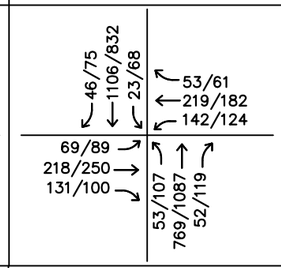
41. Fontana Ave/ Catawba Ave at Randall Ave



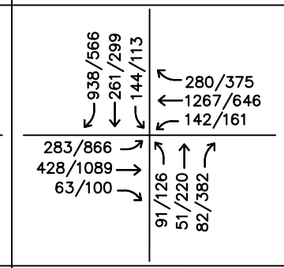
42. Citrus Ave at Randall Ave



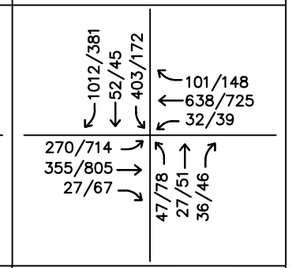
43. Sierra Ave at Randall Ave



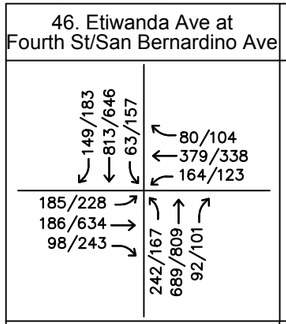
44. I-15 SB Ramps/ Ontario Mills Dr at Fourth St



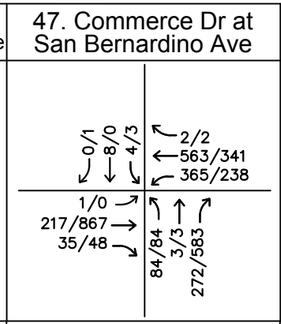
45. I-15 NB Ramps at Fourth St



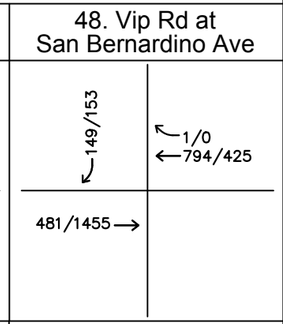
46. Etiwanda Ave at Fourth St/San Bernardino Ave



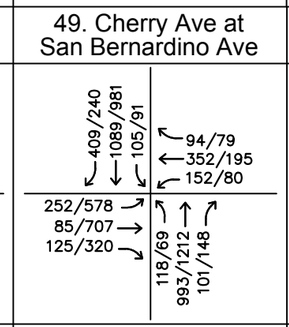
47. Commerce Dr at San Bernardino Ave



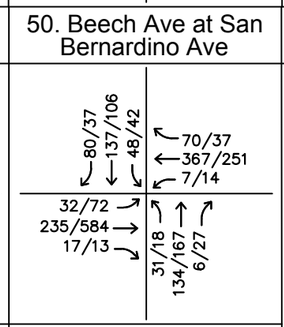
48. Vip Rd at San Bernardino Ave



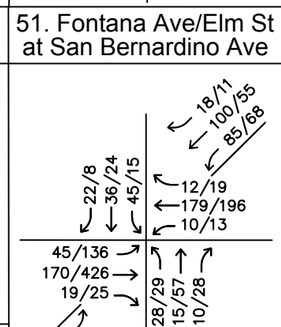
49. Cherry Ave at San Bernardino Ave



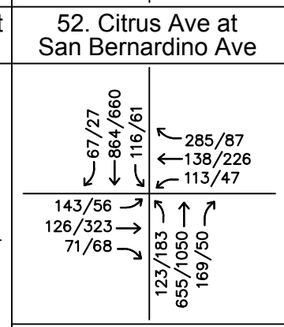
50. Beech Ave at San Bernardino Ave



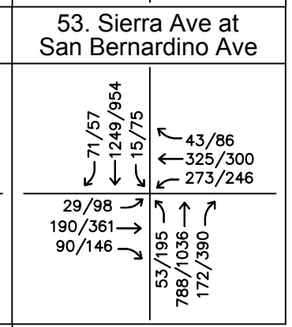
51. Fontana Ave/Elm St at San Bernardino Ave



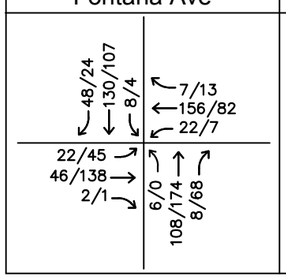
52. Citrus Ave at San Bernardino Ave



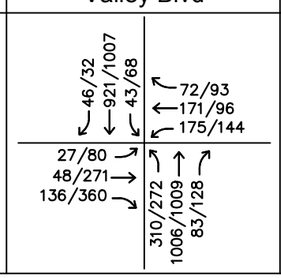
53. Sierra Ave at San Bernardino Ave



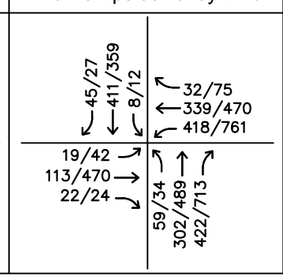
54. Beech Ave at Fontana Ave



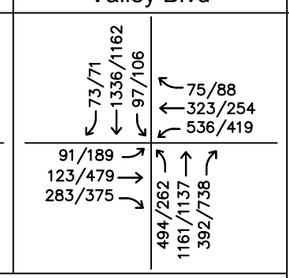
55. Etiwanda Ave at Valley Blvd



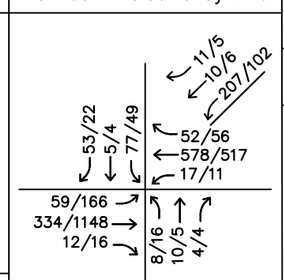
56. Commerce Dr/ I-15 Ramps at Valley Blvd



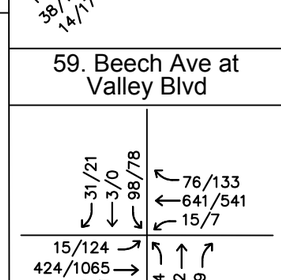
57. Cherry Ave at Valley Blvd



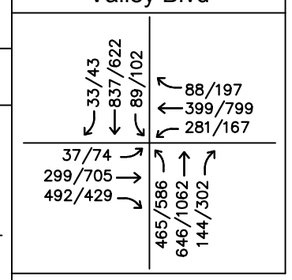
58. Fontana Ave/ Hemlock Ave at Valley Blvd



59. Beech Ave at Valley Blvd



60. Citrus Ave at Valley Blvd



Note: Volumes reflect PCE adjustments.

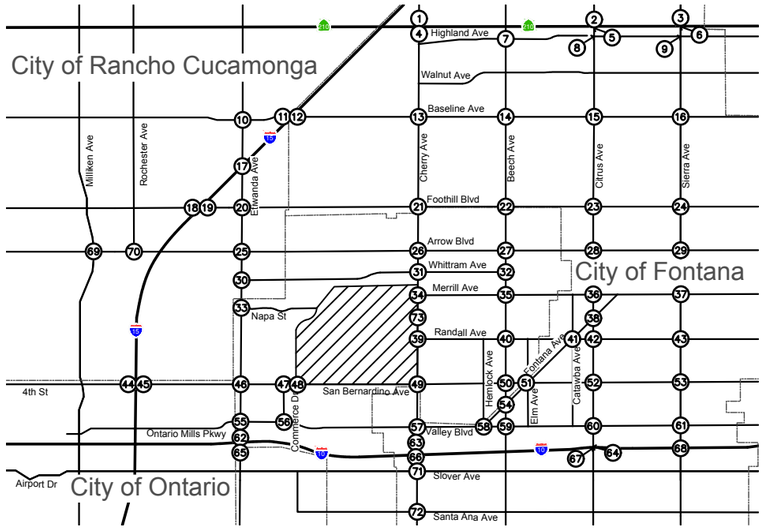
LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 8C
OPENING YEAR 2024 TRAFFIC VOLUMES



NOT TO SCALE

61. Sierra Ave at Valley Blvd	62. Etiwanda Ave at I-10 WB Off-Ramps	63. Cherry Ave at I-10 WB Ramps	64. Citrus Ave at I-10 WB Ramps	65. Etiwanda Ave at I-10 EB Ramps
104/92 ↙ 1487/1291 ↓ 122/168 ↖ 104/120 ← 444/676 ← 579/671	439/453 ↙ 826/1100 ↓ ↖ 563/458 ← 519/368	1977/2063 ↓ ↖ 737/604 ← 782/549	466/474 ↙ 1074/996 ↓ ↖ 501/554 ← 385/254	238/394 ↙ 1030/1032 ↓
180/283 → 275/915 → 161/234 ↘ 192/254 ↑ 1300/1262 ↑ 716/771 ↑	817/1061 ↑ 445/622 ↑	1079/1466 ↑ 576/412 ↑	697/1148 ↑ 272/256 ↑	308/306 → 671/392 ↘ 1142/1372 ↑ 381/562 ↑

66. Cherry Ave at I-10 EB Ramps	67. Citrus Ave at I-10 EB Ramps	68. Sierra Ave at I-10 EB/WB Ramps	69. Milliken Ave at Arrow Rte	70. Rochester Ave at Arrow Rte	71. Cherry Ave at Slover Ave	72. Cherry Ave at Santa Ana Ave	73. Cherry Ave at Street A
1609/1281 ↓ 580/667 ↓	908/691 ↓ 592/576 ↓	870/844 ↙ 791/918 ↓ 543/525 ↓ ↖ 590/611 ← 454/491	231/125 ↙ 747/551 ↓ 118/74 ↓ ↖ 115/113 ← 1174/578 ← 171/118	286/190 ↙ 413/232 ↓ 111/92 ↓ ↖ 142/183 ← 1092/534 ← 176/72	559/434 ↙ 1203/1065 ↓ 434/400 ↓ ↖ 372/386 ← 273/188 ← 56/64	357/143 ↙ 769/948 ↓ 135/84 ↓ ↖ 79/103 ← 22/22 ← 10/14	FUTURE INTERSECTION
430/547 ↗ 6/46 → 654/581 ↘ 1329/1349 ↑ 512/444 ↑	322/478 ↗ 8/7 → 453/225 ↘ 694/955 ↑ 352/540 ↑	906/969 ↗ 531/484 ↘ 445/543 ↑ 765/1304 ↑ 378/495 ↑	82/251 ↗ 438/1046 → 125/197 ↘ 187/184 ↑ 353/1556 ↑ 89/357 ↑	125/368 ↗ 365/956 → 73/22 ↘ 52/58 ↑ 180/838 ↑ 70/272 ↑	435/474 ↗ 233/712 → 45/89 ↘ 30/37 ↑ 1010/939 ↑ 58/70 ↑	264/266 ↗ 41/52 → 85/32 ↘ 38/8 ↑ 812/645 ↑ 12/31 ↑	

Note: Volumes reflect PCE adjustments.

LEGEND:
- = Project Site
- Ⓧ = Study Intersection
- XX/YY = AM/PM Volumes

FIGURE 8D
OPENING YEAR 2024 TRAFFIC VOLUMES

TABLE 3
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2024 CUMULATIVE CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
1	Cherry Ave at SR-210 WB Ramps	C	S	30.0	C	28.7	C
2	Citrus Ave at SR-210 WB Ramps	C	S	25.9	C	26.3	C
3	Sierra Ave at SR-210 WB Ramps	C	S	19.6	B	16.6	B
4	Cherry Ave at SR-210 EB Ramps	C	S	24.1	C	23.3	C
5	Citrus Ave at SR-210 EB Ramps	C	S	29.2	C	29.9	C
6	Sierra Ave at SR-210 EB Ramps	C	S	17.6	B	14.4	B
7	Beech Ave at Highland Ave	F	S	31.7	C	34.7	C
8	Citrus Ave at Highland Ave	F	S	36.6	D	39.1	D
9	Sierra Ave at Highland Ave	F	S	32.0	C	46.1	D
10	Etiwanda Ave at Base Line Rd	RC	S	55.6	E	40.3	D
11	I-15 SB Ramps at Base Line Rd	C	S	21.5	C	15.0	B
12	I-15 NB Ramps at Baseline Ave	C	S	30.3	C	34.4	C
13	Cherry Ave at Baseline Ave	F	S	38.4	D	38.7	D
14	Beech Ave at Baseline Ave	F	S	39.9	D	43.3	D
15	Citrus Ave at Baseline Ave	F	S	47.9	D	39.6	D
16	Sierra Ave at Baseline Ave	F	S	33.7	C	35.4	D
17	Etiwanda Ave at Church St/Miller Ave	RC	S	47.4	D	43.6	D
18	I-15 SB Ramps at Foothill Blvd	C	S	32.8	C	20.7	C
19	I-15 NB Ramps at Foothill Blvd	C	S	25.4	C	21.9	C
20	Etiwanda Ave at Foothill Blvd	RC	S	42.6	D	42.8	D
21	Cherry Ave at Foothill Blvd	F/SB	S	40.5	D	43.5	D
22	Beech Ave at Foothill Blvd	F/SB	U	>180	F	>180	F
23	Citrus Ave at Foothill Blvd	F	S	47.5	D	51.4	D
24	Sierra Ave at Foothill Blvd	F	S	41.9	D	42.4	D
25	Etiwanda Ave at Arrow Rte	RC	S	42.2	D	39.9	D
26	Cherry Ave at Arrow Rte	SB	S	42.4	D	53.7	D
27	Beech Ave at Arrow Rte	SB	S	26.0	C	25.2	C

TABLE 3
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2024 CUMULATIVE CONDITIONS

28	Citrus Ave at Arrow Rte	F	S	44.9	D	42.3	D
29	Sierra Ave at Arrow Rte	F	S	37.1	D	36.3	D
30	Etiwanda Ave at Whittram Ave	RC	S	24.6	C	26.8	C
31	Cherry Ave at Whittram Ave	SB	S	37.4	D	46.5	D
32	Beech Ave at Whittram Ave	SB	U	36.5	E	38.8	E
33	Etiwanda Ave at Napa St	SB	S	19.5	B	27.3	C
34	Cherry Ave at Merrill Ave	SB	S	24.5	C	29.3	C
35	Beech Ave at Merrill Ave	SB	U	29.0	D	40.9	E
36	Citrus Ave at Merrill Ave	F	S	29.4	C	30.3	C
37	Sierra Ave at Merrill Ave	F	S	39.8	D	42.5	D
38	Citrus Ave at Fontana Ave	F	S	20.7	C	23.1	C
39	Cherry Ave at Randall Ave	SB	S	36.4	D	37.4	D
40	Beech Ave at Randall Ave	SB	U	67.8	F	25.7	D
41	Fontana Ave/Catawba Ave at Randall Ave	F	U	25.1	D	28.8	D
42	Citrus Ave at Randall Ave	F	S	33.2	C	27.7	C
43	Sierra Ave at Randall Ave	F	S	28.5	C	30.8	C
44	I-15 SB Ramps/Ontario Mills Dr at Fourth St	C	S	44.6	D	51.3	D
45	I-15 NB Ramps at Fourth St	C	S	51.8	D	34.8	C
46	Etiwanda Ave at Fourth St/San Bernardino A	RC/SB	S	34.1	C	36.9	D
47	Commerce Dr at San Bernardino Ave	SB	S	34.7	C	49.8	D
48	Vip Rd at San Bernardino Ave	SB	U	13.8	B	10.8	B
49	Cherry Ave at San Bernardino Ave	SB	S	34.8	C	44.4	D
50	Beech Ave at San Bernardino Ave	SB	S	33.0	C	35.2	D
51	Fontana Ave/Elm Ave at San Bernardino Ave	F/SB	S	32.3	C	27.7	C
52	Citrus Ave at San Bernardino Ave	F	S	38.2	D	31.0	C
53	Sierra Ave at San Bernardino Ave	F	S	30.0	C	39.7	D
54	Beech Ave at Fontana Ave	F/SB	U	9.9	A	9.8	A
55	Etiwanda Ave at Valley Blvd	SB	S	26.8	C	34.1	C
56	Commerce Dr/I-10 Ramps at Valley Blvd	C	S	29.5	C	51.8	D

TABLE 3
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2024 CUMULATIVE CONDITIONS

57	Cherry Ave at Valley Blvd	F/SB	S	43.3	D	44.8	D
58	Fontana Ave/Hemlock Ave at Valley Blvd	F/SB	S	27.8	C	15.1	B
59	Beech Ave at Valley Blvd	F	U	67.0	F	>180	F
60	Citrus Ave at Valley Blvd	F	S	51.6	D	45.2	D
61	Sierra Ave at Valley Blvd	F	S	34.2	C	51.6	D
62	Etiwanda Ave at I-10 WB Off-Ramps	C	S	23.7	C	19.1	B
63	Cherry Ave at I-10 WB Ramps	C	S	34.1	C	26.3	C
64	Citrus Ave at I-10 WB Ramps	C	S	21.2	C	18.7	B
65	Etiwanda Ave at I-10 EB Ramps	C	S	30.0	C	18.6	B
66	Cherry Ave at I-10 EB Ramps	C	S	35.2	D	35.3	D
67	Citrus Ave at I-10 EB Ramps	C	S	33.2	C	30.6	C
68	Sierra Ave at I-10 EB/WB Ramps	C	S	25.6	C	50.3	D
69	Milliken Ave at Arrow Rte	RC	S	38.3	D	39.7	D
70	Rochester Ave at Arrow Rte	RC	S	36.8	D	39.1	D
71	Cherry Ave at Slover Ave	F	S	33.6	C	35.7	D
72	Cherry Ave at Santa Ana Ave	F	S	>180	F	>180	F

Notes:
- Bold values indicate intersections operating at an unacceptable Level of Service

- Delay values for unsignalized intersections represent the average vehicle delay on the worst (highest delay) intersection approach.

F = Fontana; SB = San Bernardino County; RC = Rancho Cucamonga; C = Caltrans

PROJECT TRAFFIC

Project Trip Generation

Generally, trip generation estimates for the project are based on daily and peak hour trip generation rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition[2]).

Based on information provided the applicant, the following phases and mix of uses are assumed for this analysis and applicable ITE Land Use Category for each land use are as follows:

Land Use	ITE Land Use Code	Quantity	Unit
Phase 1			
E-Commerce	N/A	2,773,050	Sq. Ft.
Truck Storage	N/A	98	Acres
Phase 2 (in addition to Phase 1)			
High-Cube Short-Term Storage	154	2,141,000	Sq. Ft.
High-Cube Cold Storage	157	500,000	Sq. Ft.
Retail / Commercial	820	261,360	Sq. Ft.

Trip generation rates for the E-Commerce component of the project were based on empirical trip generation count data collected for similar E-Commerce projects, provided by the applicant. The Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition) does not currently have a land use for truck storage facilities. Operational forecast data for the proposed Project were provided by the applicant and approved by the County of San Bernardino. A copy of the operational forecast and supporting data is provided in the Approved Scoping Agreement in *Appendix A*.

Passenger vehicle and truck mix assumptions were applied to the truck-intensive uses of the project, based on the City of Fontana Truck Trip Generation Study. Passenger car equivalent (PCE) factors were then applied to the truck types, based on number of axles (1.5 PCE for 2-axle trucks, 2.0 PCE for 3-axle trucks, and 3.0 PCE for 4+-axle trucks) to determine the total PCE trips to be generated by the project.

Trip generation rates and the resulting project PCE trips for Phase 1 of the project are summarized on Table 4. Review of this table indicates that Phase 1 of the Project is forecasted to generate 32,477 daily PCE trips on a daily basis, with 1,643 PCE trips during the morning peak hour (1,041 inbound and 602 outbound) and 3,099 PCE trips (1,700 inbound and 1,399 outbound) during the evening peak hour.

[2] Based on a comparison of 10th and 11th Edition trip rates for High-Cube Short-Term Storage, High-Cube Cold Storage, and Retail uses, the 10th Edition rates were higher and has been used for analysis as a conservative approach, consistent with the Scoping document. The E-Commerce and Truck Storage rates were based on actual counts.

Trip generation rates and the resulting project PCE trips for Phases 1 and 2 of the project (the total Project) are also summarized on Table 4 (previously mentioned). Review of this table indicates that the Project is forecasted to generate 47,352 daily PCE trips on a daily, with 2,188 PCE trips during the morning peak hour (1,425 inbound and 763 outbound) and 4,114 PCE trips (2,118 inbound and 1,997 outbound) during the evening peak hour. Further breakdown of project trip generation and PCE trips can be found in *Appendix A*.

Trip Distribution and Assignment

Project trip distribution assumptions for the project site were developed considering the proposed site uses, and routes to and from the freeway system. Trip distribution assumptions for passenger vehicles and trucks are shown on Figure 9. Trip distribution percentages at each study intersection were applied to the project trip generation to determine the project trips through each intersection. The Phase 1 project-related peak hour trips are shown on Figure 10. The entire project-related peak hour trips (Phases 1 and 2) are shown on Figure 11.

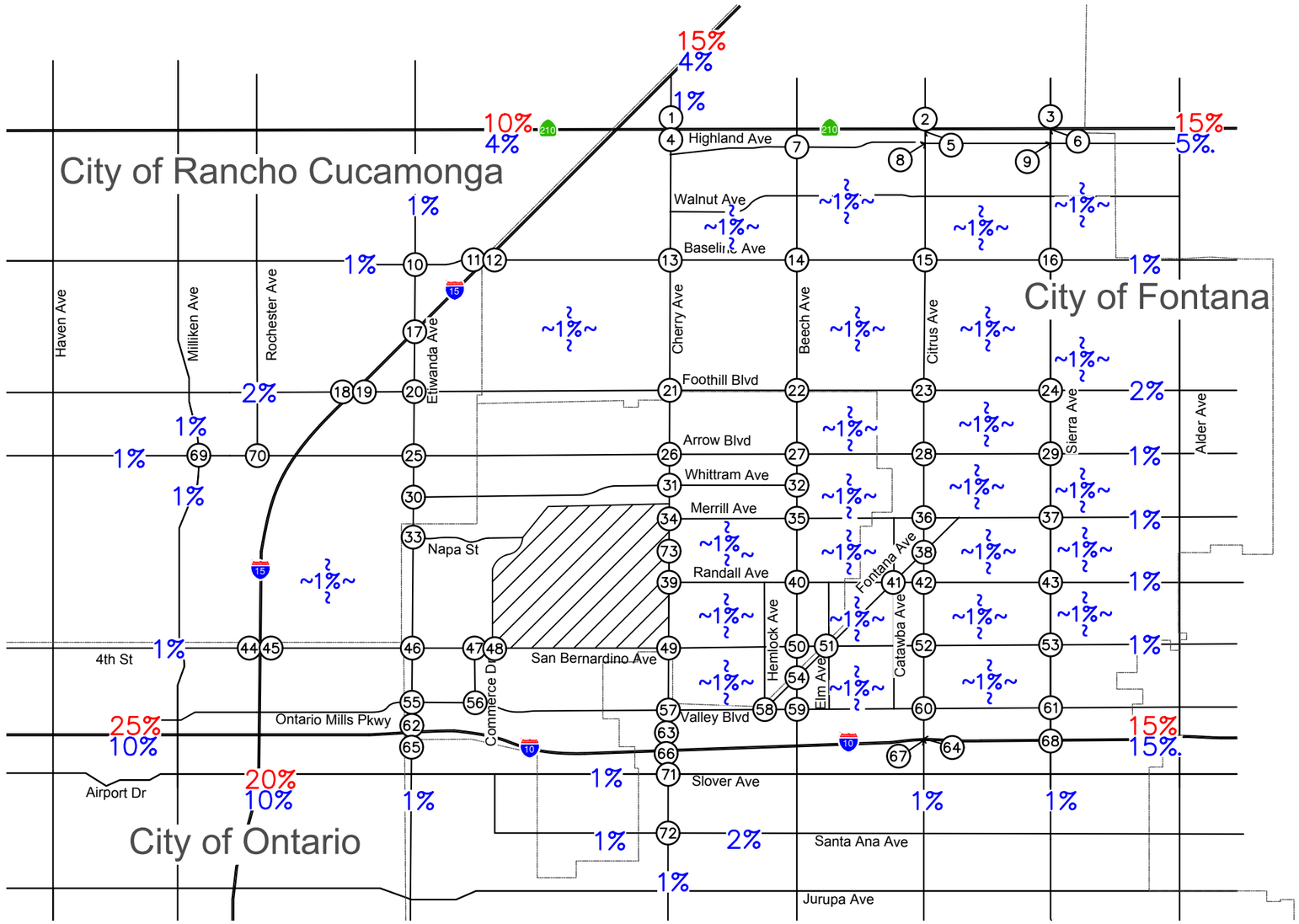
Based on the Trip Generation and Trip Distribution of the project, the following study intersections would have less than 50 peak hour trips:

- #2 – Citrus Ave at SR-210 WB Ramps
- #3 – Sierra Ave at SR-210 WB Ramps
- #5 – Citrus Ave at SR-210 EB Ramps
- #6 – Sierra Ave at SR-210 EB Ramps
- #7 – Beech Ave at Highland Ave
- #8 – Citrus Ave at Highland Ave
- #9 – Sierra Ave at Highland Ave
- #10 – Etiwanda Ave at Base Line Rd
- #11 – I-15 SB Ramps at Base Line Rd
- #32 – Beech Ave at Whittram Ave
- #54 – Beech Ave at Fontana Ave

TABLE 4
SUMMARY OF PROJECT TRIP GENERATION
TOTAL TRIP GENERATION

Vehicle Type	Daily Vehicles	PCE Factor	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
*Phase **1** Project Trips*									
E-Commerce (Could include Cold Storage) - 2,773,050 SF									
Passenger Vehicles	11,845	1.0	11,845	765	162	927	1,089	1,017	2,106
2-Axle Trucks	337	1.5	506	4	4	8	1	4	5
3-Axle Trucks	292	2.0	584	13	15	28	7	12	19
4+ Axle Trucks	1,005	3.0	3,015	56	65	121	56	88	144
Truck Storage - 98 Acres									
Passenger Vehicles	1,103	1.0	1,103	13	22	35	75	38	113
2-Axle Trucks	712	1.5	1,068	13	23	36	33	17	50
3-Axle Trucks	1,460	2.0	2,920	36	63	99	89	45	134
4+ Axle Trucks	3,812	3.0	11,436	141	248	389	350	178	528
Phase **1** Total Passenger Vehicle Trips			12,948	778	184	962	1,164	1,055	2,219
Phase **1** Total Truck PCE Trips			19,529	263	418	681	536	344	880
Phase **1** Total Proposed Project PCE Trips			32,477	1,041	602	1,643	1,700	1,399	3,099
*Phase **2** Project Trips*									
High-Cube Short-Term Storage - 2,141,000 SF									
Passenger Vehicles	2,517	1.0	2,517	112	33	145	50	129	179
2-Axle Trucks	81	1.5	122	5	2	7	2	6	8
3-Axle Trucks	109	2.0	218	10	3	13	4	11	15
4+ Axle Trucks	289	3.0	867	39	11	50	17	45	62
High-Cube Cold Storage - 500,000 SF									
Passenger Vehicles	689	1.0	689	28	8	36	12	27	39
2-Axle Trucks	63	1.5	95	4	1	5	2	4	6
3-Axle Trucks	84	2.0	168	7	2	9	3	7	10
4+ Axle Trucks	224	3.0	672	27	8	35	12	27	39
General Commercial - 261,360 SF									
Passenger Vehicles	9,527	1.0	9,527	152	93	245	316	342	657
Total Passenger Vehicle Trips (Phases **1** and 2)			25,681	1,070	318	1,388	1,542	1,553	3,094
Total Truck PCE Trips (Phases **1** and 2)			21,671	355	445	800	576	444	1,020
Total Proposed Project PCE Trips (Phases **1** and 2)			47,352	1,425	763	2,188	2,118	1,997	4,114

PCE = Passenger Car Equivalent



NOT TO SCALE

LEGEND:

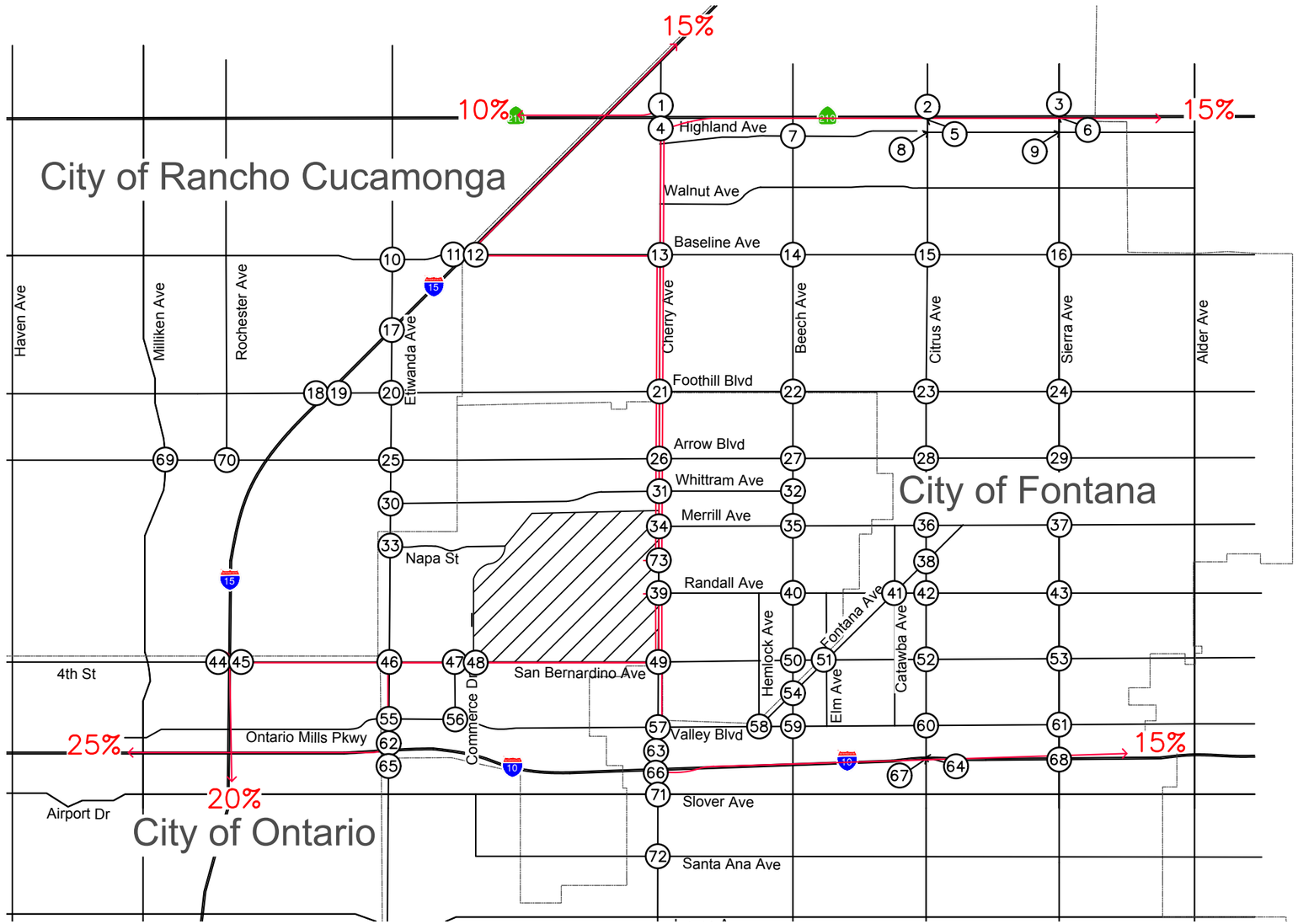
= Project Site

= Study Intersection

XX%/YY% = Passenger Car /Truck Distribution

FIGURE 9A
PROJECT TRIP DISTRIBUTION

Kimley»Horn



NOT TO SCALE

LEGEND:

= Project Site

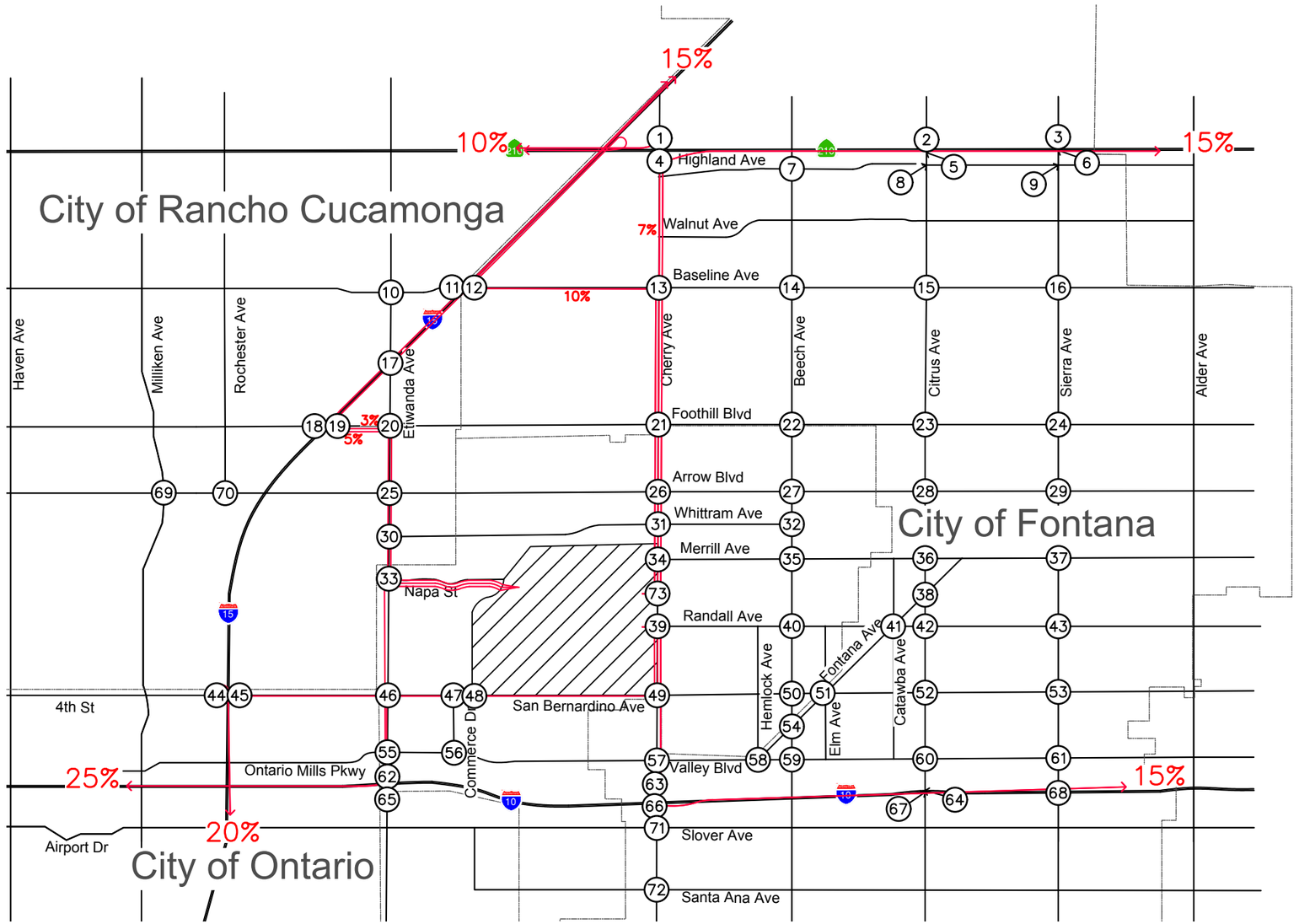
= Study Intersection

XX% = Truck Distribution

FIGURE 9B
TRUCK TRIP DISTRIBUTION - PHASE 1

Kimley»Horn

NOT TO SCALE



LEGEND:

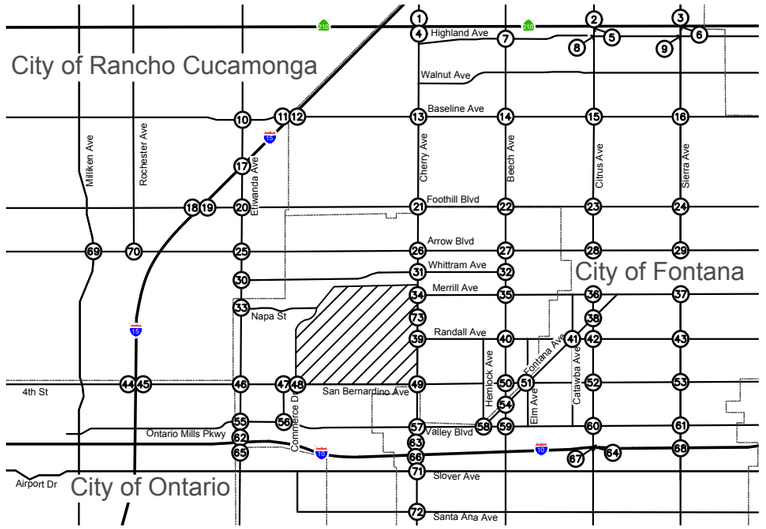
= Project Site

= Study Intersection

XX% = Truck Distribution

FIGURE 9C
TRUCK TRIP DISTRIBUTION - PHASES 1 AND 2 (BUILD-OUT)

Kimley»Horn



NOT TO SCALE

1. Cherry Ave at SR-210 WB Ramps	2. Citrus Ave at SR-210 WB Ramps	3. Sierra Ave at SR-210 WB Ramps	4. Cherry Ave at SR-210 EB Ramps	5. Citrus Ave at SR-210 EB Ramps
←7/12 66/120→ 73/130→ 0/12→	←7/12 8/12→ 0/12→	←7/12 4/6→ 0/12→	←73/132 107/177↘ 73/142→ 70/88→	←15/24 0/12→ 2/11→

6. Sierra Ave at SR-210 EB Ramps	7. Beech Ave at Highland Ave	8. Citrus Ave at Highland Ave	9. Sierra Ave at Highland Ave	10. Etiwanda Ave at Base Line Rd	11. I-15 SB Ramps at Base Line Rd	12. I-15 NB Ramps at Base Line Rd	13. Cherry Ave at Baseline Ave
←11/18 0/12→ 1/5→		←15/24 2/23→	←11/18 1/17→	←7/12 7/12↘ 0/12→ 0/12→	←23/47	48/39→ 23/47→	←180/309 57/97→ 23/47↘ 48/39→ 143/230→ 2/93→

14. Beech Ave at Baseline Ave	15. Citrus Ave at Baseline Ave	16. Sierra Ave at Baseline Ave	17. Etiwanda Ave at Church St/Miller Ave	18. I-15 SB Ramps at Foothill Blvd	19. I-15 NB Ramps at Foothill Blvd	20. Etiwanda Ave at Foothill Blvd
←50/85 2/81→	←15/24 ←28/49 2/21→ 1/47→ 0/2→ 0/1→	←14/25 ←4/6 ←7/12 1/24→ 0/12→ 0/5→	←14/24 0/24→	←5/21 15/24→	←5/21 15/24→	←11/20 3/4↘ ←0/3 ←0/2 2/2→ 13/22↘ 5/19→ 0/21→

Note: Volumes reflect PCE adjustments.

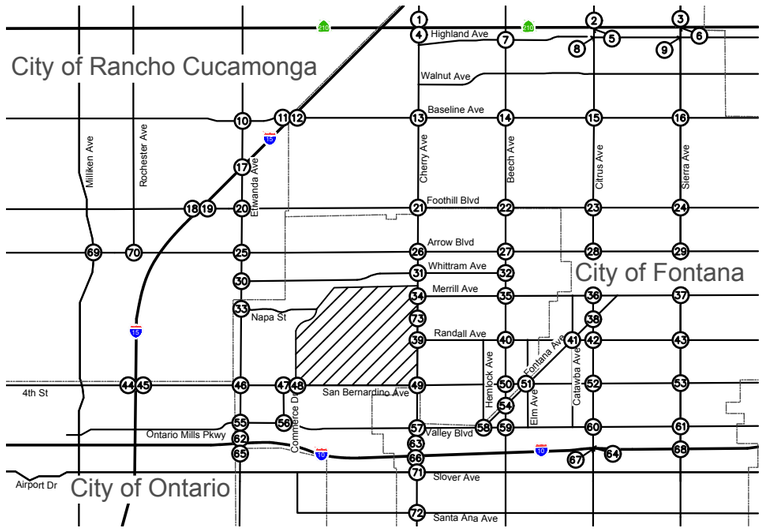
LEGEND:

= Project Site

= Study Intersection

xx/yy = AM/PM Volumes

FIGURE 10A
PROJECT-RELATED TRAFFIC VOLUMES (PHASE 1)



NOT TO SCALE

21. Cherry Ave at Foothill Blvd	22. Beech Ave at Foothill Blvd	23. Citrus Ave at Foothill Blvd	24. Sierra Ave at Foothill Blvd	25. Etiwanda Ave at Arrow Rte
←267/464 ←34/57 5/6 ↘ 0/5 ↑ 193/373 ↑ 5/54 ↑	←34/57 5/54 →	←27/45 5/42 → 0/3 ↑	5/9 ↓ 6/9 ↓ ←15/24 0/9 ↗ 5/21 → 0/8 ↑	←24/42 ←5/39 ←0/29 21/36 → 0/7 ↑ 0/1 ↑

26. Cherry Ave at Arrow Rte	27. Beech Ave at Arrow Rte	28. Citrus Ave at Arrow Rte	29. Sierra Ave at Arrow Rte	30. Etiwanda Ave at Whittram Ave	31. Cherry Ave at Whittram Ave	32. Beech Ave at Whittram Ave	33. Etiwanda Ave at Napa St
←306/527 ←28/50 45/78 ↘ 5/68 ↑ 198/432 ↑ 0/50 ↑	←28/50 ←2/3 0/50 → 0/3 ↑	←16/29 ←2/3 0/29 → 0/3 ↑ 0/3 ↑	←6/9 ←5/9 ←2/3 0/9 → 0/8 ↑ 0/3 ↑	↖0/4 0/4 ↑	←379/655 0/4 ↗ 203/550 →	←2/3 0/3 →	0/4 →

34. Cherry Ave at Merrill Ave	35. Beech Ave at Merrill Ave	36. Citrus Ave at Merrill Ave	37. Sierra Ave at Merrill Ave	38. Citrus Ave at Fontana Ave	39. Cherry Ave at Randall Ave	40. Beech Ave at Randall Ave
←379/655 ←16/28 203/554 ↑ 0/28 ↗	←2/3 ←16/28 0/28 → 0/3 ↑	←2/3 ←16/28 ←1/1 0/28 → 0/6 ↑ 0/1 ↗	↖10/19 ↖5/5 ←7/12 0/18 ↗ 0/12 → 0/7 ↘ 4/7 ↑ 0/5 ↑	←3/4 ←5/10 0/5 ↗ 0/9 → 0/2 ↑	↖38/56 ↖211/340 ↖0/69 ←41/69 ←67/112 15/49 ↗ 1/116 → 186/291 ↘ 230/394 ↑ 270/454 ↑	←2/3 ←85/142 0/3 ↗ 1/144 → 0/14 ↘ 7/12 ↑

Note: Volumes reflect PCE adjustments.

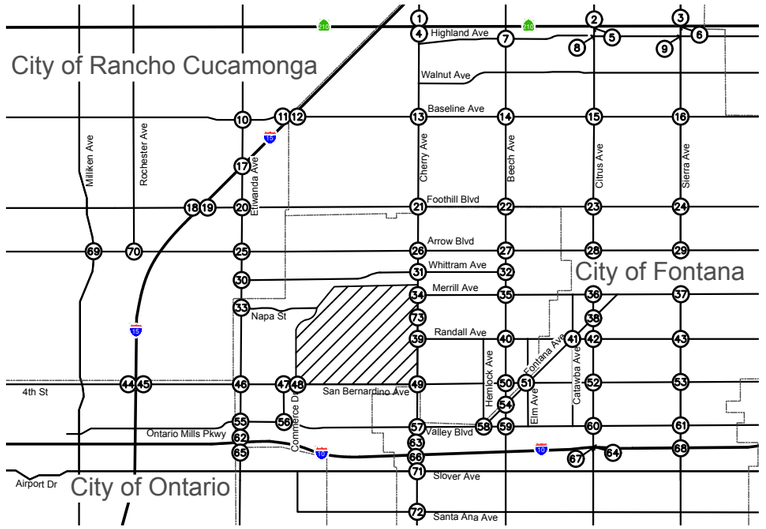
LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 10B
PROJECT-RELATED TRAFFIC VOLUMES (PHASE 1)



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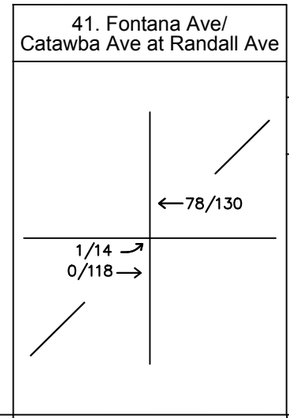
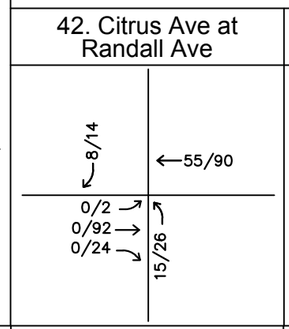
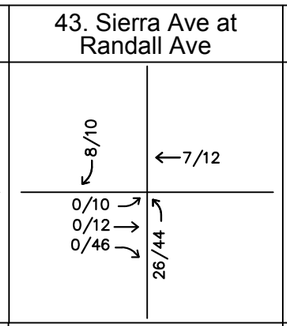
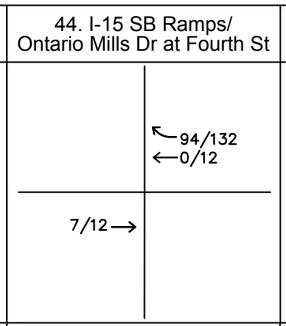
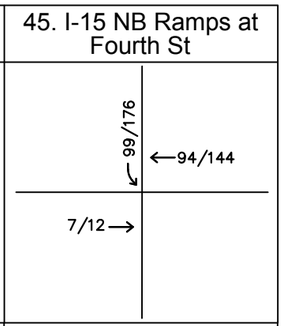
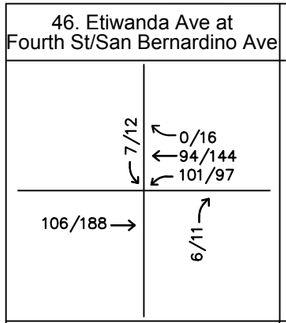


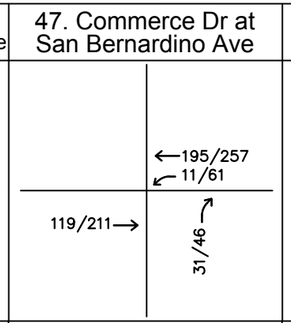


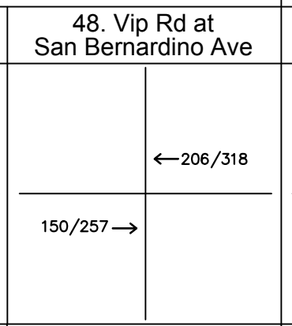


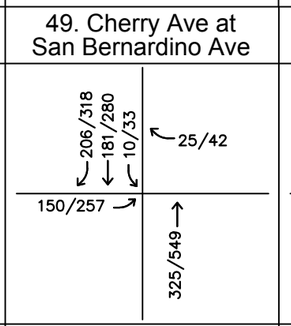


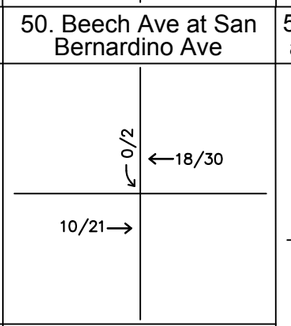


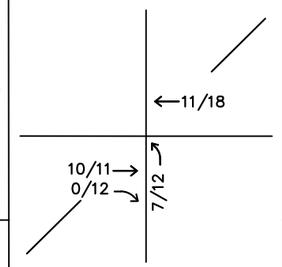


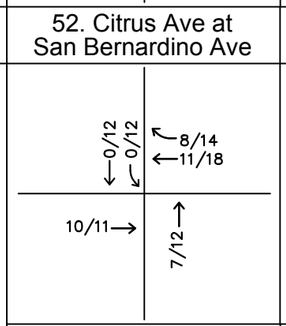


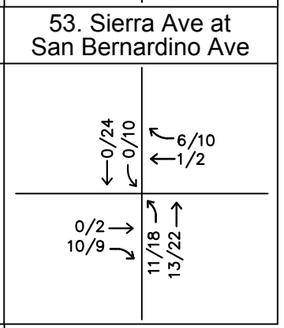


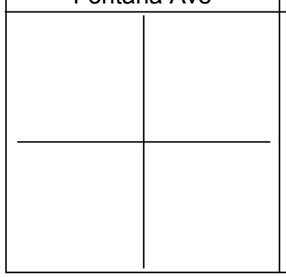


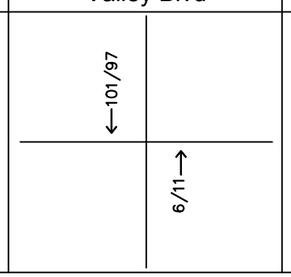


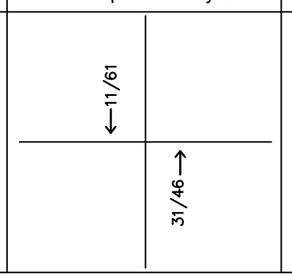


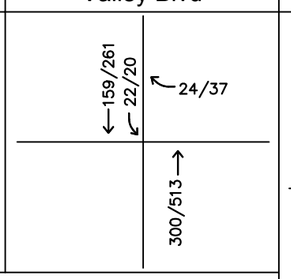


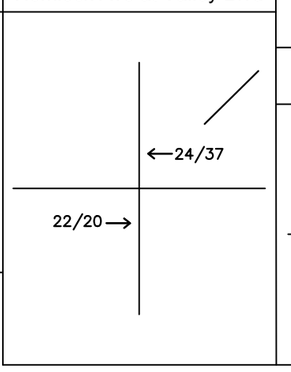


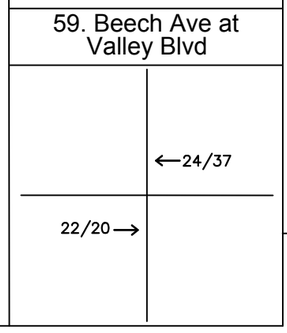


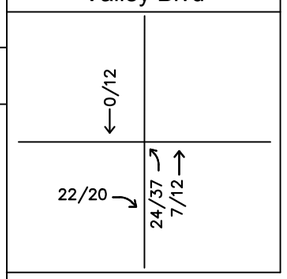










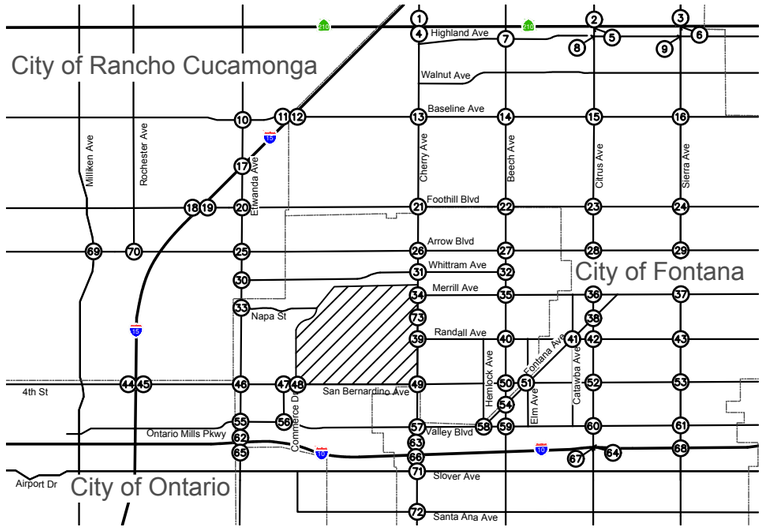


Note: Volumes reflect PCE adjustments.

LEGEND:
= Project Site
= Study Intersection
XX/YY = AM/PM Volumes

FIGURE 10C
PROJECT-RELATED TRAFFIC VOLUMES (PHASE 1)

Kimley»Horn



NOT TO SCALE

61. Sierra Ave at Valley Blvd	62. Etiwanda Ave at I-10 WB Off-Ramps	63. Cherry Ave at I-10 WB Ramps	64. Citrus Ave at I-10 WB Ramps	65. Etiwanda Ave at I-10 EB Ramps
←10/21, 0/12 ↖7/12	←101/85, 0/12	←16/85, 143/176 ↖120/202	←22/32 ↖24/37	←0/12
17/28→	6/11→	180/311→	7/12→	6/11→

66. Cherry Ave at I-10 EB Ramps	67. Citrus Ave at I-10 EB Ramps	68. Sierra Ave at I-10 EB/WB Ramps	69. Milliken Ave at Arrow Rte	70. Rochester Ave at Arrow Rte	71. Cherry Ave at Slover Ave	72. Cherry Ave at Santa Ana Ave	73. Cherry Ave at Street A
←5/57, 138/119	←0/12, 22/20	←0/12, 10/9 ↖10/16	←7/12 ↖0/12, ←0/12, ←0/12	←0/36	←0/12, 5/45	←0/12, 0/12, 5/21 ↖15/24	←357/627, 38/56
132/233→	7/12→	7/12→	7/12→, 0/12 ↗7/12	21/36→	7/12→ ↑29/48	7/12→	189/534→, 211/409↘ ↑311/523, 15/49
↑36/60						↑7/12	

Note: Volumes reflect PCE adjustments.

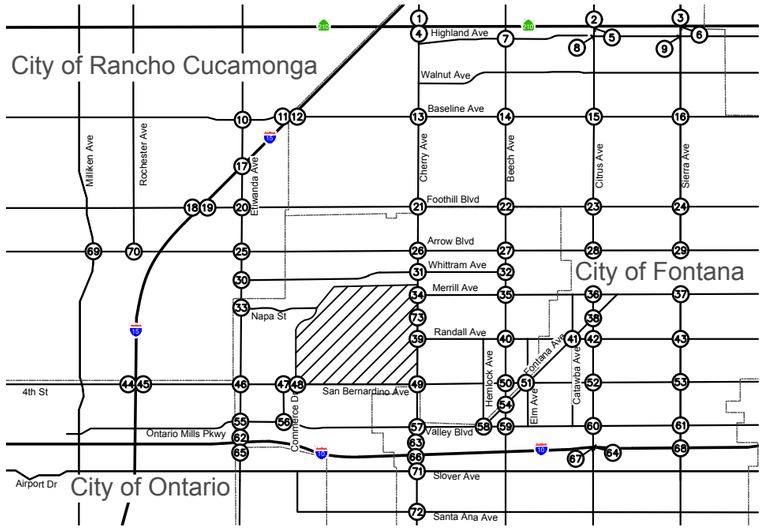
LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 10D
PROJECT-RELATED TRAFFIC VOLUMES (PHASE 1)



NOT TO SCALE

1. Cherry Ave at SR-210 WB Ramps	2. Citrus Ave at SR-210 WB Ramps	3. Sierra Ave at SR-210 WB Ramps	4. Cherry Ave at SR-210 EB Ramps	5. Citrus Ave at SR-210 EB Ramps
←9/12 85/130→ 34/56 ↗ 0/12 ↑	←9/12 9/12 ↑ 0/12 ↑	←9/12 5/7 ↑ 0/12 ↑	←94/142 48/70 ↘ 34/68 ↑ 74/107 ↑	←18/24 0/12 ↑ 3/12 ↑

6. Sierra Ave at SR-210 EB Ramps	7. Beech Ave at Highland Ave	8. Citrus Ave at Highland Ave	9. Sierra Ave at Highland Ave	10. Etiwanda Ave at Base Line Rd	11. I-15 SB Ramps at Base Line Rd	12. I-15 NB Ramps at Base Line Rd	13. Cherry Ave at Baseline Ave
←14/19 0/12 ↑ 1/6 ↑		←18/24 3/24 →	←14/19 1/18 →	←9/12 9/12 ↘ 0/12 ↑ 0/12 ↑	←22/37	↖34/34 22/37 →	←142/212 80/113 ← 22/37 ↘ 34/34 ↑ 108/175 ↑ 8/111 ↑

14. Beech Ave at Baseline Ave	15. Citrus Ave at Baseline Ave	16. Sierra Ave at Baseline Ave	17. Etiwanda Ave at Church St/Miller Ave	18. I-15 SB Ramps at Foothill Blvd	19. I-15 NB Ramps at Foothill Blvd	20. Etiwanda Ave at Foothill Blvd
←63/85 3/82 →	←18/24 ←36/49 8/16 ← 2/23 ↗ 1/48 → 0/2 ↑ 5/18 ↑	←18/25 5/6 ← ←9/12 1/25 ↗ 0/12 → 0/5 →	←18/24 1/2 ← 0/24 ↑ 0/2 ↑	←94/137 ←10/41 27/40 →	↖61/117 ←10/41 121/177 →	←19/26 1/2 ← 121/177 ↘ 71/158 ↑ 0/26 ↑ 0/2 ↑

Note: Volumes reflect PCE adjustments.

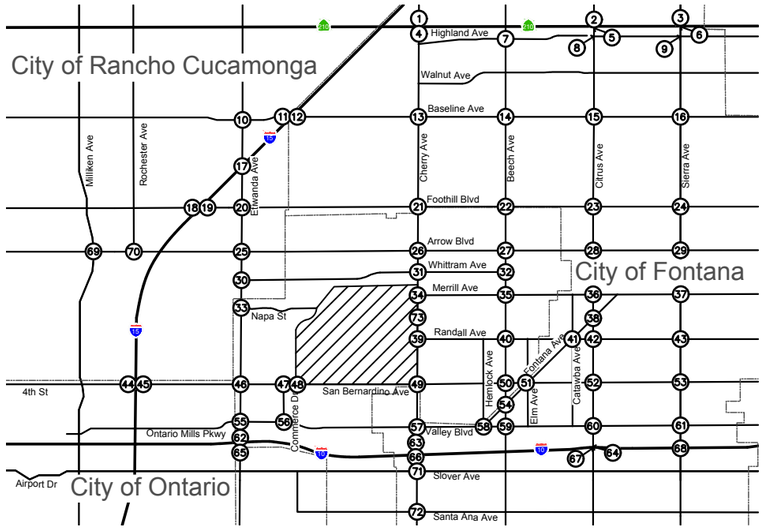
LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 11A
PROJECT-RELATED TRAFFIC VOLUMES (PHASES 1 AND 2)



NOT TO SCALE

21. Cherry Ave at Foothill Blvd	22. Beech Ave at Foothill Blvd	23. Citrus Ave at Foothill Blvd	24. Sierra Ave at Foothill Blvd	25. Etiwanda Ave at Arrow Rte
←1/2 ←259/387 ←43/57	←43/57 ←8/16	←8/16 ←34/45	←6/9 ←16/25 ←19/24 ←8/16	←141/205
0/2 → 156/345 ↑ 5/57	5/57 → 5/17 ↑	5/45 → 5/20 ↑	0/9 → 5/24 → 5/25 ↑ 5/17 ↑	27/36 → 0/36 ↑ 71/186 ↑

26. Cherry Ave at Arrow Rte	27. Beech Ave at Arrow Rte	28. Citrus Ave at Arrow Rte	29. Sierra Ave at Arrow Rte	30. Etiwanda Ave at Whittram Ave	31. Cherry Ave at Whittram Ave	32. Beech Ave at Whittram Ave	33. Etiwanda Ave at Napa St
←302/444 ←35/50	←8/16 ←35/50 ←3/3	←8/16 ←20/29 ←3/3	←24/41 ←6/9 ←3/3	←168/241	←337/494	←11/19	←168/241 ↖71/222 ←111/134
161/402 ↑ 0/50 ↑	0/50 → 5/17 ↑ 0/3 ↑	0/29 → 5/20 ↑ 0/3 ↑	0/9 → 10/42 ↑ 0/3 ↑	71/222 ↑	161/452 ↑	5/20 ↑	110/172 ↑

34. Cherry Ave at Merrill Ave	35. Beech Ave at Merrill Ave	36. Citrus Ave at Merrill Ave	37. Sierra Ave at Merrill Ave	38. Citrus Ave at Fontana Ave	39. Cherry Ave at Randall Ave	40. Beech Ave at Randall Ave
←337/494 ←20/28	←11/19 ←20/28	←11/19 ←20/28 ←1/1	←31/51 ←5/5 ←9/12	←8/16 ←4/4 ←16/32 ←9/10	←41/66 ←161/229 ←0/69 ←54/69 ←143/224	←11/19 ←159/238
161/452 ↑ 0/28 ↑	0/28 → 5/20 ↑	0/28 → 5/23 ↑ 0/1 ↑	10/52 → 0/12 → 0/7 ↘ 5/7 ↑ 0/5 ↑	5/22 → 10/43 → 0/2 ↑	13/52 → 36/235 → 156/284 ↘ 190/295 ↑ 192/275 ↑	5/20 → 31/246 → 0/14 ↘ 9/12 ↑

Note: Volumes reflect PCE adjustments.

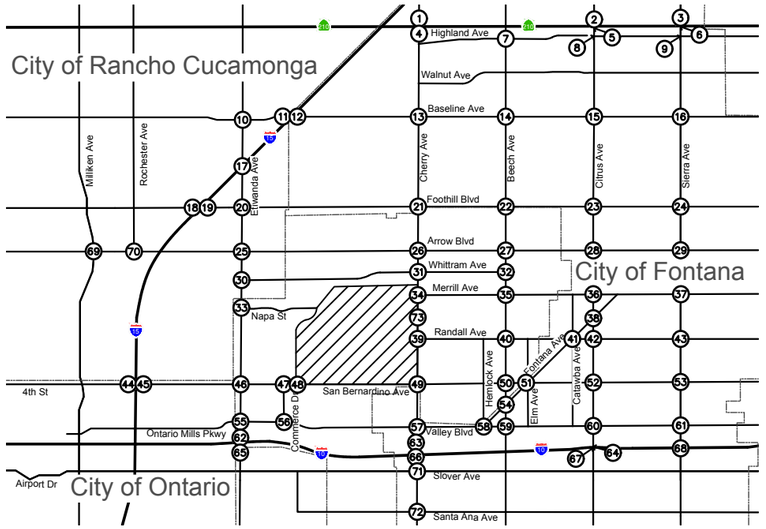
LEGEND:

= Project Site

= Study Intersection

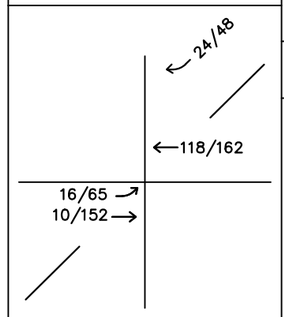
XX/YY = AM/PM Volumes

FIGURE 11B
PROJECT-RELATED TRAFFIC VOLUMES (PHASES 1 AND 2)

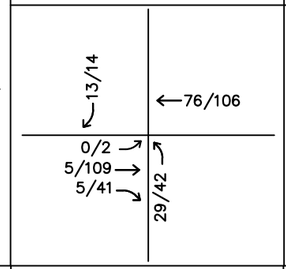


NOT TO SCALE

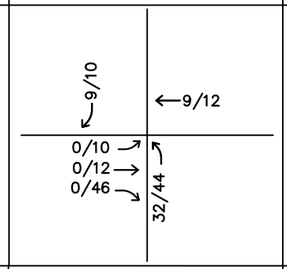
41. Fontana Ave/ Catawba Ave at Randall Ave



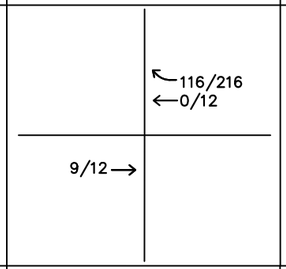
42. Citrus Ave at Randall Ave



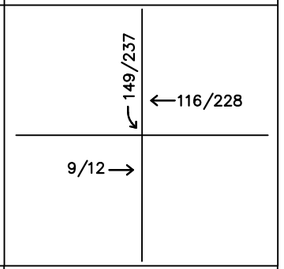
43. Sierra Ave at Randall Ave



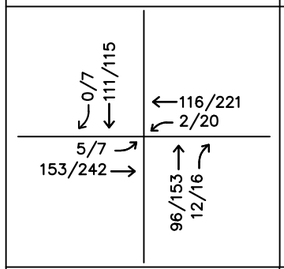
44. I-15 SB Ramps/ Ontario Mills Dr at Fourth St



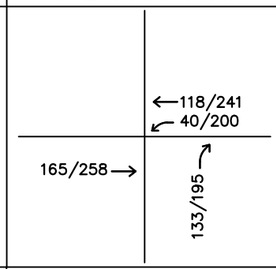
45. I-15 NB Ramps at Fourth St



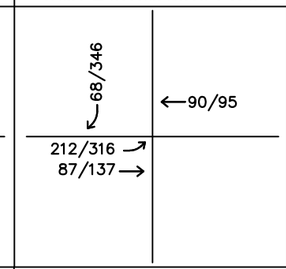
46. Etiwanda Ave at Fourth St/San Bernardino Ave



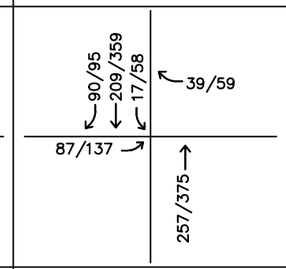
47. Commerce Dr at San Bernardino Ave



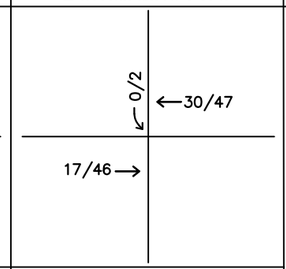
48. Vip Rd at San Bernardino Ave



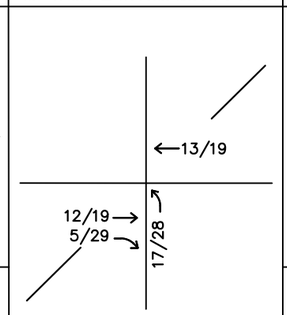
49. Cherry Ave at San Bernardino Ave



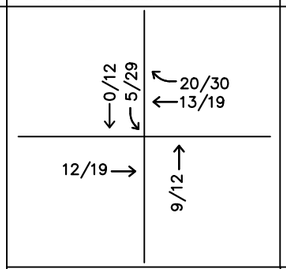
50. Beech Ave at San Bernardino Ave



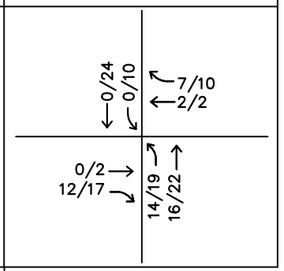
51. Fontana Ave/Elm St at San Bernardino Ave



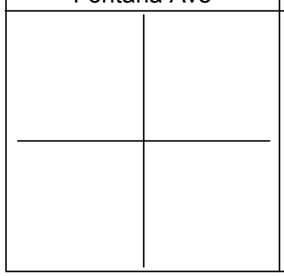
52. Citrus Ave at San Bernardino Ave



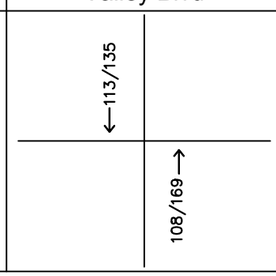
53. Sierra Ave at San Bernardino Ave



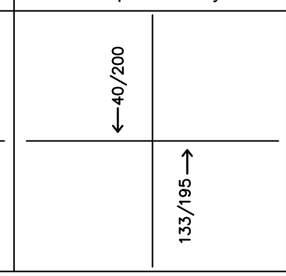
54. Beech Ave at Fontana Ave



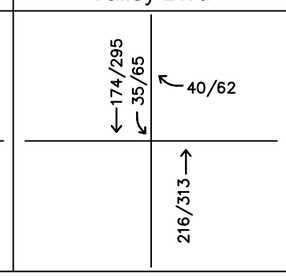
55. Etiwanda Ave at Valley Blvd



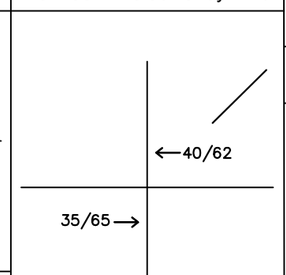
56. Commerce Dr/ I-15 Ramps at Valley Blvd



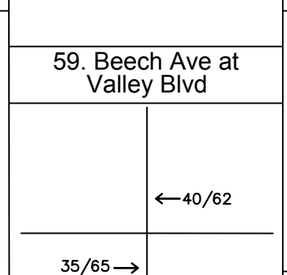
57. Cherry Ave at Valley Blvd



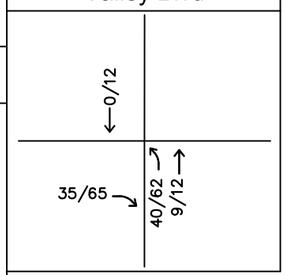
58. Fontana Ave/ Hemlock Ave at Valley Blvd



59. Beech Ave at Valley Blvd



60. Citrus Ave at Valley Blvd



Note: Volumes reflect PCE adjustments.

LEGEND:

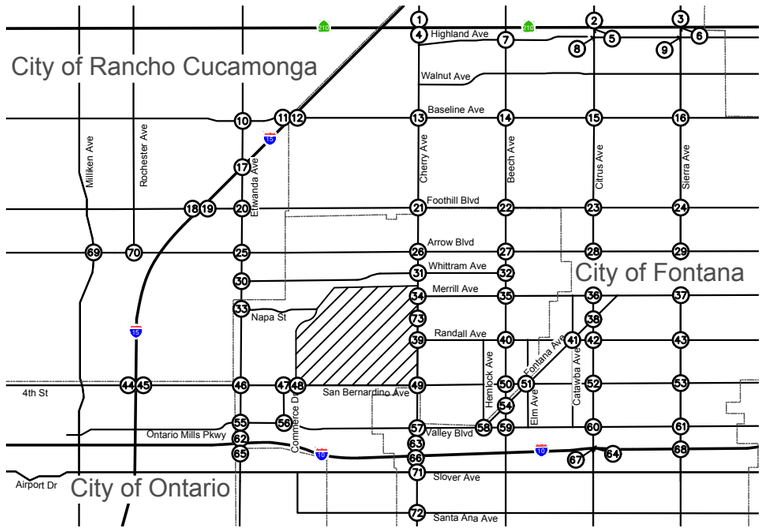
= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 11C
PROJECT-RELATED TRAFFIC VOLUMES (PHASES 1 AND 2)

Kimley»Horn



NOT TO SCALE

61. Sierra Ave at Valley Blvd	62. Etiwanda Ave at I-10 WB Off-Ramps	63. Cherry Ave at I-10 WB Ramps	64. Citrus Ave at I-10 WB Ramps	65. Etiwanda Ave at I-10 EB Ramps
←12/29, 0/12, ↖9/12	←113/123, 0/12	←2/12, ←172/282, ↖161/240	←35/77, ↖40/62	←0/12
21/29→	108/169→	55/72→	9/12→	99/157↗, 9/12→

66. Cherry Ave at I-10 EB Ramps	67. Citrus Ave at I-10 EB Ramps	68. Sierra Ave at I-10 EB/WB Ramps	69. Milliken Ave at Arrow Rte	70. Rochester Ave at Arrow Rte	71. Cherry Ave at Slover Ave	72. Cherry Ave at Santa Ana Ave	73. Cherry Ave at Street A
↓5/60, ↓167/222	←0/12, ↙35/65	←0/12, ↙12/17, ↖12/17	↙9/12, ↖0/12, ←0/12, ↙0/12	←0/36	↙0/12, ↓5/48	↙0/12, ↓0/12, ↓5/24, ↖19/24	↙317/456, ↓41/66
8/10↗	9/12→	9/12→	9/12→	27/36→	9/12↗	9/12↗	148/428↗
46/60→			9/12→		37/48→	9/12→	161/298↘, 246/344↗, 13/52→

Note: Volumes reflect PCE adjustments.

LEGEND:
- = Project Site
- Ⓧ = Study Intersection
- xx/yy = AM/PM Volumes

FIGURE 11D
PROJECT-RELATED TRAFFIC VOLUMES (PHASES 1 AND 2)

OPENING YEAR 2024 PLUS PHASE 1 CONDITIONS

Phase 1 project-related traffic for the Speedway Commerce Center II project was added to the Opening Year 2024 traffic volumes, and the resulting "Plus Phase 1" traffic volumes are shown on Figure 12. The following roadway network connections to the site have been assumed in the Opening Year 2024 conditions:

- Connection to existing Napa Street is not assumed
- Connection to existing VIP Road is not assumed

Peak Hour Operating Conditions

Intersection Level of Service analysis was conducted for the Opening Year 2024 Plus Phase 1 condition. The results are shown on Table 5. Copies of the intersection analysis worksheets are provided in *Appendix D*. Review of Table 5 indicates that, with the addition of Phase 1 project traffic, the following intersection(s) would operate at an unacceptable Level of Service under Opening Year 2024 Plus Phase 1 conditions:

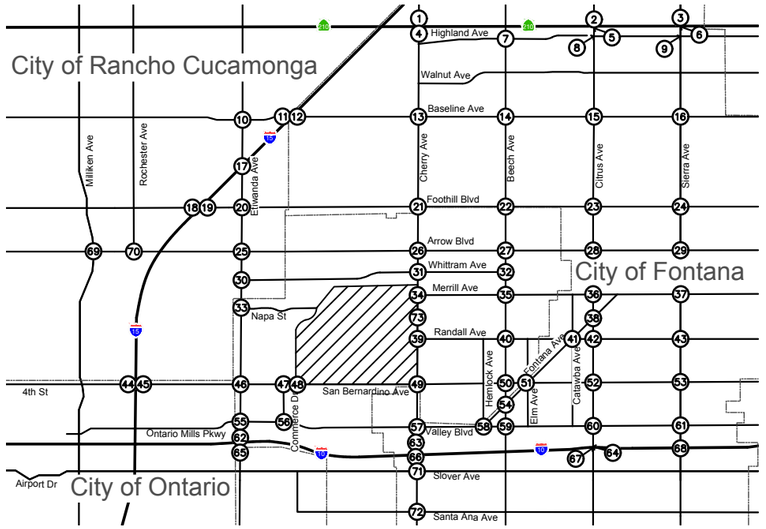
- #10 – Etiwanda Ave at Base Line Rd: AM – LOS E
- #22 – Beech Ave at Fontana Ave: AM – LOS F; PM – LOS F
- #26 – Cherry Ave at Arrow Rte: PM – LOS F
- #31 – Cherry Ave at Whittram Ave: PM – LOS F
- #32 – Beech Ave at Whittram Ave: AM – LOS E; PM – LOS E
- #34 – Cherry Ave at Merrill Ave: PM – LOS E
- #35 – Beech Ave at Merrill Ave: PM – LOS F
- #39 – Cherry Ave at Randall Ave: AM – LOS F; PM – LOS F
- #40 – Beech Ave at Randall Ave: AM – LOS F; PM – LOS F
- #41 – Fontana Ave/Catawba Ave at Randall Ave: AM – LOS E; PM – LOS F
- #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St: PM – LOS E
- #47 – Commerce Dr at San Bernardino Ave: PM – LOS F
- #49 – Cherry Ave at San Bernardino Ave: PM – LOS F
- #57 – Cherry Ave at Valley Blvd: PM – LOS E
- #59 – Beech Ave at Valley Boulevard: AM – LOS F; PM – LOS F
- #72 – Cherry Ave at Santa Ana Ave: AM – LOS F; PM – LOS F

Based on the significance thresholds presented earlier in this report, the Phase 1 project-related effect would be considered to have a cumulative effect at the following intersections under Opening Year 2024 Plus Phase 1 conditions:

- #22 – Beech Ave at Foothill Blvd
- #26 – Cherry Ave at Arrow Rte
- #31 – Cherry Ave at Whittram Ave

- #34 – Cherry Ave at Merrill Ave
- #35 – Beech Ave at Merrill Ave
- #39 – Cherry Ave at Randall Ave
- #40 – Beech Ave at Randall Ave
- #41 – Fontana Ave/Catawba Ave at Randall Ave
- #44 – I-15 SB Ramps/Ontario Mills Dr at Randall Ave
- #47 – Commerce Dr at San Bernardino Ave
- #49 – Cherry Ave at San Bernardino Ave
- #57 – Cherry Ave at Valley Blvd
- #59 – Beech Ave at Valley Blvd
- #72 – Cherry Ave at Santa Ana Ave

Recommended improvements to address the project-related effects at study intersections are presented in the Recommended Improvements section of this report. Copies of intersection analysis worksheets are provided in *Appendix D*.



NOT TO SCALE

1. Cherry Ave at SR-210 WB Ramps	2. Citrus Ave at SR-210 WB Ramps	3. Sierra Ave at SR-210 WB Ramps	4. Cherry Ave at SR-210 EB Ramps	5. Citrus Ave at SR-210 EB Ramps
212/155 ↙ 766/509 ↓	376/419 ↙ 882/796 ↓	1155/1262 ←	947/879 ↙ 170/76 ↓	1011/762 ↙ 320/216 ↓
267/143 ↑ 4/0 ← 465/450 ↖	328/352 ↖ 1/0 ← 459/380 ↖	308/424 ↖ 547/325 ↖		
263/465 ↑ 327/622 ↑	320/342 ↑ 966/1117 ↑	846/1217 ↑	162/205 ↗ 5/2 → 433/574 ↘	436/526 ↗ 3/3 → 426/365 ↘
			546/890 ↑ 430/435 ↑	872/1123 ↑ 441/303 ↑

6. Sierra Ave at SR-210 EB Ramps	7. Beech Ave at Highland Ave	8. Citrus Ave at Highland Ave	9. Sierra Ave at Highland Ave	10. Etiwanda Ave at Base Line Rd	11. I-15 SB Ramps at Base Line Rd	12. I-15 NB Ramps at Base Line Rd	13. Cherry Ave at Baseline Ave
26/41 ↙ 1358/1290 ↓	99/57 ↙ 532/409 ↓ 58/106 ↘	159/112 ↙ 1023/702 ↓ 357/312 ↘	427/255 ↙ 1279/1061 ↓ 232/378 ↘	272/65 ↙ 314/120 ↓ 156/52 ↘	601/265 ↙ 412/320 ↘		435/91 ↙ 1090/820 ↓ 73/113 ↘
	65/87 ↑ 220/196 ← 95/72 ↖	261/385 ↑ 209/314 ← 96/131 ↖	211/375 ↑ 267/181 ← 17/73 ↖	250/49 ↑ 1179/657 ← 182/136 ↖	1003/591 ←	238/211 ↑ 1691/846 ←	70/65 ↑ 1416/625 ← 529/470 ↖
170/205 ↗ 586/434 ↘	124/69 ↗ 211/343 → 80/64 ↘	228/204 ↗ 204/318 → 56/57 ↘	308/452 ↗ 267/266 → 183/54 ↘	113/78 ↗ 537/1050 → 94/142 ↘	569/1110 → 250/179 ↘	375/465 ↗ 622/1014 →	246/323 ↗ 532/1124 → 170/133 ↘
1009/1519 ↑ 492/687 ↑	39/28 ↑ 604/407 ↑ 71/92 ↑	80/66 ↑ 784/830 ↑ 76/80 ↑	170/63 ↑ 984/1420 ↑ 40/69 ↑	126/125 ↑ 290/190 ↑ 108/218 ↑		295/293 ↑ 2/0 ↑ 324/545 ↑	115/202 ↑ 746/1254 ↑ 211/490 ↑

14. Beech Ave at Baseline Ave	15. Citrus Ave at Baseline Ave	16. Sierra Ave at Baseline Ave	17. Etiwanda Ave at Church St/Miller Ave	18. I-15 SB Ramps at Foothill Blvd	19. I-15 NB Ramps at Foothill Blvd	20. Etiwanda Ave at Foothill Blvd
209/95 ↙ 253/202 ↓ 100/139 ↘	275/151 ↙ 817/470 ↓ 131/135 ↘	130/97 ↙ 1125/553 ↓ 233/240 ↘	128/99 ↙ 321/277 ↓ 81/24 ↘	900/568 ↙ 185/219 ↘		244/164 ↙ 380/259 ↓ 56/70 ↘
87/128 ↑ 701/724 ← 48/69 ↖	108/61 ↑ 741/637 ← 167/171 ↖	147/249 ↑ 533/698 ← 95/98 ↖	73/32 ↑ 492/271 ← 100/46 ↖	1542/1466 ←	245/345 ↑ 1313/1218 ←	122/53 ↑ 1272/795 ← 363/111 ↖
140/224 ↗ 484/1152 → 39/77 ↘	303/348 ↗ 389/828 → 116/122 ↘	111/177 ↗ 435/650 → 116/95 ↘	92/145 ↗ 264/465 → 114/177 ↘	578/2052 → 846/990 ↘	520/1240 →	106/250 ↗ 477/989 → 274/267 ↘
69/100 ↑ 253/265 ↑ 14/25 ↑	127/101 ↑ 607/647 ↑ 779/76 ↑	166/110 ↑ 672/1041 ↑ 59/65 ↑	149/141 ↑ 265/305 ↑ 155/104 ↑		925/775 ↑ 524/493 ↑	219/346 ↑ 224/400 ↑ 72/200 ↑

Note: Volumes reflect PCE adjustments.

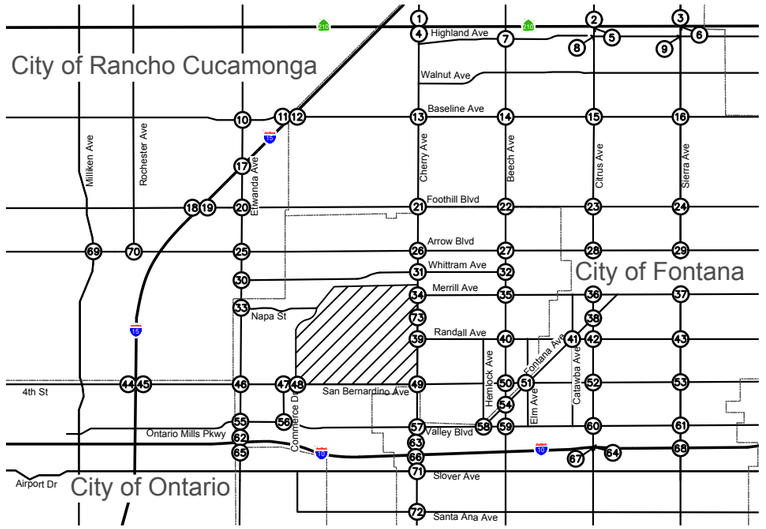
LEGEND:

= Project Site

= Study Intersection

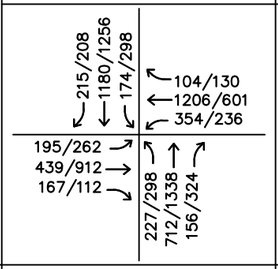
XX/YY = AM/PM Volumes

FIGURE 12A
OPENING YEAR 2024 PLUS PHASE 1 TRAFFIC VOLUMES

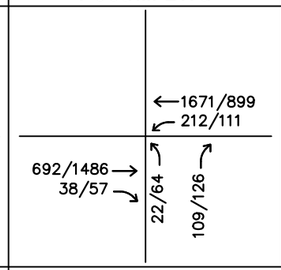


NOT TO SCALE

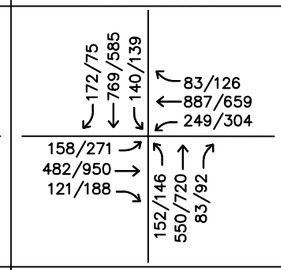
21. Cherry Ave at Foothill Blvd



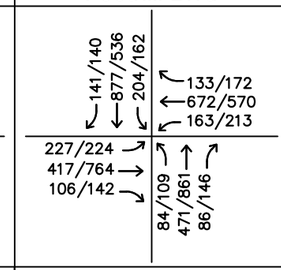
22. Beech Ave at Foothill Blvd



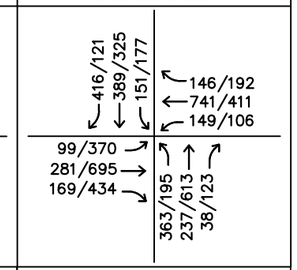
23. Citrus Ave at Foothill Blvd



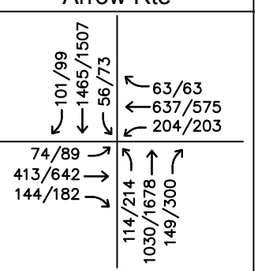
24. Sierra Ave at Foothill Blvd



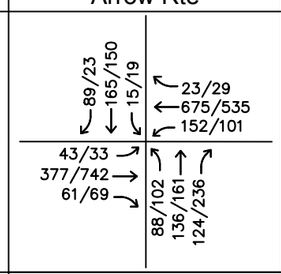
25. Etiwanda Ave at Arrow Rte



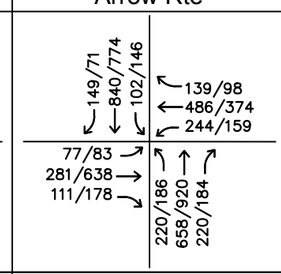
26. Cherry Ave at Arrow Rte



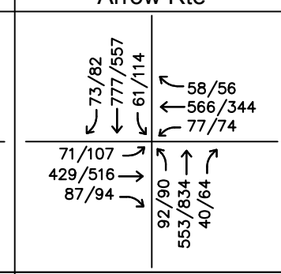
27. Beech Ave at Arrow Rte



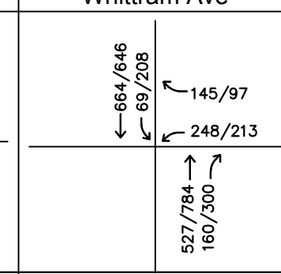
28. Citrus Ave at Arrow Rte



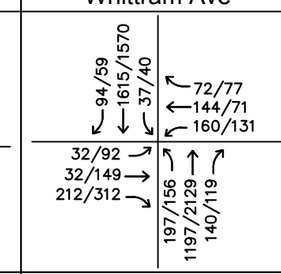
29. Sierra Ave at Arrow Rte



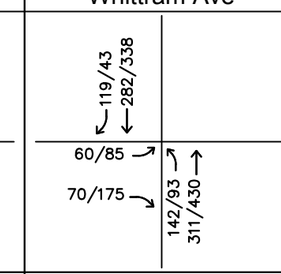
30. Etiwanda Ave at Whittram Ave



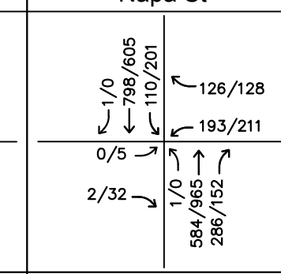
31. Cherry Ave at Whittram Ave



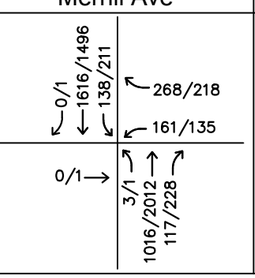
32. Beech Ave at Whittram Ave



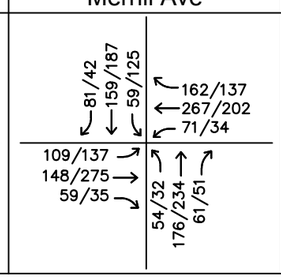
33. Etiwanda Ave at Napa St



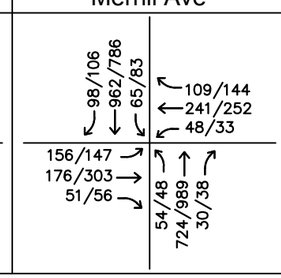
34. Cherry Ave at Merrill Ave



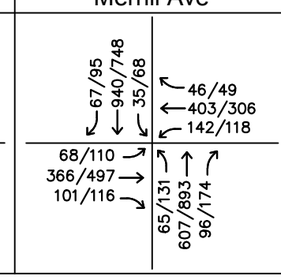
35. Beech Ave at Merrill Ave



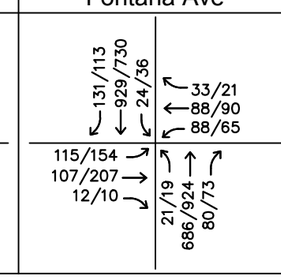
36. Citrus Ave at Merrill Ave



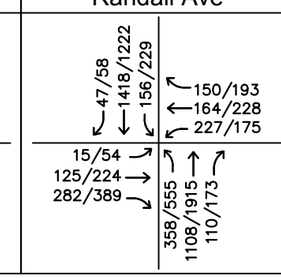
37. Sierra Ave at Merrill Ave



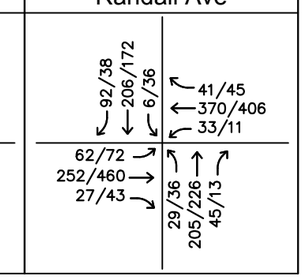
38. Citrus Ave at Fontana Ave



39. Cherry Ave at Randall Ave



40. Beech Ave at Randall Ave



Note: Volumes reflect PCE adjustments.

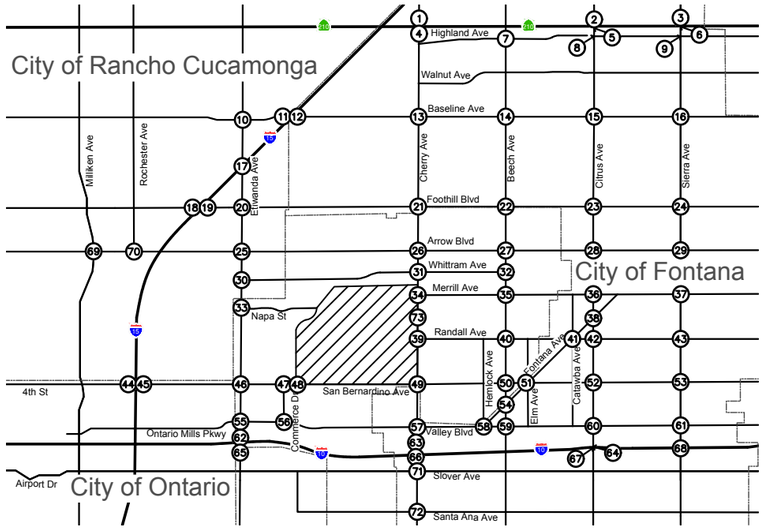
LEGEND:

= Project Site

= Study Intersection

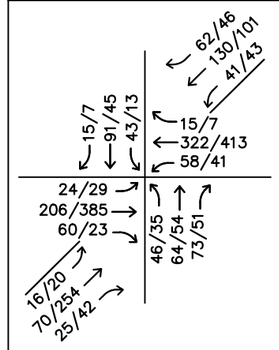
XX/YY = AM/PM Volumes

FIGURE 12B
OPENING YEAR 2024 PLUS PHASE 1 TRAFFIC VOLUMES

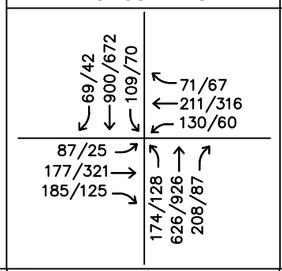


NOT TO SCALE

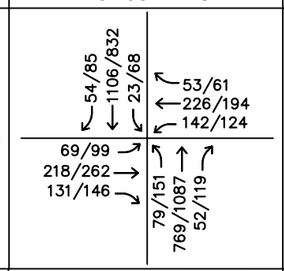
41. Fontana Ave/ Catawba Ave at Randall Ave



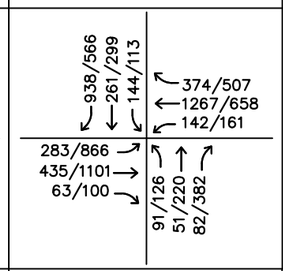
42. Citrus Ave at Randall Ave



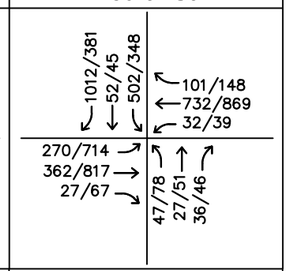
43. Sierra Ave at Randall Ave



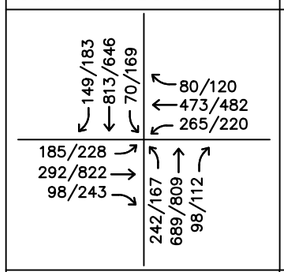
44. I-15 SB Ramps/ Ontario Mills Dr at Fourth St



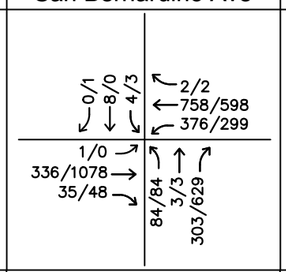
45. I-15 NB Ramps at Fourth St



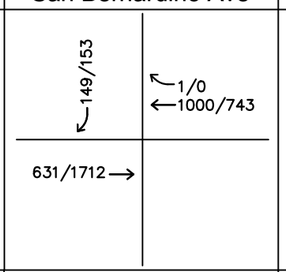
46. Etiwanda Ave at Fourth St/San Bernardino Ave



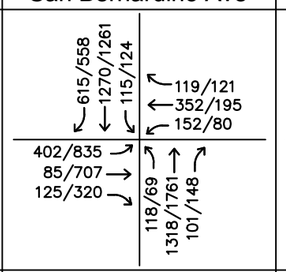
47. Commerce Dr at San Bernardino Ave



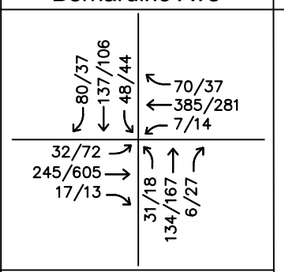
48. Vip Rd at San Bernardino Ave



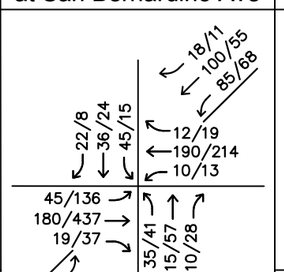
49. Cherry Ave at San Bernardino Ave



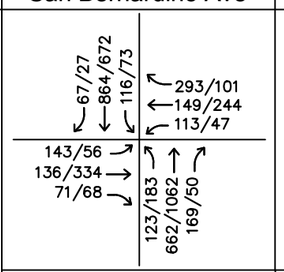
50. Beech Ave at San Bernardino Ave



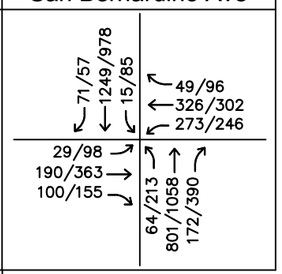
51. Fontana Ave/Elm St at San Bernardino Ave



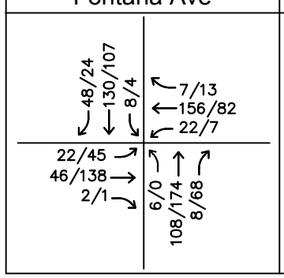
52. Citrus Ave at San Bernardino Ave



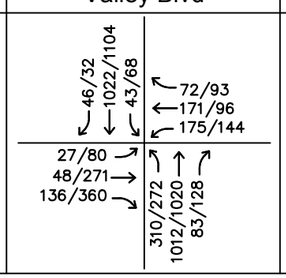
53. Sierra Ave at San Bernardino Ave



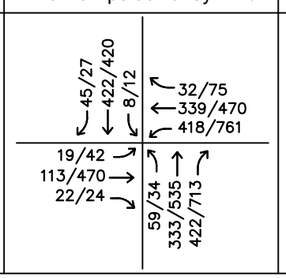
54. Beech Ave at Fontana Ave



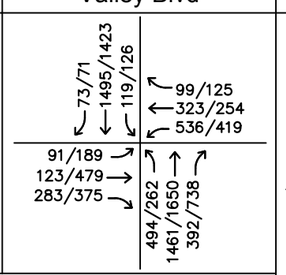
55. Etiwanda Ave at Valley Blvd



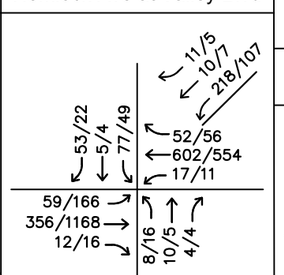
56. Commerce Dr/ I-15 Ramps at Valley Blvd



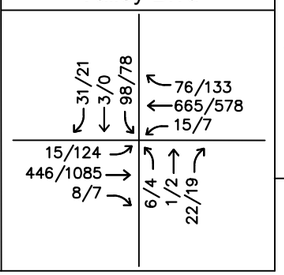
57. Cherry Ave at Valley Blvd



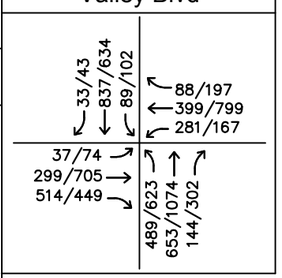
58. Fontana Ave/ Hemlock Ave at Valley Blvd



59. Beech Ave at Valley Blvd



60. Citrus Ave at Valley Blvd



Note: Volumes reflect PCE adjustments.

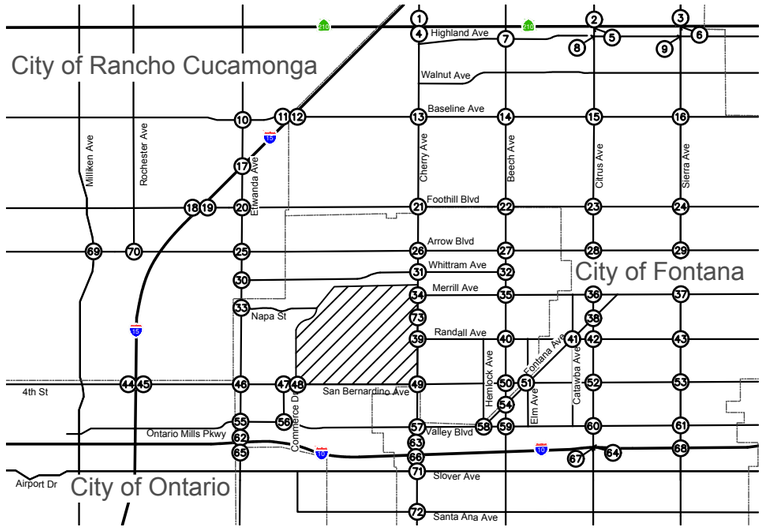
LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 12C
OPENING YEAR 2024 PLUS PHASE 1 TRAFFIC VOLUMES



NOT TO SCALE

61. Sierra Ave at Valley Blvd	62. Etiwanda Ave at I-10 WB Off-Ramps	63. Cherry Ave at I-10 WB Ramps	64. Citrus Ave at I-10 WB Ramps	65. Etiwanda Ave at I-10 EB Ramps
104/92 ↙ 1497/1312 ↓ 122/180 ↖ 111/132 ← 444/676 ← 579/671	540/538 ↙ 826/1112 ↓ ↖ 563/458 ← 519/368	16/85 ↙ 2120/2239 ↓ ↖ 857/806 ← 782/549	466/474 ↙ 1096/1028 ↓ ↖ 525/591 ← 385/254	238/394 ↙ 1030/1044 ↓
180/283 → 275/915 → 161/234 ↘ 192/254 ↑ 1317/1290 ↑ 716/771 ↑	823/1072 ↑ 445/622 ↑	1259/1777 ↑ 576/412 ↑	704/1160 ↑ 272/256 ↑	308/306 → 671/392 ↘ 1148/1383 ↑ 381/562 ↑

66. Cherry Ave at I-10 EB Ramps	67. Citrus Ave at I-10 EB Ramps	68. Sierra Ave at I-10 EB/WB Ramps	69. Milliken Ave at Arrow Rte	70. Rochester Ave at Arrow Rte	71. Cherry Ave at Slover Ave	72. Cherry Ave at Santa Ana Ave	73. Cherry Ave at Street A
1614/1338 ↙ 718/786 ↓	908/703 ↙ 614/596 ↓	870/844 ↙ 791/930 ↓ 553/534 ↙ 600/627 ← 454/491	231/125 ↙ 747/551 ↓ 125/86 ↙ 115/125 ← 1174/590 ← 171/130	286/190 ↙ 413/232 ↓ 111/92 ↙ 142/183 ← 1092/570 ← 176/72	559/446 ↙ 1208/1110 ↓ 434/400 ↙ 372/386 ← 273/188 ← 56/64	357/155 ↙ 769/960 ↓ 140/105 ↙ 94/127 ← 22/22 ← 10/14	357/627 ↙ 38/56 ↓
562/780 → 6/46 → 654/581 ↘ 1365/1409 ↑ 512/444 ↑	322/478 → 8/7 → 453/225 ↘ 701/967 ↑ 352/540 ↑	906/969 → 531/484 ↘ 445/543 ↑ 772/1316 ↑ 378/495 ↑	82/251 → 445/1058 → 125/197 ↘ 187/184 ↑ 353/1556 ↑ 96/369 ↑	125/368 → 386/992 → 73/22 ↘ 52/58 ↑ 180/838 ↑ 70/272 ↑	442/486 → 233/712 → 45/89 ↘ 30/37 ↑ 1039/987 ↑ 58/70 ↑	271/278 → 41/52 → 85/32 ↘ 38/8 ↑ 819/657 ↑ 12/31 ↑	189/534 → 211/409 ↘ 311/523 ↑ 15/49 ↑

Note: Volumes reflect PCE adjustments.

LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 12D
OPENING YEAR 2024 PLUS PHASE 1 TRAFFIC VOLUMES

TABLE 5
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2024 PLUS PHASE 1 CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour						PM Peak Hour					
				Without Project		With Project		Change Delay	Project-Related Effect?	Without Project		With Project		Change Delay	Project-Related Effect?
				Delay	LOS	Delay	LOS			Delay	LOS	Delay	LOS		
1	Cherry Ave at SR-210 WB Ramps	C	S	30.0	C	34.3	C	4.3	No	28.7	C	38.4	D	9.7	No
2	Citrus Ave at SR-210 WB Ramps	C	S	25.9	C	25.9	C	0.0	No	26.3	C	26.3	C	0.0	No
3	Sierra Ave at SR-210 WB Ramps	C	S	19.6	B	19.6	B	0.0	No	16.6	B	16.6	B	0.0	No
4	Cherry Ave at SR-210 EB Ramps	C	S	24.1	C	28.2	C	4.1	No	23.3	C	31.8	C	8.5	No
5	Citrus Ave at SR-210 EB Ramps	C	S	29.2	C	29.1	C	-0.1	No	29.9	C	30.0	C	0.1	No
6	Sierra Ave at SR-210 EB Ramps	C	S	17.6	B	17.5	B	-0.1	No	14.4	B	14.3	B	-0.1	No
7	Beech Ave at Highland Ave	F	S	31.7	C	31.7	C	0.0	No	34.7	C	34.7	C	0.0	No
8	Citrus Ave at Highland Ave	F	S	36.6	D	36.6	D	0.0	No	39.1	D	39.7	D	0.6	No
9	Sierra Ave at Highland Ave	F	S	32.0	C	32.0	C	0.0	No	46.1	D	46.6	D	0.5	No
10	Etiwanda Ave at Base Line Rd	RC	S	55.6	E	55.6	E	0.0	No	40.3	D	40.2	D	-0.1	No
11	I-15 SB Ramps at Base Line Rd	C	S	21.5	C	21.7	C	0.2	No	15.0	B	16.0	B	1.0	No
12	I-15 NB Ramps at Baseline Ave	C	S	30.3	C	30.2	C	-0.1	No	34.4	C	34.4	C	0.0	No
13	Cherry Ave at Baseline Ave	F	S	38.4	D	39.3	D	0.9	No	38.7	D	41.4	D	2.7	No
14	Beech Ave at Baseline Ave	F	S	39.9	D	39.9	D	0.0	No	43.3	D	42.9	D	-0.4	No
15	Citrus Ave at Baseline Ave	F	S	47.9	D	48.8	D	0.9	No	39.6	D	39.7	D	0.1	No
16	Sierra Ave at Baseline Ave	F	S	33.7	C	33.6	C	-0.1	No	35.4	D	35.6	D	0.2	No
17	Etiwanda Ave at Church St/Miller Ave	RC	S	47.4	D	47.3	D	-0.1	No	43.6	D	43.2	D	-0.4	No
18	I-15 SB Ramps at Foothill Blvd	C	S	32.8	C	32.7	C	-0.1	No	20.7	C	20.7	C	0.0	No
19	I-15 NB Ramps at Foothill Blvd	C	S	25.4	C	25.4	C	0.0	No	21.9	C	21.8	C	-0.1	No
20	Etiwanda Ave at Foothill Blvd	RC	S	42.6	D	43.1	D	0.5	No	42.8	D	43.4	D	0.6	No
21	Cherry Ave at Foothill Blvd	F/SB	S	40.5	D	41.2	D	0.7	No	43.5	D	45.1	D	1.6	No
22	Beech Ave at Foothill Blvd	F/SB	U	>180	F	>180	F	58.7	Yes	>180	F	>180	F	332.1	Yes
23	Citrus Ave at Foothill Blvd	F	S	47.5	D	47.7	D	0.2	No	51.4	D	52.4	D	1.0	No
24	Sierra Ave at Foothill Blvd	F	S	41.9	D	42.1	D	0.2	No	42.4	D	42.8	D	0.4	No
25	Etiwanda Ave at Arrow Rte	RC	S	42.2	D	42.6	D	0.4	No	39.9	D	41.2	D	1.3	No

TABLE 5
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2024 PLUS PHASE 1 CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour						PM Peak Hour					
				Without Project		With Project		Change Delay	Project-Related Effect?	Without Project		With Project		Change Delay	Project-Related Effect?
				Delay	LOS	Delay	LOS			Delay	LOS	Delay	LOS		
26	Cherry Ave at Arrow Rte	SB	S	42.4	D	47.8	D	5.4	No	53.7	D	92.5	F	38.8	Yes
27	Beech Ave at Arrow Rte	SB	S	26.0	C	26.9	C	0.9	No	25.2	C	24.4	C	-0.8	No
28	Citrus Ave at Arrow Rte	F	S	44.9	D	45.7	D	0.8	No	42.3	D	43.3	D	1.0	No
29	Sierra Ave at Arrow Rte	F	S	37.1	D	37.2	D	0.1	No	36.3	D	36.5	D	0.2	No
30	Etiwanda Ave at Whittram Ave	RC	S	24.6	C	24.6	C	0.0	No	26.8	C	26.9	C	0.1	No
31	Cherry Ave at Whittram Ave	SB	S	37.4	D	54.3	D	16.9	No	46.5	D	100.1	F	53.6	Yes
32	Beech Ave at Whittram Ave	SB	U	36.5	E	36.7	E	0.2	No	38.8	E	39.5	E	0.7	No
33	Etiwanda Ave at Napa St	SB	S	19.5	B	19.5	B	0.0	No	27.3	C	27.3	C	0.0	No
34	Cherry Ave at Merrill Ave	SB	S	24.5	C	27.9	C	3.4	No	29.3	C	63.2	E	33.9	Yes
35	Beech Ave at Merrill Ave	SB	U	29.0	D	31.4	D	2.4	No	40.9	E	47.4	E	6.5	Yes
36	Citrus Ave at Merrill Ave	F	S	29.4	C	29.8	C	0.4	No	30.3	C	31.0	C	0.7	No
37	Sierra Ave at Merrill Ave	F	S	39.8	D	40.0	D	0.2	No	42.5	D	43.0	D	0.5	No
38	Citrus Ave at Fontana Ave	F	S	20.7	C	20.8	C	0.1	No	23.1	C	23.8	C	0.7	No
39	Cherry Ave at Randall Ave	SB	S	36.4	D	88.2	F	51.8	Yes	37.4	D	178.6	F	141.2	Yes
40	Beech Ave at Randall Ave	SB	U	67.8	F	101.3	F	33.5	Yes	25.7	D	101.3	F	75.6	Yes
41	Fontana Ave/Catawba Ave at Randall Ave	F	U	25.1	D	38.1	E	13.0	Yes	28.8	D	75.8	F	47.0	Yes
42	Citrus Ave at Randall Ave	F	S	33.2	C	34.1	C	0.9	No	27.7	C	31.1	C	3.4	No
43	Sierra Ave at Randall Ave	F	S	28.5	C	29.5	C	1.0	No	30.8	C	33.4	C	2.6	No
44	I-15 SB Ramps/Ontario Mills Dr at Fourth St	C	S	44.6	D	45.9	D	1.3	No	51.3	D	65.2	E	13.9	Yes
45	I-15 NB Ramps at Fourth St	C	S	51.8	D	50.9	D	-0.9	No	34.8	C	36.0	D	1.2	No
46	Etiwanda Ave at Fourth St/San Bernardino Av	RC/SB	S	34.1	C	36.7	D	2.6	No	36.9	D	39.0	D	2.1	No
47	Commerce Dr at San Bernardino Ave	SB	S	34.7	C	34.4	C	-0.3	No	49.8	D	87.7	F	37.9	Yes
48	Vip Rd at San Bernardino Ave	SB	S	13.8	B	16.3	B	2.5	No	10.8	B	12.9	B	2.1	No
49	Cherry Ave at San Bernardino Ave	SB	S	34.8	C	46.0	D	11.2	No	44.4	D	95.0	F	50.6	Yes
50	Beech Ave at San Bernardino Ave	SB	S	33.0	C	33.0	C	0.0	No	35.2	D	35.1	D	-0.1	No

TABLE 5
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2024 PLUS PHASE 1 CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour						PM Peak Hour					
				Without Project		With Project		Change Delay	Project-Related Effect?	Without Project		With Project		Change Delay	Project-Related Effect?
				Delay	LOS	Delay	LOS			Delay	LOS	Delay	LOS		
51	Fontana Ave/Elm Ave at San Bernardino Ave	F/SB	S	32.3	C	32.1	C	-0.2	No	27.7	C	27.9	C	0.2	No
52	Citrus Ave at San Bernardino Ave	F	S	38.2	D	38.6	D	0.4	No	31.0	C	31.9	C	0.9	No
53	Sierra Ave at San Bernardino Ave	F	S	30.0	C	30.7	C	0.7	No	39.7	D	41.1	D	1.4	No
54	Beech Ave at Fontana Ave	F/SB	U	9.9	A	9.9	A	0.0	No	9.8	A	9.8	A	0.0	No
55	Etiwanda Ave at Valley Blvd	SB	S	26.8	C	26.6	C	-0.2	No	34.1	C	34.2	C	0.1	No
56	Commerce Dr/I-10 Ramps at Valley Blvd	C	S	29.5	C	29.2	C	-0.3	No	51.8	D	51.4	D	-0.4	No
57	Cherry Ave at Valley Blvd	F/SB	S	43.3	D	44.2	D	0.9	No	44.8	D	55.9	E	11.1	Yes
58	Fontana Ave/Hemlock Ave at Valley Blvd	F/SB	S	27.8	C	27.6	C	-0.2	No	15.1	B	15.1	B	0.0	No
59	Beech Ave at Valley Blvd	F	U	67.0	F	77.9	F	10.9	Yes	>180	F	>180	F	-	Yes
60	Citrus Ave at Valley Blvd	F	S	51.6	D	55.0	D	3.4	No	45.2	D	46.0	D	0.8	No
61	Sierra Ave at Valley Blvd	F	S	34.2	C	34.2	C	0.0	No	51.6	D	52.6	D	1.0	No
62	Etiwanda Ave at I-10 WB Off-Ramps	C	S	23.7	C	23.6	C	-0.1	No	19.1	B	19.0	B	-0.1	No
63	Cherry Ave at I-10 WB Ramps	C	S	34.1	C	53.6	D	19.5	No	26.3	C	47.6	D	21.3	No
64	Citrus Ave at I-10 WB Ramps	C	S	21.2	C	21.4	C	0.2	No	18.7	B	19.2	B	0.5	No
65	Etiwanda Ave at I-10 EB Ramps	C	S	30.0	C	30.0	C	0.0	No	18.6	B	18.6	B	0.0	No
66	Cherry Ave at I-10 EB Ramps	C	S	35.2	D	44.0	D	8.8	No	35.3	D	48.4	D	13.1	No
67	Citrus Ave at I-10 EB Ramps	C	S	33.2	C	33.6	C	0.4	No	30.6	C	31.0	C	0.4	No
68	Sierra Ave at I-10 EB/WB Ramps	C	S	25.6	C	25.8	C	0.2	No	50.3	D	54.0	D	3.7	No
69	Milliken Ave at Arrow Rte	RC	S	38.3	D	38.3	D	0.0	No	39.7	D	40.8	D	1.1	No
70	Rochester Ave at Arrow Rte	RC	S	36.8	D	36.7	D	-0.1	No	39.1	D	39.4	D	0.3	No
71	Cherry Ave at Slover Ave	F	S	33.6	C	33.9	C	0.3	No	35.7	D	36.0	D	0.3	No
72	Cherry Ave at Santa Ana Ave	F	S	>180	F	>180	F	-	Yes	>180	F	>180	F	-	Yes
73	Cherry Ave at Street A	SB	S	-	-	37.2	D	-	-	-	-	41.0	D	-	-

- Bold values indicate intersections operating at an unacceptable Level of Service
- Delay values for unsignalized intersections represent the average vehicle delay on the worst (highest delay) intersection approach.

F = Fontana; SB = San Bernardino County; RC = Rancho Cucamonga; C = Caltrans

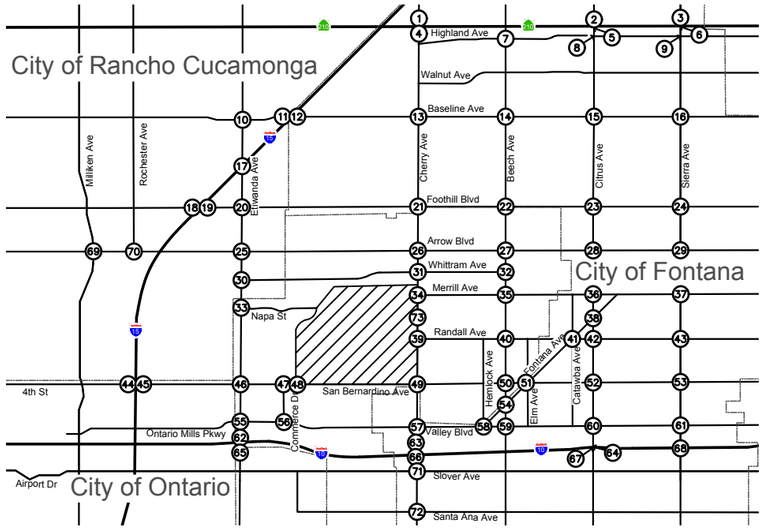
OPENING YEAR 2027 CONDITIONS

The project Opening Year for Phase 2 is anticipated to be Year 2027. Opening Year 2027 traffic forecasts have been developed by adding an ambient growth factor of 2.0 percent per year to Opening Year 2027 traffic volumes at the study intersections. Traffic volumes for Opening Year 2027 are shown on Figure 13.

Peak Hour Operating Conditions

Intersection Level of Service analysis was conducted for Opening Year 2027 conditions, and the results are shown on Table 6. Intersection analysis worksheets for this scenario are provided in *Appendix D*. Review of this table indicates that, with the addition of ambient growth and cumulative projects traffic, the following intersections would operate at an unacceptable Level of Service under Opening Year 2027 conditions:

- #9 – Sierra Ave at Highland Ave: PM – LOS E
- #10 – Etiwanda Ave at Base Line Rd: AM – LOS E
- #15 – Citrus Ave at Baseline Ave: AM – LOS E
- #22 – Beech Ave at Foothill Blvd: AM – LOS F; PM – LOS F
- #23 – Citrus Ave at Foothill Blvd: PM – LOS E
- #26 – Cherry Ave at Arrow Rte: PM – LOS E
- #32 – Beech Ave at Whittram Ave: AM – LOS E; PM – LOS F
- #35 – Beech Ave at Merrill Ave: AM – LOS E; PM – LOS F
- #40 – Beech Ave at Randall Ave: AM – LOS F
- #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St: PM – LOS E
- #45 – I-15 NB Ramps at Fourth St: AM – LOS E
- #47 – Commerce Dr at San Bernardino Ave: PM – LOS E
- #56 – Commerce Dr/I-10 Ramps at Valley Blvd: PM – LOS E
- #59 – Beech Ave at Valley Blvd: AM – LOS F; PM – LOS F
- #60 – Citrus Ave at Valley Blvd: AM – LOS E
- #61 – Sierra Ave at Valley Blvd: PM – LOS E
- #68 – Sierra Ave at I-10EB/WB Ramps: PM – LOS E
- #72 – Cherry Ave at Santa Ana Ave: AM – LOS F; PM – LOS F



NOT TO SCALE

1. Cherry Ave at SR-210 WB Ramps	2. Citrus Ave at SR-210 WB Ramps	3. Sierra Ave at SR-210 WB Ramps	4. Cherry Ave at SR-210 EB Ramps	5. Citrus Ave at SR-210 EB Ramps
224/164 ← 801/524 → 282/151 ← 4/0 ← 420/347 200/353 → 345/645	398/442 ← 925/828 → 346/372 ← 1/0 ← 477/389 338/362 → 1021/1168	1212/1321 → 326/448 ← 573/337 893/1273 →	923/788 → 179/81 171/216 → 6/2 → 344/418 ↘ 498/789 → 379/366	1052/779 ← 338/228 460/556 → 3/3 → 450/385 ↘ 921/1173 → 464/308

6. Sierra Ave at SR-210 EB Ramps	7. Beech Ave at Highland Ave	8. Citrus Ave at Highland Ave	9. Sierra Ave at Highland Ave	10. Etiwanda Ave at Base Line Rd	11. I-15 SB Ramps at Base Line Rd	12. I-15 NB Ramps at Base Line Rd	13. Cherry Ave at Baseline Ave
26/41 ← 1423/1344 179/216 → 619/458 ↘ 1066/1592 → 519/720	104/60 ← 562/432 ← 62/112 ← 68/92 ← 233/207 ← 101/76 131/73 → 223/363 → 84/67 ↘ 41/29 → 638/430 → 75/97	168/119 ← 1064/715 ← 377/329 ← 276/407 ← 221/332 ← 102/139 241/215 → 215/336 → 59/60 ↘ 84/69 → 825/852 → 81/84	451/270 ← 1340/1102 ← 245/400 ← 223/396 ← 282/192 ← 18/77 326/477 → 282/281 → 194/57 ↘ 179/66 → 1038/1482 → 43/73	288/68 ← 324/113 ← 165/55 ← 264/52 ← 1245/694 ← 193/143 120/83 → 568/1110 → 91/137 ↘ 133/119 → 306/188 → 114/231	635/280 ← 411/289 ← 1060/625 601/1173 → 264/189 ↘	200/181 ← 1786/894 396/492 → 633/1021 → 311/309 → 2/0 → 343/576	459/96 ← 959/537 ← 77/120 ← 74/68 ← 1496/661 ← 497/390 260/342 → 562/1187 → 156/91 ↘ 71/172 → 634/1079 → 219/418

14. Beech Ave at Baseline Ave	15. Citrus Ave at Baseline Ave	16. Sierra Ave at Baseline Ave	17. Etiwanda Ave at Church St/Miller Ave	18. I-15 SB Ramps at Foothill Blvd	19. I-15 NB Ramps at Foothill Blvd	20. Etiwanda Ave at Foothill Blvd
221/101 ← 268/214 ← 105/147 ← 92/136 ← 687/672 ← 50/73 148/236 → 507/1129 → 41/82 ↘ 73/105 → 268/280 → 15/27	274/134 ← 864/496 ← 139/142 ← 114/65 ← 752/619 ← 177/180 318/345 → 409/824 → 122/129 ↘ 134/106 → 642/682 → 823/79	122/76 ← 1184/577 ← 246/253 ← 156/263 ← 555/725 ← 101/103 115/161 → 460/674 → 122/101 ↘ 176/116 → 709/1095 → 63/68	136/104 ← 324/267 ← 85/26 ← 77/34 ← 520/287 ← 105/48 97/153 → 279/492 → 121/187 ↘ 158/149 → 280/297 → 163/110	951/600 ← 194/229 ← 1623/1526 594/2142 → 894/1046 ↘	257/362 ← 1381/1264 532/1281 → 978/819 → 553/521	258/174 ← 390/251 ← 56/69 ← 129/53 ← 1344/838 ← 383/117 112/264 → 502/1043 → 273/255 ↘ 223/342 → 236/400 → 76/212

Note: Volumes reflect PCE adjustments.

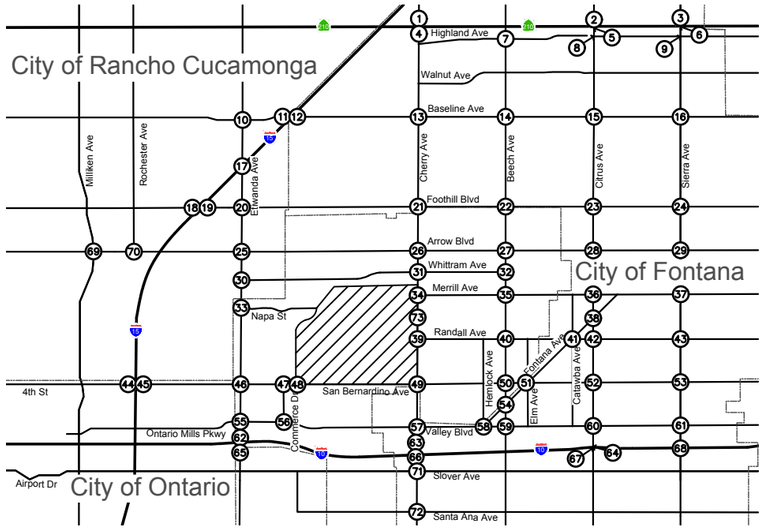
LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 13A
OPENING YEAR 2027 TRAFFIC VOLUMES



NOT TO SCALE

21. Cherry Ave at Foothill Blvd

206/277	227/219 960/830 184/315	110/138 1275/635 337/187
464/963		
171/112	240/309 543/1014 158/284	

22. Beech Ave at Foothill Blvd

		1728/887
		224/117
725/1511	24/67	115/133
40/60		

23. Citrus Ave at Foothill Blvd

181/80	813/618	87/133
813/618	148/147	908/647
148/147		263/321
167/287	160/155	
502/958	581/758	87/97
128/198		

24. Sierra Ave at Foothill Blvd

143/138	920/557	140/181
920/557	215/171	693/576
215/171		172/225
239/227	88/115	
434/785	497/901	90/154
112/150		

25. Etiwanda Ave at Arrow Rte

439/128	409/339	149/161
409/339	134/142	783/403
134/142		158/112
104/391	382/198	
274/697	246/643	40/130
178/457		

26. Cherry Ave at Arrow Rte

106/104	1220/1026	66/66
1220/1026	59/77	673/607
59/77		185/160
78/94	115/155	
437/679	873/1310	157/263
104/110		

27. Beech Ave at Arrow Rte

94/25	174/159	25/30
174/159	16/20	683/510
16/20		159/104
46/35	93/108	
397/730	143/170	131/246
65/73		

28. Citrus Ave at Arrow Rte

158/75	888/817	147/103
888/817	108/155	496/363
108/155		255/164
82/87	233/196	
297/643	695/968	233/191
118/188		

29. Sierra Ave at Arrow Rte

77/86	814/579	62/59
814/579	65/121	592/353
65/121		79/75
75/113	97/95	
453/535	583/872	42/65
92/100		

30. Etiwanda Ave at Whittram Ave

699/677	73/220	153/99
73/220		262/225
	552/820	
	169/317	

31. Cherry Ave at Whittram Ave

100/63	1300/957	76/82
1300/957	39/43	152/75
39/43		169/139
34/97	208/160	
34/158	1043/1661	148/125
224/329		

32. Beech Ave at Whittram Ave

125/46		
295/354		
64/90	150/99	
	329/451	
74/185		

33. Etiwanda Ave at Napa St

1/0	843/640	129/131
843/640	113/206	204/223
113/206		
0/6	1/0	
2/34	617/1016	298/155

34. Cherry Ave at Merrill Ave

0/1	1237/841	283/231
1237/841	146/223	145/107
146/223		
0/1	3/1	
	813/1458	117/200

35. Beech Ave at Merrill Ave

85/45	165/195	171/144
165/195	63/132	265/183
63/132		75/36
115/144	57/34	
155/261	185/244	65/54
63/37		

36. Citrus Ave at Merrill Ave

103/112	1014/827	115/152
1014/827	68/87	238/235
68/87		49/33
165/156	57/50	
186/290	764/1039	31/39
54/59		

37. Sierra Ave at Merrill Ave

59/80	987/785	48/52
987/785	37/72	418/310
37/72		150/124
71/96	65/131	
387/512	641/938	102/184
106/115		

38. Citrus Ave at Fontana Ave

139/120	979/767	35/22
979/767	26/38	92/95
26/38		88/57
121/157	22/20	
113/208	724/974	84/77
12/10		

39. Cherry Ave at Randall Ave

9/2	1207/882	109/124
1207/882	156/160	97/116
156/160		240/185
0/5	128/162	
124/108	838/1461	116/183
96/99		

40. Beech Ave at Randall Ave

95/37	217/181	44/47
217/181	7/38	296/271
7/38		35/11
66/72	23/25	
258/327	216/239	47/13
28/31		

Note: Volumes reflect PCE adjustments.

LEGEND:

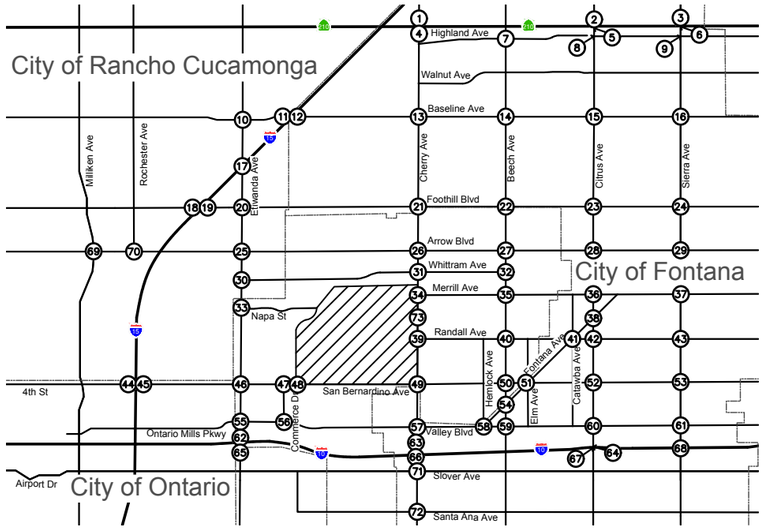
= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

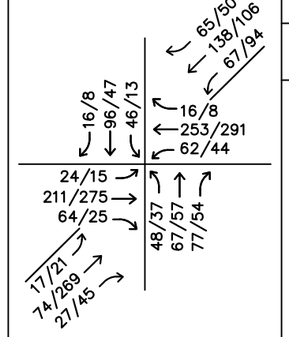
FIGURE 13B
OPENING YEAR 2027 TRAFFIC VOLUMES

Kimley»Horn

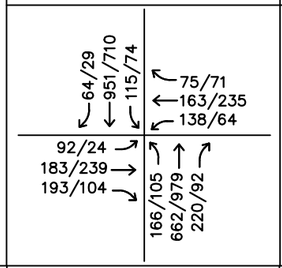


NOT TO SCALE

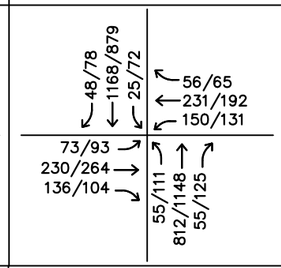
41. Fontana Ave/ Catawba Ave at Randall Ave



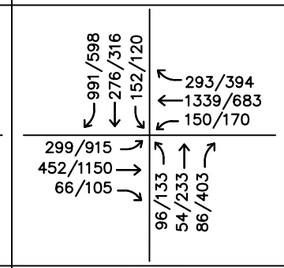
42. Citrus Ave at Randall Ave



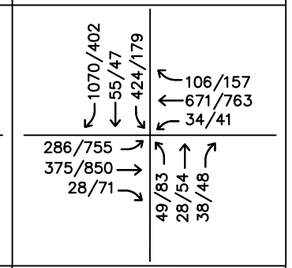
43. Sierra Ave at Randall Ave



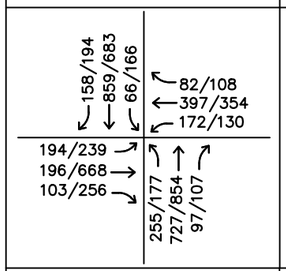
44. I-15 SB Ramps/ Ontario Mills Dr at Fourth St



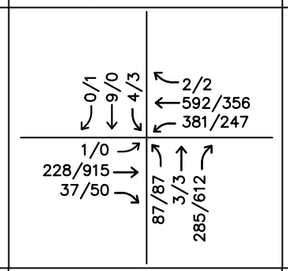
45. I-15 NB Ramps at Fourth St



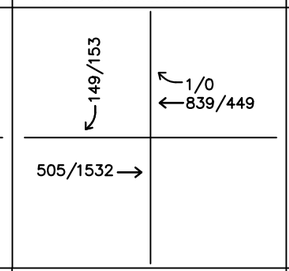
46. Etiwanda Ave at Fourth St/San Bernardino Ave



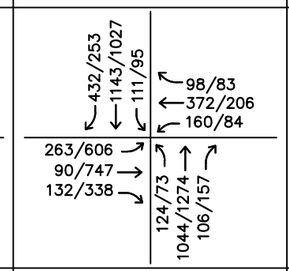
47. Commerce Dr at San Bernardino Ave



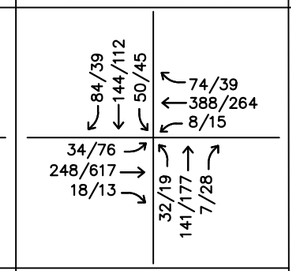
48. Vip Rd at San Bernardino Ave



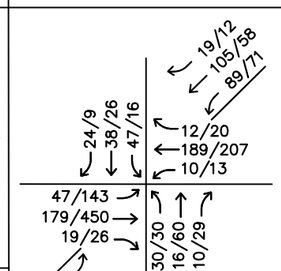
49. Cherry Ave at San Bernardino Ave



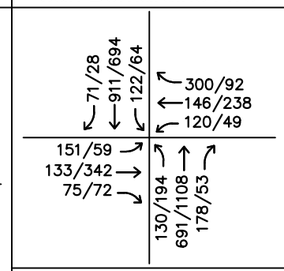
50. Beech Ave at San Bernardino Ave



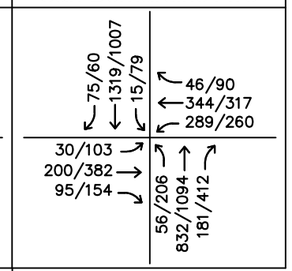
51. Fontana Ave/Elm St at San Bernardino Ave



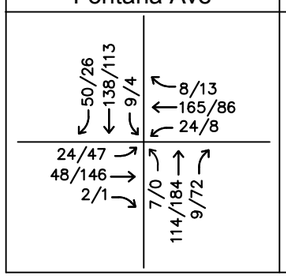
52. Citrus Ave at San Bernardino Ave



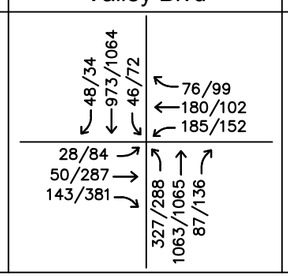
53. Sierra Ave at San Bernardino Ave



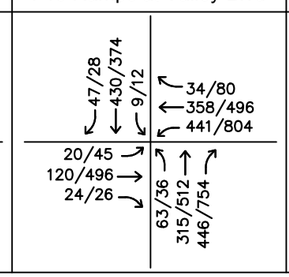
54. Beech Ave at Fontana Ave



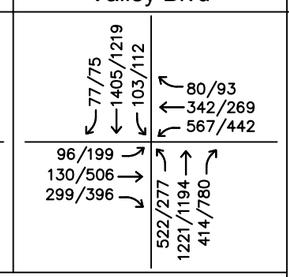
55. Etiwanda Ave at Valley Blvd



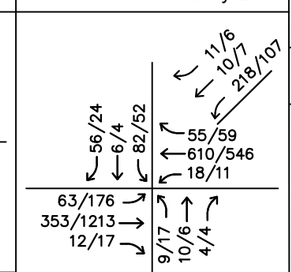
56. Commerce Dr/ I-15 Ramps at Valley Blvd



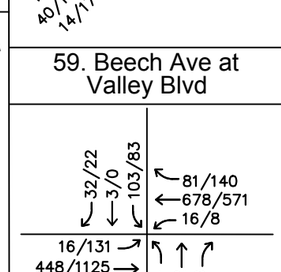
57. Cherry Ave at Valley Blvd



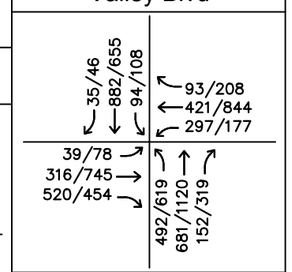
58. Fontana Ave/ Hemlock Ave at Valley Blvd



59. Beech Ave at Valley Blvd



60. Citrus Ave at Valley Blvd



Note: Volumes reflect PCE adjustments.

LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 13C
OPENING YEAR 2027 TRAFFIC VOLUMES

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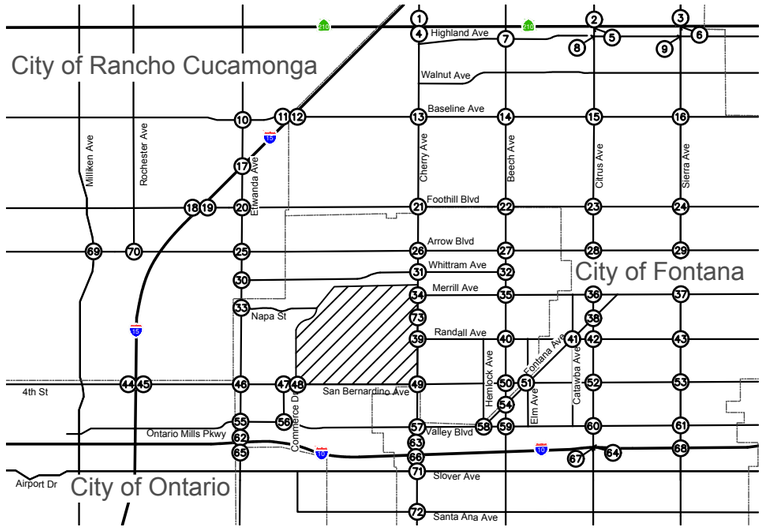
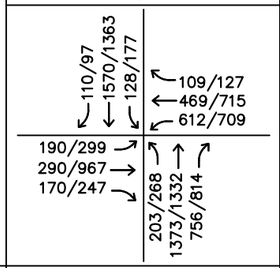
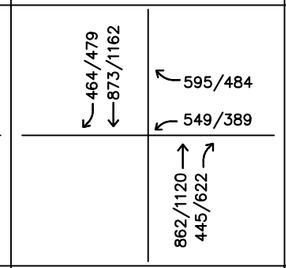


NOT TO SCALE

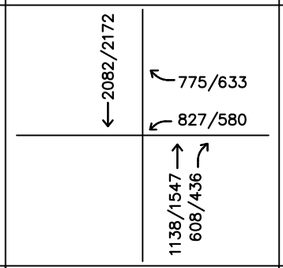
61. Sierra Ave at Valley Blvd



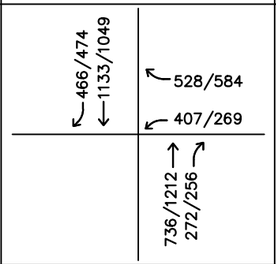
62. Etiwanda Ave at I-10 WB Off-Ramps



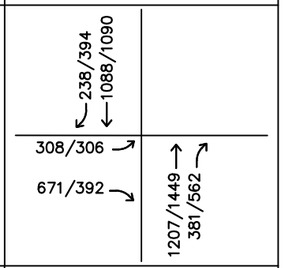
63. Cherry Ave at I-10 WB Ramps



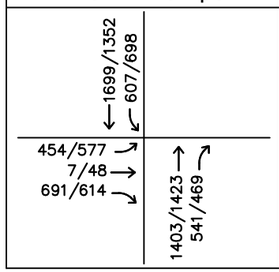
64. Citrus Ave at I-10 WB Ramps



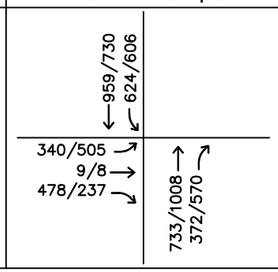
65. Etiwanda Ave at I-10 EB Ramps



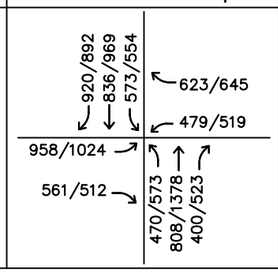
66. Cherry Ave at I-10 EB Ramps



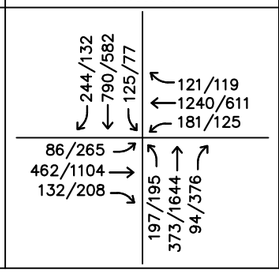
67. Citrus Ave at I-10 EB Ramps



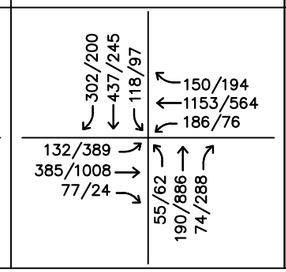
68. Sierra Ave at I-10 EB/WB Ramps



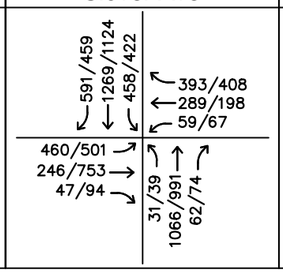
69. Milliken Ave at Arrow Rte



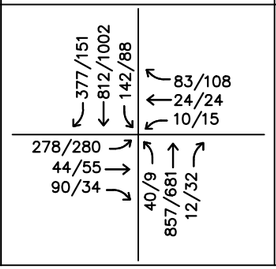
70. Rochester Ave at Arrow Rte



71. Cherry Ave at Slover Ave



72. Cherry Ave at Santa Ana Ave



73. Cherry Ave at Street A

FUTURE INTERSECTION

Note: Volumes reflect PCE adjustments.

LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 13D
OPENING YEAR 2027 TRAFFIC VOLUMES

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TABLE 6
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2027 CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
1	Cherry Ave at SR-210 WB Ramps	C	S	30.6	C	31.1	C
2	Citrus Ave at SR-210 WB Ramps	C	S	26.7	C	27.3	C
3	Sierra Ave at SR-210 WB Ramps	C	S	19.9	B	16.9	B
4	Cherry Ave at SR-210 EB Ramps	C	S	24.3	C	24.1	C
5	Citrus Ave at SR-210 EB Ramps	C	S	31.7	C	31.5	C
6	Sierra Ave at SR-210 EB Ramps	C	S	18.0	B	14.7	B
7	Beech Ave at Highland Ave	F	S	32.1	C	34.9	C
8	Citrus Ave at Highland Ave	F	S	38.1	D	40.4	D
9	Sierra Ave at Highland Ave	F	S	33.1	C	55.1	E
10	Etiwanda Ave at Base Line Rd	RC	S	61.2	E	40.1	D
11	I-15 SB Ramps at Base Line Rd	C	S	21.7	C	15.1	B
12	I-15 NB Ramps at Baseline Ave	C	S	28.0	C	34.1	C
13	Cherry Ave at Baseline Ave	F	S	39.9	D	39.6	D
14	Beech Ave at Baseline Ave	F	S	39.9	D	43.2	D
15	Citrus Ave at Baseline Ave	F	S	55.3	E	40.0	D
16	Sierra Ave at Baseline Ave	F	S	34.2	C	35.7	D
17	Etiwanda Ave at Church St/Miller Ave	RC	S	49.8	D	44.7	D
18	I-15 SB Ramps at Foothill Blvd	C	S	44.1	D	34.6	C
19	I-15 NB Ramps at Foothill Blvd	C	S	27.7	C	22.8	C
20	Etiwanda Ave at Foothill Blvd	RC	S	47.9	D	44.4	D
21	Cherry Ave at Foothill Blvd	F/SB	S	41.5	D	47.0	D
22	Beech Ave at Foothill Blvd	F/SB	U	>180	F	>180	F
23	Citrus Ave at Foothill Blvd	F	S	51.5	D	57.3	E
24	Sierra Ave at Foothill Blvd	F	S	43.5	D	44.2	D
25	Etiwanda Ave at Arrow Rte	RC	S	43.7	D	40.5	D
26	Cherry Ave at Arrow Rte	SB	S	45.5	D	62.1	E
27	Beech Ave at Arrow Rte	SB	S	26.9	C	23.9	C
28	Citrus Ave at Arrow Rte	F	S	49.0	D	45.0	D
29	Sierra Ave at Arrow Rte	F	S	38.0	D	37.2	D

TABLE 6
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2027 CONDITIONS

30	Etiwanda Ave at Whittram Ave	RC	S	25.8	C	28.8	C
31	Cherry Ave at Whittram Ave	SB	S	42.0	D	54.4	D
32	Beech Ave at Whittram Ave	SB	U	43.5	E	48.5	E
33	Etiwanda Ave at Napa St	SB	S	19.9	B	28.4	C
34	Cherry Ave at Merrill Ave	SB	S	26.0	C	36.0	D
35	Beech Ave at Merrill Ave	SB	U	37.4	E	50.3	F
36	Citrus Ave at Merrill Ave	F	S	30.4	C	31.3	C
37	Sierra Ave at Merrill Ave	F	S	40.4	D	43.1	D
38	Citrus Ave at Fontana Ave	F	S	21.2	C	23.6	C
39	Cherry Ave at Randall Ave	SB	S	37.8	D	40.0	D
40	Beech Ave at Randall Ave	SB	U	85.3	F	32.9	D
41	Fontana Ave/Catawba Ave at Randall Ave	F	U	30.1	D	34.8	D
42	Citrus Ave at Randall Ave	F	S	34.2	C	28.1	C
43	Sierra Ave at Randall Ave	F	S	29.5	C	31.9	C
44	I-15 SB Ramps/Ontario Mills Dr at Fourth St	C	S	48.3	D	58.2	E
45	I-15 NB Ramps at Fourth St	C	S	61.4	E	35.6	D
46	Etiwanda Ave at Fourth St/San Bernardino A	RC/SB	S	34.5	C	37.3	D
47	Commerce Dr at San Bernardino Ave	SB	S	35.7	D	62.0	E
48	Vip Rd at San Bernardino Ave	SB	U	14.3	B	10.9	B
49	Cherry Ave at San Bernardino Ave	SB	S	36.3	D	48.4	D
50	Beech Ave at San Bernardino Ave	SB	S	32.8	C	34.9	C
51	Fontana Ave/Elm Ave at San Bernardino Ave	F/SB	S	32.4	C	28.2	C
52	Citrus Ave at San Bernardino Ave	F	S	40.5	D	31.6	C
53	Sierra Ave at San Bernardino Ave	F	S	31.5	C	42.4	D
54	Beech Ave at Fontana Ave	F/SB	U	10.2	B	10.2	B
55	Etiwanda Ave at Valley Blvd	SB	S	27.4	C	35.6	D
56	Commerce Dr/I-10 Ramps at Valley Blvd	C	S	29.8	C	61.8	E
57	Cherry Ave at Valley Blvd	F/SB	S	49.5	D	53.2	D
58	Fontana Ave/Hemlock Ave at Valley Blvd	F/SB	S	28.7	C	16.0	B
59	Beech Ave at Valley Blvd	F	U	91.8	F	>180	F
60	Citrus Ave at Valley Blvd	F	S	58.4	E	48.1	D

TABLE 6
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2027 CONDITIONS

61	Sierra Ave at Valley Blvd	F	S	36.4	D	60.3	E
62	Etiwanda Ave at I-10 WB Off-Ramps	C	S	23.9	C	19.3	B
63	Cherry Ave at I-10 WB Ramps	C	S	40.4	D	28.2	C
64	Citrus Ave at I-10 WB Ramps	C	S	21.5	C	19.1	B
65	Etiwanda Ave at I-10 EB Ramps	C	S	30.8	C	18.6	B
66	Cherry Ave at I-10 EB Ramps	C	S	38.9	D	39.6	D
67	Citrus Ave at I-10 EB Ramps	C	S	35.6	D	32.1	C
68	Sierra Ave at I-10 EB/WB Ramps	C	S	28.5	C	69.7	E
69	Milliken Ave at Arrow Rte	RC	S	39.5	D	42.6	D
70	Rochester Ave at Arrow Rte	RC	S	37.5	D	40.5	D
71	Cherry Ave at Slover Ave	F	S	36.8	D	37.8	D
72	Cherry Ave at Santa Ana Ave	F	S	>180	F	>180	F

Notes:
- Bold values indicate intersections operating at an unacceptable Level of Service
- Delay values for unsignalized intersections represent the average vehicle delay on the worst (highest delay) intersection approach.

F = Fontana; SB = San Bernardino County; RC = Rancho Cucamonga; C = Caltrans

OPENING YEAR 2027 PLUS PROJECT (PHASES 1 AND 2) CONDITIONS

Phases 1 and 2 project-related traffic were added to the Opening Year 2027 traffic volumes, and the resulting "Plus Phases 1 and 2" traffic volumes are shown on Figure 14. The following roadway network connections to the site have been assumed in the Opening Year 2027 conditions:

- Connection to existing Napa Street is assumed with 2 lanes westbound and 2 lanes eastbound
- Connection to existing VIP Road is assumed with 2 lanes southbound and 1 lane northbound. Truck access will be restricted on VIP Road

Peak Hour Operating Conditions

Intersection Level of Service analysis was conducted for the Opening Year 2027 Plus Project (Phases 1 and 2) condition. The results are shown on Table 7. Copies of the intersection analysis worksheets are provided in *Appendix D*. Review of Table 7 indicates that, with the addition of Phases 1 and 2 project traffic, the following intersections would operate at an unacceptable Level of Service under Opening Year 2027 Plus Project (Phases 1 and 2) conditions:

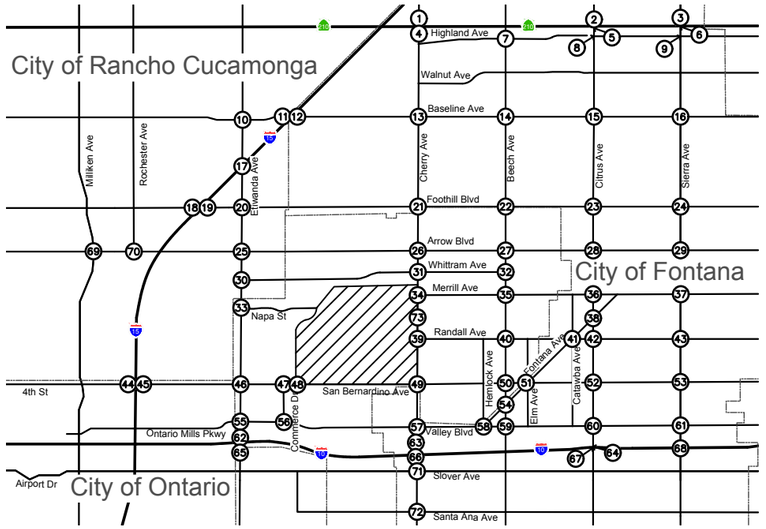
- #9 – Sierra Ave at Highland Ave: PM – LOS E
- #10 – Etiwanda Ave at Base Line Rd: AM – LOS E
- #15 – Citrus Ave at Baseline Ave: AM – LOS E
- #20 – Etiwanda Ave at Foothill Blvd AM – LOS E; PM – LOS E
- #22 – Beech Ave at Foothill Blvd: AM – LOS F; PM – LOS F
- #23 – Citrus Ave at Foothill Blvd: PM – LOS E
- #26 – Cherry Ave at Arrow Rte: PM – LOS F
- #31 – Cherry Ave at Whittram Ave: AM – LOS E; PM – LOS F
- #32 – Beech Ave at Whittram Ave: AM – LOS E; PM – LOS F
- #33 – Etiwanda Ave at Napa St: PM – LOS F
- #34 – Cherry Ave at Merrill Ave: PM – LOS E
- #35 – Beech Ave at Merrill Ave: AM – LOS E; PM – LOS F
- #39 – Cherry Ave at Randall Ave: AM – LOS F; PM – LOS F
- #40 – Beech Ave at Randall Ave: AM – LOS F; PM – LOS F
- #41 – Fontana Ave/Catawba Ave at Randall Ave: AM – LOS F; PM – LOS F
- #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St: PM – LOS F
- #45 – I-15 NB Ramps at Fourth St: AM – LOS E
- #47 – Commerce Dr at San Bernardino Ave: PM – LOS F
- #49 – Cherry Ave at San Bernardino Ave: PM – LOS F
- #56 – Commerce Dr/I-10 Ramps at Valley Blvd: PM – LOS E
- #57 – Cherry Ave at Valley Blvd: PM – LOS E
- #59 – Beech Ave at Valley Blvd: AM – LOS F; PM – LOS F

- #60 – Citrus Ave at Valley Blvd: AM – LOS E
- #61 – Sierra Ave at Valley Blvd: PM – LOS E
- #63 – Cherry Ave at I-10 WB Ramps: AM – LOS E; PM – LOS E
- #68 – Sierra Ave at I-10EB/WB Ramps: PM – LOS E
- #72 – Cherry Ave at Santa Ana Ave: AM – LOS F; PM – LOS F

Based on the County standards presented earlier in this report, the Phases 1 and 2 project-related effect would be considered to have a cumulative effect at the following intersections under Opening Year 2027 Plus Project (Phases 1 and 2) conditions:

- #20 – Etiwanda Ave at Foothill Blvd
- #22 – Beech Ave at Foothill Blvd
- #23 – Citrus Ave at Foothill Blvd
- #26 – Cherry Ave at Arrow Rte
- #31 – Cherry Ave at Whittram Ave
- #33 – Etiwanda Ave at Napa St
- #34 – Cherry Ave at Merrill Ave
- #35 – Beech Ave at Merrill Ave
- #39 – Cherry Ave at Randall Ave
- #40 – Beech Ave at Randall Ave
- #41 – Fontana Ave/Catawba Ave at Randall Ave
- #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St
- #47 – Commerce Dr at San Bernardino Ave
- #49 – Cherry Ave at San Bernardino Ave
- #57 – Cherry Ave at Valley Blvd
- #59 – Beech Ave at Valley Blvd
- #60 – Citrus Ave at Valley Blvd
- #63 – Cherry Ave at I-10 WB Ramps
- #68 – Sierra Ave at I-10 EB/WB Ramps
- #72 – Cherry Ave at Santa Ana Ave

Recommended improvements to address the project-related effects are presented in the Recommended Improvements section of this report. Copies of intersection analysis worksheets are provided in *Appendix D*.



NOT TO SCALE

1. Cherry Ave at SR-210 WB Ramps	2. Citrus Ave at SR-210 WB Ramps	3. Sierra Ave at SR-210 WB Ramps	4. Cherry Ave at SR-210 EB Ramps	5. Citrus Ave at SR-210 EB Ramps
224/164 ↙ 810/536 ↓ ↖ 282/151 ← 4/0 ← 505/477	398/442 ↙ 934/840 ↓ ↖ 346/372 ← 1/0 ← 486/401	1221/1333 ← ↖ 326/448 ↖ 578/344	1017/930 ↙ 179/81 ←	1070/803 ↙ 338/228 ↘
234/409 ↑ 345/657 ↑	338/362 ↑ 1021/1180 ↑	893/1285 ↑	171/216 ↑ 6/2 → 392/488 ↘ 532/857 ↑ 453/473 ↑	460/556 ↑ 3/3 → 450/385 ↘ 921/1185 ↑ 467/320 ↑

6. Sierra Ave at SR-210 EB Ramps	7. Beech Ave at Highland Ave	8. Citrus Ave at Highland Ave	9. Sierra Ave at Highland Ave	10. Etiwanda Ave at Base Line Rd	11. I-15 SB Ramps at Base Line Rd	12. I-15 NB Ramps at Base Line Rd	13. Cherry Ave at Baseline Ave
26/41 ↙ 1437/1363 ↓	104/60 ↙ 562/432 ↓ 62/112 ↙ ↖ 68/92 ← 233/207 ← 101/76	168/119 ↙ 1082/739 ↓ 377/329 ↙ ↖ 276/407 ← 221/332 ← 102/139	451/270 ↙ 1354/1121 ↓ 245/400 ↙ ↖ 223/396 ← 282/192 ← 18/77	288/68 ↙ 333/125 ↓ 165/55 ↙ ↖ 264/52 ← 1245/694 ← 193/143	635/280 ↙ 433/326 ↓ ← 1060/625	↖ 234/215 ← 1786/894	459/96 ↙ 1101/1749 ↓ 77/120 ↙ ↖ 74/68 ← 1496/661 ← 577/503
179/216 → ↘ 619/458 ↘ 1066/1604 ↑ 520/726 ↑	131/73 → 223/363 → 84/67 ↘ 41/29 ↑ 638/430 ↑ 75/97 ↑	241/215 → 215/336 → 59/60 ↘ 84/69 ↑ 828/876 ↑ 81/84 ↑	326/477 → 282/281 → 194/57 ↘ 179/66 ↑ 1039/1500 ↑ 43/73 ↑	120/83 → 568/1110 → 100/149 ↘ 133/131 ↑ 306/200 ↑ 114/231 ↑	601/1173 → 264/189 ↘	396/492 → 655/1058 → ↘ 311/309 ↑ 2/0 ↑ 343/576 ↑	260/342 → 562/1187 → 178/128 ↘ 105/206 ↑ 742/1254 ↑ 227/529 ↑

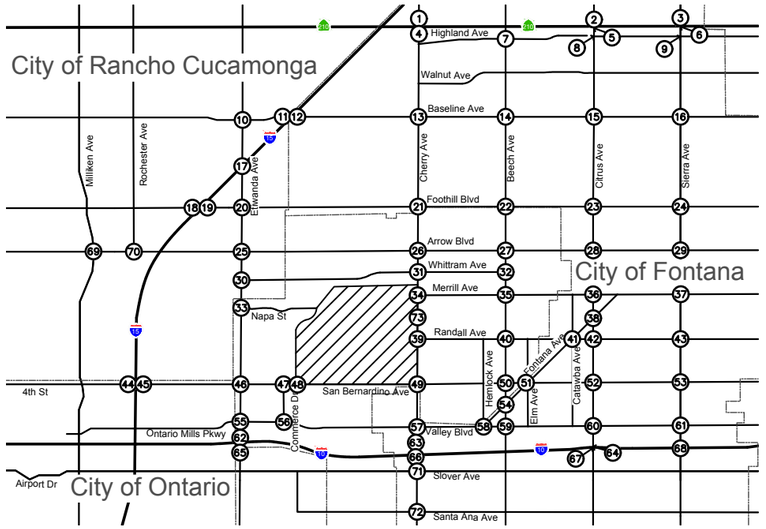
14. Beech Ave at Baseline Ave	15. Citrus Ave at Baseline Ave	16. Sierra Ave at Baseline Ave	17. Etiwanda Ave at Church St/Miller Ave	18. I-15 SB Ramps at Foothill Blvd	19. I-15 NB Ramps at Foothill Blvd	20. Etiwanda Ave at Foothill Blvd
221/101 ↙ 268/214 ↓ 105/147 ↙ ↖ 92/136 ← 750/757 ← 50/73	292/158 ↙ 864/496 ↓ 139/142 ↙ ↖ 114/65 ← 788/668 ← 185/196	140/101 ↙ 1189/583 ↓ 246/253 ↙ ↖ 156/263 ← 564/737 ← 101/103	136/104 ↙ 342/291 ↓ 85/26 ↙ ↖ 77/34 ← 520/287 ← 106/50	951/600 ↙ 288/366 ↓ ← 1633/1567	↖ 318/479 ← 1391/1305	258/174 ↙ 409/277 ↓ 56/69 ↙ ↖ 129/53 ← 1344/838 ← 384/119
148/236 → 510/1211 → 41/82 ↘ 73/105 ↑ 268/280 ↑ 15/27 ↑	320/368 → 410/872 → 122/129 ↘ 134/106 ↑ 642/684 ↑ 828/97 ↑	116/186 → 460/686 → 122/101 ↘ 176/116 ↑ 709/1100 ↑ 63/68 ↑	97/153 → 279/492 → 121/187 ↘ 158/149 ↑ 280/321 ↑ 163/112 ↑	621/2182 → 894/1046 ↘	653/1458 → ↘ 978/819 ↑ 553/521 ↑	112/264 → 502/1043 → 394/432 ↘ 294/500 ↑ 236/426 ↑ 76/214 ↑

Note: Volumes reflect PCE adjustments.

LEGEND:
- = Project Site
- Ⓧ = Study Intersection
- XX/YY = AM/PM Volumes

FIGURE 14A
OPENING YEAR 2027 PLUS PHASES 1 AND 2 TRAFFIC VOLUMES

Kimley»Horn



NOT TO SCALE

21. Cherry Ave at Foothill Blvd

206/279 → 464/963 → 171/112 ↘	228/221 ← 1219/1217 ← 184/315 ↖	110/138 ← 1275/635 ← 380/244 ↖
	240/309 ↑ 699/1359 ↑ 163/341 ↑	

22. Beech Ave at Foothill Blvd

730/1568 → 40/60 ↘		← 1771/944 ← 232/133 ↖
	24/67 ↑	120/150 ↑

23. Citrus Ave at Foothill Blvd

167/287 → 507/1003 → 128/198 ↘	181/80 ← 821/634 ← 148/147 ↖	87/133 ← 942/692 ← 263/321 ↖
	160/155 ↑ 586/778 ↑ 87/97 ↑	

24. Sierra Ave at Foothill Blvd

239/236 → 439/809 → 112/150 ↘	149/147 ← 936/582 ← 215/171 ↖	140/181 ← 712/600 ← 180/241 ↖
	88/115 ↑ 502/926 ↑ 95/171 ↑	

25. Etiwanda Ave at Arrow Rte

104/391 → 274/697 → 205/493 ↘	439/128 ← 550/544 ← 134/142 ↖	149/161 ← 783/403 ← 158/112 ↖
	382/234 ↑ 317/829 ↑ 40/130 ↑	

26. Cherry Ave at Arrow Rte

78/94 → 437/679 → 104/110 ↘	106/104 ← 1522/1470 ← 59/77 ↖	66/66 ← 673/607 ← 220/210 ↖
	115/155 ↑ 1034/1712 ↑ 157/313 ↑	

27. Beech Ave at Arrow Rte

46/35 → 397/780 → 65/73 ↘	94/25 ← 182/175 ← 16/20 ↖	25/30 ← 718/560 ← 162/107 ↖
	93/108 ↑ 148/187 ↑ 131/249 ↑	

28. Citrus Ave at Arrow Rte

82/87 → 297/672 → 118/188 ↘	158/75 ← 896/833 ← 108/155 ↖	147/103 ← 516/392 ← 258/167 ↖
	233/196 ↑ 700/988 ↑ 233/194 ↑	

29. Sierra Ave at Arrow Rte

75/113 → 453/544 → 92/100 ↘	77/86 ← 838/620 ← 65/121 ↖	62/59 ← 598/362 ← 82/78 ↖
	97/95 ↑ 593/914 ↑ 42/68 ↑	

30. Etiwanda Ave at Whittram Ave

	← 867/918 ← 73/220 ↖	153/99 ↑ 262/225 ↑
	623/1042 ↑ 169/317 ↑	

31. Cherry Ave at Whittram Ave

34/97 → 34/158 → 224/329 ↘	100/63 ← 1637/1451 ← 39/43 ↖	76/82 ← 152/75 ← 169/139 ↖
	208/160 ↑ 1204/2113 ↑ 148/125 ↑	

32. Beech Ave at Whittram Ave

64/90 → 74/185 ↘	125/46 ← 306/373 ↖	
	150/99 ↑ 334/471 ↑	

33. Etiwanda Ave at Napa St

0/6 → 2/34 ↘	1/0 ← 843/640 ← 281/447 ↖	200/353 ↑ 315/357 ↑
	1/0 ↑ 617/1016 ↑ 408/327 ↑	

34. Cherry Ave at Merrill Ave

0/1 →	0/1 ← 1574/1335 ← 146/223 ↖	283/231 ← 165/135 ↖
	3/1 ↑ 974/1910 ↑ 117/228 ↑	

35. Beech Ave at Merrill Ave

115/144 → 155/289 → 63/37 ↘	85/45 ← 176/214 ← 63/132 ↖	171/144 ← 285/211 ← 75/36 ↖
	57/34 ↑ 190/264 ↑ 65/54 ↑	

36. Citrus Ave at Merrill Ave

165/156 → 186/318 → 54/59 ↘	103/112 ← 1025/846 ← 68/87 ↖	115/152 ← 258/263 ← 50/34 ↖
	57/50 ↑ 769/1062 ↑ 31/40 ↑	

37. Sierra Ave at Merrill Ave

81/148 → 387/524 → 106/122 ↘	90/131 ← 992/790 ← 37/72 ↖	48/52 ← 427/322 ← 150/124 ↖
	70/138 ↑ 641/943 ↑ 102/184 ↑	

38. Citrus Ave at Fontana Ave

126/179 → 123/251 → 12/10 ↘	147/136 ← 983/771 ← 26/38 ↖	35/22 ← 108/127 ← 97/67 ↖
	22/20 ↑ 724/976 ↑ 84/77 ↑	

39. Cherry Ave at Randall Ave

13/57 → 160/343 → 252/383 ↘	50/68 ← 1368/1111 ← 156/229 ↖	163/193 ← 240/340 ← 240/185 ↖
	318/457 ↑ 1030/1736 ↑ 116/183 ↑	

40. Beech Ave at Randall Ave

71/92 → 289/573 → 28/45 ↘	106/56 ← 217/181 ← 7/38 ↖	44/47 ← 455/509 ← 35/11 ↖
	32/37 ↑ 216/239 ↑ 47/13 ↑	

Note: Volumes reflect PCE adjustments.

LEGEND:

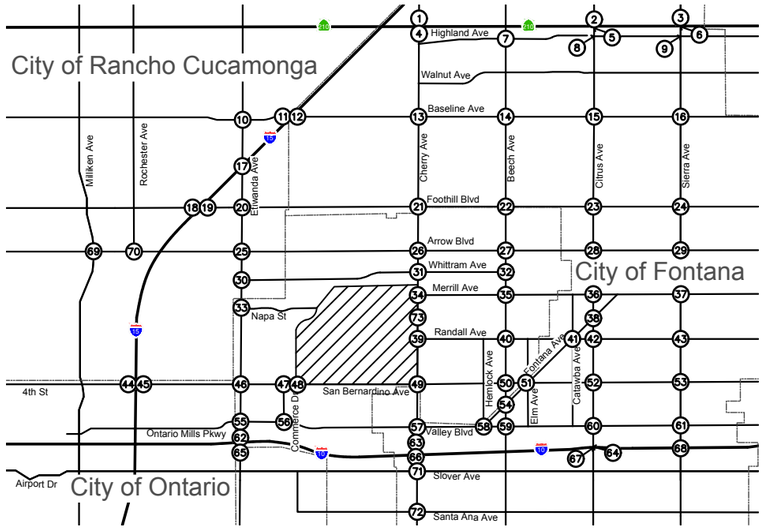
= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

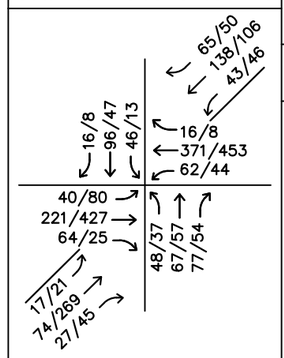
FIGURE 14B
OPENING YEAR 2027 PLUS PHASES 1 AND 2 TRAFFIC VOLUMES

Kimley»Horn

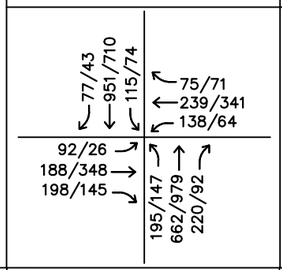


NOT TO SCALE

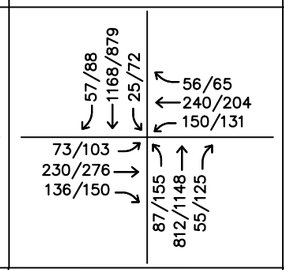
41. Fontana Ave/ Catawba Ave at Randall Ave



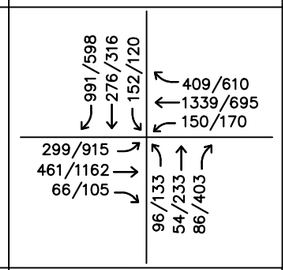
42. Citrus Ave at Randall Ave



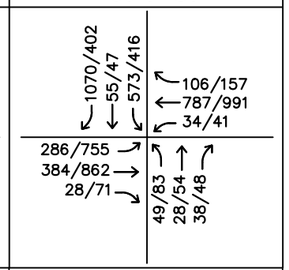
43. Sierra Ave at Randall Ave



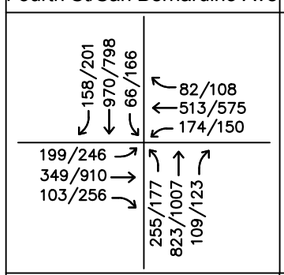
44. I-15 SB Ramps/ Ontario Mills Dr at Fourth St



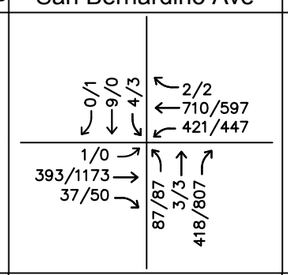
45. I-15 NB Ramps at Fourth St



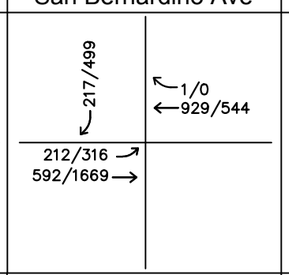
46. Etiwanda Ave at Fourth St/San Bernardino Ave



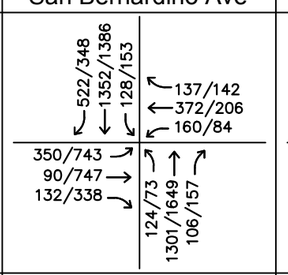
47. Commerce Dr at San Bernardino Ave



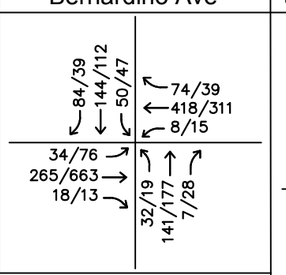
48. Vip Rd at San Bernardino Ave



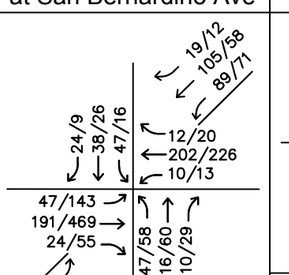
49. Cherry Ave at San Bernardino Ave



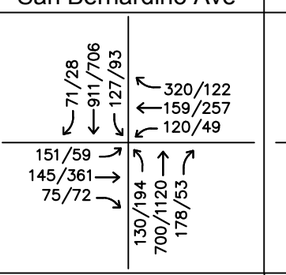
50. Beech Ave at San Bernardino Ave



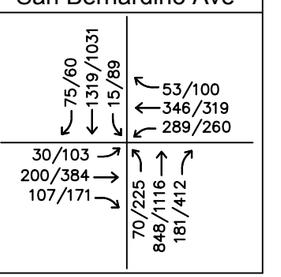
51. Fontana Ave/Elm St at San Bernardino Ave



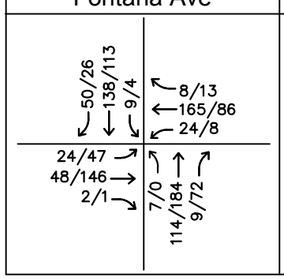
52. Citrus Ave at San Bernardino Ave



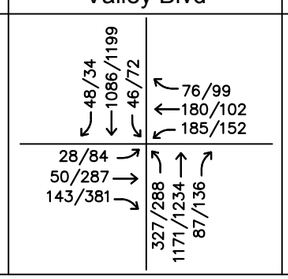
53. Sierra Ave at San Bernardino Ave



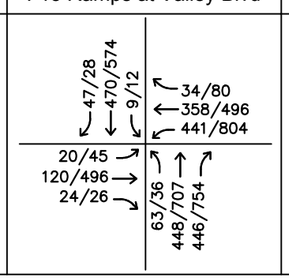
54. Beech Ave at Fontana Ave



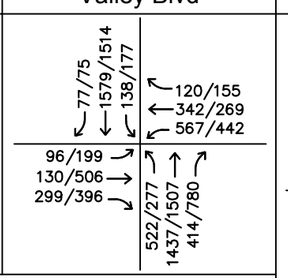
55. Etiwanda Ave at Valley Blvd



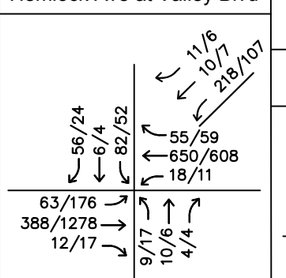
56. Commerce Dr/ I-15 Ramps at Valley Blvd



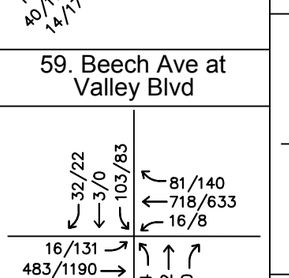
57. Cherry Ave at Valley Blvd



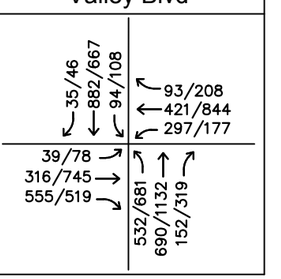
58. Fontana Ave/ Hemlock Ave at Valley Blvd



59. Beech Ave at Valley Blvd



60. Citrus Ave at Valley Blvd



Note: Volumes reflect PCE adjustments.

LEGEND:

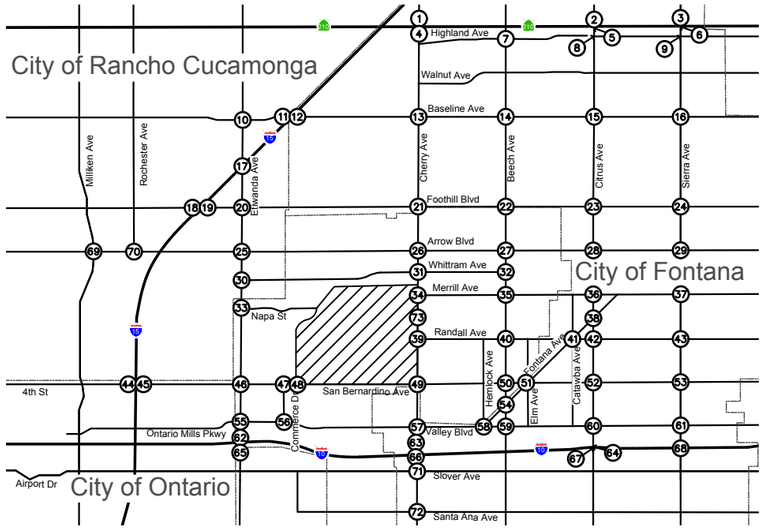
= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 14C
OPENING YEAR 2027 PLUS PHASES 1 AND 2 TRAFFIC VOLUMES

Kimley»Horn



NOT TO SCALE

61. Sierra Ave at Valley Blvd	62. Etiwanda Ave at I-10 WB Off-Ramps	63. Cherry Ave at I-10 WB Ramps	64. Citrus Ave at I-10 WB Ramps	65. Etiwanda Ave at I-10 EB Ramps
110/97 ↙ 1582/1392 ↓ 128/189 ↖ 118/139 ← 469/715 ← 612/709	577/602 ↙ 873/1174 ↓ ↖ 595/484 ← 549/389	2/12 ↙ 2254/2454 ↓ ↖ 936/873 ← 827/580	466/474 ↙ 1168/1126 ↓ ↖ 568/646 ← 407/269	238/394 ↙ 1088/1102 ↓
190/299 → 290/967 → 170/247 ↘ 203/268 ↑ 1394/1361 ↑ 756/814 ↑	970/1289 ↑ 445/622 ↑	1193/1619 ↑ 608/436 ↑	745/1224 ↑ 272/256 ↑	407/463 → 671/392 ↘ 1216/1461 ↑ 381/562 ↑

66. Cherry Ave at I-10 EB Ramps	67. Citrus Ave at I-10 EB Ramps	68. Sierra Ave at I-10 EB/WB Ramps	69. Milliken Ave at Arrow Rte	70. Rochester Ave at Arrow Rte	71. Cherry Ave at Slover Ave	72. Cherry Ave at Santa Ana Ave	73. Cherry Ave at Street A
1704/1412 ↙ 774/920 ↓	959/742 ↙ 659/671 ↓	920/892 ↙ 836/981 ↓ 585/571 ↖ 635/662 ← 479/519	244/132 ↙ 790/582 ↓ 134/89 ↖ 121/131 ← 1240/623 ← 181/137	302/200 ↙ 437/245 ↓ 118/97 ↖ 150/194 ← 1153/600 ← 186/76	591/471 ↙ 1274/1172 ↓ 458/422 ↖ 393/408 ← 289/198 ← 59/67	377/163 ↙ 812/1014 ↓ 147/112 ↖ 102/132 ← 24/24 ← 10/15	317/456 ↙ 41/66 ↓
462/587 → 7/48 → 691/614 ↘ 1449/1483 ↑ 541/469 ↑	340/505 → 9/8 → 478/237 ↘ 742/1020 ↑ 372/570 ↑	958/1024 → 561/512 ↘ 470/573 ↑ 817/1390 ↑ 400/523 ↑	86/265 → 471/1116 → 132/208 ↘ 197/195 ↑ 373/1644 ↑ 103/388 ↑	132/389 → 412/1044 → 77/24 ↘ 55/62 ↑ 190/886 ↑ 74/288 ↑	469/513 → 246/753 → 47/94 ↘ 31/39 ↑ 1103/1039 ↑ 62/74 ↑	287/292 → 44/55 → 90/34 ↘ 40/9 ↑ 866/693 ↑ 12/32 ↑	148/428 → 161/298 ↘ 246/344 ↑ 13/52 ↑

Note: Volumes reflect PCE adjustments.

LEGEND:
- = Project Site
- (X) = Study Intersection
- XX/YY = AM/PM Volumes

FIGURE 14D
OPENING YEAR 2027 PLUS PHASES 1 AND 2 TRAFFIC VOLUMES

Kimley»Horn

TABLE 7
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2027 PLUS PHASES **1** AND **2** CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour						PM Peak Hour					
				Without Project		With Project		Change Delay	Project-Related Effect?	Without Project		With Project		Change Delay	Project-Related Effect?
				Delay	LOS	Delay	LOS			Delay	LOS	Delay	LOS		
1	Cherry Ave at SR-210 WB Ramps	C	S	30.6	C	34.7	C	4.1	No	31.1	C	36.7	D	5.6	No
2	Citrus Ave at SR-210 WB Ramps	C	S	26.7	C	26.7	C	0.0	No	27.3	C	27.4	C	0.1	No
3	Sierra Ave at SR-210 WB Ramps	C	S	19.9	B	20.0	B	0.1	No	16.9	B	16.9	B	0.0	No
4	Cherry Ave at SR-210 EB Ramps	C	S	24.3	C	27.6	C	3.3	No	24.1	C	28.1	C	4.0	No
5	Citrus Ave at SR-210 EB Ramps	C	S	31.7	C	31.7	C	0.0	No	31.5	C	31.7	C	0.2	No
6	Sierra Ave at SR-210 EB Ramps	C	S	18.0	B	17.9	B	-0.1	No	14.7	B	14.6	B	-0.1	No
7	Beech Ave at Highland Ave	F	S	32.1	C	32.1	C	0.0	No	34.9	C	34.9	C	0.0	No
8	Citrus Ave at Highland Ave	F	S	38.1	D	38.1	D	0.0	No	40.4	D	40.5	D	0.1	No
9	Sierra Ave at Highland Ave	F	S	33.1	C	33.1	C	0.0	No	55.1	E	56.2	E	1.1	No
10	Etiwanda Ave at Base Line Rd	RC	S	61.2	E	61.1	E	-0.1	No	40.1	D	40.0	D	-0.1	No
11	I-15 SB Ramps at Base Line Rd	C	S	21.7	C	21.8	C	0.1	No	15.1	B	15.8	B	0.7	No
12	I-15 NB Ramps at Baseline Ave	C	S	28.0	C	27.9	C	-0.1	No	34.1	C	34.2	C	0.1	No
13	Cherry Ave at Baseline Ave	F	S	39.9	D	41.2	D	1.3	No	39.6	D	43.8	D	4.2	No
14	Beech Ave at Baseline Ave	F	S	39.9	D	39.9	D	0.0	No	43.2	D	43.0	D	-0.2	No
15	Citrus Ave at Baseline Ave	F	S	55.3	E	56.8	E	1.5	No	40.0	D	40.3	D	0.3	No
16	Sierra Ave at Baseline Ave	F	S	34.2	C	34.2	C	0.0	No	35.7	D	35.9	D	0.2	No
17	Etiwanda Ave at Church St/Miller Ave	RC	S	49.8	D	49.8	D	0.0	No	44.7	D	44.4	D	-0.3	No
18	I-15 SB Ramps at Foothill Blvd	C	S	44.1	D	38.9	D	-5.2	No	34.6	C	27.7	C	-6.9	No
19	I-15 NB Ramps at Foothill Blvd	C	S	27.7	C	27.5	C	-0.2	No	22.8	C	22.8	C	0.0	No
20	Etiwanda Ave at Foothill Blvd	RC	S	47.9	D	62.6	E	14.7	Yes	44.4	D	71.3	E	26.9	Yes
21	Cherry Ave at Foothill Blvd	F/SB	S	41.5	D	43.1	D	1.6	No	47.0	D	48.4	D	1.4	No
22	Beech Ave at Foothill Blvd	F/SB	U	>180	F	>180	F	192.2	Yes	>180	F	>180	F	828.3	Yes
23	Citrus Ave at Foothill Blvd	F	S	51.5	D	52.9	D	1.4	No	57.3	E	60.0	E	2.7	Yes
24	Sierra Ave at Foothill Blvd	F	S	43.5	D	44.0	D	0.5	No	44.2	D	45.9	D	1.7	No
25	Etiwanda Ave at Arrow Rte	RC	S	43.7	D	43.1	D	-0.6	No	40.5	D	42.8	D	2.3	No

TABLE 7
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2027 PLUS PHASES **1** AND **2** CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour						PM Peak Hour					
				Without Project		With Project		Change Delay	Project-Related Effect?	Without Project		With Project		Change Delay	Project-Related Effect?
				Delay	LOS	Delay	LOS			Delay	LOS	Delay	LOS		
26	Cherry Ave at Arrow Rte	SB	S	45.5	D	54.5	D	9.0	No	62.1	E	93.9	F	31.8	Yes
27	Beech Ave at Arrow Rte	SB	S	26.9	C	29.4	C	2.5	No	23.9	C	24.1	C	0.2	No
28	Citrus Ave at Arrow Rte	F	S	49.0	D	50.9	D	1.9	No	45.0	D	46.6	D	1.6	No
29	Sierra Ave at Arrow Rte	F	S	38.0	D	38.2	D	0.2	No	37.2	D	37.1	D	-0.1	No
30	Etiwanda Ave at Whittram Ave	RC	S	25.8	C	28.3	C	2.5	No	28.8	C	43.3	D	14.5	No
31	Cherry Ave at Whittram Ave	SB	S	42.0	D	64.1	E	22.1	Yes	54.4	D	96.1	F	41.7	Yes
32	Beech Ave at Whittram Ave	SB	U	43.5	E	45.6	E	2.1	No	48.5	E	54.9	F	6.4	No
33	Etiwanda Ave at Napa St	SB	S	19.9	B	32.1	C	12.2	No	28.4	C	88.9	F	60.5	Yes
34	Cherry Ave at Merrill Ave	SB	S	26.0	C	30.4	C	4.4	No	36.0	D	73.3	E	37.3	Yes
35	Beech Ave at Merrill Ave	SB	U	37.4	E	42.7	E	5.3	Yes	50.3	F	63.1	F	12.8	Yes
36	Citrus Ave at Merrill Ave	F	S	30.4	C	30.8	C	0.4	No	31.3	C	32.0	C	0.7	No
37	Sierra Ave at Merrill Ave	F	S	40.4	D	41.0	D	0.6	No	43.1	D	45.1	D	2.0	No
38	Citrus Ave at Fontana Ave	F	S	21.2	C	22.4	C	1.2	No	23.6	C	26.4	C	2.8	No
39	Cherry Ave at Randall Ave	SB	S	37.8	D	92.3	F	54.5	Yes	40.0	D	135.9	F	95.9	Yes
40	Beech Ave at Randall Ave	SB	U	85.3	F	177.9	F	92.6	Yes	32.9	D	>180	F	170.6	Yes
41	Fontana Ave/Catawba Ave at Randall Ave	F	U	30.1	D	57.1	F	27.0	Yes	34.8	D	125.2	F	90.4	Yes
42	Citrus Ave at Randall Ave	F	S	34.2	C	35.8	D	1.6	No	28.1	C	32.5	C	4.4	No
43	Sierra Ave at Randall Ave	F	S	29.5	C	30.7	C	1.2	No	31.9	C	34.6	C	2.7	No
44	I-15 SB Ramps/Ontario Mills Dr at Fourth St	C	S	48.3	D	50.4	D	2.1	No	58.2	E	87.5	F	29.3	Yes
45	I-15 NB Ramps at Fourth St	C	S	61.4	E	59.7	E	-1.7	No	35.6	D	37.9	D	2.4	No
46	Etiwanda Ave at Fourth St/San Bernardino Av	RC/SB	S	34.5	C	36.3	D	1.8	No	37.3	D	39.3	D	2.0	No
47	Commerce Dr at San Bernardino Ave	SB	S	35.7	D	41.6	D	5.9	No	62.0	E	179.1	F	117.1	Yes
48	Vip Rd at San Bernardino Ave	SB	S	14.3	B	18.1	B	3.8	No	10.9	B	22.5	C	11.6	No
49	Cherry Ave at San Bernardino Ave	SB	S	36.3	D	45.4	D	9.1	No	48.4	D	85.8	F	37.4	Yes
50	Beech Ave at San Bernardino Ave	SB	S	32.8	C	32.9	C	0.1	No	34.9	C	35.1	D	0.2	No

TABLE 7
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2027 PLUS PHASES **1** AND **2** CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour						PM Peak Hour					
				Without Project		With Project		Change Delay	Project-Related Effect?	Without Project		With Project		Change Delay	Project-Related Effect?
				Delay	LOS	Delay	LOS			Delay	LOS	Delay	LOS		
51	Fontana Ave/Elm Ave at San Bernardino Ave	F/SB	S	32.4	C	32.2	C	-0.2	No	28.2	C	29.2	C	1.0	No
52	Citrus Ave at San Bernardino Ave	F	S	40.5	D	41.7	D	1.2	No	31.6	C	33.5	C	1.9	No
53	Sierra Ave at San Bernardino Ave	F	S	31.5	C	33.1	C	1.6	No	42.4	D	45.0	D	2.6	No
54	Beech Ave at Fontana Ave	F/SB	U	10.2	B	10.2	B	0.0	No	10.2	B	10.2	B	0.0	No
55	Etiwanda Ave at Valley Blvd	SB	S	27.4	C	27.0	C	-0.4	No	35.6	D	36.0	D	0.4	No
56	Commerce Dr/I-10 Ramps at Valley Blvd	C	S	29.8	C	28.7	C	-1.1	No	61.8	E	61.3	E	-0.5	No
57	Cherry Ave at Valley Blvd	F/SB	S	49.5	D	50.3	D	0.8	No	53.2	D	63.1	E	9.9	Yes
58	Fontana Ave/Hemlock Ave at Valley Blvd	F/SB	S	28.7	C	28.5	C	-0.2	No	16.0	B	16.2	B	0.2	No
59	Beech Ave at Valley Blvd	F	U	91.8	F	120.8	F	29.0	Yes	>180	F	>180	F	-	Yes
60	Citrus Ave at Valley Blvd	F	S	58.4	E	65.4	E	7.0	Yes	48.1	D	52.8	D	4.7	No
61	Sierra Ave at Valley Blvd	F	S	36.4	D	36.5	D	0.1	No	60.3	E	62.0	E	1.7	No
62	Etiwanda Ave at I-10 WB Off-Ramps	C	S	23.9	C	23.7	C	-0.2	No	19.3	B	19.1	B	-0.2	No
63	Cherry Ave at I-10 WB Ramps	C	S	40.4	D	70.5	E	30.1	Yes	28.2	C	59.3	E	31.1	Yes
64	Citrus Ave at I-10 WB Ramps	C	S	21.5	C	21.9	C	0.4	No	19.1	B	20.1	C	1.0	No
65	Etiwanda Ave at I-10 EB Ramps	C	S	30.8	C	30.5	C	-0.3	No	18.6	B	19.6	B	1.0	No
66	Cherry Ave at I-10 EB Ramps	C	S	38.9	D	46.4	D	7.5	No	39.6	D	50.7	D	11.1	No
67	Citrus Ave at I-10 EB Ramps	C	S	35.6	D	35.9	D	0.3	No	32.1	C	33.5	C	1.4	No
68	Sierra Ave at I-10 EB/WB Ramps	C	S	28.5	C	28.7	C	0.2	No	69.7	E	75.2	E	5.5	Yes
69	Milliken Ave at Arrow Rte	RC	S	39.5	D	39.6	D	0.1	No	42.6	D	44.1	D	1.5	No
70	Rochester Ave at Arrow Rte	RC	S	37.5	D	37.4	D	-0.1	No	40.5	D	41.0	D	0.5	No
71	Cherry Ave at Slover Ave	F	S	36.8	D	37.5	D	0.7	No	37.8	D	38.2	D	0.4	No
72	Cherry Ave at Santa Ana Ave	F	S	>180	F	>180	F	-	Yes	>180	F	>180	F	-	Yes
73	Cherry Ave at Street A	SB	S	-	-	36.1	D	-	-	-	-	37.1	D	-	-

- Bold values indicate intersections operating at an unacceptable Level of Service
- Delay values for unsignalized intersections represent the average vehicle delay on the worst (highest delay) intersection approach.

F = Fontana; SB = San Bernardino County; RC = Rancho Cucamonga; C = Caltrans

HORIZON YEAR 2040 CONDITIONS

To derive the Horizon Year 2040 intersection turning movement forecasts, the San Bernardino Transportation Analysis Model (SBTAM) Base Year 2012 and Build-out Year 2040 future traffic projections were used. The raw volumes obtained from the model output were post- processed by determining the annual growth between the base model year (2012) and the future model year (2040) and applying the growth increment to existing count volumes. This was accomplished using the B- Turns methodology, developed by the Federal Highway Administration (FHWA). As a conservative approach, if a turning movement volume produced by this process was less than the Opening Year 2027 forecast volume for that movement, manual adjustments were made to assure that all forecast build-out year volumes would not be less than the Opening Year 2027 forecast volumes. The SBTAM Model plots and B-Turns worksheets are provided in *Appendix E.* The resulting traffic volumes for Horizon Year 2040 condition are shown on Figure 15.

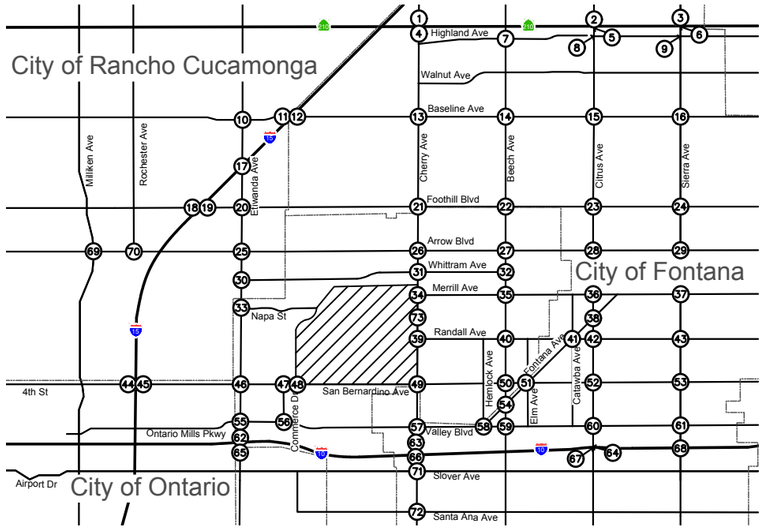
Peak Hour Operating Conditions

Intersection Level of Service analysis was conducted for the Horizon Year 2040 condition. The results are shown on Table 8. Copies of intersection analysis worksheets are provided in *Appendix D*.

Review of this table indicates that, under Horizon Year 2040 conditions, the following intersections would operate at an unacceptable Level of Service:

- #10 – Etiwanda Ave at Base Line Rd: AM – LOS E
- #21 – Cherry Ave at Foothill Blvd: PM – LOS E
- #22 – Beech Ave at Foothill Blvd: AM – LOS F; PM – LOS F
- #23 – Citrus Ave at Foothill Blvd: PM – LOS F
- #24 – Sierra Ave at Foothill Blvd: PM – LOS E
- #25 – Etiwanda Ave at Arrow Rte: AM – LOS E; PM – LOS F
- #26 – Cherry Ave at Arrow Rte: PM – LOS E
- #28 – Citrus Ave at Arrow Rte: AM – LOS E
- #31 – Cherry Ave at Whittram Ave: PM – LOS E
- #32 – Beech Ave at Whittram Ave: AM – LOS F; PM – LOS F
- #34 – Cherry Ave at Merrill Ave: PM – LOS E
- #35 – Beech Ave at Merrill Ave: AM – LOS F; PM – LOS F
- #40 – Beech Ave at Randall Ave: AM – LOS F; PM – LOS F
- #41 – Fontana Ave/Catawba Ave at Randall Ave: AM – LOS F; PM – LOS F
- #47 – Commerce Dr at San Bernardino Ave: PM – LOS E
- #54 – Beech Ave at Fontana Ave: AM – LOS F; PM – LOS F
- #56 – Commerce Dr/I-10 Ramps at Valley Blvd: PM – LOS E
- #57 – Cherry Ave at Valley Blvd: PM – LOS E
- #59 – Beech Ave at Valley Blvd: AM – LOS F; PM – LOS F

- #60 – Citrus Ave at Valley Blvd: AM – LOS E
- #68 – Sierra Ave at I-10EB/WB Ramps: PM – LOS E
- #70 – Rochester Ave at Arrow Rte: AM – LOS F; PM – LOS F
- #72 – Cherry Ave at Santa Ana Ave: AM – LOS F; PM – LOS F



NOT TO SCALE

1. Cherry Ave at SR-210 WB Ramps	2. Citrus Ave at SR-210 WB Ramps	3. Sierra Ave at SR-210 WB Ramps	4. Cherry Ave at SR-210 EB Ramps	5. Citrus Ave at SR-210 EB Ramps
224/253 917/680 331/204 4/0 420/347 200/353 489/822	398/460 925/857 439/372 1/0 477/389 338/362 1029/1187	1212/1404 373/448 580/337 1006/1273	981/819 228/121 253/288 7/3 344/418 533/854 379/366	1052/779 338/287 460/578 450/385 921/1173 464/308

6. Sierra Ave at SR-210 EB Ramps	7. Beech Ave at Highland Ave	8. Citrus Ave at Highland Ave	9. Sierra Ave at Highland Ave	10. Etiwanda Ave at Base Line Rd	11. I-15 SB Ramps at Base Line Rd	12. I-15 NB Ramps at Base Line Rd	13. Cherry Ave at Baseline Ave
26/41 1454/1465 299/333 619/458 1066/1592 899/1202	110/60 632/524 62/112 68/92 323/275 149/133 131/73 237/432 118/146 74/66 727/588 109/161	189/119 1064/715 428/329 294/441 315/435 114/177 241/245 269/480 59/81 102/73 825/852 99/92	492/318 1340/1207 245/400 223/396 395/347 23/132 326/551 362/526 270/162 339/172 1082/1482 67/118	288/71 344/113 165/55 266/58 1377/787 291/169 120/104 649/1286 113/170 133/122 306/193 134/231	1297/633 411/289 1060/625 1088/1642 264/189	219/269 1954/1061 396/627 652/1074 363/445 3/0 427/853	492/113 959/537 77/120 74/68 1527/687 497/390 260/394 562/1263 183/141 107/232 661/1079 219/418

14. Beech Ave at Baseline Ave	15. Citrus Ave at Baseline Ave	16. Sierra Ave at Baseline Ave	17. Etiwanda Ave at Church St/Miller Ave	18. I-15 SB Ramps at Foothill Blvd	19. I-15 NB Ramps at Foothill Blvd	20. Etiwanda Ave at Foothill Blvd
221/101 434/413 114/179 120/150 695/672 105/150 148/236 507/1129 61/129 95/170 432/542 25/61	281/134 864/496 139/188 114/77 1060/625 177/202 318/345 1048/1701 122/129 144/106 642/682 823/97	122/76 1228/814 250/335 218/263 640/791 141/139 115/161 460/804 122/131 192/151 923/1259 81/100	142/108 444/315 85/39 77/38 520/287 130/53 97/153 279/500 149/187 158/149 280/321 163/146	951/600 194/229 1774/1526 693/2163 894/1046	257/362 1480/1401 640/1415 978/819 553/521	296/174 419/251 57/69 129/53 1399/957 383/140 118/266 558/1164 282/287 223/382 236/400 76/224

Note: Volumes reflect PCE adjustments.

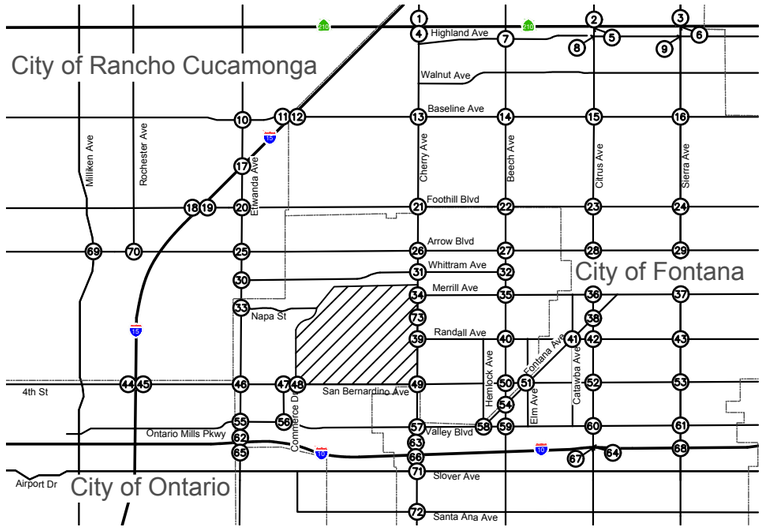
LEGEND:

= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 15A
HORIZON YEAR 2040 TRAFFIC VOLUMES



NOT TO SCALE

21. Cherry Ave at Foothill Blvd

227/219 ↖ 960/855 ← 184/315 ↗		110/138 ↑ 1306/635 ← 337/200
206/288 →	380/461 ↑ 575/1014 ↑ 172/285	
468/1137 →		
204/236 ↘		

22. Beech Ave at Foothill Blvd

		1728/887 ← 282/195
725/1511 →	108/214 ↑	202/211 ↑
123/226 ↘		

23. Citrus Ave at Foothill Blvd

181/80 ↖ 813/618 ← 151/189 ↗		107/154 ↑ 998/647 ← 365/444
167/287 →	160/155 ↑ 586/758 ↑ 120/152	
502/1101 →		
128/198 ↘		

24. Sierra Ave at Foothill Blvd

143/156 ↖ 996/750 ← 216/220 ↗		169/181 ↑ 811/615 ← 233/287
239/227 →	129/160 ↑ 722/1095 ↑ 138/230	
434/958 →		
125/199 ↘		

25. Etiwanda Ave at Arrow Rte

439/128 ↖ 519/353 ← 163/192 ↗		167/180 ↑ 1753/973 ← 277/177
104/391 →	398/216 ↑ 246/751 ↑ 65/240	
848/1737 →		
209/457 ↘		

26. Cherry Ave at Arrow Rte

106/115 ↖ 1220/1160 ← 59/103 ↗		87/67 ↑ 763/607 ← 221/160
81/95 →	136/162 ↑ 1033/1374 ↑ 168/310	
437/758 →		
104/123 ↘		

27. Beech Ave at Arrow Rte

137/42 ↖ 260/368 ← 24/34 ↗		45/56 ↑ 780/510 ← 189/142
68/73 →	107/124 ↑ 260/345 ↑ 156/276	
397/830 →		
65/117 ↘		

28. Citrus Ave at Arrow Rte

178/90 ↖ 888/817 ← 108/155 ↗		160/103 ↑ 596/390 ← 262/164
90/111 →	268/222 ↑ 714/968 ↑ 233/191	
297/779 →		
123/237 ↘		

29. Sierra Ave at Arrow Rte

94/141 ↖ 988/824 ← 76/121 ↗		72/59 ↑ 592/353 ← 79/75
94/183 →	112/125 ↑ 837/1135 ↑ 43/65	
453/535 →		
92/142 ↘		

30. Etiwanda Ave at Whittram Ave

941/769 ↖ 89/220 ↗		153/107 ↑ 262/225 ↑
		572/1053 ↑ 171/317

31. Cherry Ave at Whittram Ave

103/69 ↖ 1300/1113 ← 39/43 ↗		76/82 ↑ 152/75 ← 169/139
34/105 →	251/160 ↑ 1239/1769 ↑ 148/125	
34/158 →		
224/379 ↘		

32. Beech Ave at Whittram Ave

125/46 ↖ 421/642 ↑		
64/90 →	150/99 ↑ 487/681 ↑	
74/185 ↘		

33. Etiwanda Ave at Napa St

1/0 ↖ 1074/939 ← 113/206 ↗		129/131 ↑ 204/223 ↑
0/6 →	1/0 ↑ 849/1216 ↑ 298/155	
2/34 ↘		

34. Cherry Ave at Merrill Ave

0/1 ↖ 1237/841 ← 146/372 ↗		419/258 ↑ 145/107 ↑
0/1 →	3/1 ↑ 813/1458 ↑ 117/200	

35. Beech Ave at Merrill Ave

132/92 ↖ 241/346 ← 65/223 ↗		210/159 ↑ 397/296 ← 84/36
159/235 →	75/49 ↑ 251/360 ↑ 65/65	
143/278 →		
79/51 ↘		

36. Citrus Ave at Merrill Ave

117/112 ↖ 1077/896 ← 68/87 ↗		115/152 ↑ 265/235 ← 52/40
165/156 →	74/62 ↑ 835/1046 ↑ 32/50	
186/331 →		
54/78 ↘		

37. Sierra Ave at Merrill Ave

64/94 ↖ 1141/935 ← 51/82 ↗		58/55 ↑ 418/310 ← 150/124
71/124 →	65/131 ↑ 794/1197 ↑ 102/184	
387/512 →		
106/115 ↘		

38. Citrus Ave at Fontana Ave

361/297 ↖ 979/767 ← 26/41 ↗		40/24 ↑ 220/188 ← 88/57
230/352 →	47/32 ↑ 724/974 ↑ 84/77	
168/370 →		
17/16 ↘		

39. Cherry Ave at Randall Ave

9/2 ↖ 1207/882 ← 156/160 ↗		109/124 ↑ 97/116 ← 248/185
0/5 →	128/162 ↑ 838/1461 ↑ 116/183	
124/108 →		
96/99 ↘		

40. Beech Ave at Randall Ave

110/43 ↖ 302/336 ← 7/45 ↗		44/47 ↑ 296/271 ← 44/19
66/77 →	28/31 ↑ 290/376 ↑ 58/24	
258/327 →		
28/48 ↘		

Note: Volumes reflect PCE adjustments.

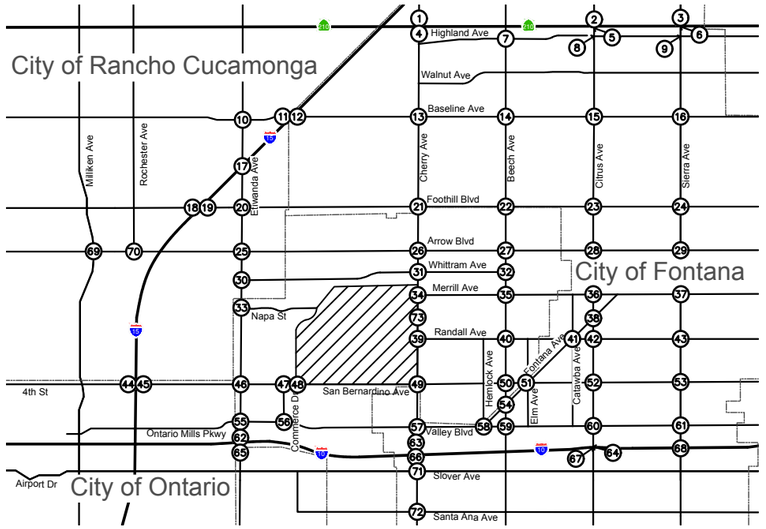
LEGEND:

= Project Site

= Study Intersection

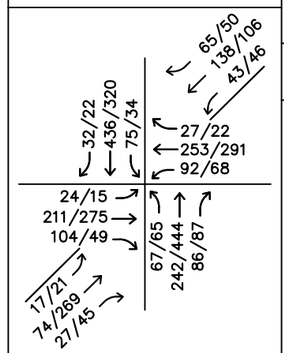
XX/YY = AM/PM Volumes

FIGURE 15B
HORIZON YEAR 2040 TRAFFIC VOLUMES

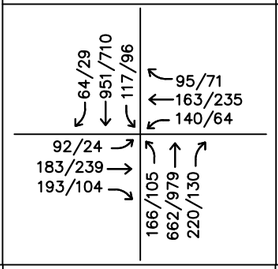


NOT TO SCALE

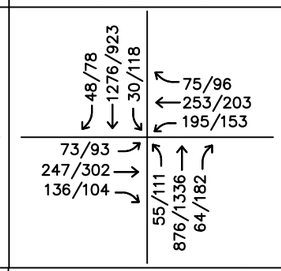
41. Fontana Ave/ Catawba Ave at Randall Ave



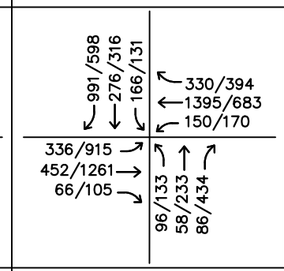
42. Citrus Ave at Randall Ave



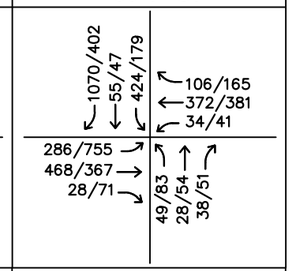
43. Sierra Ave at Randall Ave



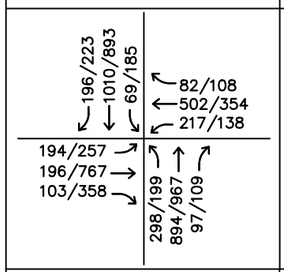
44. I-15 SB Ramps/ Ontario Mills Dr at Fourth St



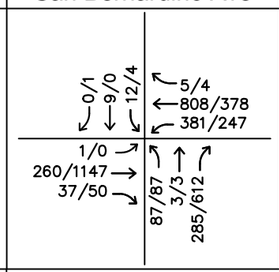
45. I-15 NB Ramps at Fourth St



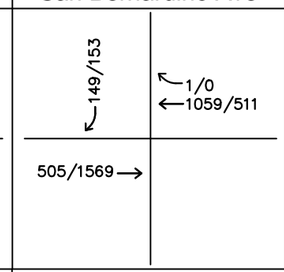
46. Etiwanda Ave at Fourth St/San Bernardino Ave



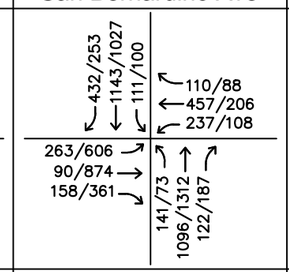
47. Commerce Dr at San Bernardino Ave



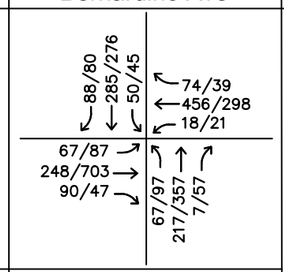
48. Vip Rd at San Bernardino Ave



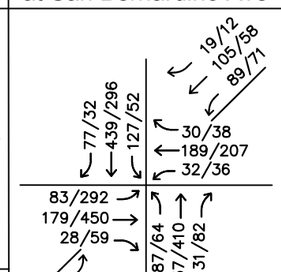
49. Cherry Ave at San Bernardino Ave



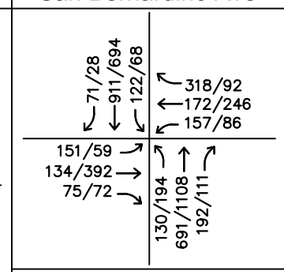
50. Beech Ave at San Bernardino Ave



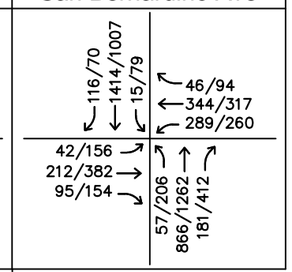
51. Fontana Ave/Elm St at San Bernardino Ave



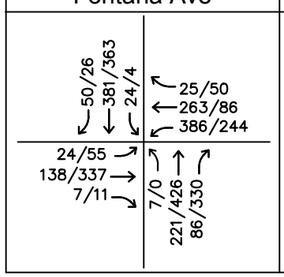
52. Citrus Ave at San Bernardino Ave



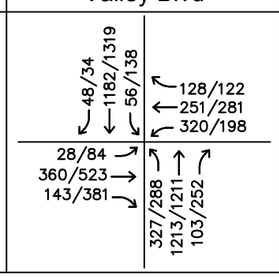
53. Sierra Ave at San Bernardino Ave



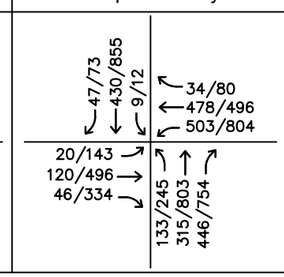
54. Beech Ave at Fontana Ave



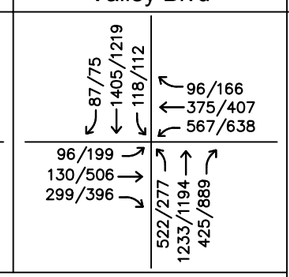
55. Etiwanda Ave at Valley Blvd



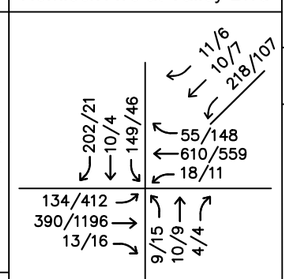
56. Commerce Dr/ I-15 Ramps at Valley Blvd



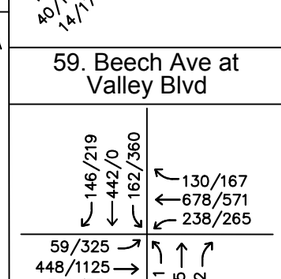
57. Cherry Ave at Valley Blvd



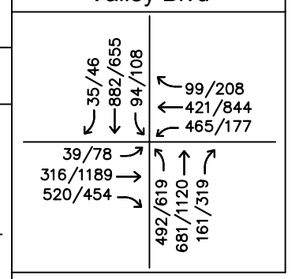
58. Fontana Ave/ Hemlock Ave at Valley Blvd



59. Beech Ave at Valley Blvd



60. Citrus Ave at Valley Blvd



Note: Volumes reflect PCE adjustments.

LEGEND:

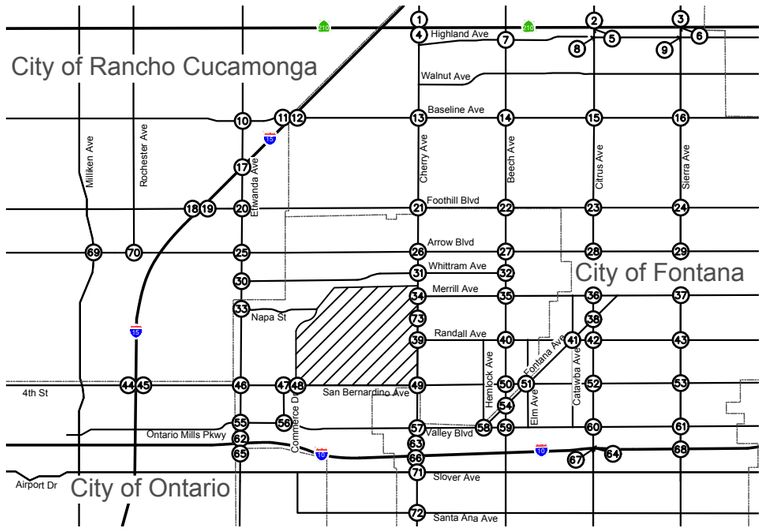
= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 15C
HORIZON YEAR 2040 TRAFFIC VOLUMES

Kimley»Horn



NOT TO SCALE

61. Sierra Ave at Valley Blvd	62. Etiwanda Ave at I-10 WB Off-Ramps	63. Cherry Ave at I-10 WB Ramps	64. Citrus Ave at I-10 WB Ramps	65. Etiwanda Ave at I-10 EB Ramps
132/102 ↙ 1600/1363 ↓ 128/177 ↘ 109/127 ← 469/715 ← 612/709	655/819 ↙ 1012/1210 ↓ 595/484 ↖ 637/585	2082/2172 ↙ 808/633 ↖ 949/581	466/555 ↙ 1133/1049 ↓ 529/584 ↖ 407/269	238/394 ↙ 1366/1344
203/333 → 290/967 → 191/247 ↘ 222/288 ↑ 1373/1361 ↑ 756/814	1092/1505 ↑ 445/622 ↑	1164/1679 ↑ 608/436 ↑	736/1212 ↑ 272/256 ↑	308/344 → 671/439 ↘ 1329/1713 ↑ 381/562 ↑

66. Cherry Ave at I-10 EB Ramps	67. Citrus Ave at I-10 EB Ramps	68. Sierra Ave at I-10 EB/WB Ramps	69. Milliken Ave at Arrow Rte	70. Rochester Ave at Arrow Rte	71. Cherry Ave at Slover Ave	72. Cherry Ave at Santa Ana Ave	73. Cherry Ave at Street A
1701/1352 ↓ 609/759 ↘	959/730 ↓ 624/606 ↘	920/892 ↙ 984/969 ↓ 610/554 ↘ 665/706 ← 493/540	254/132 ↙ 920/598 ↓ 132/77 ↘ 121/119 ← 1240/611 ← 181/125	302/200 ↙ 437/245 ↓ 444/344 ↘ 326/509 ← 1498/762 ← 310/117	613/459 ↙ 1531/1277 ↓ 458/422 ↘ 393/408 ← 289/198 ← 68/71	377/151 ↙ 812/1002 ↓ 142/107 ↘ 144/127 ← 70/50 ← 31/36	FUTURE INTERSECTION
543/741 → 8/75 → 691/630 ↘ 1403/1423 ↑ 541/533 ↑	340/505 → 9/8 → 478/237 ↘ 733/1008 ↑ 372/570 ↑	958/1024 → 561/512 ↘ 470/573 ↑ 808/1426 ↑ 400/523 ↑	86/265 → 462/1104 → 132/208 ↘ 197/195 ↑ 373/1644 ↑ 94/376 ↑	132/389 → 757/1463 → 77/24 ↘ 55/62 ↑ 190/886 ↑ 187/503 ↑	460/540 → 246/753 → 52/117 ↘ 37/50 ↑ 1144/1279 ↑ 67/86 ↑	278/280 → 62/122 → 106/45 ↘ 54/12 ↑ 857/681 ↑ 20/87 ↑	

Note: Volumes reflect PCE adjustments.

LEGEND:
- = Project Site
- ⊗ = Study Intersection
- XX/YY = AM/PM Volumes

FIGURE 15D
HORIZON YEAR 2040 TRAFFIC VOLUMES

Kimley»Horn

TABLE 8
SUMMARY OF INTERSECTION OPERATION
HORIZON YEAR 2040 CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
1	Cherry Ave at SR-210 WB Ramps	C	S	29.1	C	29.2	C
2	Citrus Ave at SR-210 WB Ramps	C	S	28.3	C	26.2	C
3	Sierra Ave at SR-210 WB Ramps	C	S	19.4	B	16.3	B
4	Cherry Ave at SR-210 EB Ramps	C	S	25.2	C	24.9	C
5	Citrus Ave at SR-210 EB Ramps	C	S	29.0	C	31.3	C
6	Sierra Ave at SR-210 EB Ramps	C	S	18.6	B	15.7	B
7	Beech Ave at Highland Ave	F	S	33.6	C	36.1	D
8	Citrus Ave at Highland Ave	F	S	37.9	D	41.3	D
9	Sierra Ave at Highland Ave	F	S	35.2	D	50.5	D
10	Etiwanda Ave at Base Line Rd	RC	S	60.2	E	40.1	D
11	I-15 SB Ramps at Base Line Rd	C	S	26.7	C	19.2	B
12	I-15 NB Ramps at Baseline Ave	C	S	27.7	C	33.8	C
13	Cherry Ave at Baseline Ave	F	S	38.5	D	39.5	D
14	Beech Ave at Baseline Ave	F	S	39.0	D	42.8	D
15	Citrus Ave at Baseline Ave	F	S	54.0	D	41.3	D
16	Sierra Ave at Baseline Ave	F	S	33.6	C	36.6	D
17	Etiwanda Ave at Church St/Miller Ave	RC	S	45.9	D	43.2	D
18	I-15 SB Ramps at Foothill Blvd	C	S	31.4	C	20.5	C
19	I-15 NB Ramps at Foothill Blvd	C	S	24.4	C	22.1	C
20	Etiwanda Ave at Foothill Blvd	RC	S	42.6	D	49.7	D
21	Cherry Ave at Foothill Blvd	F/SB	S	49.7	D	61.6	E
22	Beech Ave at Foothill Blvd	F/SB	U	>180	F	>180	F
23	Citrus Ave at Foothill Blvd	F	S	48.3	D	80.3	F
24	Sierra Ave at Foothill Blvd	F	S	44.0	D	58.9	E
25	Etiwanda Ave at Arrow Rte	RC	S	72.4	E	161.2	F
26	Cherry Ave at Arrow Rte	SB	S	48.3	D	68.8	E
27	Beech Ave at Arrow Rte	SB	S	25.4	C	28.4	C
28	Citrus Ave at Arrow Rte	F	S	57.6	E	45.5	D
29	Sierra Ave at Arrow Rte	F	S	35.7	D	38.0	D

TABLE 8
SUMMARY OF INTERSECTION OPERATION
HORIZON YEAR 2040 CONDITIONS

30	Etiwanda Ave at Whittram Ave	RC	S	24.7	C	37.5	D
31	Cherry Ave at Whittram Ave	SB	S	37.6	D	59.4	E
32	Beech Ave at Whittram Ave	SB	U	90.2	F	>180	F
33	Etiwanda Ave at Napa St	SB	S	18.5	B	26.4	C
34	Cherry Ave at Merrill Ave	SB	S	30.9	C	39.3	D
35	Beech Ave at Merrill Ave	SB	U	93.4	F	>180	F
36	Citrus Ave at Merrill Ave	F	S	30.4	C	30.7	C
37	Sierra Ave at Merrill Ave	F	S	40.1	D	42.8	D
38	Citrus Ave at Fontana Ave	F	S	31.7	C	34.2	C
39	Cherry Ave at Randall Ave	SB	S	34.8	C	38.1	D
40	Beech Ave at Randall Ave	SB	U	95.9	F	123.8	F
41	Fontana Ave/Catawba Ave at Randall Ave	F	U	150.1	F	156.5	F
42	Citrus Ave at Randall Ave	F	S	34.0	C	27.9	C
43	Sierra Ave at Randall Ave	F	S	30.9	C	35.5	D
44	I-15 SB Ramps/Ontario Mills Dr at Fourth St	C	S	43.9	D	53.0	D
45	I-15 NB Ramps at Fourth St	C	S	49.3	D	38.6	D
46	Etiwanda Ave at Fourth St/San Bernardino A	RC/SB	S	35.2	D	37.4	D
47	Commerce Dr at San Bernardino Ave	SB	S	30.5	C	61.6	E
48	Vip Rd at San Bernardino Ave	SB	U	16.2	C	11.3	B
49	Cherry Ave at San Bernardino Ave	SB	S	36.3	D	45.0	D
50	Beech Ave at San Bernardino Ave	SB	S	32.5	C	37.4	D
51	Fontana Ave/Elm Ave at San Bernardino Ave	F/SB	S	40.2	D	49.5	D
52	Citrus Ave at San Bernardino Ave	F	S	38.6	D	32.5	C
53	Sierra Ave at San Bernardino Ave	F	S	30.8	C	40.9	D
54	Beech Ave at Fontana Ave	F/SB	U	147.2	F	>180	F
55	Etiwanda Ave at Valley Blvd	SB	S	31.3	C	37.7	D
56	Commerce Dr/I-10 Ramps at Valley Blvd	C	S	32.5	C	71.3	E
57	Cherry Ave at Valley Blvd	F/SB	S	43.8	D	70.0	E
58	Fontana Ave/Hemlock Ave at Valley Blvd	F/SB	S	37.3	D	15.5	B
59	Beech Ave at Valley Blvd	F	U	>180	F	>180	F
60	Citrus Ave at Valley Blvd	F	S	61.3	E	45.6	D

TABLE 8
SUMMARY OF INTERSECTION OPERATION
HORIZON YEAR 2040 CONDITIONS

61	Sierra Ave at Valley Blvd	F	S	34.9	C	52.3	D
62	Etiwanda Ave at I-10 WB Off-Ramps	C	S	23.2	C	22.0	C
63	Cherry Ave at I-10 WB Ramps	C	S	32.5	C	26.5	C
64	Citrus Ave at I-10 WB Ramps	C	S	21.1	C	18.6	B
65	Etiwanda Ave at I-10 EB Ramps	C	S	30.9	C	20.4	C
66	Cherry Ave at I-10 EB Ramps	C	S	34.3	C	44.7	D
67	Citrus Ave at I-10 EB Ramps	C	S	33.5	C	30.4	C
68	Sierra Ave at I-10 EB/WB Ramps	C	S	28.9	C	69.8	E
69	Milliken Ave at Arrow Rte	RC	S	37.1	D	39.5	D
70	Rochester Ave at Arrow Rte	RC	S	88.7	F	87.2	F
71	Cherry Ave at Slover Ave	F	S	32.0	C	36.9	D
72	Cherry Ave at Santa Ana Ave	F	S	>180	F	>180	F

Notes:
- Bold values indicate intersections operating at an unacceptable Level of Service

- Delay values for unsignalized intersections represent the average vehicle delay on the worst (highest delay) intersection approach.

F = Fontana; SB = San Bernardino County; RC = Rancho Cucamonga; C = Caltrans

HORIZON YEAR 2040 PLUS PROJECT CONDITIONS

Project-related traffic was added to the Horizon Year 2040 traffic volumes. Horizon Year 2040 Plus Project traffic volumes at the study intersections are shown on Figure 16. Under Horizon Year 2040 conditions, truck access will continue to be restricted on VIP Road.

Peak Hour Operating Conditions

Intersection Level of Service analysis was conducted for the Horizon Year 2040 Plus Project condition. The results are shown on Table 9. Copies of intersection analysis worksheets are provided in *Appendix D*.

Review of this table indicates that, with the addition of project traffic, the following intersection(s) would operate at an unacceptable Level of Service:

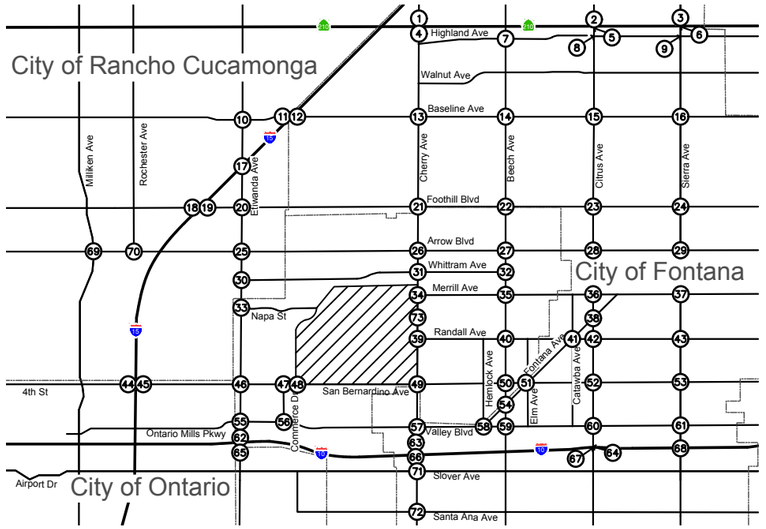
- #10 – Etiwanda Ave at Base Line Rd: AM – LOS E
- #15 – Citrus Ave at Baseline Ave: AM – LOS E
- #20 – Etiwanda Ave at Foothill Blvd: PM – LOS F
- #21 – Cherry Ave at Foothill Blvd: PM – LOS E
- #22 – Beech Ave at Foothill Blvd: AM – LOS F; PM – LOS F
- #23 – Citrus Ave at Foothill Blvd: PM – LOS F
- #24 – Sierra Ave at Foothill Blvd: PM – LOS E
- #25 – Etiwanda Ave at Arrow Rte: AM – LOS E; PM – LOS F
- #26 – Cherry Ave at Arrow Rte: AM – LOS E; PM – LOS F
- #28 – Citrus Ave at Arrow Rte: AM – LOS E
- #30 – Etiwanda Ave at Whittram Ave: PM – LOS E
- #31 – Cherry Ave at Whittram Ave: PM – LOS F
- #32 – Beech Ave at Whittram Ave: AM – LOS F; PM – LOS F
- #33 – Etiwanda Ave at Napa St: PM – LOS F
- #34 – Cherry Ave at Merrill Ave: PM – LOS F
- #35 – Beech Ave at Merrill Ave: AM – LOS F; PM – LOS F
- #39 – Cherry Ave at Randall Ave: PM – LOS F
- #40 – Beech Ave at Randall Ave: AM – LOS F; PM – LOS F
- #41 – Fontana Ave/Catawba Ave at Randall Ave: AM – LOS F; PM – LOS F
- #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St: PM – LOS E
- #47 – Commerce Dr at San Bernardino Ave: PM – LOS F
- #49 – Cherry Ave at San Bernardino Ave: PM – LOS E
- #51 – Fontana Ave/Elm Ave at San Bernardino Ave: PM – LOS E
- #54 – Beech Ave at Fontana Ave: AM – LOS F; PM – LOS F
- #56 – Commerce Dr/I-10 Ramps at Valley Blvd: PM – LOS F
- #57 – Cherry Ave at Valley Blvd: PM – LOS E
- #59 – Beech Ave at Valley Blvd: AM – LOS F; PM – LOS F

- #60 – Citrus Ave at Valley Blvd: AM – LOS E
- #66 – Cherry Ave at I-10 EB Ramps: PM – LOS E
- #68 – Sierra Ave at I-10EB/WB Ramps: PM – LOS E
- #70 – Rochester Ave at Arrow Rte: AM – LOS F; PM – LOS F
- #72 – Cherry Ave at Santa Ana Ave: AM – LOS F; PM – LOS F

Based on the County standards presented earlier in this report, the Phases 1 and 2 project-related effect would be considered to have a cumulative effect at the following intersections under Horizon Year 2040 Plus Project conditions:

- #15 – Citrus Ave at Baseline Ave
- #20 – Etiwanda Ave at Foothill Blvd
- #23 – Citrus Ave at Foothill Blvd
- #24 – Sierra Ave at Foothill Blvd
- #25 – Etiwanda Ave at Arrow Rte
- #26 – Cherry Ave at Arrow Rte
- #30 – Etiwanda Ave at Whittram Ave
- #31 – Cherry Ave at Whittram Ave
- #32 – Beech Ave at Whittram Ave
- #33 – Etiwanda Ave at Napa St
- #34 – Cherry Ave at Merrill Ave
- #35 – Beech Ave at Merrill Ave
- #39 – Cherry Ave at Randall Ave
- #40 – Beech Ave at Randall Ave
- #41 – Fontana Ave/Catawba Ave at Randall Ave
- #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St
- #47 – Commerce Dr at San Bernardino Ave
- #49 – Cherry Ave at San Bernardino Ave
- #51 – Fontana Ave/Elm Ave at San Bernardino Ave
- #56 – Commerce Dr/I-10 Ramps at Valley Blvd
- #57 – Cherry Ave at Valley Blvd
- #60 – Citrus Ave at Valley Blvd
- #66 – Cherry Ave at I-10 EB Ramps
- #68 – Sierra Ave at I-10 EB/WB Ramps
- #70 – Rochester Ave at Arrow Rte
- #72 – Cherry Ave at Santa Ana Ave

Recommended improvements to address the project-related effects are presented in the Recommended Improvements section of this report. Copies of intersection analysis worksheets are provided in *Appendix D*.



NOT TO SCALE

1. Cherry Ave at SR-210 WB Ramps	2. Citrus Ave at SR-210 WB Ramps	3. Sierra Ave at SR-210 WB Ramps	4. Cherry Ave at SR-210 EB Ramps	5. Citrus Ave at SR-210 EB Ramps
224/253 ↙ 926/692 ↓	398/460 ↙ 934/869 ↓	1221/1416 ←	1075/961 ← 228/121 ↙	1070/803 ← 338/287 ↙
↖ 331/204 ← 4/0 ↙ 505/477	↖ 439/372 ← 1/0 ↙ 486/401	↖ 373/448 ↙ 585/344		
234/409 ↑ 489/834 ↑	338/362 ↑ 1029/1199 ↑	1006/1285 ↑	253/288 ↗ 7/3 → 392/488 ↘	460/578 ↗ 450/385 ↘
			567/922 ↑ 453/473 ↑	921/1185 ↑ 467/320 ↑

6. Sierra Ave at SR-210 EB Ramps	7. Beech Ave at Highland Ave	8. Citrus Ave at Highland Ave	9. Sierra Ave at Highland Ave	10. Etiwanda Ave at Base Line Rd	11. I-15 SB Ramps at Base Line Rd	12. I-15 NB Ramps at Base Line Rd	13. Cherry Ave at Baseline Ave
26/41 ↙ 1468/1484 ↓	110/60 ↙ 632/524 ↓ 62/112 ↙	189/119 ↙ 1082/739 ↓ 428/329 ↙	492/318 ↙ 1354/1226 ↓ 245/400 ↙	288/71 ↙ 353/125 ↓ 165/55 ↙	1297/633 ↙ 433/326 ↓		492/113 ↙ 1101/749 ↓ 77/120 ↙
	68/92 ↖ 323/275 ← 149/133 ↙	294/441 ↖ 315/435 ← 114/177 ↙	223/396 ↖ 395/347 ← 23/132 ↙	266/58 ↖ 1377/787 ← 291/169 ↙	1060/625 ←	253/303 ↖ 1954/1061 ←	74/68 ↖ 1527/687 ← 577/503 ↙
299/333 ↗ 619/458 ↘	131/73 ↗ 237/432 → 118/146 ↘	241/245 ↗ 269/480 → 59/81 ↘	326/551 ↗ 362/526 → 270/162 ↘	120/104 ↗ 649/1286 → 122/182 ↘	1088/1642 → 264/189 ↘	396/627 ↗ 674/1111 →	260/394 ↗ 562/1263 → 205/178 ↘
1066/1604 ↑ 900/1208 ↑	74/66 ↑ 727/588 ↑ 109/161 ↑	102/73 ↑ 828/876 ↑ 99/92 ↑	339/172 ↑ 1083/1500 ↑ 67/118 ↑	133/134 ↑ 306/205 ↑ 134/231 ↑		363/445 ↑ 3/0 ↑ 427/853 ↑	141/266 ↑ 769/1254 ↑ 227/529 ↑

14. Beech Ave at Baseline Ave	15. Citrus Ave at Baseline Ave	16. Sierra Ave at Baseline Ave	17. Etiwanda Ave at Church St/Miller Ave	18. I-15 SB Ramps at Foothill Blvd	19. I-15 NB Ramps at Foothill Blvd	20. Etiwanda Ave at Foothill Blvd
221/101 ↙ 434/413 ↓ 114/179 ↙	299/158 ↙ 864/496 ↓ 139/188 ↙	140/101 ↙ 1233/820 ↓ 250/335 ↙	142/108 ↙ 462/339 ↓ 85/39 ↙	951/600 ↙ 288/366 ↓		296/174 ↙ 438/277 ↓ 57/69 ↙
↖ 120/150 ← 758/757 ↙ 105/150	↖ 114/77 ← 1096/674 ↙ 185/218	↖ 218/263 ← 649/803 ↙ 141/139	↖ 77/38 ← 520/287 ↙ 131/55	← 1784/1567	↖ 318/479 ← 1490/1442	↖ 129/53 ← 1399/957 ↙ 384/142
148/236 ↗ 510/1211 → 61/129 ↘	320/368 ↗ 1049/1749 → 122/129 ↘	116/186 ↗ 460/816 → 122/131 ↘	97/153 ↗ 279/500 → 149/187 ↘	720/2203 → 894/1046 ↘	761/1592 →	118/266 ↗ 558/1164 → 403/464 ↘
95/170 ↑ 432/542 ↑ 25/61 ↑	144/106 ↑ 642/684 ↑ 828/115 ↑	192/151 ↑ 923/1264 ↑ 81/100 ↑	158/149 ↑ 280/345 ↑ 163/148 ↑		978/819 ↑ 553/521 ↑	294/540 ↑ 236/426 ↑ 76/226 ↑

Note: Volumes reflect PCE adjustments.

LEGEND:

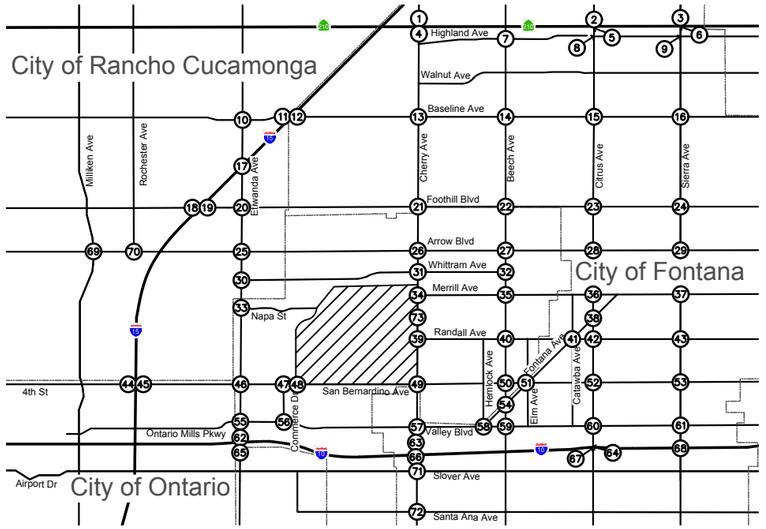
= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 16A
HORIZON YEAR 2040 PLUS PROJECT TRAFFIC VOLUMES

Kimley»Horn



NOT TO SCALE

21. Cherry Ave at Foothill Blvd

206/290 → 468/1137 → 204/236 ↘	380/461 ↑ 731/1359 ↑ 177/342 ↑	↖ 228/221 ← 1219/1242 ← 184/315 ↖ ← 110/138 ← 1306/635 ← 380/257

22. Beech Ave at Foothill Blvd

730/1568 → 123/226 ↘	108/214 ↑ 207/228 ↑	← 1771/944 ← 290/211

23. Citrus Ave at Foothill Blvd

167/287 → 507/1146 → 128/198 ↘	160/155 ↑ 591/778 ↑ 120/152 ↑	↖ 181/80 ← 821/634 ← 151/189 ↖ ← 107/154 ← 1032/692 ← 365/444

24. Sierra Ave at Foothill Blvd

239/236 → 439/982 → 125/199 ↘	129/160 ↑ 727/1120 ↑ 143/247 ↑	↖ 149/165 ← 1012/775 ← 216/220 ↖ ← 169/181 ← 830/639 ← 241/303

25. Etiwanda Ave at Arrow Rte

104/391 → 848/1737 → 236/493 ↘	398/252 ↑ 317/937 ↑ 65/240 ↑	↖ 439/128 ← 660/558 ← 163/192 ↖ ← 167/180 ← 1753/973 ← 277/177

26. Cherry Ave at Arrow Rte

81/95 → 437/758 → 104/123 ↘	136/162 ↑ 1194/1776 ↑ 168/360 ↑	↖ 106/115 ← 1522/1604 ← 59/103 ↖ ← 87/67 ← 763/607 ← 256/210

27. Beech Ave at Arrow Rte

68/73 → 397/880 → 65/117 ↘	107/124 ↑ 265/362 ↑ 156/279 ↑	↖ 137/42 ← 268/384 ← 24/34 ↖ ← 45/56 ← 815/560 ← 192/145

28. Citrus Ave at Arrow Rte

90/111 → 297/808 → 123/237 ↘	268/222 ↑ 719/988 ↑ 233/194 ↑	↖ 178/90 ← 896/833 ← 108/155 ↖ ← 160/103 ← 616/419 ← 265/167

29. Sierra Ave at Arrow Rte

94/183 → 453/544 → 92/142 ↘	112/125 ↑ 847/1177 ↑ 43/68 ↑	↖ 94/141 ← 1012/865 ← 76/121 ↖ ← 72/59 ← 598/362 ← 82/78

30. Etiwanda Ave at Whittram Ave

	643/1275 ↑ 171/317 ↑	↖ 1109/1010 ← 89/220 ↖ ← 153/107 ← 262/225

31. Cherry Ave at Whittram Ave

34/105 → 34/158 → 224/379 ↘	251/160 ↑ 1400/2221 ↑ 148/125 ↑	↖ 103/69 ← 1637/1607 ← 39/43 ↖ ← 76/82 ← 152/75 ← 169/139

32. Beech Ave at Whittram Ave

64/90 → 74/185 ↘	150/99 ↑ 492/701 ↑	↖ 125/46 ← 432/661 ↖

33. Etiwanda Ave at Napa St

0/6 → 2/34 ↘	1/0 ↑ 849/1216 ↑ 408/327 ↑	↖ 1/0 ← 1074/939 ← 281/447 ↖ ← 200/353 ← 315/357

34. Cherry Ave at Merrill Ave

0/1 →	3/1 ↑ 974/1910 ↑ 117/228 ↑	↖ 0/1 ← 1574/1335 ← 146/372 ↖ ← 419/258 ← 165/135

35. Beech Ave at Merrill Ave

159/235 → 143/306 → 79/51 ↘	75/49 ↑ 256/380 ↑ 65/65 ↑	↖ 132/92 ← 252/365 ← 65/223 ↖ ← 210/159 ← 417/324 ← 84/36

36. Citrus Ave at Merrill Ave

165/156 → 186/359 → 54/78 ↘	74/62 ↑ 840/1069 ↑ 32/51 ↑	↖ 117/112 ← 1088/915 ← 68/87 ↖ ← 115/152 ← 285/263 ← 53/41

37. Sierra Ave at Merrill Ave

81/176 → 387/524 → 106/122 ↘	70/138 ↑ 794/1202 ↑ 102/184 ↑	↖ 95/145 ← 1146/940 ← 51/82 ↖ ← 58/55 ← 427/322 ← 150/124

38. Citrus Ave at Fontana Ave

235/374 → 178/413 → 17/16 ↘	47/32 ↑ 724/976 ↑ 84/77 ↑	↖ 369/313 ← 983/771 ← 26/41 ↖ ← 40/24 ← 236/220 ← 97/67

39. Cherry Ave at Randall Ave

13/57 → 160/343 → 252/383 ↘	318/457 ↑ 1030/1736 ↑ 116/183 ↑	↖ 50/68 ← 1368/1111 ← 156/229 ↖ ← 163/193 ← 240/340 ← 248/185

40. Beech Ave at Randall Ave

71/97 → 289/573 → 28/62 ↘	37/43 ↑ 290/376 ↑ 58/24 ↑	↖ 121/62 ← 302/336 ← 7/45 ↖ ← 44/47 ← 455/509 ← 44/19

Note: Volumes reflect PCE adjustments.

LEGEND:

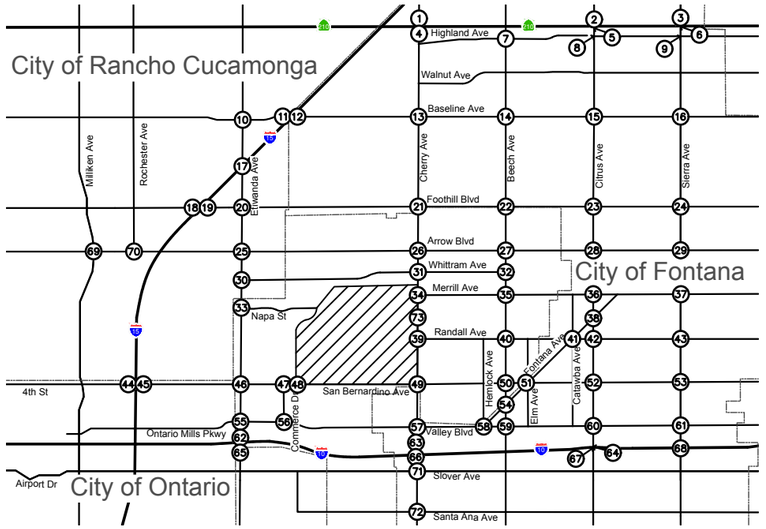
= Project Site

Ⓧ = Study Intersection

XX/YY = AM/PM Volumes

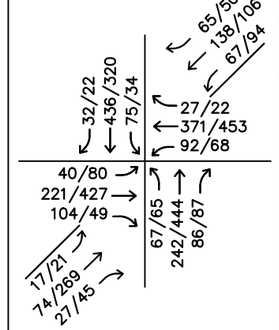
FIGURE 16B
HORIZON YEAR 2040 PLUS PROJECT TRAFFIC VOLUMES

Kimley»Horn

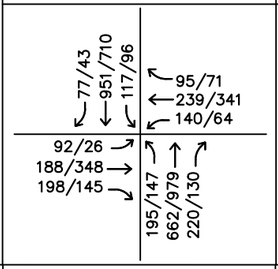


NOT TO SCALE

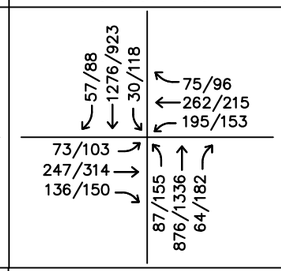
41. Fontana Ave/ Catawba Ave at Randall Ave



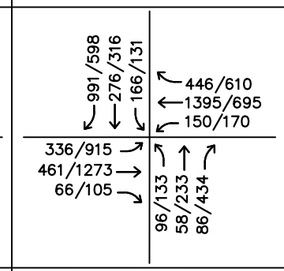
42. Citrus Ave at Randall Ave



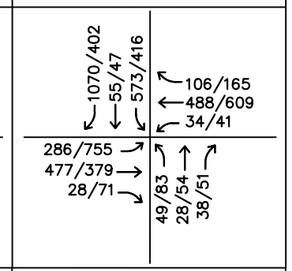
43. Sierra Ave at Randall Ave



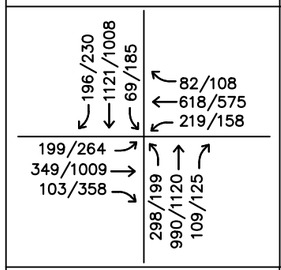
44. I-15 SB Ramps/ Ontario Mills Dr at Fourth St



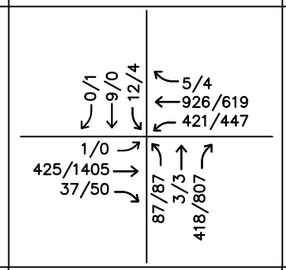
45. I-15 NB Ramps at Fourth St



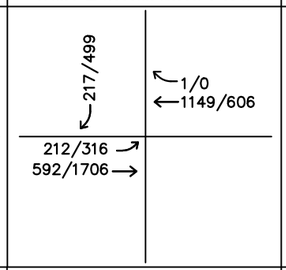
46. Etiwanda Ave at Fourth St/San Bernardino Ave



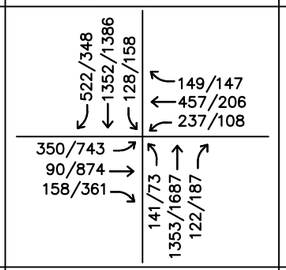
47. Commerce Dr at San Bernardino Ave



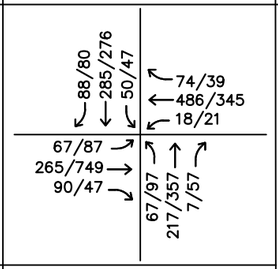
48. Vip Rd at San Bernardino Ave



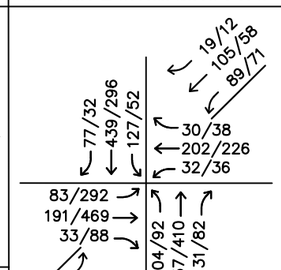
49. Cherry Ave at San Bernardino Ave



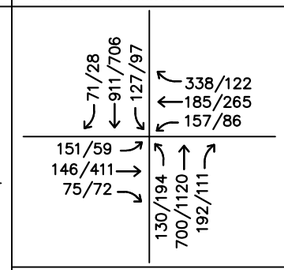
50. Beech Ave at San Bernardino Ave



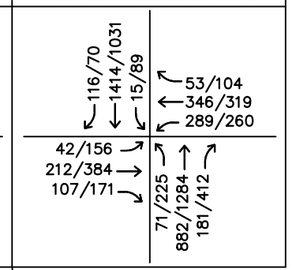
51. Fontana Ave/Elm St at San Bernardino Ave



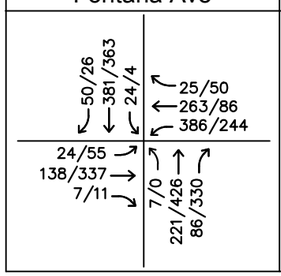
52. Citrus Ave at San Bernardino Ave



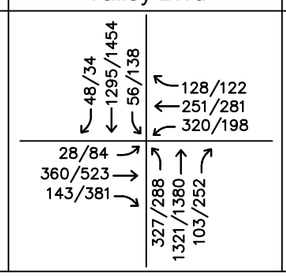
53. Sierra Ave at San Bernardino Ave



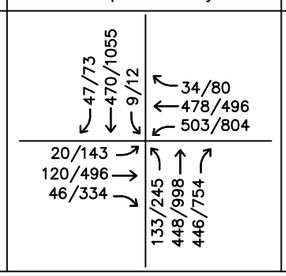
54. Beech Ave at Fontana Ave



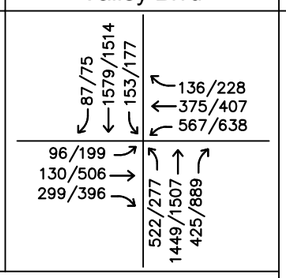
55. Etiwanda Ave at Valley Blvd



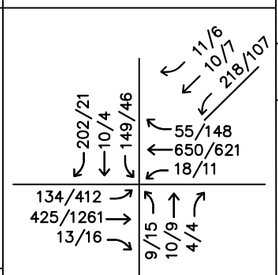
56. Commerce Dr/ I-15 Ramps at Valley Blvd



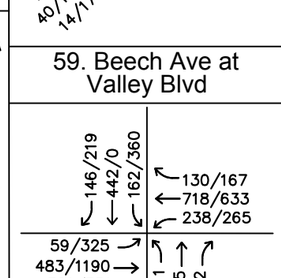
57. Cherry Ave at Valley Blvd



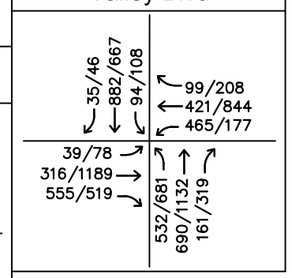
58. Fontana Ave/ Hemlock Ave at Valley Blvd



59. Beech Ave at Valley Blvd



60. Citrus Ave at Valley Blvd



Note: Volumes reflect PCE adjustments.

LEGEND:

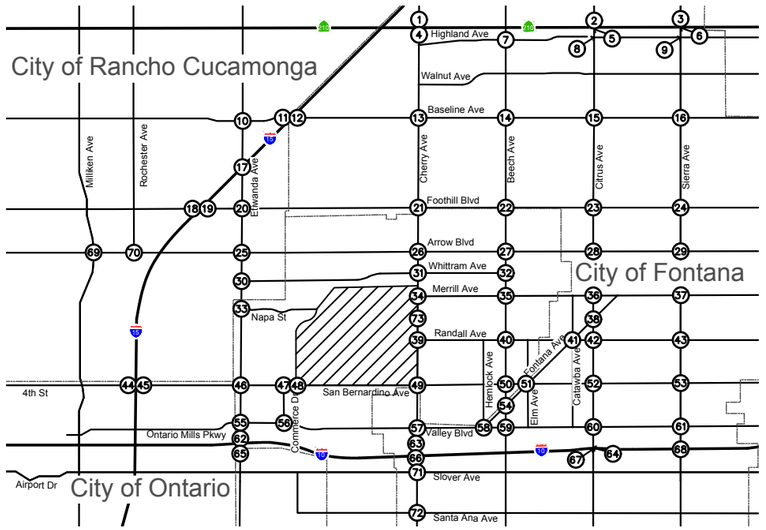
= Project Site

= Study Intersection

XX/YY = AM/PM Volumes

FIGURE 16C
HORIZON YEAR 2040 PLUS PROJECT TRAFFIC VOLUMES

Kimley»Horn





NOT TO SCALE

61. Sierra Ave at Valley Blvd	62. Etiwanda Ave at I-10 WB Off-Ramps	63. Cherry Ave at I-10 WB Ramps	64. Citrus Ave at I-10 WB Ramps	65. Etiwanda Ave at I-10 EB Ramps
132/102 ↙ 1612/1392 ↓ 128/189 ↖ 118/139 ← 469/715 ← 612/709	768/942 ↙ 1012/1222 ↓ ↖ 595/484 ← 637/585	2/12 ↙ 2254/2454 ↓ ↖ 969/873 ← 949/581	466/555 ↙ 1168/1126 ↓ ↖ 569/646 ← 407/269	238/394 ↙ 1366/1356 ↓
203/333 → 290/967 → 191/247 ↘ 222/288 → 1394/1390 → 756/814 ↑	1200/1674 → 445/622 ↑	1219/1751 → 608/436 ↑	745/1224 → 272/256 ↑	407/501 → 671/439 ↘ 1338/1725 → 381/562 ↑

66. Cherry Ave at I-10 EB Ramps	67. Citrus Ave at I-10 EB Ramps	68. Sierra Ave at I-10 EB/WB Ramps	69. Milliken Ave at Arrow Rte	70. Rochester Ave at Arrow Rte	71. Cherry Ave at Slover Ave	72. Cherry Ave at Santa Ana Ave	73. Cherry Ave at Street A
1706/1412 ↙ 776/981 ↓	959/742 ↙ 659/671 ↓	920/892 ↙ 984/981 ↓ 622/571 ↖ 677/723 ← 493/540	254/132 ↙ 920/598 ↓ 141/89 ↖ 121/131 ← 1240/623 ← 181/137	302/200 ↙ 437/245 ↓ 444/344 ↖ 326/509 ← 1498/798 ← 310/117	613/471 ↙ 1536/1325 ↓ 458/422 ↖ 393/408 ← 289/198 ← 68/71	377/163 ↙ 812/1014 ↓ 147/131 ↖ 163/151 ← 70/50 ← 31/36	317/456 ↙ 41/66 ↓
551/751 → 8/75 → 691/630 ↘ 1449/1483 → 541/533 ↑	340/505 → 9/8 → 478/237 ↘ 742/1020 → 372/570 ↑	958/1024 → 561/512 ↘ 470/573 ↑ 817/1438 → 400/523 ↑	86/265 → 471/1116 → 132/208 ↘ 197/195 ↑ 373/1644 → 103/388 ↑	132/389 → 784/1499 → 77/24 ↘ 55/62 ↑ 190/886 → 187/503 ↑	469/552 → 246/753 → 52/117 ↘ 37/50 ↑ 1181/1327 → 67/86 ↑	287/292 → 62/122 → 106/45 ↘ 54/12 ↑ 866/693 → 20/87 ↑	148/428 → 161/298 ↘ 246/344 ↑ 13/52 ↑

Note: Volumes reflect PCE adjustments.

LEGEND:

= Project Site

Ⓧ = Study Intersection

XX/YY = AM/PM Volumes

FIGURE 16D
HORIZON YEAR 2040 PLUS PROJECT TRAFFIC VOLUMES

Kimley»Horn

TABLE 9
SUMMARY OF INTERSECTION OPERATION
HORIZON YEAR 2040 PLUS PHASES **1** AND **2** CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour						PM Peak Hour					
				Without Project		With Project		Change Delay	Project-Related Effect?	Without Project		With Project		Change Delay	Project-Related Effect?
				Delay	LOS	Delay	LOS			Delay	LOS	Delay	LOS		
1	Cherry Ave at SR-210 WB Ramps	C	S	29.1	C	32.5	C	3.4	No	29.2	C	35.7	D	6.5	No
2	Citrus Ave at SR-210 WB Ramps	C	S	28.3	C	28.4	C	0.1	No	26.2	C	26.3	C	0.1	No
3	Sierra Ave at SR-210 WB Ramps	C	S	19.4	B	19.5	B	0.1	No	16.3	B	16.4	B	0.1	No
4	Cherry Ave at SR-210 EB Ramps	C	S	25.2	C	26.5	C	1.3	No	24.9	C	28.2	C	3.3	No
5	Citrus Ave at SR-210 EB Ramps	C	S	29.0	C	28.9	C	-0.1	No	31.3	C	31.4	C	0.1	No
6	Sierra Ave at SR-210 EB Ramps	C	S	18.6	B	18.5	B	-0.1	No	15.7	B	15.7	B	0.0	No
7	Beech Ave at Highland Ave	F	S	33.6	C	33.6	C	0.0	No	36.1	D	36.1	D	0.0	No
8	Citrus Ave at Highland Ave	F	S	37.9	D	37.6	D	-0.3	No	41.3	D	41.0	D	-0.3	No
9	Sierra Ave at Highland Ave	F	S	35.2	D	35.2	D	0.0	No	50.5	D	51.4	D	0.9	No
10	Etiwanda Ave at Base Line Rd	RC	S	60.2	E	60.1	E	-0.1	No	40.1	D	39.9	D	-0.2	No
11	I-15 SB Ramps at Base Line Rd	C	S	26.7	C	26.6	C	-0.1	No	19.2	B	19.4	B	0.2	No
12	I-15 NB Ramps at Baseline Ave	C	S	27.7	C	27.6	C	-0.1	No	33.8	C	33.8	C	0.0	No
13	Cherry Ave at Baseline Ave	F	S	38.5	D	39.6	D	1.1	No	39.5	D	42.4	D	2.9	No
14	Beech Ave at Baseline Ave	F	S	39.0	D	39.2	D	0.2	No	42.8	D	42.8	D	0.0	No
15	Citrus Ave at Baseline Ave	F	S	54.0	D	56.4	E	2.4	Yes	41.3	D	42.1	D	0.8	No
16	Sierra Ave at Baseline Ave	F	S	33.6	C	33.5	C	-0.1	No	36.6	D	36.8	D	0.2	No
17	Etiwanda Ave at Church St/Miller Ave	RC	S	45.9	D	44.5	D	-1.4	No	43.2	D	43.0	D	-0.2	No
18	I-15 SB Ramps at Foothill Blvd	C	S	31.4	C	33.4	C	2.0	No	20.5	C	23.1	C	2.6	No
19	I-15 NB Ramps at Foothill Blvd	C	S	24.4	C	24.1	C	-0.3	No	22.1	C	22.1	C	0.0	No
20	Etiwanda Ave at Foothill Blvd	RC	S	42.6	D	51.3	D	8.7	No	49.7	D	80.9	F	31.2	Yes
21	Cherry Ave at Foothill Blvd	F/SB	S	49.7	D	51.0	D	1.3	No	61.6	E	62.1	E	0.5	No
22	Beech Ave at Foothill Blvd	F/SB	U	>180	F	>180	F	384.2	Yes	>180	F	>180	F	0.0	No
23	Citrus Ave at Foothill Blvd	F	S	48.3	D	48.9	D	0.6	No	80.3	F	84.1	F	3.8	Yes
24	Sierra Ave at Foothill Blvd	F	S	44.0	D	44.4	D	0.4	No	58.9	E	63.7	E	4.8	Yes
25	Etiwanda Ave at Arrow Rte	RC	S	72.4	E	72.5	E	0.1	No	161.2	F	170.1	F	8.9	Yes

TABLE 9
SUMMARY OF INTERSECTION OPERATION
HORIZON YEAR 2040 PLUS PHASES **1** AND **2** CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour						PM Peak Hour					
				Without Project		With Project		Change Delay	Project-Related Effect?	Without Project		With Project		Change Delay	Project-Related Effect?
				Delay	LOS	Delay	LOS			Delay	LOS	Delay	LOS		
26	Cherry Ave at Arrow Rte	SB	S	48.3	D	57.5	E	9.2	Yes	68.8	E	102.1	F	33.3	Yes
27	Beech Ave at Arrow Rte	SB	S	25.4	C	25.9	C	0.5	No	28.4	C	29.9	C	1.5	No
28	Citrus Ave at Arrow Rte	F	S	57.6	E	59.6	E	2.0	No	45.5	D	46.8	D	1.3	No
29	Sierra Ave at Arrow Rte	F	S	35.7	D	35.8	D	0.1	No	38.0	D	38.5	D	0.5	No
30	Etiwanda Ave at Whittram Ave	RC	S	24.7	C	27.1	C	2.4	No	37.5	D	65.6	E	28.1	Yes
31	Cherry Ave at Whittram Ave	SB	S	37.6	D	48.8	D	11.2	No	59.4	E	96.8	F	37.4	Yes
32	Beech Ave at Whittram Ave	SB	U	90.2	F	95.7	F	5.5	No	>180	F	>180	F	53.9	Yes
33	Etiwanda Ave at Napa St	SB	S	18.5	B	32.1	C	13.6	No	26.4	C	85.9	F	59.5	Yes
34	Cherry Ave at Merrill Ave	SB	S	30.9	C	32.2	C	1.3	No	39.3	D	62.7	E	23.4	Yes
35	Beech Ave at Merrill Ave	SB	U	93.4	F	103.6	F	10.2	Yes	>180	F	>180	F	29.2	Yes
36	Citrus Ave at Merrill Ave	F	S	30.4	C	30.8	C	0.4	No	30.7	C	31.3	C	0.6	No
37	Sierra Ave at Merrill Ave	F	S	40.1	D	40.1	D	0.0	No	42.8	D	44.9	D	2.1	No
38	Citrus Ave at Fontana Ave	F	S	31.7	C	32.9	C	1.2	No	34.2	C	36.8	D	2.6	No
39	Cherry Ave at Randall Ave	SB	S	34.8	C	57.5	E	22.7	Yes	38.1	D	127.4	F	89.3	Yes
40	Beech Ave at Randall Ave	SB	U	95.9	F	160.6	F	64.7	Yes	123.8	F	>180	F	185.4	Yes
41	Fontana Ave/Catawba Ave at Randall Ave	F	U	150.1	F	>180	F	-	Yes	156.5	F	>180	F	-	Yes
42	Citrus Ave at Randall Ave	F	S	34.0	C	35.5	D	1.5	No	27.9	C	32.1	C	4.2	No
43	Sierra Ave at Randall Ave	F	S	30.9	C	32.2	C	1.3	No	35.5	D	37.8	D	2.3	No
44	I-15 SB Ramps/Ontario Mills Dr at Fourth St	C	S	43.9	D	45.6	D	1.7	No	53.0	D	77.4	E	24.4	Yes
45	I-15 NB Ramps at Fourth St	C	S	49.3	D	48.1	D	-1.2	No	38.6	D	39.7	D	1.1	No
46	Etiwanda Ave at Fourth St/San Bernardino Av	RC/SB	S	35.2	D	37.4	D	2.2	No	37.4	D	40.1	D	2.7	No
47	Commerce Dr at San Bernardino Ave	SB	S	30.5	C	36.0	D	5.5	No	61.6	E	>180	F	125.9	Yes
48	Vip Rd at San Bernardino Ave	SB	S	16.2	C	21.2	C	5.0	No	11.3	B	25.6	C	14.3	No
49	Cherry Ave at San Bernardino Ave	SB	S	36.3	D	43.4	D	7.1	No	45.0	D	76.1	E	31.1	Yes
50	Beech Ave at San Bernardino Ave	SB	S	32.5	C	32.7	C	0.2	No	37.4	D	39.7	D	2.3	No

TABLE 9
SUMMARY OF INTERSECTION OPERATION
HORIZON YEAR 2040 PLUS PHASES **1** AND **2** CONDITIONS

Int. #	Intersection	Jurisdiction	Traffic Control	AM Peak Hour						PM Peak Hour					
				Without Project		With Project		Change Delay	Project-Related Effect?	Without Project		With Project		Change Delay	Project-Related Effect?
				Delay	LOS	Delay	LOS			Delay	LOS	Delay	LOS		
51	Fontana Ave/Elm Ave at San Bernardino Ave	F/SB	S	40.2	D	40.8	D	0.6	No	49.5	D	61.0	E	11.5	Yes
52	Citrus Ave at San Bernardino Ave	F	S	38.6	D	39.7	D	1.1	No	32.5	C	34.0	C	1.5	No
53	Sierra Ave at San Bernardino Ave	F	S	30.8	C	31.7	C	0.9	No	40.9	D	42.4	D	1.5	No
54	Beech Ave at Fontana Ave	F/SB	U	147.2	F	147.2	F	0.0	No	>180	F	>180	F	0.0	No
55	Etiwanda Ave at Valley Blvd	SB	S	31.3	C	31.0	C	-0.3	No	37.7	D	38.6	D	0.9	No
56	Commerce Dr/I-10 Ramps at Valley Blvd	C	S	32.5	C	31.4	C	-1.1	No	71.3	E	84.7	F	13.4	Yes
57	Cherry Ave at Valley Blvd	F/SB	S	43.8	D	44.7	D	0.9	No	70.0	E	75.0	E	5.0	Yes
58	Fontana Ave/Hemlock Ave at Valley Blvd	F/SB	S	37.3	D	37.2	D	-0.1	No	15.5	B	15.9	B	0.4	No
59	Beech Ave at Valley Blvd	F	U	>180	F	>180	F	-	No	>180	F	>180	F	-	No
60	Citrus Ave at Valley Blvd	F	S	61.3	E	68.4	E	7.1	Yes	45.6	D	48.6	D	3.0	No
61	Sierra Ave at Valley Blvd	F	S	34.9	C	34.9	C	0.0	No	52.3	D	53.5	D	1.2	No
62	Etiwanda Ave at I-10 WB Off-Ramps	C	S	23.2	C	24.1	C	0.9	No	22.0	C	22.3	C	0.3	No
63	Cherry Ave at I-10 WB Ramps	C	S	32.5	C	51.5	D	19.0	No	26.5	C	49.5	D	23.0	No
64	Citrus Ave at I-10 WB Ramps	C	S	21.1	C	21.5	C	0.4	No	18.6	B	19.5	B	0.9	No
65	Etiwanda Ave at I-10 EB Ramps	C	S	30.9	C	30.7	C	-0.2	No	20.4	C	21.1	C	0.7	No
66	Cherry Ave at I-10 EB Ramps	C	S	34.3	C	39.6	D	5.3	No	44.7	D	57.1	E	12.4	Yes
67	Citrus Ave at I-10 EB Ramps	C	S	33.5	C	34.1	C	0.6	No	30.4	C	31.5	C	1.1	No
68	Sierra Ave at I-10 EB/WB Ramps	C	S	28.9	C	28.8	C	-0.1	No	69.8	E	72.8	E	3.0	Yes
69	Milliken Ave at Arrow Rte	RC	S	37.1	D	37.2	D	0.1	No	39.5	D	40.6	D	1.1	No
70	Rochester Ave at Arrow Rte	RC	S	88.7	F	88.7	F	0.0	No	87.2	F	92.6	F	5.4	Yes
71	Cherry Ave at Slover Ave	F	S	32.0	C	32.2	C	0.2	No	36.9	D	37.3	D	0.4	No
72	Cherry Ave at Santa Ana Ave	F	S	>180	F	>180	F	-	Yes	>180	F	>180	F	-	Yes
73	Cherry Ave at Street A	SB	S	-	-	35.9	D	-	-	-	-	36.9	D	-	-

- Bold values indicate intersections operating at an unacceptable Level of Service
- Delay values for unsignalized intersections represent the average vehicle delay on the worst (highest delay) intersection approach.

F = Fontana; SB = San Bernardino County; RC = Rancho Cucamonga; C = Caltrans

TRAFFIC SIGNAL WARRANT ANALYSIS

Traffic signal warrant analyses were conducted for the following unsignalized intersections:

- #22 – Beech Ave at Foothill Blvd
- #35 – Beech Ave at Merrill Ave
- #40 – Beech Ave at Randall Ave
- #41 – Catawba Ave at Randall Ave
- #59 – Beech Ave at Valley Blvd

Signal warrants were based on the 2014 California Manual on Uniform Traffic Control Devices (CA MUTCD). The warrants were conducted using Warrant 3 (Peak Hour Warrant) for the following scenarios:

- Existing Conditions
- Horizon Year 2040
- Horizon Year 2040 Plus Project

Traffic Signal Warrant Analysis worksheets are provided in *Appendix F*. Based on the signal warrant analysis, Warrant 3 was met during the following scenarios:

- Existing Conditions
    - #22 – Beech Ave at Foothill Blvd: AM & PM
- Horizon Year 2040
    - #35 – Beech Ave at Merrill Ave: AM & PM
    - #40 – Beech Ave at Randall Ave: AM & PM
    - #41 – Catawba Ave at Randall Ave: AM & PM
    - #59 – Beech Ave at Valley Blvd: AM & PM

The CA MUTCD specifically states that, "The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal." The reference document goes on to state a number of other factors to take into account when considering a signal for a specific location, including whether or not a signal would improve the overall safety of the intersection, whether it would benefit or disrupt progressive traffic flow, and consideration of site-specific characteristics such as queuing, signal spacing, and overall delay to the main street through movements.

The decision to install a traffic signal should be based on engineering judgement, and not solely upon satisfying a single peak hour warrant. It is recommended that a decision about signalization at the intersection should be made based on future observations as well as engineering judgement, based on the factors listed above.

RECOMMENDED IMPROVEMENTS

Based on the respective jurisdictional LOS standards and criteria noted earlier in the report, under the Horizon Year 2040 Plus Project Conditions, the project-related effect would be considered significant at the following intersections:

- #15 – Citrus Ave at Baseline Ave
- #20 – Etiwanda Ave at Foothill Blvd
- #22 – Beech Ave at Foothill Blvd
- #23 – Citrus Ave at Foothill Blvd
- #24 – Sierra Ave at Foothill Blvd
- #25 – Etiwanda Ave at Arrow Rte
- #26 – Cherry Ave at Arrow Rte
- #30 – Etiwanda Ave at Whittram Ave
- #31 – Cherry Ave at Whittram Ave
- #32 – Beech Ave at Whittram Ave
- #33 – Etiwanda Ave at Napa St
- #34 – Cherry Ave at Merrill Ave
- #35 – Beech Ave at Merrill Ave
- #39 – Cherry Ave at Randall Ave
- #40 – Beech Ave at Randall Ave
- #41 – Fontana Ave/Catawba Ave at Randall Ave
- #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St
- #47 – Commerce Dr at San Bernardino Ave
- #49 – Cherry Ave at San Bernardino Ave
- #56 – Commerce Dr/I-10 Ramps at Valley Blvd
- #57 – Cherry Ave at Valley Blvd
- #60 – Citrus Ave at Valley Blvd
- #63 – Cherry Ave at I-10 WB Ramps
- #66 – Cherry Ave at I-10 EB Ramps
- #67 – Citrus Ave at I-10 EB Ramps
- #68 – Sierra Ave at I-10 EB/WB Ramps
- #70 – Rochester Ave at Arrow Rte
- #72 – Cherry Ave at Santa Ana Ave

Implementation of the following improvements under applicable Opening Year 2024, Opening Year 2027, and Horizon Year 2040 scenarios are recommended to address the project's effect at the study intersections:

<u>#15 – Citrus Ave at Baseline Ave</u>

- Add a dedicated northbound right-turn lane with overlap phasing

#20 – Etiwanda Ave at Foothill Blvd

- Widen all approaches by 1 through lane
- Add southbound right-turn overlap phasing (Programmed Improvement; Rancho Cucamonga CIP)

#22 – Beech Ave at Foothill Blvd

- Traffic Signal recommended (Programmed Improvement; Fontana CIP)

#23 – Citrus Ave at Foothill Blvd

- Widen north, south, and eastbound approaches by 1 through lane (Programmed Improvement; SBCTA Arterial Projects)
- Add a 2nd westbound left-turn lane

#24 – Sierra Ave at Foothill Blvd

- Restripe southbound approach to provide dual left-turn lanes

#25 – Etiwanda Ave at Arrow Rte

- Add 2nd eastbound through lane (Programmed Improvement; Rancho Cucamonga CIP)

#26 – Cherry Ave at Arrow Rte

- Widen all approaches by 1 through lane

#30 – Etiwanda Ave at Whittram Ave

- Widen north and southbound approaches by 1 through lane (Programmed Improvement; SBCTA Arterial Projects)

#31 – Cherry Ave at Whittram Ave

- Add eastbound right-turn overlap phasing

#32 – Beech Ave at Whittram Ave

- Traffic Signal recommended under Horizon Year 2040 conditions

#33 – Etiwanda Ave at Napa St

- Widen north and southbound approaches by 1 through lane (Programmed Improvement; SBCTA Arterial Projects)
- Add northbound right-turn lane with overlap phasing
- Add westbound right-turn overlap phasing

#34 – Cherry Ave at Merrill Ave

- Widen north and southbound approaches by 1 through lane (Programmed Improvement; SBCTA Arterial Projects)

#35 – Beech Ave at Merrill Ave

- Traffic Signal recommended under Horizon Year 2040 conditions (Programmed Improvement; SBCTA Arterial Projects)
- Add a southbound left-turn lane

#39 – Cherry Ave at Randall Ave

- Add east and westbound right-turn overlap phasing
- Add a 2nd northbound left-turn lane
- Modified eastbound approach – 1 left, 1 through, and 2 rights
- Modified westbound approach – 1 left, 2 through, 1 right

#40 – Beech Ave at Randall Ave

- Traffic Signal recommended under Horizon Year 2040 conditions (Programmed Improvement; SBCTA Arterial Projects)

#41 – Fontana Ave/Catawba Ave at Randall Ave

- Traffic Signal recommended under Horizon Year 2040 conditions

#44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St

- Add westbound right-turn overlap phasing
- Add eastbound right-turn overlap phasing

#47 – Commerce Dr at San Bernardino Ave

- Analyze as a cluster intersection with INT #48
- Modify northbound approach to 1 left-turn lane, 1 shared through-right lane, and 1 right-turn lane

#49 – Cherry Ave at San Bernardino Ave

- Widen westbound approach by 1 through lane (Programmed Improvement; SB County CIP)
- Restripe northbound approach to provide a dedicated right-turn lane

#51 – Fontana Ave/Elm St at San Bernardino Ave

- Widen eastbound approach by 1 through lane (Programmed Improvement; SB County CIP)

#56 – Commerce Dr/I-10 Ramps at Valley Blvd

- Modify the northbound approach to be 1 dedicated left, 2 throughs, and 1 free right
- Add eastbound right-turn overlap phasing

#57 – Cherry Ave at Valley Blvd

- Add northbound right-turn overlap phasing

#59 – Beech Ave at Valley Blvd

- Traffic Signal recommended under Horizon Year 2040 conditions
- Widen all approaches by 1 through lane (Programmed Improvement; SBCTA Arterial Projects)

#60 – Citrus Ave at Valley Blvd

- Add eastbound right-turn overlap phasing

#63 – Cherry Ave at I-10 WB Ramps

- Restripe westbound approach to provide 1 left and 2 right-turn lanes

#66 – Cherry Ave at I-10 EB Ramps

- Restripe eastbound approach to provide 1 left, 1 shared through-right, and 1 right
- Add 2nd left-turn lane

#67 – Citrus Ave at I-10 EB Ramps

- Add 2nd southbound left-turn lane

#68 – Sierra Ave at I-10 EB/WB Ramps

- Add 3rd eastbound left-turn lane

#70 – Rochester Ave at Arrow Rte

- Add northbound right-turn overlap phasing

#72 – Cherry Ave at Santa Ana Ave

- Restripe eastbound approach to provide a dedicated left and a shared through-right lane

A summary of the intersection operation before and after implementation of the recommended improvements is provided on Table 10. Copies of intersection analysis worksheets with improvements are provided in *Appendix G*. Recommended improvements may include a combination of fee payments to established programs, construction of specific improvements, payment of a fair-share contribution toward future improvements, or a combination of these approaches. The project fair share proportion for non-programmed improvements at deficient study intersections under Horizon Year 2040 conditions is shown on Table 11. For programmed improvements, the developer will pay into the regional transportation fee program.

TABLE 10
SUMMARY OF INTERSECTION OPERATION
RECOMMENDED IMPROVEMENTS

Int. #	Intersection	Improvements	Peak Hour	Traffic Control	Opening Year 2024						Opening Year 2027						Horizon Year 2040					
					Without Project		With Phase 1		With Improvements		Without Project		With Phases **1** & 2		With Improvements		Without Project		With Phases **1** & 2		With Improvements	
					Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
15	Citrus Ave at Baseline Ave	- Add NBR lane with overlap phasing	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	54.0	D	56.4	E	41.5	D
			PM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20	Etiwanda Ave at Foothill Blvd	- Widen all approaches by 1 lane - SBR overlap phasing (Programmed Improvement; Rancho Cucamonga CIP)	AM	S	--	--	--	--	--	--	47.9	D	62.6	E	40.7	D	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	44.4	D	71.3	E	44.1	D	49.7	D	80.9	F	49.0	D
22	Beech Ave at Foothill Blvd	- Install Signal (Programmed Improvement; Fontana CIP)	AM	U	>180	F	>180	F	9.1	A	>180	F	>180	F	10.6	B	>180	F	>180	F	17.5	C
			PM	U	>180	F	>180	F	10.1	B	>180	F	>180	F	12.6	B	--	--	--	--	--	--
23	Citrus Ave at Foothill Blvd	- Widen NB/SB/EB approaches by 1 lane (Programmed Improvement; SBCTA Arterial Projects) - Add 2nd WBL turn lane	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	57.3	E	60.0	E	42.7	D	80.3	F	84.1	F	43.8	D
24	Sierra Ave at Foothill Blvd	- Restripe SB approach to provide dual SBL	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	--	--	--	--	--	--	58.9	E	63.7	E	52.8	D
25	Etiwanda Ave at Arrow Rte	- 2nd EBT Lane (Programmed Improvement; Rancho Cucamonga CIP)	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	--	--	--	--	--	--	161.2	F	170.1	F	65.3	E
26	Cherry Ave at Arrow Rte	- Widen all approaches by 1 lane	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	48.3	D	57.5	E	34.6	C
			PM	S	53.7	D	92.5	F	40.6	D	62.1	E	93.9	F	39.8	D	68.8	E	102.1	F	40.7	D
30	Etiwanda Ave at Whittram Ave	- Widen NB/SB approaches by 1 lane (Programmed Improvement; SBCTA Arterial Projects)	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	--	--	--	--	--	--	37.5	D	65.6	E	21.5	C
31	Cherry Ave at Whittram Ave	- EBR overlap phasing	AM	S	--	--	--	--	--	--	42.0	D	64.1	E	37.8	D	--	--	--	--	--	--
			PM	S	46.5	D	100.1	F	49.2	D	54.4	D	96.1	F	51.3	D	59.4	E	96.8	F	50.8	D
32	Beech Ave at Whittram Ave	- Install Signal	AM	U	--	--	--	--	--	--	--	--	--	--	--	--	90.2	F	95.7	F	9.0	A
			PM	U	--	--	--	--	--	--	48.5	E	54.9	F	16.1	C	>180	F	>180	F	15.0	B
33	Etiwanda Ave at Napa St	- Widen NB/SB approaches by 1 lane (Programmed Improvement; SBCTA Arterial Projects) - NBR turn lane with overlap phasing - WBR overlap phasing	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	28.4	C	88.9	F	44.4	D	26.4	C	85.9	F	45.2	D
34	Cherry Ave at Merrill Ave	- Widen NB/SB approaches by 1 lane (Programmed Improvement; SBCTA Arterial Projects)	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	29.3	C	63.2	E	23.9	C	36.0	D	73.3	E	26.1	C	39.3	D	62.7	E	38.0	D
35	Beech Ave at Merrill Ave	- Install Signal (Programmed Improvement; SBCTA Arterial Projects) - Add SBL turn lane	AM	S	--	--	--	--	--	--	37.4	E	42.7	E	34.5	C	93.4	F	103.6	F	46.4	D
			PM	S	40.9	E	47.4	E	22.3	C	50.3	F	63.1	F	24.2	C	>180	F	>180	F	137.1	F
39	Cherry Ave at Randall Ave	- EBR and WBR overlap phasing - 2nd NBL turn lane - EB approach = 1 Left, 1 Through, 2 Right - WB approach = 1 Left, 2 Through, 1 Right	AM	S	36.4	D	88.2	F	34.4	C	37.8	D	92.3	F	34.3	C	34.8	C	57.5	E	32.3	C
			PM	S	37.4	D	178.6	F	52.8	D	40.0	D	135.9	F	48.8	D	38.1	D	127.4	F	42.9	D
40	Beech Ave at Randall Ave	- Install Signal (Programmed Improvement; SBCTA Arterial Projects)	AM	S	67.8	F	101.3	F	26.1	C	85.3	F	177.9	F	26.7	C	95.9	F	160.6	F	28.2	C
			PM	S	25.7	D	101.3	F	21.8	C	32.9	D	>180	F	24.0	C	123.8	F	>180	F	30.9	C

TABLE 10
SUMMARY OF INTERSECTION OPERATION
RECOMMENDED IMPROVEMENTS

Int. #	Intersection	Improvements	Peak Hour	Traffic Control	Opening Year 2024						Opening Year 2027						Horizon Year 2040					
					Without Project		With Phase 1		With Improvements		Without Project		With Phases **1** & 2		With Improvements		Without Project		With Phases **1** & 2		With Improvements	
					Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
41	Fontana Ave/Catawba Ave at Randall Ave	- Install Singal	AM	U	25.1	D	38.1	E	22.4	C	30.1	D	57.1	F	22.2	C	150.1	F	>180	F	21.3	C
			PM	U	28.8	D	75.8	F	22.0	C	34.8	D	125.2	F	21.3	C	156.5	F	>180	F	20.8	C
44	I-15 SB Ramps/Ontario Mills Dr at Fourth St	- WBR overlap and NBR overlap	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	51.3	D	65.2	E	43.0	D	58.2	E	87.5	F	45.7	D	53.0	D	77.4	E	43.8	D
47	Commerce Dr at San Bernardino Ave	- Analyze as a cluster intersection with INT 48 - Modify NB approach to 1 left, 1 shared through-right, and 1 right	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	49.8	D	87.7	F	29.5	C	62.0	E	179.1	F	45.5	D	61.6	E	>180	F	39.8	D
49	Cherry Ave at San Bernardino Ave	- Widen WB approach by 1 lane (Programmed Improvement; SB County CIP) - Restripe NB approach to provide a dedicated right-turn lane	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	44.4	D	95.0	F	54.0	D	48.4	D	85.8	F	50.6	D	45.0	D	76.1	E	65.8	E
51	Fontana Ave/Elm Ave at San Bernardino Ave	- Widen EB approach by 1 lane (Programmed Improvement; SB County CIP)	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	--	--	--	--	--	--	49.5	D	61.0	E	50.5	D
56	Commerce Dr/I-10 Ramps at Valley Blvd	- Modify NB approach to be 1 dedicated left, 2 throughs, and 1 free right - Add EBR overlap phasing	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	--	--	--	--	--	--	71.3	E	84.7	F	66.5	E
57	Cherry Ave at Valley Blvd	- NBR Overlap	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	44.8	D	55.9	E	48.8	D	53.2	D	63.1	E	51.7	D	70.0	E	75.0	E	55.6	E
59	Beech Ave at Valley Blvd	- Install Signal - Widen all approaches by 1 lane (Programmed Improvement; SBCTA Arterial Projects)	AM	S	67.0	F	77.9	F	6.8	A	91.8	F	120.8	F	8.3	A	>180	F	>180	F	20.8	C
			PM	S	>180	F	>180	F	4.5	A	>180	F	>180	F	11.3	B	>180	F	>180	F	77.6	E
60	Citrus Ave at Valley Blvd	- EBR overlap phasing	AM	S	--	--	--	--	--	--	58.4	E	65.4	E	40.1	D	61.3	E	68.4	E	42.1	D
			PM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
63	Cherry Ave at I-10 WB Ramps	- Restripe WB approach to provide 1 left and 2 right-turn lanes	AM	S	--	--	--	--	--	--	40.4	D	70.5	E	40.2	D	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	28.2	C	59.3	E	25.9	C	--	--	--	--	--	--
66	Cherry Ave at I-10 EB Ramps	- Add 2nd EB left-turn lane and retripe to be shared through right & dedicated right	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	--	--	--	--	--	--	44.7	D	57.1	E	41.8	D
68	Sierra Ave at I-10 EB/WB Ramps	- Tripe EBL turn lanes	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	69.7	E	75.2	E	51.4	D	69.8	E	72.8	E	51.3	D
70	Rochester Ave at Arrow Rte	- Northbound right-turn overlap phasing	AM	S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			PM	S	--	--	--	--	--	--	--	--	--	--	--	--	87.2	F	92.6	F	78.0	E
72	Cherry Ave at Santa Ana Ave	- Restripe EB approach to provide dedicated left and a shared through-right	AM	S	>180	F	>180	F	27.9	C	>180	F	>180	F	29.3	C	>180	F	>180	F	30.1	C
			PM	S	>180	F	>180	F	23.6	C	>180	F	>180	F	24.81	C	>180	F	>180	F	28.0	C

Notes:
- Bold values indicate intersections operating at an unacceptable Level of Service
- Delay values for unsignalized intersections represent the average vehicle delay on the worst (highest delay) intersection approach.

TABLE 11

SUMMARY OF PROJECT FAIR SHARE - HORIZON YEAR 2040

Int. #	Intersection	AM Peak Hour					PM Peak Hour				
		Total Volume		Total	Project		Total Volume		Total	Project	
		2021	2040	Growth	Trips	%-age	2021	2040	Growth	Trips	%-age
15	Citrus Ave at Baseline Ave	4,202	5,802	1,600	70	4.4%	3,325	4,962	1,637	180	11.0%
20	Etiwanda Ave at Foothill Blvd [1]	3,455	4,388	933	212	22.7%	3,465	4,758	1,293	391	30.2%
23	Citrus Ave at Foothill Blvd [1]	3,555	4,330	775	52	6.7%	3,880	4,909	1,029	126	12.2%
24	Sierra Ave at Foothill Blvd	3,299	4,419	1,120	64	5.7%	3,682	5,227	1,545	149	9.6%
26	Cherry Ave at Arrow Rte	3,419	4,913	1,494	498	33.3%	3,870	5,980	2,110	946	44.8%
31	Cherry Ave at Whittram Ave	2,930	4,267	1,337	498	37.2%	3,187	5,163	1,976	946	47.9%
32	Beech Ave at Whittram Ave [2]	919	1,337	418	16	1.2%	1,086	1,782	696	39	2.2%
33	Etiwanda Ave at Napa St [1]	1,772	3,131	1,359	460	33.8%	1,908	3,679	1,771	769	43.4%
35	Beech Ave at Merrill Ave [1]	1,286	1,937	651	36	5.5%	1,318	2,285	967	95	9.8%
39	Cherry Ave at Randall Ave	2,648	4,114	1,466	986	67.3%	2,985	5,285	2,300	1,798	78.2%
41	Fontana Ave/Catawba Ave at Randall Ave	686	1,793	1,107	144	13.0%	548	2,071	1,523	379	24.9%
44	I-15 SB Ramps/Ontario Mills Dr at Fourth St	3,748	4,527	779	125	16.0%	4,604	5,613	1,009	240	23.8%
49	Cherry Ave at San Bernardino Ave [1]	3,368	5,059	1,691	699	41.3%	4,056	6,278	2,222	1,083	48.7%
56	Commerce Dr/I-10 Ramps at Valley Blvd	1,916	2,754	838	173	20.6%	3,104	5,490	2,386	395	16.6%
57	Cherry Ave at Valley Blvd	4,497	5,818	1,321	465	35.2%	4,708	6,813	2,105	735	34.9%
59	Beech Ave at Valley Blvd [1,2]	1,264	3,211	1,947	75	2.3%	1,886	4,618	2,732	127	2.8%
60	Citrus Ave at Valley Blvd	3,533	4,289	756	84	11.1%	4,717	5,968	1,251	151	12.1%
63	Cherry Ave at I-10 WB Ramps	4,659	6,001	1,342	390	29.1%	4,543	6,107	1,564	606	38.7%
66	Cherry Ave at I-10 EB Ramps	4,689	5,722	1,033	226	21.9%	4,450	5,865	1,415	352	24.9%
67	Citrus Ave at I-10 EB Ramps	3,107	3,559	452	44	9.7%	3,220	3,753	533	89	16.7%
68	Sierra Ave at I-10 EB/WB Ramps	5,891	6,902	1,011	33	3.3%	6,739	7,777	1,038	58	5.6%
70	Rochester Ave at Arrow Rte	2,883	4,742	1,859	27	1.5%	3,566	5,576	2,010	72	3.6%
72	Cherry Ave at Santa Ana Ave [2]	2,434	2,995	561	42	1.4%	2,164	2,796	632	96	3.4%

Notes:

- [1] Fair Share percentage is to be applied to non-programmed improvements
- [2] Fair Share for intersections failing under existing conditions was calculated using the total 2040 volume

EVENT TRAFFIC MANAGEMENT

The Project would construct new public roads, improving access to and within the site, and construct additional transportation improvements. The Project would therefore improve emergency access to the site, including to the proposed Planning Areas and the Next Gen motorsports facility. With the Project buildout and operation, however, there would be an increase in traffic during major race and ancillary events held at the Next Gen motorsports facility. As race day access and management during a race event is dependent on the size and type of event and is subject to change with traffic conditions, and phased Project improvements, a Transportation Management Association shall be formed for the SCCII SP and Next Gen motorsports facility who will be responsible to prepare a Traffic Management Plan for applicable events in accordance with Mitigation Measure (MM) TRANS-1, which would require the Master Developer to form a Transportation Management Association and MM TRANS-2, which is incorporated as a condition of approval for the Next Gen Project

Additionally, the Project would be reviewed by the County of San Bernardino Public Works and Fire Departments to ensure the project sufficiently avoids hazards related to design features and that adequate emergency access is provided to the site. As a result, the Project would not substantially increase delays on street segments substantially that would result in inadequate emergency access. Therefore, impacts would be less than significant with mitigation.

Mitigation Measures

MM TRANS-1 Master Developer will form a Transportation Management Association by the date of issuance of the first building permit issued for the development.

MM TRANS-2 A comprehensive traffic management plan shall be submitted and approved by the County Engineer to manage traffic to and from the Next Gen motorsports facility and SCCII SP Project during race weekends and as required during ancillary events. Manual traffic control, including signage, traffic control personnel, and routing shall be provided by the Transportation Management Association to ensure that all intersections affected by race-related or ancillary event-related traffic, will function at LOS E or better at midday and in the p.m. peak hour on Friday, as well as all day Saturday and Sunday and on weekdays during ancillary events. The TMP shall be submitted a minimum of 30 days prior to each event.

In addition, manual traffic control shall also be employed as determined by the County of San Bernardino in consultation with the California Highway Patrol; Cities of Fontana, Rancho Cucamonga, and Ontario; and the Fontana Unified School District, where needed, to safely move traffic through intersections affected by traffic.

FINDINGS AND CONCLUSIONS

- The Project proposes conceptual land uses that include, but are not limited to, approximately 6.6 million square feet (SF) of high cube warehouse and e-commerce uses with approximately 12 acres (261,000 SF) of accessory commercial uses.

- Under Existing Conditions, the following study intersections currently operate at an unacceptable Level of Service (LOS):

    - #22 – Beech Ave at Foothill Blvd
    - #32 – Beech Ave at Whittram Ave
    - #59 – Beech Ave at Valley Blvd
    - #72 – Cherry Ave at Santa Ana Ave

- The Opening Year for Phase 1 of the project is anticipated to be Year 2024. The Opening Year 2024 scenario includes a 2% ambient annual growth rate and the addition of Cumulative Project traffic. Under Opening Year 2024 conditions, the following study intersections would operate at an unacceptable Level of Service:

    - #10 – Etiwanda Ave at Base Line Rd
    - #22 – Beech Ave at Foothill Blvd
    - #32 – Beech Ave at Whittram Ave
    - #35 – Beech Ave at Merrill Ave
    - #40 – Beech Ave at Randall Ave
    - #59 – Beech Ave at Valley Blvd
    - #72 – Cherry Ave at Santa Ana Ave

- Phase 1 of the proposed project is estimated to generate 32,477 PCE trips daily, with 1,643 PCE trips in the morning peak hour and 3,099 PCE trips in the evening peak hour.

- The entire proposed project (Phases 1 and 2) is estimated to generate 47,352 PCE trips daily, with 2,188 PCE trips in the morning peak hour and 4,114 PCE trips in the evening peak hour.

- Phase 1 project traffic was added to Opening Year 2024 traffic volumes to establish Opening Year 2024 Plus Phase 1 conditions. Under this scenario, the following study intersections would operate an acceptable Level of Service:

    - #10 – Etiwanda Ave at Base Line Rd
    - #22 – Beech Ave at Fontana Ave
    - #26 – Cherry Ave at Arrow Rte
    - #31 – Cherry Ave at Whittram Ave
    - #32 – Beech Ave at Whittram Ave

- #34 – Cherry Ave at Merrill Ave
- #35 – Beech Ave at Merrill Ave
- #39 – Cherry Ave at Randall Ave
- #40 – Beech Ave at Randall Ave
- #41 – Fontana Ave/Catawba Ave at Randall Ave
- #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St
- #47 – Commerce Dr at San Bernardino Ave
- #49 – Cherry Ave at San Bernardino Ave
- #57 – Cherry Ave at Valley Blvd
- #59 – Beech Ave at Valley Boulevard
- #72 – Cherry Ave at Santa Ana Ave

- The Opening Year for Phase 2 of the project is anticipated to be Year 2027. The Opening Year 2027 scenario includes a 2% ambient annual growth rate and the addition of Cumulative Project traffic. Compared to Opening Year 2024 conditions, the following study intersections would operate at an unacceptable Level of Service under Opening Year 2027 conditions:

    - #9 – Sierra Ave at Highland Ave
    - #10 – Etiwanda Ave at Base Line Rd
    - #15 – Citrus Ave at Baseline Ave
    - #22 – Beech Ave at Foothill Blvd
    - #23 – Citrus Ave at Foothill Blvd
    - #26 – Cherry Ave at Arrow Rte
    - #32 – Beech Ave at Whittram Ave
    - #35 – Beech Ave at Merrill Ave
    - #40 – Beech Ave at Randall Ave
    - #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St
    - #45 – I-15 NB Ramps at Fourth St
    - #47 – Commerce Dr at San Bernardino Ave
    - #56 – Commerce Dr/I-10 Ramps at Valley Blvd
    - #59 – Beech Ave at Valley Blvd
    - #60 – Citrus Ave at Valley Blvd
    - #61 – Sierra Ave at Valley Blvd
    - #68 – Sierra Ave at I-10EB/WB Ramps
    - #72 – Cherry Ave at Santa Ana Ave

- Project traffic (Phases 1 and 2) was added to Opening Year 2027 traffic volumes to establish Opening Year 2027 Plus Phases 1 and 2 conditions. With the addition of project traffic, the following additional study intersections would operate at an unacceptable Level of Service under Opening Year 2027 Plus Project (Phases 1 and 2) conditions:

- #9 – Sierra Ave at Highland Ave
- #10 – Etiwanda Ave at Base Line Rd
- #15 – Citrus Ave at Baseline Ave
- #20 – Etiwanda Ave at Foothill Blvd
- #22 – Beech Ave at Foothill Blvd
- #23 – Citrus Ave at Foothill Blvd
- #26 – Cherry Ave at Arrow Rte
- #31 – Cherry Ave at Whittram Ave
- #32 – Beech Ave at Whittram Ave
- #33 – Etiwanda Ave at Napa St
- #34 – Cherry Ave at Merrill Ave
- #35 – Beech Ave at Whittram Ave
- #39 – Cherry Ave at Randall Ave
- #40 – Beech Ave at Randall Ave
- #41 – Fontana Ave/Catawba Ave at Randall Ave
- #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St
- #45 – I-15 NB Ramps at Fourth St
- #47 – Commerce Dr at San Bernardino Ave
- #49 – Cherry Ave at San Bernardino Ave
- #56 – Commerce Dr/I-10 Ramps at Valley Blvd
- #57 – Cherry Ave at Valley Blvd
- #59 – Beech Ave at Valley Blvd
- #60 – Citrus Ave at Valley Blvd
- #61 – Sierra Ave at Valley Blvd
- #63 – Cherry Ave at I-10 WB Ramps
- #68 – Sierra Ave at I-10 EB/WB Ramps
- #72 – Cherry Ave at Santa Ana Ave

- The San Bernardino Transportation Analysis Model (SBTAM) was used to develop forecast volumes for Horizon Year 2040 conditions. Compared to Opening Year 2027 conditions, the following additional study intersections would operate at an unacceptable Level of Service under Horizon Year 2040 conditions:

    - #10 – Etiwanda Ave at Base Line Rd
    - #21 – Cherry Ave at Foothill Blvd
    - #22 – Beech Ave at Foothill Blvd
    - #23 – Citrus Ave at Foothill Blvd
    - #24 – Sierra Ave at Foothill Blvd
    - #25 – Etiwanda Ave at Arrow Rte
    - #26 – Cherry Ave at Arrow Rte
    - #28 – Citrus Ave at Arrow Rte
    - #31 – Cherry Ave at Whittram Ave

- #32 – Beech Ave at Whittram Ave
- #34 – Cherry Ave at Merrill Ave
- #35 – Beech Ave at Merrill Ave
- #40 – Beech Ave at Randall Ave
- #41 – Fontana Ave/Catawba Ave at Randall Ave
- #47 – Commerce Dr at San Bernardino Ave
- #54 – Beech Ave at Fontana Ave
- #56 – Commerce Dr/I-10 Ramps at Valley Blvd
- #57 – Cherry Ave at Valley Blvd
- #59 – Beech Ave at Valley Blvd
- #60 – Citrus Ave at Valley Blvd
- #68 – Sierra Ave at I-10 EB/WB Ramps
- #70 – Rochester Ave at Arrow Rte
- #72 – Cherry Ave at Santa Ana Ave

- Project traffic (Phases 1 and 2) was added to Horizon Year 2040 traffic volumes to establish the conditions for Opening Year 2027 Plus Phases 1 and 2 conditions. With the addition of project traffic, the following additional study intersections would operate at an unacceptable Level of Service under Horizon Year 2040 Plus Project (Phases 1 and 2) conditions:

  - #10 – Etiwanda Ave at Base Line Rd
  - #15 – Citrus Ave at Baseline Ave
  - #20 – Etiwanda Ave at Foothill Blvd
  - #21 – Cherry Ave at Foothill Blvd
  - #22 – Beech Ave at Foothill Blvd
  - #23 – Citrus Ave at Foothill Blvd
  - #24 – Sierra Ave at Foothill Blvd
  - #25 – Etiwanda Ave at Arrow Rte
  - #26 – Cherry Ave at Arrow Rte
  - #28 – Citrus Ave at Arrow Rte
  - #30 – Etiwanda Ave at Whittram Ave
  - #31 – Cherry Ave at Whittram Ave
  - #32 – Beech Ave at Whittram Ave
  - #33 – Etiwanda Ave at Napa St
  - #34 – Cherry Ave at Merrill Ave
  - #35 – Beech Ave at Merrill Ave
  - #39 – Cherry Ave at Randall Ave
  - #40 – Beech Ave at Randall Ave
  - #41 – Fontana Ave/Catawba Ave at Randall Ave
  - #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St
  - #47 – Commerce Dr at San Bernardino Ave

- #49 – Cherry Ave at San Bernardino Ave
- #51 – Fontana Ave/Elm Ave at San Bernardino Ave
- #54 – Beech Ave at Fontana Ave
- #56 – Commerce Dr/I-10 Ramps at Valley Blvd
- #57 – Cherry Ave at Valley Blvd
- #59 – Beech Ave at Valley Blvd
- #60 – Citrus Ave at Valley Blvd
- #66 – Cherry Ave at I-10 EB Ramps
- #68 – Sierra Ave at I-10 EB/WB Ramps
- #70 – Rochester Ave at Arrow Rte
- #72 – Cherry Ave at Santa Ana Ave

- Based on the respective jurisdictional LOS standards and criteria noted earlier in the report, under the Horizon Year 2040 Plus Project Conditions, the project-related effect would be considered significant at the following intersections:

  - #15 – Citrus Ave at Baseline Ave
  - #20 – Etiwanda Ave at Foothill Blvd
  - #23 – Citrus Ave at Foothill Blvd
  - #24 – Sierra Ave at Foothill Blvd
  - #25 – Etiwanda Ave at Arrow Rte
  - #26 – Cherry Ave at Arrow Rte
  - #30 – Etiwanda Ave at Whittram Ave
  - #31 – Cherry Ave at Whittram Ave
  - #32 – Beech Ave at Whittram Ave
  - #33 – Etiwanda Ave at Napa St
  - #34 – Cherry Ave at Merrill Ave
  - #35 – Beech Ave at Merrill Ave
  - #39 – Cherry Ave at Randall Ave
  - #40 – Beech Ave at Randall Ave
  - #41 – Fontana Ave/Catawba Ave at Randall Ave
  - #44 – I-15 SB Ramps/Ontario Mills Dr at Fourth St
  - #47 – Commerce Dr at San Bernardino Ave
  - #49 – Cherry Ave at San Bernardino Ave
  - #51 – Fontana Ave/Elm Ave at San Bernardino Ave
  - #56 – Commerce Dr/I-10 Ramps at Valley Blvd
  - #57 – Cherry Ave at Valley Blvd
  - #60 – Citrus Ave at Valley Blvd
  - #66 – Cherry Ave at I-10 EB Ramps
  - #68 – Sierra Ave at I-10 EB/WB Ramps
  - #70 – Rochester Ave at Arrow Rte
  - #72 – Cherry Ave at Santa Ana Ave

- Recommended improvements under applicable Opening Year 2024, Opening Year 2027, and Horizon Year 2040 conditions were provided to address the project's effect at the study intersections

- Recommended improvements may include a combination of fee payments to established programs, construction of specific improvements, payment of a fair-share contribution toward future improvements, or a combination of these approaches.

APPENDIX A

APPROVED SCOPE OF STUDY FORM

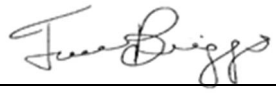
SCOPE FOR TRAFFIC STUDY

Project Name:	Speedway Commerce Center II

This Scope for Traffic Study acknowledges San Bernardino County Department of Public Works, Traffic Division requirements of traffic impact analysis for the project and is subject to change:

Project Address:	9300 Cherry Ave, Fontana, CA 92335		
Project Description:	Industrial Uses – See Attachment A – Site Plan		
City:	County of San Bernardino		
Project Buildout Year:	2027	**Ambient Growth Rate per Year:**	2%
Closest Intersection (Xtn) to the Project			
Xtn N/S Street Name:	Cherry Avenue		
Xtn E/W Street Name:	Randall Avenue		
Thomas Guide Pg+Grid:		**County Supervisorial District:**	2

	Engineer	**Developer**
Company:	Kimley-Horn and Associates, Inc.	Hillwood Enterprises, L.P.
Name:	Trevor Briggs	Ned Sciortino
Address:	1100 Town and Country Road, Suite 700	901 Via Piemonte
City, State, Zip Code:	Orange, CA, 92868	Ontario, CA 91764
Phone #:	714-939-1030	909-382-0033
Fax #:		
Email:	trevor.briggs@kimley-horn.com	Ned.Sciortino@hillwood.com

By: 

Print Name: Trevor Briggs, P.E.

Consultant/Developer's Representative **Date 8/12/21**

Reviewed By:

Print Name:

Traffic Division Representative **Date**

SCOPE FOR TRAFFIC STUDY

Project Name:	Speedway Commerce Center II

1. Traffic Distribution: See Attachment C (Study Area)

2. Trip Credit: Exact amount of credit subject to approval by Traffic Division.

Transportation Demand Management (TDM)	No	
Existing Active Land Use	No	
Previous Land Use	No	
Internal Trip Reduction	No	
Pass-by Trip Reduction	Yes	See Attachment B6

3. Related Projects: Consultant should check with Planning in the San Bernardino County Department of Land Use Services and planning departments of adjoining Cities. Documentation of the consultation from these agencies shall be included in the traffic study. Related projects list shall be submitted to Traffic Division for our review and approval before being incorporated in the study.

4. Freeway Analysis: The potential traffic impact on the following Freeway(s) must be considered.

No longer required based on new Caltrans guidelines.

The applicant shall consult with the State of California Department of Transportation (Caltrans) to determine the California Environmental Quality Act levels of significance with regard to traffic impacts on Caltrans' freeway facilities. This consultation shall also include a determination of Caltrans requirements for the study of traffic impacts to its facilities and the mitigation of any such impacts. This analysis must follow the most current Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) and can be obtained from http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tiguide.pdf. If Caltrans finds that the project has a significant impact on the freeway, Caltrans shall be requested to include the basis for this finding in their response. If fees are proposed to mitigate the freeway impact, Caltrans shall be requested to identify the specific project to which the fees will apply. These written comments from Caltrans shall be included with the traffic study and submitted to Public Works for review and approval. If a documented good faith effort is made to consult with Caltrans and written comments cannot be obtained from within a reasonable amount of time, an analysis of the freeway impact shall be made using HCM procedures. Appendix A of the SANBAG CMP outlines allowable modifications to these procedures. The SANBAG CMP can be viewed online at: http://www.sanbag.ca.gov/planning/subr_congestion.html

SCOPE FOR TRAFFIC STUDY

Project Name:	Speedway Commerce Center II

5. Trip Generation – See **Attachments B1 through B6** for a Detailed Breakdown of Trip Generation.

Trip Generation Rate(s) Source: ITE Trip Generation			**I – Institute of Transportation Engineers; S – San Diego Traffic Generators; C – County; O – Other: Based on information provided by the Applicant**							**Edition:**	10th
Land Use Code	**Land Use**	**Rate Based on**	**Qty**	***AVTE vs**	**ADT**	Weekday a.m. peak		Weekday p.m. peak		Weekend peak hour	
						In	Out	In	Out	In	Out
N/A	E-Commerce (Could include Cold Storage)	**O[1]**	2,773.050	KSF	15,950 PCE	838 PCE	246 PCE	1,153 PCE	1,121 PCE	N/A	N/A
N/A	Truck Storage	**O[2]**	98	Acres	16,527 PCE	203 PCE	356 PCE	547 PCE	278 PCE	N/A	N/A
154	High-Cube Short-Term Storage	**I**	2,141.000	KSF	3,724 PCE	166 PCE	49 PCE	73 PCE	191 PCE	N/A	N/A
157	High-Cube Cold Storage	**I**	500.000	KSF	1,624 PCE	66 PCE	19 PCE	29 PCE	65 PCE	N/A	N/A
820	General Commercial	**I**	261.360	KSF	9,527	152	93	316	342	N/A	N/A
Total Proposed Project Trips			**-**	**-**	**47,352 PCE**	**1,425 PCE**	**763 PCE**	**2,118 PCE**	**1,997 PCE**	**N/A**	**N/A**

* - Average Vehicle Trip Ends.
For ITE Land Uses provide number and name of Land Use. e.g. LU 814 - Variety Store
[1] Trip Generation Rates for E-Commerce are based on actual counts with a blended rate of 10 months non-peak and 2 months peak season.
[2] Trip Generation Rates for Truck Storage are based on information provided by the City of San Bernardino based on data from similar facilities.
Note: PCE = Passenger Car Equivalent-

SCOPE FOR TRAFFIC STUDY

Project Name:	Speedway Commerce Center II

6. Study Intersections: At minimum, the study shall include the following intersections. The list is subject to change after related projects, trip generation and distribution are determined. Consultant should check with adjoining Cities regarding their requirements in addition to the following County/City intersections. Documentation of the consultation from these agencies shall be included in the traffic study.

Xtn #	% County	Thomas Guide Page+Grid	N/S-E/W Street Name	City	Signalized	CMP
1	0%	N/A	Cherry Ave at SR-210 WB Ramps	Fontana	Yes	Yes
2	0%	N/A	Citrus Ave at SR-210 WB Ramps	Fontana	Yes	Yes
3	0%	N/A	Sierra Ave at SR-210 WB Ramps	Fontana	Yes	Yes
4	0%	N/A	Cherry Ave at SR-210 EB Ramps	Fontana	Yes	Yes
5	0%	N/A	Citrus Ave at SR-210 EB Ramps	Fontana	Yes	Yes
6	0%	N/A	Sierra Ave at SR-210 EB Ramps	Fontana	Yes	Yes
7	0%	N/A	Beech Ave at Highland Ave	Fontana	Yes	No
8	0%	N/A	Citrus Ave at Highland Ave	Fontana	Yes	Yes
9	0%	N/A	Sierra Ave at Highland Ave	Fontana	Yes	Yes
10	0%	N/A	Etiwanda Ave at Base Line Rd	Rancho Cucamonga	Yes	No
11	0%	N/A	I-15 SB Ramps at Base Line Rd	Rancho Cucamonga	Yes	Yes
12	0%	N/A	I-15 NB Ramps at Baseline Ave	Fontana	Yes	Yes
13	0%	N/A	Cherry Ave at Baseline Ave	Fontana	Yes	Yes

14	0%	N/A	Beech Ave at Baseline Ave	Fontana	Yes	No
15	0%	N/A	Citrus Ave at Baseline Ave	Fontana	Yes	Yes
16	0%	N/A	Sierra Ave at Baseline Ave	Fontana	Yes	Yes
17	0%	N/A	Etiwanda Ave at Church St/Miller Ave	Rancho Cucamonga	Yes	No
18	0%	N/A	I-15 SB Ramps at Foothill Blvd	Rancho Cucamonga	Yes	Yes
19	0%	N/A	I-15 NB Ramps at Foothill Blvd	Rancho Cucamonga	Yes	Yes
20	0%	N/A	Etiwanda Ave at Foothill Blvd	Rancho Cucamonga	Yes	No
21	50%	N/A	Cherry Ave at Foothill Blvd	Fontana/SB County	Yes	Yes
22	50%	N/A	Beech Ave at Foothill Blvd	Fontana/SB County	Yes	No
23	0%	N/A	Citrus Ave at Foothill Blvd	Fontana	Yes	Yes
24	0%	N/A	Sierra Ave at Foothill Blvd	Fontana	Yes	Yes
25	0%	N/A	Etiwanda Ave at Arrow Rte	Rancho Cucamonga	Yes	No
26	100%	N/A	Cherry Ave at Arrow Blvd	SB County	Yes	No
27	100%	N/A	Beech Ave at Arrow Blvd	SB County	Yes	No
28	0%	N/A	Citrus Ave at Arrow Blvd	Fontana	Yes	No
29	0%	N/A	Sierra Ave at Arrow Blvd	Fontana	Yes	No
30	0%	N/A	Etiwanda Ave at Whittram Ave	Rancho Cucamonga	Yes	No

31	100%	N/A	Cherry Ave at Whittram Ave	SB County	Yes	No
32	100%	N/A	Beech Ave at Whittram Ave	SB County	Yes	No
33	100%	N/A	Etiwanda Ave at Napa St	SB County	Yes	No
34	100%	N/A	Cherry Ave at Merrill Ave	SB County	Yes	No
35	100%	N/A	Beech Ave at Merrill Ave	SB County	Yes	No
36	0%	N/A	Citrus Ave at Merrill Ave	Fontana	Yes	No
37	0%	N/A	Sierra Ave at Merrill Ave	Fontana	Yes	No
38	0%	N/A	Citrus Ave at Fontana Ave	Fontana	Yes	No
39	100%	N/A	Cherry Ave at Randall Ave	SB County	Yes	No
40	100%	N/A	Beech Ave at Randall Ave	SB County	Yes	No
41	0%	N/A	Fontana Ave/Catawba Ave at Randall Ave	Fontana	No	No
42	0%	N/A	Citrus Ave at Randall Ave	Fontana	Yes	No
43	0%	N/A	Sierra Ave at Randall Ave	Fontana	Yes	No
44	50%	N/A	I-15 SB Ramps/Ontario Mills Dr at Fourth St	Rancho Cucamonga/ SB County	Yes	Yes
45	50%	N/A	I-15 NB Ramps at Fourth St	Rancho Cucamonga/ SB County	Yes	Yes
46	50%	N/A	Etiwanda Ave at Fourth St/San Bernardino	Rancho Cucamonga/ SB County	Yes	Yes
47	100%	N/A	Commerce Dr at San Bernardino Ave	SB County	Yes	No

48	100%	N/A	Vip Rd at San Bernardino Ave	SB County	No	No
49	100%	N/A	Cherry Ave at San Bernardino Ave	SB County	Yes	No
50	100%	N/A	Beech Ave at San Bernardino Ave	SB County	Yes	No
51	50%	N/A	Fontana Ave/Elm Ave at San Bernardino Ave	Fontana/SB County	Yes	No
52	0%	N/A	Citrus Ave at San Bernardino Ave	Fontana	Yes	No
53	0%	N/A	Sierra Ave at San Bernardino Ave	Fontana	Yes	No
54	50%	N/A	Beech Ave at Fontana Ave	Fontana/SB County	No	No
55	100%	N/A	Etiwanda Ave at Valley Blvd	SB County	Yes	No
56	100%	N/A	Commerce Dr/I-10 Ramps at Valley Blvd	SB County	Yes	No
57	50%	N/A	Cherry Ave at Valley Blvd	Fontana/SB County	Yes	No
58	50%	N/A	Fontana Ave/Hemlock Ave at Valley Blvd	Fontana/SB County	Yes	No
59	0%	N/A	Beech Ave at Valley Blvd	Fontana	Yes	No
60	0%	N/A	Citrus Ave at Valley Blvd	Fontana	Yes	No
61	0%	N/A	Sierra Ave at Valley Blvd	Fontana	Yes	No
62	100%	N/A	Etiwanda Ave at I-10 WB Off-Ramp	SB County	Yes	Yes
63	0%	N/A	Cherry Ave at I-10 WB Ramps	Fontana	Yes	Yes
64	0%	N/A	Citrus Ave at I-10 WB Ramps	Fontana	Yes	Yes

SCOPE FOR TRAFFIC STUDY

Project Name:	Speedway Commerce Center II

65	0%	N/A	Sierra Ave at I-10 WB Ramps	Fontana	Yes	Yes
66	50%	N/A	Etiwanda Ave at I-10 EB Ramps	Fontana/SB County	Yes	Yes
67	0%	N/A	Cherry Ave at I-10 EB Ramps	Fontana	Yes	Yes
68	0%	N/A	Citrus Ave at I-10 EB Ramps	Fontana	Yes	Yes
69	0%	N/A	Sierra Ave at I-10 EB Ramps	Fontana	Yes	Yes

Cities to be consulted: Fontana, Rancho Cucamonga

Project Name:	Speedway Commerce Center II

7. Other:

Per discussion with County staff, new counts will be conducted at the study locations.
Traffic counts should include the following parameters:
• Must be taken on Tuesdays, Wednesdays, or Thursdays.
• Must exclude holidays, and the first weekdays before and after the holiday.
• Must be taken on days when local schools or colleges are in session.
• Must be taken on days of good weather, and avoid atypical conditions (e.g., road construction, detours, or major traffic incidents).
For all proposed mitigation measures, a conceptual plan for the improvements shall be submitted to our Traffic Studies section for review and approval prior to the approval of the Traffic Impact Analysis. All proposed improvements shall be within the right-of-way.
For all cumulative mitigation measures, a cost estimate for the improvement shall be submitted.
This study will be analyzed under the following scenarios:
• Existing Conditions
• Opening Year 2024
• Opening Year 2024 Plus Phase 1
• Opening Year 2027
• Opening Year 2027 Plus Project (Phases 1 and 2)
• Horizon Year 2040
• Horizon Year 2040 Plus Project
A VMT analysis will be performed using the SBTAM model based on VMT per employee for home-based work trip purpose (attractions) consistent with the San Bernardino County *Transportation Impact Study Guidelines* (July 2019)

This analysis must follow the most current Traffic Impact Study Guidelines for the County as stated in the County's Road Planning and Design Standards.

Project Name:	Speedway Commerce Center II

8. Fees

The County charges on an actual cost basis for review of traffic studies. An initial deposit of $1082 is required at the time that a land use application is filed with the Department of Land Use Services If the review costs exceed the initial deposit, the applicant will be expected to provide additional funds and the review will be suspended until the additional funds are deposited.

9. Contact Information:

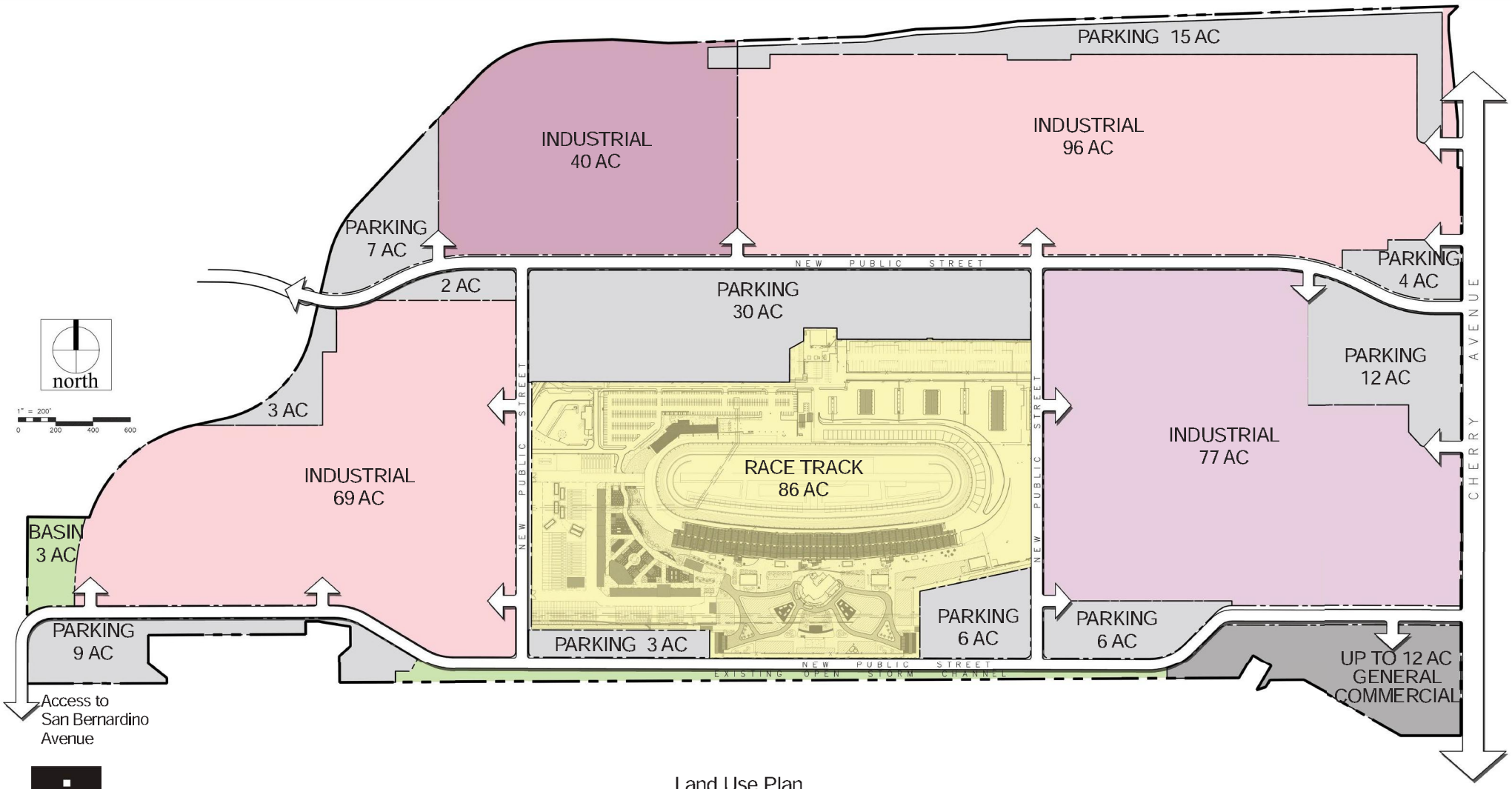
Please submit a signed copy of this scope for approval by the Traffic Division. Draft scopes may be sent electronically. Final scope with signature should be submitted in person or by US Mail to:

County of San Bernardino
Dept. of Public Works, Traffic Division
825 E. 3rd Street, Rm 115
San Bernardino, CA 92415-0835

Phone: 909-387-8186
Fax: 909-387-7809
Email: Anthony.Pham@dpw.sbcounty.gov

Attachment A - Site Plan

Kimley»Horn



HPA architecture

Land Use Plan

Speedway Commerce Center II

HILLWOOD
A PEROT COMPANY

18831 Bardeen Ave, - Ste #100
Irvine, CA 92612
(949) 863-1770
www.hparchs.com

County of San Bernardino, CA

August 12, 2021 / Job #19316

Preliminary Landscape Concept

ATTACHMENT B1
SUMMARY OF PROJECT TRIP GENERATION
TOTAL TRIP GENERATION

Vehicle Type	Daily Vehicles	PCE Factor	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
*Phase **1** Project Trips*									
E-Commerce (Could include Cold Storage) - 2,773,050 SF									
Passenger Vehicles	11,845	1.0	11,845	765	162	927	1,089	1,017	2,106
2-Axle Trucks	337	1.5	506	4	4	8	1	4	5
3-Axle Trucks	292	2.0	584	13	15	28	7	12	19
4+ Axle Trucks	1,005	3.0	3,015	56	65	121	56	88	144
Truck Storage - 98 Acres									
Passenger Vehicles	1,103	1.0	1,103	13	22	35	75	38	113
2-Axle Trucks	712	1.5	1,068	13	23	36	33	17	50
3-Axle Trucks	1,460	2.0	2,920	36	63	99	89	45	134
4+ Axle Trucks	3,812	3.0	11,436	141	248	389	350	178	528
Phase **1** Total Passenger Vehicle Trips			12,948	778	184	962	1,164	1,055	2,219
Phase **1** Total Truck PCE Trips			19,529	263	418	681	536	344	880
Phase **1** Total Proposed Project PCE Trips			32,477	1,041	602	1,643	1,700	1,399	3,099
*Phase **2** Project Trips*									
High-Cube Short-Term Storage - 2,141,000 SF									
Passenger Vehicles	2,517	1.0	2,517	112	33	145	50	129	179
2-Axle Trucks	81	1.5	122	5	2	7	2	6	8
3-Axle Trucks	109	2.0	218	10	3	13	4	11	15
4+ Axle Trucks	289	3.0	867	39	11	50	17	45	62
High-Cube Cold Storage - 500,000 SF									
Passenger Vehicles	689	1.0	689	28	8	36	12	27	39
2-Axle Trucks	63	1.5	95	4	1	5	2	4	6
3-Axle Trucks	84	2.0	168	7	2	9	3	7	10
4+ Axle Trucks	224	3.0	672	27	8	35	12	27	39
General Commercial - 261,360 SF									
Passenger Vehicles	9,866	1.0	9,527	152	93	245	316	342	657
Total Passenger Vehicle Trips (Phases **1** and 2)			25,681	1,070	318	1,388	1,542	1,553	3,094
Total Truck PCE Trips (Phases **1** and 2)			21,671	355	445	800	576	444	1,020
Total Proposed Project PCE Trips (Phases **1** and 2)			47,352	1,425	763	2,188	2,118	1,997	4,114

PCE = Passenger Car Equivalent

ATTACHMENT B2

SUMMARY OF PROJECT TRIP GENERATION

SPEEDWAY COMMERCE CENTER II PROJECT - E-COMMERCE (COULD INCLUDE COLD STORAGE) COMPONENT

TRIP GENERATION RATES [1]

ITE Land Use	ITE Code	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
All Vehicles	-	KSF	4.8607	0.2857	0.0697	0.3596	0.4009	0.3805	0.7815
Passenger Vehicles	-	KSF	4.2716	0.2757	0.0583	0.3340	0.3928	0.3669	0.7597
2-Axle Trucks	-	KSF	0.1216	0.0009	0.0009	0.0017	0.0002	0.0009	0.0010
3-Axle Trucks	-	KSF	0.1052	0.0024	0.0028	0.0052	0.0012	0.0022	0.0035
4-Axle Trucks	-	KSF	0.3623	0.0067	0.0078	0.0187	0.0067	0.0105	0.0173

PROJECT TRIP GENERATION

Project Land Use	Quantity	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
E-Commerce (Could include Cold Storage)	2,773.050	KSF	13,479	792	193	985	1,112	1,055	2,167

PROJECT TRIPS - PASSENGER CAR EQUIVALENTS (PCE)

Vehicle Type	Vehicle Mix	Daily Vehicles	PCE Factor	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Passenger Vehicles	87.88%	11,845	1.0	11,845	765	162	927	1,089	1,017	2,106
2-Axle Trucks	2.50%	337	1.5	506	4	4	8	1	4	5
3-Axle Trucks	2.16%	292	2.0	584	13	15	28	7	12	19
4+ Axle Trucks	7.45%	1,005	3.0	3,015	56	65	121	56	88	144
Total Truck PCE Trips				4,105	73	84	157	64	104	168
Total Proposed Project PCE Trips				15,950	838	246	1,084	1,153	1,121	2,274

[1] Source: Trip Generation data provided by Applicant with a blended rate of 10 months off-peak and 2 months peak season project trips

PCE = Passenger Car Equivalent

KSF = Thousand Square Feet

ATTACHMENT B3

SUMMARY OF PROJECT TRIP GENERATION

SPEEDWAY COMMERCE CENTER II PROJECT - TRUCK STORAGE COMPONENT

TRIP GENERATION RATES [1]

ITE Land Use	ITE Code	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Truck Storage - Employee Vehicles	-	Acre	11.260	0.130	0.220	0.350	0.770	0.390	1.160
Truck Storage - Trucks	-	Acre	61.060	0.760	1.330	2.090	1.870	0.950	2.820

PROJECT TRIP GENERATION

Project Land Use	Quantity	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Truck Storage Lot	98.000	Acre							
Employee Vehicles			1,103	13	22	35	75	38	113
Trucks			5,984	74	130	204	183	93	276

PROJECT TRIPS - PASSENGER CAR EQUIVALENTS (PCE)

Vehicle Type	Vehicle Mix [2]	Daily Vehicles	PCE Factor	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Passenger Vehicles		1,103	1.0	1,103	13	22	35	75	38	113
2-Axle Trucks	11.90%	712	1.5	1,068	13	23	36	33	17	50
3-Axle Trucks	24.40%	1,460	2.0	2,920	36	63	99	89	45	134
4+ Axle Trucks	63.70%	3,812	3.0	11,436	141	248	389	350	178	528
Total Truck PCE Trips				15,424	190	334	524	472	240	712
Total Proposed Project PCE Trips				16,527	203	356	559	547	278	825

[1] Source: Truck storage trip rates provided by the City of San Bernardino staff based on data from similar facilities

[2] Truck Terminal truck mix based on *Truck Trip Generation Study - City of Fontana* (August 2003)

PCE = Passenger Car Equivalent

ATTACHMENT B4

SUMMARY OF PROJECT TRIP GENERATION

SPEEDWAY COMMERCE CENTER II PROJECT - HIGH-CUBE SHORT-TERM STORAGE COMPONENT

TRIP GENERATION RATES [1]

ITE Land Use	ITE Code	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
High-Cube Short-Term Storage	154	KSF	1.400	0.062	0.018	0.080	0.028	0.072	0.100

PROJECT TRIP GENERATION

Project Land Use		Quantity	Unit	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
High-Cube Short-Term Storage		2,141.000	KSF	2,997	133	39	172	60	154	214
Passenger Vehicles	84.00%			2,517	112	33	145	50	129	179
Trucks	16.00%			480	21	6	27	10	25	35

PROJECT TRIPS - PASSENGER CAR EQUIVALENTS (PCE)

Vehicle Type	Vehicle Mix [1]	Daily Vehicles	PCE Factor	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Passenger Vehicles	84.00%	2,517	1.0	2,517	112	33	145	50	129	179
2-Axle Trucks	2.71%	81	1.5	122	5	2	7	2	6	8
3-Axle Trucks	3.63%	109	2.0	218	10	3	13	4	11	15
4+ Axle Trucks	9.66%	289	3.0	867	39	11	50	17	45	62
Total Truck PCE Trips				1,207	54	16	70	23	62	85
Total Proposed Project PCE Trips				3,724	166	49	215	73	191	264

[1] Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition

PCE = Passenger Car Equivalent

KSF = Thousand Square Feet

ATTACHMENT B5

SUMMARY OF PROJECT TRIP GENERATION

SPEEDWAY COMMERCE CENTER II PROJECT - HIGH-CUBE COLD STORAGE COMPONENT

TRIP GENERATION RATES [1]

ITE Land Use	ITE Code	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
High-Cube Cold Storage Warehouse	157	KSF	2.120	0.085	0.025	0.110	0.037	0.083	0.120

PROJECT TRIP GENERATION

Project Land Use		Quantity	Unit	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
High-Cube Cold Storage Warehouse		500.000	KSF	1,060	43	13	56	19	42	61
Passenger Vehicles	65.00%			689	28	8	36	12	27	39
Trucks	35.00%			371	15	5	20	7	15	22

PROJECT TRIPS - PASSENGER CAR EQUIVALENTS (PCE)

Vehicle Type	Vehicle Mix [1]	Daily Vehicles	PCE Factor	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Passenger Vehicles	65.00%	689	1.0	689	28	8	36	12	27	39
2-Axle Trucks	5.93%	63	1.5	95	4	1	5	2	4	6
3-Axle Trucks	7.95%	84	2.0	168	7	2	9	3	7	10
4+ Axle Trucks	21.12%	224	3.0	672	27	8	35	12	27	39
Total Truck PCE Trips				935	38	11	49	17	38	55
Total Proposed Project PCE Trips				1,624	66	19	85	29	65	94

[1] Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition

PCE = Passenger Car Equivalent

KSF = Thousand Square Feet

ATTACHMENT B6

SUMMARY OF PROJECT TRIP GENERATION

SPEEDWAY COMMERCE CENTER II PROJECT - GENERAL COMMERCIAL

TRIP GENERATION RATES [1]

ITE Land Use	ITE Code	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Shopping Center	820	KSF	37.750	0.583	0.357	0.940	1.829	1.981	3.810

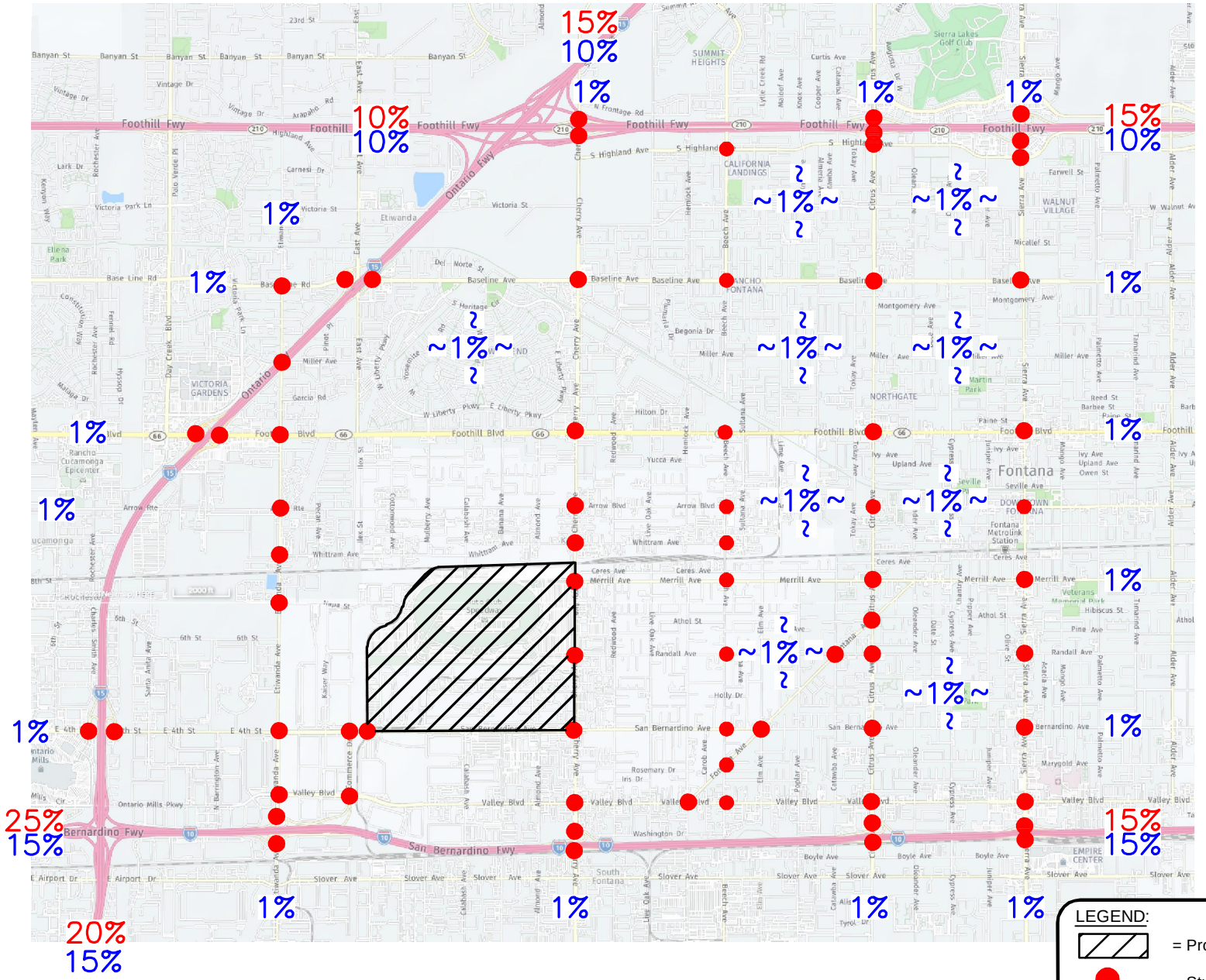
PROJECT TRIP GENERATION

Project Land Use	Quantity	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Shopping Center	261.360	KSF	9,866	152	93	245	478	518	996
Pass-By Reduction for Shopping Center (34% PM)[2]			-339	0	0	0	-163	-176	-339
Total Net New Project Trips			9,527	152	93	245	316	342	657

[1] Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition

[2] Source: Institute of Transportation Engineers (ITE) Trip Generation Handbook, 3rd Edition. The daily pass-by trips shown are the sum of the AM and the PM pass-by trips.

KSF = Thousand Square Feet



ATTACHMENT C
PROJECT STUDY AREA AND TRIP DISTRIBUTION

Kimley»Horn

APPENDIX B

TRAFFIC COUNT DATA SHEETS

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-001
Date: 9/8/2021

Data - Total

NS/EW Streets:	Cherry Ave				Cherry Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	3	0	0	0	0	0	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	26	48	0	0	0	123	41	0	0	0	0	0	56	1	51	0	346
7:15 AM	34	33	0	0	0	206	56	0	0	0	0	0	71	3	58	0	461
7:30 AM	36	49	0	0	0	197	58	0	0	0	0	0	68	1	61	0	470
7:45 AM	45	63	0	0	0	198	39	0	0	0	0	0	61	0	66	0	472
8:00 AM	41	70	0	0	0	137	42	0	0	0	0	0	88	2	64	0	444
8:15 AM	35	102	0	0	0	135	59	0	0	0	0	0	107	1	56	0	495
8:30 AM	52	88	0	0	0	113	41	0	0	0	0	0	104	1	21	0	420
8:45 AM	60	92	0	0	0	117	32	0	0	0	0	0	81	0	16	0	398
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	329	545	0	0	0	1226	368	0	0	0	0	0	636	9	393	0	3506
APPROACH %'s :	37.64%	62.36%	0.00%	0.00%	0.00%	76.91%	23.09%	0.00%					61.27%	0.87%	37.86%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	157	284	0	0	0	667	198	0	0	0	0	0	324	4	247	0	1881
PEAK HR FACTOR :	0.872	0.696	0.000	0.000	0.000	0.842	0.839	0.000	0.000	0.000	0.000	0.000	0.757	0.500	0.936	0.000	0.950
	0.805				0.848								0.877				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	3	0	0	0	0	0	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	66	129	0	0	0	97	46	0	0	0	0	0	64	0	39	0	441
4:15 PM	70	128	0	0	0	99	35	0	0	0	0	0	72	0	38	0	442
4:30 PM	75	123	0	0	0	119	35	0	0	0	0	0	76	0	33	0	461
4:45 PM	68	125	0	0	0	131	40	0	0	0	0	0	56	0	27	0	447
5:00 PM	78	163	0	0	0	86	33	0	0	0	0	0	70	0	32	0	462
5:15 PM	67	162	0	0	0	82	28	0	0	0	0	0	36	1	20	0	396
5:30 PM	88	157	0	0	0	61	37	0	0	0	0	0	34	1	17	0	395
5:45 PM	50	182	0	0	0	70	46	0	0	0	0	0	22	0	26	0	396
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	562	1169	0	0	0	745	300	0	0	0	0	0	430	2	232	0	3440
APPROACH %'s :	32.47%	67.53%	0.00%	0.00%	0.00%	71.29%	28.71%	0.00%					64.76%	0.30%	34.94%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	291	539	0	0	0	435	143	0	0	0	0	0	274	0	130	0	1812
PEAK HR FACTOR :	0.933	0.827	0.000	0.000	0.000	0.830	0.894	0.000	0.000	0.000	0.000	0.000	0.901	0.000	0.855	0.000	0.981
	0.861				0.845								0.918				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-001
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Cherry Ave				Cherry Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	3	0	0	0	0	0	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	25	45	0	0	0	113	40	0	0	0	0	0	50	1	50	0	324
7:15 AM	32	31	0	0	0	199	56	0	0	0	0	0	68	3	55	0	444
7:30 AM	35	45	0	0	0	189	57	0	0	0	0	0	65	1	58	0	450
7:45 AM	45	62	0	0	0	185	39	0	0	0	0	0	55	0	64	0	450
8:00 AM	37	65	0	0	0	135	42	0	0	0	0	0	81	2	62	0	424
8:15 AM	33	93	0	0	0	123	59	0	0	0	0	0	98	1	54	0	461
8:30 AM	49	81	0	0	0	109	40	0	0	0	0	0	95	1	20	0	395
8:45 AM	54	88	0	0	0	112	32	0	0	0	0	0	74	0	13	0	373
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	310	510	0	0	0	1165	365	0	0	0	0	0	586	9	376	0	3321
APPROACH %'s :	37.80%	62.20%	0.00%	0.00%	0.00%	76.14%	23.86%	0.00%					60.35%	0.93%	38.72%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	150	265	0	0	0	632	197	0	0	0	0	0	299	4	238	0	1785
PEAK HR FACTOR :	0.833	0.712	0.000	0.000	0.000	0.836	0.835	0.000	0.000	0.000	0.000	0.000	0.763	0.500	0.930	0.000	0.968
	0.823				0.842								0.884				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	3	0	0	0	0	0	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	63	122	0	0	0	92	46	0	0	0	0	0	63	0	38	0	424
4:15 PM	69	124	0	0	0	96	34	0	0	0	0	0	70	0	35	0	428
4:30 PM	74	117	0	0	0	114	35	0	0	0	0	0	73	0	33	0	446
4:45 PM	66	121	0	0	0	126	39	0	0	0	0	0	55	0	26	0	433
5:00 PM	76	153	0	0	0	80	33	0	0	0	0	0	65	0	30	0	437
5:15 PM	66	161	0	0	0	80	28	0	0	0	0	0	32	0	20	0	387
5:30 PM	83	152	0	0	0	59	35	0	0	0	0	0	32	1	16	0	378
5:45 PM	47	182	0	0	0	66	45	0	0	0	0	0	20	0	26	0	386
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	544	1132	0	0	0	713	295	0	0	0	0	0	410	1	224	0	3319
APPROACH %'s :	32.46%	67.54%	0.00%	0.00%	0.00%	70.73%	29.27%	0.00%					64.57%	0.16%	35.28%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	285	515	0	0	0	416	141	0	0	0	0	0	263	0	124	0	1744
PEAK HR FACTOR :	0.938	0.842	0.000	0.000	0.000	0.825	0.904	0.000	0.000	0.000	0.000	0.000	0.901	0.000	0.886	0.000	0.978
	0.873				0.844								0.913				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-001
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Cherry Ave				Cherry Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	3	0	0	0	0	0	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	4	0	0	0	0	0	0	2	0	1	0	7
7:15 AM	1	0	0	0	0	3	0	0	0	0	0	0	1	0	2	0	7
7:30 AM	1	2	0	0	0	3	0	0	0	0	0	0	2	0	3	0	11
7:45 AM	0	0	0	0	0	3	0	0	0	0	0	0	1	0	1	0	5
8:00 AM	1	3	0	0	0	1	0	0	0	0	0	0	1	0	2	0	8
8:15 AM	0	5	0	0	0	5	0	0	0	0	0	0	2	0	2	0	14
8:30 AM	1	4	0	0	0	3	0	0	0	0	0	0	3	0	1	0	12
8:45 AM	2	1	0	0	0	0	0	0	0	0	0	0	3	0	2	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	15	0	0	0	22	0	0	0	0	0	0	15	0	14	0	72
APPROACH %'s :	28.57%	71.43%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					51.72%	0.00%	48.28%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	10	0	0	0	12	0	0	0	0	0	0	6	0	8	0	38
PEAK HR FACTOR :	0.500	0.500	0.000	0.000	0.000	0.600	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.667	0.000	0.679
	0.600				0.600								0.700				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	3	0	0	0	0	0	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	4	0	0	0	2	0	0	0	0	0	0	0	0	1	0	9
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	2	0	4
4:30 PM	1	4	0	0	0	0	0	0	0	0	0	0	2	0	0	0	7
4:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	3	0	0	0	1	0	0	0	0	0	0	1	0	2	0	7
5:15 PM	1	0	0	0	0	1	0	0	0	0	0	0	2	1	0	0	5
5:30 PM	1	1	0	0	0	0	2	0	0	0	0	0	1	0	1	0	6
5:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	13	0	0	0	6	2	0	0	0	0	0	8	1	6	0	42
APPROACH %'s :	31.58%	68.42%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%					53.33%	6.67%	40.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	1	8	0	0	0	3	0	0	0	0	0	0	4	0	4	0	20
PEAK HR FACTOR :	0.250	0.500	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.714
	0.450				0.750								0.667				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-001
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Cherry Ave				Cherry Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	3	0	0	0	0	0	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	2	1	0	0	0	0	0	2	0	0	0	5
7:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	5	0	0	0	0	0	0	1	0	1	0	7
8:00 AM	1	2	0	0	0	1	0	0	0	0	0	0	1	0	0	0	5
8:15 AM	1	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	5
8:30 AM	2	3	0	0	0	1	1	0	0	0	0	0	1	0	0	0	8
8:45 AM	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	8	0	0	0	12	2	0	0	0	0	0	9	0	1	0	38
APPROACH %'s :	42.86%	57.14%	0.00%	0.00%	0.00%	85.71%	14.29%	0.00%					90.00%	0.00%	10.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	4	0	0	0	7	0	0	0	0	0	0	5	0	1	0	19
PEAK HR FACTOR :	0.500	0.500	0.000	0.000	0.000	0.350	0.000	0.000	0.000	0.000	0.000	0.000	0.417	0.000	0.250	0.000	0.679
	0.500				0.350								0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	3	0	0	0	0	0	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2
4:30 PM	0	1	0	0	0	3	0	0	0	0	0	0	1	0	0	0	5
4:45 PM	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	2	0	0	0	3	0	0	0	0	0	0	2	0	0	0	7
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
5:30 PM	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3
5:45 PM	1	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	5	0	0	0	12	1	0	0	0	0	0	7	0	1	0	28
APPROACH %'s :	28.57%	71.43%	0.00%	0.00%	0.00%	92.31%	7.69%	0.00%					87.50%	0.00%	12.50%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	4	0	0	0	8	1	0	0	0	0	0	3	0	1	0	17
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.667	0.250	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.250	0.000	0.607
	0.500				0.750								0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-001
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Cherry Ave				Cherry Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	3	0	0	0	0	0	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	3	0	0	0	4	0	0	0	0	0	0	2	0	0	0	10
7:15 AM	1	2	0	0	0	2	0	0	0	0	0	0	2	0	1	0	8
7:30 AM	0	1	0	0	0	4	1	0	0	0	0	0	1	0	0	0	7
7:45 AM	0	1	0	0	0	5	0	0	0	0	0	0	4	0	0	0	10
8:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	7
8:15 AM	1	3	0	0	0	7	0	0	0	0	0	0	4	0	0	0	15
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5
8:45 AM	2	2	0	0	0	5	0	0	0	0	0	0	3	0	1	0	13
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	12	0	0	0	27	1	0	0	0	0	0	26	0	2	0	75
APPROACH %'s :	36.84%	63.16%	0.00%	0.00%	0.00%	96.43%	3.57%	0.00%					92.86%	0.00%	7.14%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	3	5	0	0	0	16	1	0	0	0	0	0	14	0	0	0	39
PEAK HR FACTOR :	0.375	0.417	0.000	0.000	0.000	0.571	0.250	0.000	0.000	0.000	0.000	0.000	0.700	0.000	0.000	0.000	0.650
	0.500				0.607								0.700				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	3	0	0	0	0	0	0	0.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	6
4:15 PM	1	4	0	0	0	1	1	0	0	0	0	0	1	0	0	0	8
4:30 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
4:45 PM	2	2	0	0	0	3	0	0	0	0	0	0	1	0	1	0	9
5:00 PM	2	5	0	0	0	2	0	0	0	0	0	0	2	0	0	0	11
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
5:30 PM	3	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	8
5:45 PM	1	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	10	19	0	0	0	14	2	0	0	0	0	0	5	0	1	0	51
APPROACH %'s :	34.48%	65.52%	0.00%	0.00%	0.00%	87.50%	12.50%	0.00%					83.33%	0.00%	16.67%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	5	12	0	0	0	8	1	0	0	0	0	0	4	0	1	0	31
PEAK HR FACTOR :	0.625	0.600	0.000	0.000	0.000	0.667	0.250	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.705
	0.607				0.750								0.625				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-002
Date: 9/8/2021

Data - Total

NS/EW Streets:	Citrus Ave				Citrus Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	2	1	0	0	0	0	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	75	127	0	0	0	145	99	0	0	0	0	0	123	0	39	0	608
7:15 AM	71	132	0	0	0	195	115	0	0	0	0	0	108	1	50	0	672
7:30 AM	73	178	0	0	0	216	100	0	0	0	0	0	122	1	60	0	750
7:45 AM	61	261	0	0	0	184	81	0	0	0	0	0	109	0	87	0	783
8:00 AM	81	221	0	0	0	199	84	0	0	0	0	0	98	0	83	0	766
8:15 AM	75	226	0	0	0	204	82	0	0	0	0	0	66	0	68	0	721
8:30 AM	73	209	0	0	0	163	88	0	0	0	0	0	67	0	69	0	669
8:45 AM	59	175	0	0	0	138	73	0	0	0	0	0	76	0	49	0	570
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	568	1529	0	0	0	1444	722	0	0	0	0	0	769	2	505	0	5539
APPROACH %'s :	27.09%	72.91%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%					60.27%	0.16%	39.58%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	290	886	0	0	0	803	347	0	0	0	0	0	395	1	298	0	3020
PEAK HR FACTOR :	0.895	0.849	0.000	0.000	0.000	0.929	0.868	0.000	0.000	0.000	0.000	0.000	0.809	0.250	0.856	0.000	0.964
	0.913				0.910								0.885				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	2	1	0	0	0	0	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	81	269	0	0	0	191	91	0	0	0	0	0	92	0	93	0	817
4:15 PM	71	234	0	0	0	196	94	0	0	0	0	0	83	0	84	0	762
4:30 PM	87	280	0	0	0	169	98	0	0	0	0	0	92	0	89	0	815
4:45 PM	77	250	0	0	0	165	105	0	0	0	0	0	65	0	65	0	727
5:00 PM	85	277	0	0	0	179	101	0	0	0	0	0	31	0	37	0	710
5:15 PM	93	286	0	0	0	163	83	0	0	0	0	0	39	0	42	0	706
5:30 PM	90	302	0	0	0	219	77	0	0	0	0	0	41	0	35	0	764
5:45 PM	78	299	0	0	0	274	89	0	0	0	0	0	52	0	33	0	825
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	662	2197	0	0	0	1556	738	0	0	0	0	0	495	0	478	0	6126
APPROACH %'s :	23.15%	76.85%	0.00%	0.00%	0.00%	67.83%	32.17%	0.00%					50.87%	0.00%	49.13%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	316	1033	0	0	0	721	388	0	0	0	0	0	332	0	331	0	3121
PEAK HR FACTOR :	0.908	0.922	0.000	0.000	0.000	0.920	0.924	0.000	0.000	0.000	0.000	0.000	0.902	0.000	0.890	0.000	0.955
	0.919				0.956								0.896				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-002
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Citrus Ave				Citrus Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	2	1	0	0	0	0	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	72	123	0	0	0	136	98	0	0	0	0	0	118	0	39	0	586
7:15 AM	65	124	0	0	0	192	110	0	0	0	0	0	102	1	50	0	644
7:30 AM	70	176	0	0	0	210	99	0	0	0	0	0	119	1	58	0	733
7:45 AM	58	254	0	0	0	179	79	0	0	0	0	0	106	0	85	0	761
8:00 AM	79	214	0	0	0	197	83	0	0	0	0	0	90	0	81	0	744
8:15 AM	69	221	0	0	0	203	79	0	0	0	0	0	62	0	67	0	701
8:30 AM	68	205	0	0	0	159	83	0	0	0	0	0	63	0	66	0	644
8:45 AM	52	170	0	0	0	133	73	0	0	0	0	0	69	0	49	0	546
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	533	1487	0	0	0	1409	704	0	0	0	0	0	729	2	495	0	5359
APPROACH %'s :	26.39%	73.61%	0.00%	0.00%	0.00%	66.68%	33.32%	0.00%					59.46%	0.16%	40.38%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	276	865	0	0	0	789	340	0	0	0	0	0	377	1	291	0	2939
PEAK HR FACTOR :	0.873	0.851	0.000	0.000	0.000	0.939	0.859	0.000	0.000	0.000	0.000	0.000	0.792	0.250	0.856	0.000	0.966
	0.914				0.913								0.876				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	2	1	0	0	0	0	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	80	268	0	0	0	187	89	0	0	0	0	0	90	0	92	0	806
4:15 PM	70	233	0	0	0	193	91	0	0	0	0	0	80	0	84	0	751
4:30 PM	85	279	0	0	0	164	95	0	0	0	0	0	89	0	88	0	800
4:45 PM	76	248	0	0	0	164	105	0	0	0	0	0	65	0	65	0	723
5:00 PM	85	275	0	0	0	179	101	0	0	0	0	0	31	0	37	0	708
5:15 PM	93	286	0	0	0	160	82	0	0	0	0	0	38	0	42	0	701
5:30 PM	90	300	0	0	0	217	77	0	0	0	0	0	40	0	35	0	759
5:45 PM	78	297	0	0	0	272	89	0	0	0	0	0	52	0	33	0	821
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	657	2186	0	0	0	1536	729	0	0	0	0	0	485	0	476	0	6069
APPROACH %'s :	23.11%	76.89%	0.00%	0.00%	0.00%	67.81%	32.19%	0.00%					50.47%	0.00%	49.53%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	311	1028	0	0	0	708	380	0	0	0	0	0	324	0	329	0	3080
PEAK HR FACTOR :	0.915	0.921	0.000	0.000	0.000	0.917	0.905	0.000	0.000	0.000	0.000	0.000	0.900	0.000	0.894	0.000	0.955
	0.920				0.958								0.897				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-002
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Citrus Ave				Citrus Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	2	1	0	0	0	0	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	2	0	0	0	7	1	0	0	0	0	0	1	0	0	0	14
7:15 AM	1	6	0	0	0	2	3	0	0	0	0	0	1	0	0	0	13
7:30 AM	1	1	0	0	0	2	0	0	0	0	0	0	1	0	1	0	6
7:45 AM	1	3	0	0	0	2	1	0	0	0	0	0	1	0	0	0	8
8:00 AM	1	5	0	0	0	1	1	0	0	0	0	0	2	0	1	0	11
8:15 AM	2	4	0	0	0	0	2	0	0	0	0	0	3	0	0	0	11
8:30 AM	3	2	0	0	0	2	2	0	0	0	0	0	2	0	1	0	12
8:45 AM	3	3	0	0	0	4	0	0	0	0	0	0	3	0	0	0	13
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	15	26	0	0	0	20	10	0	0	0	0	0	14	0	3	0	88
APPROACH %'s :	36.59%	63.41%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%					82.35%	0.00%	17.65%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	5	13	0	0	0	5	4	0	0	0	0	0	7	0	2	0	36
PEAK HR FACTOR :	0.625	0.650	0.000	0.000	0.000	0.625	0.500	0.000	0.000	0.000	0.000	0.000	0.583	0.000	0.500	0.000	0.818
	0.750				0.750								0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	2	1	0	0	0	0	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	0	0	0	2	2	0	0	0	0	0	1	0	1	0	7
4:15 PM	0	1	0	0	0	2	2	0	0	0	0	0	1	0	0	0	6
4:30 PM	0	1	0	0	0	3	2	0	0	0	0	0	1	0	1	0	8
4:45 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	5	0	0	0	10	6	0	0	0	0	0	3	0	2	0	28
APPROACH %'s :	28.57%	71.43%	0.00%	0.00%	0.00%	62.50%	37.50%	0.00%					60.00%	0.00%	40.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	2	2	0	0	0	8	6	0	0	0	0	0	3	0	2	0	23
PEAK HR FACTOR :	0.500	0.500	0.000	0.000	0.000	0.667	0.750	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.500	0.000	0.719
	1.000				0.700								0.625				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-002
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Citrus Ave				Citrus Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	2	1	0	0	0	0	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
7:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	2	0	0	0	1	0	0	0	0	0	0	1	0	0	0	4
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	7	0	0	0	3	0	0	0	0	0	0	6	0	0	0	16
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					100.00%	0.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625
	0.750				0.500												

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	2	1	0	0	0	0	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
4:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	3	1	0	0	0	0	0	5	0	0	0	11
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%					100.00%	0.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	2	0	0	0	3	0	0	0	0	0	0	3	0	0	0	8
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.000	1.000
	0.250				0.750								0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-002
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Citrus Ave				Citrus Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	2	1	0	0	0	0	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	2	0	0	0	0	0	0	2	0	0	0	5
7:15 AM	5	2	0	0	0	1	2	0	0	0	0	0	3	0	0	0	13
7:30 AM	2	0	0	0	0	3	1	0	0	0	0	0	2	0	1	0	9
7:45 AM	2	3	0	0	0	3	1	0	0	0	0	0	2	0	2	0	13
8:00 AM	1	1	0	0	0	0	0	0	0	0	0	0	6	0	1	0	9
8:15 AM	4	1	0	0	0	1	1	0	0	0	0	0	1	0	1	0	9
8:30 AM	2	0	0	0	0	1	3	0	0	0	0	0	1	0	2	0	9
8:45 AM	4	1	0	0	0	1	0	0	0	0	0	0	3	0	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	20	9	0	0	0	12	8	0	0	0	0	0	20	0	7	0	76
APPROACH %'s :	68.97%	31.03%	0.00%	0.00%	0.00%	60.00%	40.00%	0.00%					74.07%	0.00%	25.93%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	9	5	0	0	0	7	3	0	0	0	0	0	11	0	5	0	40
PEAK HR FACTOR :	0.563	0.417	0.000	0.000	0.000	0.583	0.750	0.000	0.000	0.000	0.000	0.000	0.458	0.000	0.625	0.000	0.769
	0.700				0.625								0.571				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	2	1	0	0	0	0	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	3
4:30 PM	2	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	5
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	4	0	0	0	7	2	0	0	0	0	0	2	0	0	0	18
APPROACH %'s :	42.86%	57.14%	0.00%	0.00%	0.00%	77.78%	22.22%	0.00%					100.00%	0.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	3	1	0	0	0	2	2	0	0	0	0	0	2	0	0	0	10
PEAK HR FACTOR :	0.375	0.250	0.000	0.000	0.000	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.500
	0.500				0.500								0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-003
Date: 9/8/2021

Data - Total

NS/EW Streets:	Sierra Ave				Sierra Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0	0	0	0	1.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	115	0	0	0	235	0	0	0	0	0	0	95	0	69	0	514
7:15 AM	0	114	0	0	0	220	0	0	0	0	0	0	131	0	52	0	517
7:30 AM	0	162	0	0	0	278	0	0	0	0	0	0	147	0	65	0	652
7:45 AM	0	251	0	0	0	260	0	0	0	0	0	0	150	0	83	0	744
8:00 AM	0	177	0	0	0	281	0	0	0	0	0	0	114	0	71	0	643
8:15 AM	0	166	0	0	0	230	0	0	0	0	0	0	84	0	66	0	546
8:30 AM	0	149	0	0	0	247	0	0	0	0	0	0	79	0	74	0	549
8:45 AM	0	166	0	0	0	234	0	0	0	0	0	0	102	0	82	0	584
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1300	0	0	0	1985	0	0	0	0	0	0	902	0	562	0	4749
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					61.61%	0.00%	38.39%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	756	0	0	0	1049	0	0	0	0	0	0	495	0	285	0	2585
PEAK HR FACTOR :	0.000	0.753	0.000	0.000	0.000	0.933	0.000	0.000	0.000	0.000	0.000	0.000	0.825	0.000	0.858	0.000	0.869
	0.753				0.933								0.837				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0	0	0	0	1.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	253	0	0	0	299	0	0	0	0	0	0	105	0	118	0	775
4:15 PM	0	285	0	0	0	289	0	0	0	0	0	0	78	0	121	0	773
4:30 PM	0	275	0	0	0	298	0	0	0	0	0	0	67	0	113	0	753
4:45 PM	0	280	0	0	0	274	0	0	0	0	0	0	40	0	45	0	639
5:00 PM	0	308	0	0	0	286	0	0	0	0	0	0	23	0	21	0	638
5:15 PM	0	292	0	0	0	292	0	0	0	0	0	0	10	0	20	0	614
5:30 PM	0	295	0	0	0	289	0	0	0	0	0	0	28	0	21	0	633
5:45 PM	0	283	0	0	0	265	0	0	0	0	0	0	64	0	117	0	729
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2271	0	0	0	2292	0	0	0	0	0	0	415	0	576	0	5554
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					41.88%	0.00%	58.12%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	1093	0	0	0	1160	0	0	0	0	0	0	290	0	397	0	2940
PEAK HR FACTOR :	0.000	0.959	0.000	0.000	0.000	0.970	0.000	0.000	0.000	0.000	0.000	0.000	0.690	0.000	0.820	0.000	0.948
	0.959				0.970								0.770				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-003
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Sierra Ave				Sierra Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0	0	0	0	1.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	101	0	0	0	228	0	0	0	0	0	0	94	0	68	0	491
7:15 AM	0	107	0	0	0	215	0	0	0	0	0	0	130	0	50	0	502
7:30 AM	0	158	0	0	0	269	0	0	0	0	0	0	143	0	62	0	632
7:45 AM	0	242	0	0	0	252	0	0	0	0	0	0	146	0	82	0	722
8:00 AM	0	167	0	0	0	274	0	0	0	0	0	0	114	0	69	0	624
8:15 AM	0	159	0	0	0	227	0	0	0	0	0	0	82	0	65	0	533
8:30 AM	0	144	0	0	0	235	0	0	0	0	0	0	76	0	69	0	524
8:45 AM	0	156	0	0	0	229	0	0	0	0	0	0	101	0	80	0	566
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1234	0	0	0	1929	0	0	0	0	0	0	886	0	545	0	4594
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					61.91%	0.00%	38.09%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	726	0	0	0	1022	0	0	0	0	0	0	485	0	278	0	2511
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.000	0.932	0.000	0.000	0.000	0.000	0.000	0.000	0.830	0.000	0.848	0.000	0.869
	0.750				0.932								0.837				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0	0	0	0	1.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	247	0	0	0	296	0	0	0	0	0	0	104	0	117	0	764
4:15 PM	0	281	0	0	0	286	0	0	0	0	0	0	75	0	120	0	762
4:30 PM	0	265	0	0	0	293	0	0	0	0	0	0	65	0	112	0	735
4:45 PM	0	274	0	0	0	272	0	0	0	0	0	0	40	0	44	0	630
5:00 PM	0	303	0	0	0	282	0	0	0	0	0	0	22	0	21	0	628
5:15 PM	0	284	0	0	0	289	0	0	0	0	0	0	10	0	18	0	601
5:30 PM	0	286	0	0	0	287	0	0	0	0	0	0	28	0	21	0	622
5:45 PM	0	275	0	0	0	263	0	0	0	0	0	0	64	0	117	0	719
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2215	0	0	0	2268	0	0	0	0	0	0	408	0	570	0	5461
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					41.72%	0.00%	58.28%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	1067	0	0	0	1147	0	0	0	0	0	0	284	0	393	0	2891
PEAK HR FACTOR :	0.000	0.949	0.000	0.000	0.000	0.969	0.000	0.000	0.000	0.000	0.000	0.000	0.683	0.000	0.819	0.000	0.946
	0.949				0.969								0.766				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-003
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Sierra Ave				Sierra Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0	0	0	0	1.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	4	0	0	0	3	0	0	0	0	0	0	1	0	0	0	8
7:15 AM	0	3	0	0	0	1	0	0	0	0	0	0	1	0	0	0	5
7:30 AM	0	0	0	0	0	5	0	0	0	0	0	0	1	0	1	0	7
7:45 AM	0	5	0	0	0	2	0	0	0	0	0	0	2	0	0	0	9
8:00 AM	0	5	0	0	0	5	0	0	0	0	0	0	0	0	2	0	12
8:15 AM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	1	0	6
8:30 AM	0	1	0	0	0	4	0	0	0	0	0	0	1	0	1	0	7
8:45 AM	0	1	0	0	0	4	0	0	0	0	0	0	1	0	1	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	21	0	0	0	27	0	0	0	0	0	0	7	0	6	0	61
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					53.85%	0.00%	46.15%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	12	0	0	0	15	0	0	0	0	0	0	3	0	4	0	34
PEAK HR FACTOR :	0.000	0.600	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.500	0.000	0.708
	0.600				0.750								0.875				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0	0	0	0	1.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	0	2	0	0	0	0	0	0	1	0	0	0	5
4:15 PM	0	1	0	0	0	2	0	0	0	0	0	0	1	0	1	0	5
4:30 PM	0	1	0	0	0	3	0	0	0	0	0	0	1	0	1	0	6
4:45 PM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	1	0	5
5:00 PM	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4
5:15 PM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	1	0	6
5:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	18	0	0	0	10	0	0	0	0	0	0	4	0	4	0	36
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					50.00%	0.00%	50.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	7	0	0	0	8	0	0	0	0	0	0	3	0	3	0	21
PEAK HR FACTOR :	0.000	0.583	0.000	0.000	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.750	0.000	0.875
	0.583				0.667								0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-003
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Sierra Ave				Sierra Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0	0	0	0	1.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
7:15 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	1	0	5
7:30 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	1	0	4
7:45 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	1	0	4
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
8:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	4
8:45 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	14	0	0	0	7	0	0	0	0	0	0	1	0	5	0	27
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					16.67%	0.00%	83.33%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	6	0	0	0	2	0	0	0	0	0	0	1	0	2	0	11
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.500	0.000	0.688
	0.750				0.500								0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0	0	0	0	1.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	3
4:30 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	1	0	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	8	0	0	0	3	0	0	0	0	0	0	1	0	2	0	14
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					33.33%	0.00%	66.67%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	3	0	0	0	2	0	0	0	0	0	0	1	0	1	0	7
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.583
	0.375				0.500								0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & SR-210 WB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-003
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Sierra Ave				Sierra Ave				SR-210 WB Ramps				SR-210 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0	0	0	0	1.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	6	0	0	0	3	0	0	0	0	0	0	0	0	1	0	10
7:15 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	1	0	5
7:30 AM	0	2	0	0	0	3	0	0	0	0	0	0	3	0	1	0	9
7:45 AM	0	2	0	0	0	5	0	0	0	0	0	0	2	0	0	0	9
8:00 AM	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	0	6
8:15 AM	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5
8:30 AM	0	4	0	0	0	6	0	0	0	0	0	0	2	0	2	0	14
8:45 AM	0	7	0	0	0	1	0	0	0	0	0	0	0	0	1	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	31	0	0	0	22	0	0	0	0	0	0	8	0	6	0	67
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					57.14%	0.00%	42.86%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	12	0	0	0	10	0	0	0	0	0	0	6	0	1	0	29
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.806
	0.750				0.500								0.438				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0	0	0	0	1.5	0	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
4:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3
4:30 PM	0	7	0	0	0	1	0	0	0	0	0	0	1	0	0	0	9
4:45 PM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
5:00 PM	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	5
5:15 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	7	0	0	0	2	0	0	0	0	0	0	0	0	0	0	9
5:45 PM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	30	0	0	0	11	0	0	0	0	0	0	2	0	0	0	43
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					100.00%	0.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	16	0	0	0	3	0	0	0	0	0	0	2	0	0	0	21
PEAK HR FACTOR :	0.000	0.571	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.583
	0.571				0.750								0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-004
Date: 9/8/2021

Data - Total

NS/EW Streets:	Cherry Ave				Cherry Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	1	2	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	63	70	0	31	150	0	0	13	0	40	0	0	0	0	0	367
7:15 AM	0	51	71	0	26	248	0	0	16	0	57	0	0	0	0	0	469
7:30 AM	0	73	73	0	43	226	0	0	16	1	66	0	0	0	0	0	498
7:45 AM	0	76	67	0	33	217	0	0	29	1	58	0	0	0	0	0	481
8:00 AM	0	80	84	0	40	191	0	0	34	1	56	0	0	0	0	0	486
8:15 AM	0	100	56	0	45	186	0	0	34	1	57	0	0	0	0	0	479
8:30 AM	0	105	70	0	43	188	0	0	41	2	72	0	0	0	0	0	521
8:45 AM	0	103	84	0	29	166	0	0	42	1	74	0	0	0	0	0	499
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	651	575	0	290	1572	0	0	225	7	480	0	0	0	0	0	3800
APPROACH %'s :	0.00%	53.10%	46.90%	0.00%	15.57%	84.43%	0.00%	0.00%	31.60%	0.98%	67.42%	0.00%					
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	388	294	0	157	731	0	0	151	5	259	0	0	0	0	0	1985
PEAK HR FACTOR :	0.000	0.924	0.875	0.000	0.872	0.957	0.000	0.000	0.899	0.625	0.875	0.000	0.000	0.000	0.000	0.000	0.952
	0.912				0.961				0.887								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	1	2	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	147	85	0	14	142	0	0	51	0	83	0	0	0	0	0	522
4:15 PM	0	152	64	0	23	152	0	0	46	0	94	0	0	0	0	0	531
4:30 PM	0	158	66	0	20	171	0	0	44	1	80	0	0	0	0	0	540
4:45 PM	0	137	77	0	13	177	0	0	53	1	79	0	0	0	0	0	537
5:00 PM	0	199	81	0	16	136	0	0	48	0	81	0	0	0	0	0	561
5:15 PM	0	170	89	0	11	109	0	0	53	0	78	0	0	0	0	0	510
5:30 PM	0	180	64	0	10	81	0	0	64	0	90	0	0	0	0	0	489
5:45 PM	0	177	57	0	11	84	0	0	55	0	110	0	0	0	0	0	494
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1320	583	0	118	1052	0	0	414	2	695	0	0	0	0	0	4184
APPROACH %'s :	0.00%	69.36%	30.64%	0.00%	10.09%	89.91%	0.00%	0.00%	37.26%	0.18%	62.56%	0.00%					
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	646	288	0	72	636	0	0	191	2	334	0	0	0	0	0	2169
PEAK HR FACTOR :	0.000	0.812	0.889	0.000	0.783	0.898	0.000	0.000	0.901	0.500	0.888	0.000	0.000	0.000	0.000	0.000	0.967
	0.834				0.927				0.941								

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-004
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Cherry Ave				Cherry Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	1	2	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	58	66	0	31	135	0	0	13	0	35	0	0	0	0	0	338
7:15 AM	0	49	62	0	26	239	0	0	13	0	52	0	0	0	0	0	441
7:30 AM	0	69	70	0	43	213	0	0	16	1	63	0	0	0	0	0	475
7:45 AM	0	74	65	0	33	201	0	0	29	1	54	0	0	0	0	0	457
8:00 AM	0	72	80	0	39	181	0	0	34	1	51	0	0	0	0	0	458
8:15 AM	0	89	51	0	45	172	0	0	32	1	53	0	0	0	0	0	443
8:30 AM	0	96	62	0	42	168	0	0	40	2	64	0	0	0	0	0	474
8:45 AM	0	95	79	0	28	157	0	0	42	1	64	0	0	0	0	0	466
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	602	535	0	287	1466	0	0	219	7	436	0	0	0	0	0	3552
APPROACH %'s :	0.00%	52.95%	47.05%	0.00%	16.37%	83.63%	0.00%	0.00%	33.08%	1.06%	65.86%	0.00%					
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	352	272	0	154	678	0	0	148	5	232	0	0	0	0	0	1841
PEAK HR FACTOR :	0.000	0.917	0.850	0.000	0.856	0.936	0.000	0.000	0.881	0.625	0.906	0.000	0.000	0.000	0.000	0.000	0.971
	0.897				0.945				0.900								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	1	2	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	137	80	0	14	139	0	0	51	0	82	0	0	0	0	0	503
4:15 PM	0	146	61	0	23	145	0	0	45	0	87	0	0	0	0	0	507
4:30 PM	0	153	64	0	20	163	0	0	43	1	72	0	0	0	0	0	516
4:45 PM	0	131	71	0	13	171	0	0	52	1	77	0	0	0	0	0	516
5:00 PM	0	190	78	0	16	127	0	0	47	0	80	0	0	0	0	0	538
5:15 PM	0	165	84	0	11	103	0	0	53	0	74	0	0	0	0	0	490
5:30 PM	0	174	61	0	10	75	0	0	63	0	89	0	0	0	0	0	472
5:45 PM	0	173	56	0	11	80	0	0	54	0	109	0	0	0	0	0	483
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1269	555	0	118	1003	0	0	408	2	670	0	0	0	0	0	4025
APPROACH %'s :	0.00%	69.57%	30.43%	0.00%	10.53%	89.47%	0.00%	0.00%	37.78%	0.19%	62.04%	0.00%					
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	620	274	0	72	606	0	0	187	2	316	0	0	0	0	0	2077
PEAK HR FACTOR :	0.000	0.816	0.878	0.000	0.783	0.886	0.000	0.000	0.899	0.500	0.908	0.000	0.000	0.000	0.000	0.000	0.965
	0.834				0.921				0.956								

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-004
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Cherry Ave				Cherry Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	1	2	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	0	5	0	0	0	0	0	0	0	0	0	0	6
7:15 AM	0	0	3	0	0	5	0	0	3	0	1	0	0	0	0	0	12
7:30 AM	0	1	1	0	0	5	0	0	0	0	0	0	0	0	0	0	7
7:45 AM	0	1	0	0	0	3	0	0	0	0	2	0	0	0	0	0	6
8:00 AM	0	3	3	0	1	2	0	0	0	0	2	0	0	0	0	0	11
8:15 AM	0	6	2	0	0	6	0	0	2	0	2	0	0	0	0	0	18
8:30 AM	0	2	2	0	1	6	0	0	0	0	2	0	0	0	0	0	13
8:45 AM	0	4	3	0	0	2	0	0	0	0	4	0	0	0	0	0	13
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	17	15	0	2	34	0	0	5	0	13	0	0	0	0	0	86
APPROACH %'s :	0.00%	53.13%	46.88%	0.00%	5.56%	94.44%	0.00%	0.00%	27.78%	0.00%	72.22%	0.00%					
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	15	10	0	2	16	0	0	2	0	10	0	0	0	0	0	55
PEAK HR FACTOR :	0.000	0.625	0.833	0.000	0.500	0.667	0.000	0.000	0.250	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.764
	0.781				0.643				0.750								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	1	2	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	6	4	0	0	0	0	0	0	0	1	0	0	0	0	0	11
4:15 PM	0	0	2	0	0	4	0	0	1	0	2	0	0	0	0	0	9
4:30 PM	0	3	1	0	0	2	0	0	1	0	4	0	0	0	0	0	11
4:45 PM	0	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	4
5:00 PM	0	1	0	0	0	3	0	0	1	0	0	0	0	0	0	0	5
5:15 PM	0	1	1	0	0	1	0	0	0	0	3	0	0	0	0	0	6
5:30 PM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
5:45 PM	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	15	10	0	0	13	0	0	5	0	10	0	0	0	0	0	53
APPROACH %'s :	0.00%	60.00%	40.00%	0.00%	0.00%	100.00%	0.00%	0.00%	33.33%	0.00%	66.67%	0.00%					
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	5	5	0	0	9	0	0	4	0	6	0	0	0	0	0	29
PEAK HR FACTOR :	0.000	0.417	0.625	0.000	0.000	0.563	0.000	0.000	1.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.659
	0.625				0.563				0.500								

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-004
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Cherry Ave				Cherry Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	1	2	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	2	0	0	4	0	0	0	0	1	0	0	0	0	0	7
7:15 AM	0	0	2	0	0	1	0	0	0	0	1	0	0	0	0	0	4
7:30 AM	0	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	5
7:45 AM	0	1	1	0	0	6	0	0	0	0	0	0	0	0	0	0	8
8:00 AM	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
8:15 AM	0	2	1	0	0	2	0	0	0	0	0	0	0	0	0	0	5
8:30 AM	0	6	2	0	0	4	0	0	1	0	2	0	0	0	0	0	15
8:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	13	11	0	0	21	0	0	1	0	4	0	0	0	0	0	50
APPROACH %'s :	0.00%	54.17%	45.83%	0.00%	0.00%	100.00%	0.00%	0.00%	20.00%	0.00%	80.00%	0.00%					
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	11	4	0	0	8	0	0	1	0	2	0	0	0	0	0	26
PEAK HR FACTOR :	0.000	0.458	0.500	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.433
	0.469				0.500				0.250								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	1	2	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	4
4:45 PM	0	2	1	0	0	2	0	0	0	0	0	0	0	0	0	0	5
5:00 PM	0	1	1	0	0	3	0	0	0	0	1	0	0	0	0	0	6
5:15 PM	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	4
5:30 PM	0	2	1	0	0	2	0	0	0	0	0	0	0	0	0	0	5
5:45 PM	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	7	5	0	0	17	0	0	0	0	2	0	0	0	0	0	31
APPROACH %'s :	0.00%	58.33%	41.67%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%					
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	4	2	0	0	10	0	0	0	0	2	0	0	0	0	0	18
PEAK HR FACTOR :	0.000	0.500	0.500	0.000	0.000	0.833	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.750
	0.500				0.833				0.500								

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-004
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Cherry Ave				Cherry Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	1	2	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	5	1	0	0	6	0	0	0	0	4	0	0	0	0	0	16
7:15 AM	0	2	4	0	0	3	0	0	0	0	3	0	0	0	0	0	12
7:30 AM	0	2	0	0	0	6	0	0	0	0	3	0	0	0	0	0	11
7:45 AM	0	0	1	0	0	7	0	0	0	0	2	0	0	0	0	0	10
8:00 AM	0	3	0	0	0	7	0	0	0	0	3	0	0	0	0	0	13
8:15 AM	0	3	2	0	0	6	0	0	0	0	2	0	0	0	0	0	13
8:30 AM	0	1	4	0	0	10	0	0	0	0	4	0	0	0	0	0	19
8:45 AM	0	3	2	0	1	6	0	0	0	0	6	0	0	0	0	0	18
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	19	14	0	1	51	0	0	0	0	27	0	0	0	0	0	112
APPROACH %'s :	0.00%	57.58%	42.42%	0.00%	1.92%	98.08%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%					
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	10	8	0	1	29	0	0	0	0	15	0	0	0	0	0	63
PEAK HR FACTOR :	0.000	0.833	0.500	0.000	0.250	0.725	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.829
	0.900				0.750				0.625								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	1	2	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	4	1	0	0	2	0	0	0	0	0	0	0	0	0	0	7
4:15 PM	0	5	1	0	0	1	0	0	0	0	5	0	0	0	0	0	12
4:30 PM	0	2	1	0	0	3	0	0	0	0	3	0	0	0	0	0	9
4:45 PM	0	3	3	0	0	4	0	0	0	0	2	0	0	0	0	0	12
5:00 PM	0	7	2	0	0	3	0	0	0	0	0	0	0	0	0	0	12
5:15 PM	0	4	3	0	0	2	0	0	0	0	1	0	0	0	0	0	10
5:30 PM	0	2	2	0	0	1	0	0	1	0	1	0	0	0	0	0	7
5:45 PM	0	2	0	0	0	3	0	0	0	0	1	0	0	0	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	29	13	0	0	19	0	0	1	0	13	0	0	0	0	0	75
APPROACH %'s :	0.00%	69.05%	30.95%	0.00%	0.00%	100.00%	0.00%	0.00%	7.14%	0.00%	92.86%	0.00%					
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	17	7	0	0	11	0	0	0	0	10	0	0	0	0	0	45
PEAK HR FACTOR :	0.000	0.607	0.583	0.000	0.000	0.688	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.938
	0.667				0.688				0.500								

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-005
Date: 9/8/2021

Data - Total

NS/EW Streets:	Citrus Ave				Citrus Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	1.3	0.3	1.3	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	142	115	0	68	188	0	0	70	0	110	0	0	0	0	0	693
7:15 AM	0	145	100	0	61	252	0	0	48	2	100	0	0	0	0	0	708
7:30 AM	0	169	111	0	71	260	0	0	92	1	113	0	0	0	0	0	817
7:45 AM	0	231	93	0	65	234	0	0	80	0	112	0	0	0	0	0	815
8:00 AM	0	201	84	0	80	215	0	0	112	2	87	0	0	0	0	0	781
8:15 AM	0	183	105	0	80	185	0	0	118	0	74	0	0	0	0	0	745
8:30 AM	0	189	90	0	47	191	0	0	87	0	82	0	0	0	0	0	686
8:45 AM	0	161	59	0	35	176	0	0	74	0	61	0	0	0	0	0	566
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1421	757	0	507	1701	0	0	681	5	739	0	0	0	0	0	5811
APPROACH %'s :	0.00%	65.24%	34.76%	0.00%	22.96%	77.04%	0.00%	0.00%	47.79%	0.35%	51.86%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	784	393	0	296	894	0	0	402	3	386	0	0	0	0	0	3158
PEAK HR FACTOR :	0.000	0.848	0.885	0.000	0.925	0.860	0.000	0.000	0.852	0.375	0.854	0.000	0.000	0.000	0.000	0.000	0.966
	0.908				0.899				0.960								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	1.3	0.3	1.3	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	235	77	0	68	199	0	0	121	0	69	0	0	0	0	0	769
4:15 PM	0	181	95	0	70	199	0	0	117	0	75	0	0	0	0	0	737
4:30 PM	0	226	78	0	74	200	0	0	121	1	78	0	0	0	0	0	778
4:45 PM	0	220	94	0	58	179	0	0	103	0	62	0	0	0	0	0	716
5:00 PM	0	256	58	0	40	142	0	1	114	0	92	0	0	0	0	0	703
5:15 PM	0	272	61	0	49	149	0	0	112	2	94	0	0	0	0	0	739
5:30 PM	0	253	69	0	49	162	0	0	128	0	83	0	0	0	0	0	744
5:45 PM	0	251	76	0	64	219	0	0	141	1	70	0	0	0	0	0	822
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1894	608	0	472	1449	0	1	957	4	623	0	0	0	0	0	6008
APPROACH %'s :	0.00%	75.70%	24.30%	0.00%	24.56%	75.39%	0.00%	0.05%	60.42%	0.25%	39.33%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	1032	264	0	202	672	0	1	495	3	339	0	0	0	0	0	3008
PEAK HR FACTOR :	0.000	0.949	0.868	0.000	0.789	0.767	0.000	0.250	0.878	0.375	0.902	0.000	0.000	0.000	0.000	0.000	0.915
	0.973				0.773				0.987								

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-005
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Citrus Ave				Citrus Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	1.3	0.3	1.3	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	133	109	0	67	179	0	0	67	0	109	0	0	0	0	0	664
7:15 AM	0	137	96	0	61	240	0	0	47	2	97	0	0	0	0	0	680
7:30 AM	0	161	109	0	68	253	0	0	90	1	110	0	0	0	0	0	792
7:45 AM	0	227	91	0	64	228	0	0	79	0	112	0	0	0	0	0	801
8:00 AM	0	189	82	0	78	207	0	0	110	2	83	0	0	0	0	0	751
8:15 AM	0	177	98	0	80	180	0	0	117	0	69	0	0	0	0	0	721
8:30 AM	0	180	83	0	46	185	0	0	84	0	75	0	0	0	0	0	653
8:45 AM	0	155	53	0	33	166	0	0	69	0	57	0	0	0	0	0	533
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1359	721	0	497	1638	0	0	663	5	712	0	0	0	0	0	5595
APPROACH %'s :	0.00%	65.34%	34.66%	0.00%	23.28%	76.72%	0.00%	0.00%	48.04%	0.36%	51.59%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	754	380	0	290	868	0	0	396	3	374	0	0	0	0	0	3065
PEAK HR FACTOR :	0.000	0.830	0.872	0.000	0.906	0.858	0.000	0.000	0.846	0.375	0.835	0.000	0.000	0.000	0.000	0.000	0.957
	0.892				0.902				0.961								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	1.3	0.3	1.3	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	232	73	0	66	192	0	0	121	0	69	0	0	0	0	0	753
4:15 PM	0	180	92	0	69	195	0	0	115	0	75	0	0	0	0	0	726
4:30 PM	0	224	72	0	72	193	0	0	121	1	77	0	0	0	0	0	760
4:45 PM	0	217	91	0	58	175	0	0	102	0	61	0	0	0	0	0	704
5:00 PM	0	251	56	0	39	142	0	1	113	0	89	0	0	0	0	0	691
5:15 PM	0	271	61	0	49	145	0	0	111	2	92	0	0	0	0	0	731
5:30 PM	0	251	67	0	49	161	0	0	128	0	83	0	0	0	0	0	739
5:45 PM	0	248	76	0	63	218	0	0	141	1	68	0	0	0	0	0	815
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1874	588	0	465	1421	0	1	952	4	614	0	0	0	0	0	5919
APPROACH %'s :	0.00%	76.12%	23.88%	0.00%	24.64%	75.30%	0.00%	0.05%	60.64%	0.25%	39.11%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	1021	260	0	200	666	0	1	493	3	332	0	0	0	0	0	2976
PEAK HR FACTOR :	0.000	0.942	0.855	0.000	0.794	0.764	0.000	0.250	0.874	0.375	0.902	0.000	0.000	0.000	0.000	0.000	0.913
	0.965				0.771				0.981								

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-005
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Citrus Ave				Citrus Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	1.3	0.3	1.3	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	5	1	0	1	4	0	0	1	0	0	0	0	0	0	0	12
7:15 AM	0	5	1	0	0	5	0	0	1	0	0	0	0	0	0	0	12
7:30 AM	0	4	0	0	1	3	0	0	0	0	3	0	0	0	0	0	11
7:45 AM	0	2	2	0	1	1	0	0	0	0	0	0	0	0	0	0	6
8:00 AM	0	7	0	0	2	2	0	0	1	0	0	0	0	0	0	0	12
8:15 AM	0	4	3	0	0	3	0	0	0	0	1	0	0	0	0	0	11
8:30 AM	0	6	3	0	1	2	0	0	0	0	3	0	0	0	0	0	15
8:45 AM	0	3	1	0	2	6	0	0	2	0	2	0	0	0	0	0	16
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	36	11	0	8	26	0	0	5	0	9	0	0	0	0	0	95
APPROACH %'s :	0.00%	76.60%	23.40%	0.00%	23.53%	76.47%	0.00%	0.00%	35.71%	0.00%	64.29%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	17	5	0	4	9	0	0	1	0	4	0	0	0	0	0	40
PEAK HR FACTOR :	0.000	0.607	0.417	0.000	0.500	0.750	0.000	0.000	0.250	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.833
	0.786				0.813				0.417								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	1.3	0.3	1.3	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	2	0	2	4	0	0	0	0	0	0	0	0	0	0	10
4:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	1	3	0	2	4	0	0	0	0	0	0	0	0	0	0	10
4:45 PM	0	1	1	0	0	3	0	0	0	0	0	0	0	0	0	0	5
5:00 PM	0	4	0	0	1	0	0	0	1	0	3	0	0	0	0	0	9
5:15 PM	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	4
5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	2	0	0	1	0	0	0	0	0	1	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	12	7	0	6	13	0	0	2	0	5	0	0	0	0	0	45
APPROACH %'s :	0.00%	63.16%	36.84%	0.00%	31.58%	68.42%	0.00%	0.00%	28.57%	0.00%	71.43%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	7	1	0	2	1	0	0	2	0	5	0	0	0	0	0	18
PEAK HR FACTOR :	0.000	0.438	0.250	0.000	0.500	0.250	0.000	0.000	0.500	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.500
	0.500				0.750				0.438								

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-005
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Citrus Ave				Citrus Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	1.3	0.3	1.3	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
7:15 AM	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
7:30 AM	0	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	4
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	1	0	0	0	0	0	0	0	2	0	0	0	0	0	4
8:15 AM	0	0	2	0	0	1	0	0	1	0	0	0	0	0	0	0	4
8:30 AM	0	1	3	0	0	1	0	0	0	0	1	0	0	0	0	0	6
8:45 AM	0	1	0	0	0	2	0	0	2	0	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	5	8	0	0	9	0	0	4	0	3	0	0	0	0	0	29
APPROACH %'s :	0.00%	38.46%	61.54%	0.00%	0.00%	100.00%	0.00%	0.00%	57.14%	0.00%	42.86%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	2	4	0	0	2	0	0	2	0	2	0	0	0	0	0	12
PEAK HR FACTOR :	0.000	0.500	0.500	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.750
	0.750				0.500				0.500								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	1.3	0.3	1.3	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	4
4:15 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	4
4:45 PM	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	8	0	0	7	0	0	0	0	3	0	0	0	0	0	21
APPROACH %'s :	0.00%	27.27%	72.73%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	1	2	0	0	1	0	0	0	0	2	0	0	0	0	0	6
PEAK HR FACTOR :	0.000	0.250	0.500	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.750
	0.750				0.250				0.500								

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-005
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Citrus Ave				Citrus Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	1.3	0.3	1.3	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	3	5	0	0	3	0	0	2	0	1	0	0	0	0	0	14
7:15 AM	0	3	2	0	0	5	0	0	0	0	3	0	0	0	0	0	13
7:30 AM	0	3	1	0	2	3	0	0	1	0	0	0	0	0	0	0	10
7:45 AM	0	2	0	0	0	5	0	0	1	0	0	0	0	0	0	0	8
8:00 AM	0	4	1	0	0	6	0	0	1	0	2	0	0	0	0	0	14
8:15 AM	0	2	2	0	0	1	0	0	0	0	4	0	0	0	0	0	9
8:30 AM	0	2	1	0	0	3	0	0	3	0	3	0	0	0	0	0	12
8:45 AM	0	2	5	0	0	2	0	0	1	0	2	0	0	0	0	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	21	17	0	2	28	0	0	9	0	15	0	0	0	0	0	92
APPROACH %'s :	0.00%	55.26%	44.74%	0.00%	6.67%	93.33%	0.00%	0.00%	37.50%	0.00%	62.50%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	11	4	0	2	15	0	0	3	0	6	0	0	0	0	0	41
PEAK HR FACTOR :	0.000	0.688	0.500	0.000	0.250	0.625	0.000	0.000	0.750	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.732
	0.750				0.708				0.563								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	1.3	0.3	1.3	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	1	0	1	1	0	0	2	0	0	0	0	0	0	0	5
4:30 PM	0	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	4
4:45 PM	0	0	2	0	0	1	0	0	1	0	0	0	0	0	0	0	4
5:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	5	5	0	1	8	0	0	3	0	1	0	0	0	0	0	23
APPROACH %'s :	0.00%	50.00%	50.00%	0.00%	11.11%	88.89%	0.00%	0.00%	75.00%	0.00%	25.00%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	8
PEAK HR FACTOR :	0.000	0.375	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667
	0.500				0.500												

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-006
Date: 9/15/2021

Data - Total

NS/EW Streets:	Sierra Ave				Sierra Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	3	0	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	82	27	0	0	114	1	0	13	0	46	0	0	0	0	0	283
7:15 AM	0	221	88	0	0	286	3	0	32	0	99	0	0	0	0	0	729
7:30 AM	0	225	119	0	0	321	3	0	21	0	115	0	0	0	0	0	804
7:45 AM	0	236	129	0	0	334	5	0	38	0	128	0	0	0	0	0	870
8:00 AM	0	251	100	0	0	331	4	0	42	0	148	0	0	0	0	0	876
8:15 AM	0	206	111	0	0	257	2	0	34	0	140	0	0	0	0	0	750
8:30 AM	0	184	95	0	0	251	4	0	39	0	94	0	0	0	0	0	667
8:45 AM	0	191	70	0	0	227	3	0	41	0	104	0	0	0	0	0	636
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1596	739	0	0	2121	25	0	260	0	874	0	0	0	0	0	5615
APPROACH %'s :	0.00%	68.35%	31.65%	0.00%	0.00%	98.84%	1.16%	0.00%	22.93%	0.00%	77.07%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	918	459	0	0	1243	14	0	135	0	531	0	0	0	0	0	3300
PEAK HR FACTOR :	0.000	0.914	0.890	0.000	0.000	0.930	0.700	0.000	0.804	0.000	0.897	0.000	0.000	0.000	0.000	0.000	0.942
	0.943				0.927				0.876								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	3	0	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	315	150	0	0	287	4	0	51	0	115	0	0	0	0	0	922
4:15 PM	0	389	156	0	0	294	6	0	39	0	108	0	0	0	0	0	992
4:30 PM	0	332	171	0	0	294	6	0	45	0	83	0	0	0	0	0	931
4:45 PM	0	356	163	0	0	298	2	0	40	0	99	0	0	0	0	0	958
5:00 PM	0	338	159	0	0	270	0	0	43	0	101	0	0	0	0	0	911
5:15 PM	0	406	143	0	0	295	1	0	40	0	98	0	0	0	0	0	983
5:30 PM	0	345	162	0	0	276	1	0	40	0	91	0	0	0	0	0	915
5:45 PM	0	360	140	0	0	298	1	0	38	0	83	0	0	0	0	0	920
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2841	1244	0	0	2312	21	0	336	0	778	0	0	0	0	0	7532
APPROACH %'s :	0.00%	69.55%	30.45%	0.00%	0.00%	99.10%	0.90%	0.00%	30.16%	0.00%	69.84%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	1392	640	0	0	1173	18	0	175	0	405	0	0	0	0	0	3803
PEAK HR FACTOR :	0.000	0.895	0.936	0.000	0.000	0.984	0.750	0.000	0.858	0.000	0.880	0.000	0.000	0.000	0.000	0.000	0.958
	0.932				0.993				0.873								

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-006
Date: 9/15/2021

Data - Cars

NS/EW Streets:	Sierra Ave				Sierra Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	3	0	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	81	26	0	0	111	0	0	8	0	43	0	0	0	0	0	269
7:15 AM	0	212	88	0	0	281	0	0	28	0	93	0	0	0	0	0	702
7:30 AM	0	218	117	0	0	315	0	0	17	0	111	0	0	0	0	0	778
7:45 AM	0	229	127	0	0	327	0	0	36	0	125	0	0	0	0	0	844
8:00 AM	0	243	99	0	0	323	0	0	35	0	142	0	0	0	0	0	842
8:15 AM	0	204	110	0	0	253	0	0	30	0	133	0	0	0	0	0	730
8:30 AM	0	176	94	0	0	244	0	0	36	0	91	0	0	0	0	0	641
8:45 AM	0	185	69	0	0	215	0	0	37	0	99	0	0	0	0	0	605
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1548	730	0	0	2069	0	0	227	0	837	0	0	0	0	0	5411
APPROACH %'s :	0.00%	67.95%	32.05%	0.00%	0.00%	100.00%	0.00%	0.00%	21.33%	0.00%	78.67%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	894	453	0	0	1218	0	0	118	0	511	0	0	0	0	0	3194
PEAK HR FACTOR :	0.000	0.920	0.892	0.000	0.000	0.931	0.000	0.000	0.819	0.000	0.900	0.000	0.000	0.000	0.000	0.000	0.946
	0.946				0.931				0.888								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	3	0	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	309	150	0	0	284	0	0	48	0	113	0	0	0	0	0	904
4:15 PM	0	385	155	0	0	293	0	0	36	0	105	0	0	0	0	0	974
4:30 PM	0	330	168	0	0	287	0	0	40	0	81	0	0	0	0	0	906
4:45 PM	0	346	162	0	0	293	0	0	39	0	99	0	0	0	0	0	939
5:00 PM	0	332	159	0	0	266	0	0	40	0	98	0	0	0	0	0	895
5:15 PM	0	401	142	0	0	292	0	0	37	0	98	0	0	0	0	0	970
5:30 PM	0	341	161	0	0	275	0	0	32	0	90	0	0	0	0	0	899
5:45 PM	0	357	137	0	0	295	0	0	34	0	82	0	0	0	0	0	905
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2801	1234	0	0	2285	0	0	306	0	766	0	0	0	0	0	7392
APPROACH %'s :	0.00%	69.42%	30.58%	0.00%	0.00%	100.00%	0.00%	0.00%	28.54%	0.00%	71.46%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	1370	635	0	0	1157	0	0	163	0	398	0	0	0	0	0	3723
PEAK HR FACTOR :	0.000	0.890	0.945	0.000	0.000	0.987	0.000	0.000	0.849	0.000	0.881	0.000	0.000	0.000	0.000	0.000	0.956
	0.928				0.987				0.871								

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-006
Date: 9/15/2021

Data - 2axle

NS/EW Streets:	Sierra Ave				Sierra Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	3	0	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	0	1	0	2	0	3	0	0	0	0	0	7
7:15 AM	0	8	0	0	0	3	2	0	1	0	4	0	0	0	0	0	18
7:30 AM	0	3	1	0	0	4	2	0	2	0	2	0	0	0	0	0	14
7:45 AM	0	1	2	0	0	5	4	0	0	0	2	0	0	0	0	0	14
8:00 AM	0	5	1	0	0	4	2	0	2	0	3	0	0	0	0	0	17
8:15 AM	0	2	1	0	0	2	0	0	0	0	4	0	0	0	0	0	9
8:30 AM	0	4	1	0	0	5	1	0	1	0	2	0	0	0	0	0	14
8:45 AM	0	2	1	0	0	6	2	0	1	0	3	0	0	0	0	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	26	7	0	0	29	14	0	9	0	23	0	0	0	0	0	108
APPROACH %'s :	0.00%	78.79%	21.21%	0.00%	0.00%	67.44%	32.56%	0.00%	28.13%	0.00%	71.88%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	11	5	0	0	15	8	0	4	0	11	0	0	0	0	0	54
PEAK HR FACTOR :	0.000	0.550	0.625	0.000	0.000	0.750	0.500	0.000	0.500	0.000	0.688	0.000	0.000	0.000	0.000	0.000	0.794
	0.667				0.639				0.750								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	3	0	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	3	0	0	0	2	2	0	0	0	2	0	0	0	0	0	9
4:15 PM	0	4	1	0	0	0	3	0	0	0	2	0	0	0	0	0	10
4:30 PM	0	0	3	0	0	5	2	0	1	0	2	0	0	0	0	0	13
4:45 PM	0	4	1	0	0	3	1	0	1	0	0	0	0	0	0	0	10
5:00 PM	0	2	0	0	0	2	0	0	0	0	1	0	0	0	0	0	5
5:15 PM	0	3	1	0	0	2	0	0	2	0	0	0	0	0	0	0	8
5:30 PM	0	3	1	0	0	0	0	0	2	0	0	0	0	0	0	0	6
5:45 PM	0	0	2	0	0	3	1	0	0	0	1	0	0	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	19	9	0	0	17	9	0	6	0	8	0	0	0	0	0	68
APPROACH %'s :	0.00%	67.86%	32.14%	0.00%	0.00%	65.38%	34.62%	0.00%	42.86%	0.00%	57.14%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	11	5	0	0	10	8	0	2	0	6	0	0	0	0	0	42
PEAK HR FACTOR :	0.000	0.688	0.417	0.000	0.000	0.500	0.667	0.000	0.500	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.808
	0.800				0.643				0.667								

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-006
Date: 9/15/2021

Data - 3axle

NS/EW Streets:	Sierra Ave				Sierra Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	3	0	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
7:30 AM	0	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	4
7:45 AM	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	1	0	0	0	3	1	0	2	0	1	0	0	0	0	0	8
8:15 AM	0	0	0	0	0	2	2	0	0	0	1	0	0	0	0	0	5
8:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
8:45 AM	0	3	0	0	0	3	0	0	1	0	0	0	0	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	8	1	0	0	12	4	0	6	0	2	0	0	0	0	0	33
APPROACH %'s :	0.00%	88.89%	11.11%	0.00%	0.00%	75.00%	25.00%	0.00%	75.00%	0.00%	25.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	4	1	0	0	6	4	0	3	0	2	0	0	0	0	0	20
PEAK HR FACTOR :	0.000	0.500	0.250	0.000	0.000	0.500	0.500	0.000	0.375	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.625
	0.625				0.625				0.417								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	3	0	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
4:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3
5:45 PM	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	6	0	0	0	1	1	0	8	0	1	0	0	0	0	0	17
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	88.89%	0.00%	11.11%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	3	0	0	0	1	1	0	3	0	1	0	0	0	0	0	9
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.000	0.250	0.250	0.000	0.750	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.750
	0.375				0.500				0.500								

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & SR-210 EB Ramps
City: Fontana
Control: Signalized

Project ID: 21-030070-006
Date: 9/15/2021

Data - 4axle

NS/EW Streets:	Sierra Ave				Sierra Ave				SR-210 EB Ramps				SR-210 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	3	0	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	0	1	0	0	3	0	0	0	0	0	0	0	5
7:15 AM	0	0	0	0	0	1	1	0	2	0	2	0	0	0	0	0	6
7:30 AM	0	3	0	0	0	1	1	0	1	0	2	0	0	0	0	0	8
7:45 AM	0	4	0	0	0	2	0	0	2	0	1	0	0	0	0	0	9
8:00 AM	0	2	0	0	0	1	1	0	3	0	2	0	0	0	0	0	9
8:15 AM	0	0	0	0	0	0	0	0	4	0	2	0	0	0	0	0	6
8:30 AM	0	4	0	0	0	2	3	0	1	0	1	0	0	0	0	0	11
8:45 AM	0	1	0	0	0	3	1	0	2	0	2	0	0	0	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	14	1	0	0	11	7	0	18	0	12	0	0	0	0	0	63
APPROACH %'s :	0.00%	93.33%	6.67%	0.00%	0.00%	61.11%	38.89%	0.00%	60.00%	0.00%	40.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	9	0	0	0	4	2	0	10	0	7	0	0	0	0	0	32
PEAK HR FACTOR :	0.000	0.563	0.000	0.000	0.000	0.500	0.500	0.000	0.625	0.000	0.875	0.000	0.000	0.000	0.000	0.000	0.889
	0.563				0.750				0.708								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	0	3	0	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	0	1	1	0	2	0	0	0	0	0	0	0	6
4:15 PM	0	0	0	0	0	1	3	0	2	0	0	0	0	0	0	0	6
4:30 PM	0	2	0	0	0	1	4	0	3	0	0	0	0	0	0	0	10
4:45 PM	0	4	0	0	0	2	1	0	0	0	0	0	0	0	0	0	7
5:00 PM	0	4	0	0	0	2	0	0	1	0	2	0	0	0	0	0	9
5:15 PM	0	1	0	0	0	1	1	0	1	0	0	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	1	1	0	4	0	1	0	0	0	0	0	7
5:45 PM	0	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	15	1	0	0	9	11	0	16	0	3	0	0	0	0	0	55
APPROACH %'s :	0.00%	93.75%	6.25%	0.00%	0.00%	45.00%	55.00%	0.00%	84.21%	0.00%	15.79%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	8	0	0	0	5	9	0	7	0	0	0	0	0	0	0	29
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.625	0.563	0.000	0.583	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.725
	0.500				0.700				0.583								

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-007
Date: 9/8/2021

Data - Total

NS/EW Streets:	Beech Ave				Beech Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	8	58	15	0	5	41	20	0	7	28	4	0	12	62	16	0	276
7:15 AM	10	97	10	0	2	87	30	0	15	27	8	0	27	47	14	0	374
7:30 AM	12	113	17	0	5	115	35	0	23	29	8	0	24	68	19	0	468
7:45 AM	9	186	13	0	15	111	29	0	31	50	18	0	36	58	15	0	571
8:00 AM	8	149	20	0	15	142	14	0	41	70	35	0	19	43	20	0	576
8:15 AM	7	119	16	0	19	132	12	0	22	48	14	0	10	32	6	0	437
8:30 AM	7	58	10	0	10	77	13	0	9	21	8	0	4	25	3	0	245
8:45 AM	2	53	5	0	10	38	6	0	8	24	7	0	13	29	14	0	209
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	63	833	106	0	81	743	159	0	156	297	102	0	145	364	107	0	3156
APPROACH %'s :	6.29%	83.13%	10.58%	0.00%	8.24%	75.58%	16.17%	0.00%	28.11%	53.51%	18.38%	0.00%	23.54%	59.09%	17.37%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	36	567	66	0	54	500	90	0	117	197	75	0	89	201	60	0	2052
PEAK HR FACTOR :	0.750	0.762	0.825	0.000	0.711	0.880	0.643	0.000	0.713	0.704	0.536	0.000	0.618	0.739	0.750	0.000	0.891
	0.804				0.942				0.666				0.788				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	8	83	19	0	19	84	17	0	20	88	7	0	15	32	9	0	401
4:15 PM	5	71	16	0	15	87	13	0	20	71	11	0	13	32	7	0	361
4:30 PM	8	100	23	0	22	88	15	0	19	90	14	0	14	32	12	0	437
4:45 PM	10	101	22	0	22	81	19	0	17	62	10	0	15	34	14	0	407
5:00 PM	9	81	15	0	16	78	12	0	18	69	8	0	11	27	17	0	361
5:15 PM	5	87	12	0	27	99	12	0	12	75	22	0	15	54	24	0	444
5:30 PM	5	109	31	0	24	110	15	0	21	88	12	0	18	41	22	0	496
5:45 PM	7	107	28	0	32	98	14	0	14	91	18	0	24	61	19	0	513
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	57	739	166	0	177	725	117	0	141	634	102	0	125	313	124	0	3420
APPROACH %'s :	5.93%	76.82%	17.26%	0.00%	17.37%	71.15%	11.48%	0.00%	16.08%	72.29%	11.63%	0.00%	22.24%	55.69%	22.06%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	26	384	86	0	99	385	53	0	65	323	60	0	68	183	82	0	1814
PEAK HR FACTOR :	0.722	0.881	0.694	0.000	0.773	0.875	0.883	0.000	0.774	0.887	0.682	0.000	0.708	0.750	0.854	0.000	0.884
	0.855				0.901				0.911				0.800				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-007
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Beech Ave				Beech Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	8	55	14	0	5	40	20	0	7	26	4	0	11	60	14	0	264
7:15 AM	10	97	10	0	2	86	29	0	15	27	8	0	27	47	14	0	372
7:30 AM	11	111	16	0	5	115	35	0	23	29	8	0	24	66	19	0	462
7:45 AM	9	184	13	0	14	110	27	0	31	50	18	0	35	57	14	0	562
8:00 AM	8	147	20	0	15	141	13	0	41	70	35	0	19	42	20	0	571
8:15 AM	6	119	16	0	19	131	12	0	22	44	14	0	10	31	6	0	430
8:30 AM	7	58	10	0	10	77	12	0	9	20	8	0	4	24	3	0	242
8:45 AM	2	53	5	0	10	37	6	0	8	23	7	0	13	28	14	0	206
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	61	824	104	0	80	737	154	0	156	289	102	0	143	355	104	0	3109
APPROACH %'s :	6.17%	83.32%	10.52%	0.00%	8.24%	75.90%	15.86%	0.00%	28.52%	52.83%	18.65%	0.00%	23.75%	58.97%	17.28%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	34	561	65	0	53	497	87	0	117	193	75	0	88	196	59	0	2025
PEAK HR FACTOR :	0.773	0.762	0.813	0.000	0.697	0.881	0.621	0.000	0.713	0.689	0.536	0.000	0.629	0.742	0.738	0.000	0.887
	0.801				0.942				0.659				0.787				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	8	83	18	0	19	83	17	0	20	85	6	0	15	31	9	0	394
4:15 PM	5	69	16	0	15	85	13	0	20	71	11	0	13	32	6	0	356
4:30 PM	8	100	23	0	21	88	15	0	19	87	14	0	14	31	12	0	432
4:45 PM	9	101	22	0	22	81	19	0	17	62	10	0	15	32	14	0	404
5:00 PM	9	81	15	0	15	78	12	0	18	69	8	0	11	27	17	0	360
5:15 PM	5	87	12	0	27	99	11	0	12	75	22	0	15	53	24	0	442
5:30 PM	5	109	31	0	24	109	15	0	21	87	12	0	18	41	22	0	494
5:45 PM	7	107	27	0	32	97	14	0	14	91	18	0	24	60	19	0	510
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	56	737	164	0	175	720	116	0	141	627	101	0	125	307	123	0	3392
APPROACH %'s :	5.85%	77.01%	17.14%	0.00%	17.31%	71.22%	11.47%	0.00%	16.23%	72.15%	11.62%	0.00%	22.52%	55.32%	22.16%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	26	384	85	0	98	383	52	0	65	322	60	0	68	181	82	0	1806
PEAK HR FACTOR :	0.722	0.881	0.685	0.000	0.766	0.878	0.867	0.000	0.774	0.885	0.682	0.000	0.708	0.754	0.854	0.000	0.885
	0.853				0.900				0.909				0.803				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-007
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Beech Ave				Beech Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	3	1	0	0	0	0	0	0	1	0	0	1	1	1	0	8
7:15 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
7:30 AM	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4
7:45 AM	0	2	0	0	1	1	2	0	0	0	0	0	1	1	1	0	9
8:00 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	5
8:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	9	1	0	1	4	4	0	0	5	0	0	2	4	2	0	34
APPROACH %'s :	16.67%	75.00%	8.33%	0.00%	11.11%	44.44%	44.44%	0.00%	0.00%	100.00%	0.00%	0.00%	25.00%	50.00%	25.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	6	0	0	1	2	2	0	0	4	0	0	1	2	1	0	21
PEAK HR FACTOR :	0.500	0.750	0.000	0.000	0.250	0.500	0.250	0.000	0.000	0.250	0.000	0.000	0.250	0.500	0.250	0.000	0.583
	0.667				0.313				0.250				0.333				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	2	1	0	0	1	0	0	5
4:15 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	4
4:30 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	3
4:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3
5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
5:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
5:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	1	0	2	5	1	0	0	4	1	0	0	5	1	0	22
APPROACH %'s :	33.33%	33.33%	33.33%	0.00%	25.00%	62.50%	12.50%	0.00%	0.00%	80.00%	20.00%	0.00%	0.00%	83.33%	16.67%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	1	0	1	2	1	0	0	1	0	0	0	1	0	0	7
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.250	0.500	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.875
	0.250				1.000				0.250				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-007
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Beech Ave				Beech Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	2	0	0	0	3	0	0	0	1	0	0	7
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
		0.250				0.250											

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	1	0	0	0	0	0	0	2	0	0	0	1	0	0	5
APPROACH %'s :	0.00%	50.00%	50.00%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
														0.250			

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-007
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Beech Ave				Beech Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	1	0	0	0	0	0	0	4	1	0	6
APPROACH %'s :					0.00%	0.00%	100.00%	0.00%					0.00%	80.00%	20.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	4
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.500
					0.250								0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-008
Date: 9/8/2021

Data - Total

NS/EW Streets:	Citrus Ave				Citrus Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	2	2	1	0	2	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	17	169	9	0	41	221	35	0	55	24	10	0	4	26	34	3	648
7:15 AM	14	162	17	0	63	254	30	0	44	40	10	0	6	25	47	4	716
7:30 AM	25	163	28	0	105	240	32	0	56	60	10	0	25	59	50	0	853
7:45 AM	23	193	11	0	92	206	49	0	54	45	17	0	21	65	83	7	866
8:00 AM	13	167	15	0	73	190	36	0	59	47	14	0	20	46	61	4	745
8:15 AM	19	180	21	0	60	181	22	0	57	39	17	0	26	20	42	7	691
8:30 AM	11	208	13	0	52	190	25	0	33	25	11	0	16	15	47	2	648
8:45 AM	9	141	12	0	59	163	20	0	30	23	8	0	4	23	44	1	537
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	131	1383	126	0	545	1645	249	0	388	303	97	0	122	279	408	28	5704
APPROACH %'s :	7.99%	84.33%	7.68%	0.00%	22.35%	67.45%	10.21%	0.00%	49.24%	38.45%	12.31%	0.00%	14.58%	33.33%	48.75%	3.35%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	75	685	71	0	333	890	147	0	213	192	51	0	72	195	241	15	3180
PEAK HR FACTOR :	0.750	0.887	0.634	0.000	0.793	0.876	0.750	0.000	0.903	0.800	0.750	0.000	0.720	0.750	0.726	0.536	0.918
	0.915				0.908				0.905				0.743				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	2	2	1	0	2	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	186	23	0	52	180	28	0	55	60	17	0	13	32	65	4	731
4:15 PM	7	184	19	0	54	194	31	0	44	69	9	0	15	28	57	2	713
4:30 PM	7	192	13	0	55	181	34	0	53	65	11	0	11	50	49	8	729
4:45 PM	6	199	20	0	55	163	34	0	54	52	12	0	11	39	69	1	715
5:00 PM	21	185	15	0	63	145	13	0	52	56	10	0	23	50	79	9	721
5:15 PM	7	193	16	0	85	144	23	0	44	78	9	0	14	82	86	5	786
5:30 PM	18	177	22	0	83	130	24	0	52	89	14	0	27	86	97	6	825
5:45 PM	14	185	21	0	61	196	46	0	44	75	21	0	27	77	96	9	872
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	96	1501	149	0	508	1333	233	0	398	544	103	0	141	444	598	44	6092
APPROACH %'s :	5.50%	85.97%	8.53%	0.00%	24.49%	64.27%	11.23%	0.00%	38.09%	52.06%	9.86%	0.00%	11.49%	36.19%	48.74%	3.59%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	60	740	74	0	292	615	106	0	192	298	54	0	91	295	358	29	3204
PEAK HR FACTOR :	0.714	0.959	0.841	0.000	0.859	0.784	0.576	0.000	0.923	0.837	0.643	0.000	0.843	0.858	0.923	0.806	0.919
	0.989				0.836				0.877				0.895				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-008
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Citrus Ave				Citrus Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	2	2	1	0	2	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	17	157	8	0	38	216	32	0	55	24	10	0	2	26	32	3	620
7:15 AM	14	151	16	0	61	244	29	0	43	40	9	0	5	25	44	3	684
7:30 AM	25	159	28	0	105	231	32	0	55	60	10	0	25	59	49	0	838
7:45 AM	23	184	11	0	92	198	48	0	54	45	17	0	21	64	83	7	847
8:00 AM	13	156	14	0	71	181	36	0	59	47	14	0	18	46	61	4	720
8:15 AM	18	170	21	0	58	174	21	0	55	38	17	0	26	19	41	7	665
8:30 AM	10	193	12	0	52	179	24	0	31	25	11	0	15	14	46	2	614
8:45 AM	9	130	12	0	57	152	18	0	30	23	8	0	3	22	43	1	508
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	129	1300	122	0	534	1575	240	0	382	302	96	0	115	275	399	27	5496
APPROACH %'s :	8.32%	83.82%	7.87%	0.00%	22.73%	67.05%	10.22%	0.00%	48.97%	38.72%	12.31%	0.00%	14.09%	33.70%	48.90%	3.31%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	75	650	69	0	329	854	145	0	211	192	50	0	69	194	237	14	3089
PEAK HR FACTOR :	0.750	0.883	0.616	0.000	0.783	0.875	0.755	0.000	0.894	0.800	0.735	0.000	0.690	0.758	0.714	0.500	0.912
	0.911				0.902				0.906				0.734				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	2	2	1	0	2	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	182	22	0	51	175	28	0	54	59	17	0	11	32	64	4	715
4:15 PM	7	179	18	0	53	191	31	0	44	67	9	0	15	28	57	2	701
4:30 PM	7	187	13	0	54	178	33	0	52	63	11	0	11	50	49	8	716
4:45 PM	6	191	20	0	54	157	33	0	54	51	12	0	10	38	69	1	696
5:00 PM	20	181	14	0	63	145	13	0	52	55	10	0	22	50	78	9	712
5:15 PM	7	192	16	0	84	141	23	0	44	78	9	0	14	82	85	5	780
5:30 PM	18	175	22	0	81	126	24	0	52	88	14	0	27	86	96	6	815
5:45 PM	14	181	21	0	61	195	46	0	44	74	21	0	25	76	96	8	862
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	95	1468	146	0	501	1308	231	0	396	535	103	0	135	442	594	43	5997
APPROACH %'s :	5.56%	85.90%	8.54%	0.00%	24.56%	64.12%	11.32%	0.00%	38.30%	51.74%	9.96%	0.00%	11.12%	36.41%	48.93%	3.54%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	59	729	73	0	289	607	106	0	192	295	54	0	88	294	355	28	3169
PEAK HR FACTOR :	0.738	0.949	0.830	0.000	0.860	0.778	0.576	0.000	0.923	0.838	0.643	0.000	0.815	0.855	0.924	0.778	0.919
	0.997				0.829				0.878				0.890				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-008
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	2	2	1	0	2	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	4	1	0	2	1	2	0	0	0	0	0	0	0	1	0	11
7:15 AM	0	6	1	0	1	3	0	0	1	0	0	0	1	0	1	1	15
7:30 AM	0	1	0	0	0	4	0	0	0	0	0	0	0	0	1	0	6
7:45 AM	0	5	0	0	0	3	1	0	0	0	0	0	0	0	0	0	9
8:00 AM	0	6	1	0	1	1	0	0	0	0	0	0	1	0	0	0	10
8:15 AM	1	5	0	0	1	2	0	0	1	1	0	0	0	0	1	0	12
8:30 AM	1	9	0	0	0	5	1	0	1	0	0	0	0	0	0	0	17
8:45 AM	0	3	0	0	2	4	1	0	0	0	0	0	1	1	0	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	39	3	0	7	23	5	0	3	1	0	0	3	1	4	1	92
APPROACH %'s :	4.55%	88.64%	6.82%	0.00%	20.00%	65.71%	14.29%	0.00%	75.00%	25.00%	0.00%	0.00%	33.33%	11.11%	44.44%	11.11%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	18	2	0	2	11	1	0	1	0	0	0	2	0	2	1	40
PEAK HR FACTOR :	0.000	0.750	0.500	0.000	0.500	0.688	0.250	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.500	0.250	0.667
	0.714				0.875				0.250				0.417				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	2	2	1	0	2	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	1	0	1	3	0	0	0	0	0	0	2	0	1	0	10
4:15 PM	0	3	0	0	1	0	0	0	0	2	0	0	0	0	0	0	6
4:30 PM	0	1	0	0	1	2	1	0	1	0	0	0	0	0	0	0	6
4:45 PM	0	3	0	0	1	2	0	0	0	1	0	0	0	1	0	0	8
5:00 PM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	1	0	4
5:15 PM	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	4
5:30 PM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	4
5:45 PM	0	2	0	0	0	0	0	0	0	1	0	0	1	0	0	1	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	15	1	0	6	10	1	0	1	6	0	0	3	1	2	1	47
APPROACH %'s :	0.00%	93.75%	6.25%	0.00%	35.29%	58.82%	5.88%	0.00%	14.29%	85.71%	0.00%	0.00%	42.86%	14.29%	28.57%	14.29%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	6	0	0	2	3	0	0	0	3	0	0	1	0	1	1	17
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.500	0.375	0.000	0.000	0.000	0.750	0.000	0.000	0.250	0.000	0.250	0.250	0.850
	0.750				0.417				0.750				0.375				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-008
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	2	2	1	0	2	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	0	0	0	2	0	0	0	0	0	0	1	0	0	0	5
7:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
8:30 AM	0	3	1	0	0	2	0	0	1	0	0	0	0	1	0	0	8
8:45 AM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	12	1	0	1	11	0	0	3	0	0	0	1	1	0	0	30
APPROACH %'s :	0.00%	92.31%	7.69%	0.00%	8.33%	91.67%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	3	0	0	1	4	0	0	1	0	0	0	0	0	0	0	9
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.250	0.500	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
	0.750				0.625				0.250								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	2	2	1	0	2	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	4
4:15 PM	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	0	2	0	0	0	1	0	0	0	2	0	0	0	0	0	0	5
4:45 PM	0	2	0	0	0	1	1	0	0	0	0	0	1	0	0	0	5
5:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	3
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	10	2	0	1	7	1	0	1	2	0	0	2	1	0	0	27
APPROACH %'s :	0.00%	83.33%	16.67%	0.00%	11.11%	77.78%	11.11%	0.00%	33.33%	66.67%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	3	1	0	1	2	0	0	0	0	0	0	1	1	0	0	9
PEAK HR FACTOR :	0.000	0.750	0.250	0.000	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.750
	0.500				0.750								0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-008
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	2	2	1	0	2	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	6	0	0	1	2	1	0	0	0	0	0	1	0	1	0	12
7:15 AM	0	5	0	0	1	5	1	0	0	0	1	0	0	0	2	0	15
7:30 AM	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0	6
7:45 AM	0	3	0	0	0	5	0	0	0	0	0	0	0	1	0	0	9
8:00 AM	0	4	0	0	0	7	0	0	0	0	0	0	1	0	0	0	12
8:15 AM	0	4	0	0	1	4	1	0	0	0	0	0	0	1	0	0	11
8:30 AM	0	3	0	0	0	4	0	0	0	0	0	0	1	0	1	0	9
8:45 AM	0	5	0	0	0	5	1	0	0	0	0	0	0	0	1	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	32	0	0	3	36	4	0	0	0	1	0	3	2	5	0	86
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	6.98%	83.72%	9.30%	0.00%	0.00%	0.00%	100.00%	0.00%	30.00%	20.00%	50.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	14	0	0	1	21	1	0	0	0	1	0	1	1	2	0	42
PEAK HR FACTOR :	0.000	0.700	0.000	0.000	0.250	0.750	0.250	0.000	0.000	0.000	0.250	0.000	0.250	0.250	0.250	0.000	0.700
	0.700				0.821				0.250				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	2	2	1	0	2	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
4:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	6
5:00 PM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
5:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	4
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	8	0	0	0	8	0	0	0	1	0	0	1	0	2	0	21
APPROACH %'s :	11.11%	88.89%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	33.33%	0.00%	66.67%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	1	2	0	0	0	3	0	0	0	0	0	0	1	0	2	0	9
PEAK HR FACTOR :	0.250	0.500	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.500	0.000	0.563
	0.375				0.250								0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-009
Date: 9/15/2021

Data - Total

NS/EW Streets:	Sierra Ave				Sierra Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	5	77	1	0	13	107	33	0	29	8	5	0	3	14	13	0	308
7:15 AM	23	194	3	0	35	267	88	0	47	22	12	0	4	26	59	0	780
7:30 AM	27	212	6	0	32	280	116	1	66	29	57	0	3	49	70	0	948
7:45 AM	49	250	11	0	36	304	128	1	72	71	50	0	3	60	39	0	1074
8:00 AM	52	240	7	0	77	295	99	0	69	65	27	0	3	73	46	0	1053
8:15 AM	31	196	13	0	56	290	57	0	81	85	36	0	7	68	35	0	955
8:30 AM	16	183	11	0	45	248	52	1	41	54	13	0	2	21	57	0	744
8:45 AM	8	163	5	0	48	213	67	1	46	28	13	0	6	24	49	0	671
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	211	1515	57	0	342	2004	640	4	451	362	213	0	31	335	368	0	6533
APPROACH %'s :	11.83%	84.97%	3.20%	0.00%	11.44%	67.02%	21.40%	0.13%	43.96%	35.28%	20.76%	0.00%	4.22%	45.64%	50.14%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	159	898	37	0	201	1169	400	2	288	250	170	0	16	250	190	0	4030
PEAK HR FACTOR :	0.764	0.898	0.712	0.000	0.653	0.961	0.781	0.500	0.889	0.735	0.746	0.000	0.571	0.856	0.679	0.000	0.938
	0.882				0.941				0.876				0.934				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	18	265	9	0	101	232	58	0	119	76	17	0	21	36	88	0	1040
4:15 PM	16	363	16	0	84	269	59	0	93	52	13	0	24	37	84	0	1110
4:30 PM	14	310	16	0	81	219	67	2	106	70	15	0	17	43	93	0	1053
4:45 PM	13	325	15	0	97	251	56	1	97	53	13	0	13	25	88	0	1047
5:00 PM	16	296	17	0	86	217	57	0	123	75	9	0	14	64	87	0	1061
5:15 PM	19	329	16	0	88	246	67	1	100	66	20	0	6	37	111	0	1106
5:30 PM	17	312	20	0	83	213	61	0	97	66	15	0	12	52	101	0	1049
5:45 PM	13	315	23	0	105	225	61	0	80	59	16	0	10	40	101	0	1048
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	126	2515	132	0	725	1872	486	4	815	517	118	0	117	334	753	0	8514
APPROACH %'s :	4.54%	90.70%	4.76%	0.00%	23.49%	60.64%	15.74%	0.13%	56.21%	35.66%	8.14%	0.00%	9.72%	27.74%	62.54%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	59	1294	64	0	348	956	239	3	419	250	50	0	68	169	352	0	4271
PEAK HR FACTOR :	0.922	0.891	0.941	0.000	0.897	0.888	0.892	0.375	0.852	0.833	0.833	0.000	0.708	0.660	0.946	0.000	0.962
	0.897				0.938				0.868				0.892				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-009
Date: 9/15/2021

Data - Cars

NS/EW Streets:	Sierra Ave				Sierra Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
7:00 AM	5	72	1	0	13	104	32	0	29	8	5	0	3	14	12	0	298
7:15 AM	23	189	3	0	31	259	88	0	47	22	12	0	4	26	58	0	762
7:30 AM	27	206	5	0	30	274	115	1	64	28	57	0	3	49	69	0	928
7:45 AM	48	242	11	0	33	297	126	1	72	71	49	0	3	60	37	0	1050
8:00 AM	52	235	7	0	77	289	97	0	68	64	27	0	3	73	45	0	1037
8:15 AM	30	192	13	0	50	282	57	0	81	85	35	0	7	67	34	0	933
8:30 AM	16	178	10	0	43	238	51	1	41	54	13	0	2	20	54	0	721
8:45 AM	8	158	5	0	46	203	66	1	46	28	13	0	6	24	46	0	650
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	209	1472	55	0	323	1946	632	4	448	360	211	0	31	333	355	0	6379
APPROACH %'s :	12.04%	84.79%	3.17%	0.00%	11.12%	66.99%	21.76%	0.14%	43.96%	35.33%	20.71%	0.00%	4.31%	46.31%	49.37%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	157	875	36	0	190	1142	395	2	285	248	168	0	16	249	185	0	3948
PEAK HR FACTOR :	0.755	0.904	0.692	0.000	0.617	0.961	0.784	0.500	0.880	0.729	0.737	0.000	0.571	0.853	0.670	0.000	0.940
	0.887				0.934				0.872				0.930				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
4:00 PM	18	259	8	0	100	231	58	0	118	75	17	0	21	34	88	0	1027
4:15 PM	16	359	15	0	83	265	57	0	93	52	11	0	23	36	84	0	1094
4:30 PM	14	304	16	0	81	212	67	2	104	69	15	0	16	42	93	0	1035
4:45 PM	13	320	15	0	95	246	56	1	94	53	13	0	13	25	87	0	1031
5:00 PM	16	292	17	0	86	213	56	0	121	75	9	0	14	63	87	0	1049
5:15 PM	19	325	16	0	87	243	67	1	99	65	19	0	6	37	110	0	1094
5:30 PM	17	307	19	0	82	211	61	0	97	66	15	0	11	51	100	0	1037
5:45 PM	13	311	22	0	105	222	61	0	79	58	16	0	10	40	101	0	1038
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	126	2477	128	0	719	1843	483	4	805	513	115	0	114	328	750	0	8405
APPROACH %'s :	4.61%	90.70%	4.69%	0.00%	23.58%	60.45%	15.84%	0.13%	56.18%	35.80%	8.03%	0.00%	9.56%	27.52%	62.92%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	59	1275	63	0	345	936	236	3	412	249	48	0	66	166	351	0	4209
PEAK HR FACTOR :	0.922	0.888	0.926	0.000	0.908	0.883	0.881	0.375	0.851	0.830	0.800	0.000	0.717	0.659	0.944	0.000	0.962
	0.896				0.938				0.865				0.889				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-009
Date: 9/15/2021

Data - 2axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	0	0	0	2	1	0	0	0	0	0	0	0	1	0	6
7:15 AM	0	5	0	0	1	5	0	0	0	0	0	0	0	0	1	0	12
7:30 AM	0	2	1	0	0	6	1	0	2	1	0	0	0	0	0	0	13
7:45 AM	1	5	0	0	0	6	1	0	0	0	1	0	0	0	0	0	14
8:00 AM	0	4	0	0	0	1	2	0	0	0	0	0	0	0	0	0	7
8:15 AM	1	4	0	0	4	6	0	0	0	0	0	0	0	0	0	0	15
8:30 AM	0	2	0	0	0	6	1	0	0	0	0	0	0	0	2	0	11
8:45 AM	0	3	0	0	1	6	1	0	0	0	0	0	0	0	1	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	27	1	0	6	38	7	0	2	1	1	0	0	0	5	0	90
APPROACH %'s :	6.67%	90.00%	3.33%	0.00%	11.76%	74.51%	13.73%	0.00%	50.00%	25.00%	25.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	15	1	0	4	19	4	0	2	1	1	0	0	0	0	0	49
PEAK HR FACTOR :	0.500	0.750	0.250	0.000	0.250	0.792	0.500	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.817
	0.750				0.675				0.333								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	3	0	0	1	1	0	0	1	0	0	0	0	1	0	0	7
4:15 PM	0	4	0	0	0	2	2	0	0	0	2	0	1	1	0	0	12
4:30 PM	0	2	0	0	0	7	0	0	1	1	0	0	1	0	0	0	12
4:45 PM	0	3	0	0	0	3	0	0	3	0	0	0	0	0	0	0	9
5:00 PM	0	0	0	0	0	2	1	0	1	0	0	0	0	1	0	0	5
5:15 PM	0	4	0	0	0	1	0	0	1	0	1	0	0	0	0	0	7
5:30 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	1	0	4
5:45 PM	0	2	0	0	0	3	0	0	1	0	0	0	0	0	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	20	0	0	1	20	3	0	8	1	3	0	2	3	1	0	62
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	4.17%	83.33%	12.50%	0.00%	66.67%	8.33%	25.00%	0.00%	33.33%	50.00%	16.67%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	9	0	0	0	14	3	0	5	1	2	0	2	2	0	0	38
PEAK HR FACTOR :	0.000	0.563	0.000	0.000	0.000	0.500	0.375	0.000	0.417	0.250	0.250	0.000	0.500	0.500	0.000	0.000	0.792
	0.563				0.607				0.667				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-009
Date: 9/15/2021

Data - 3axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
7:00 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
7:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	4	0	0	0	1	0	0	0	0	1	0	6
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	1	1	0	0	3	0	0	0	0	0	0	0	1	0	0	6
8:45 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	7	1	0	0	12	1	0	0	1	0	0	0	1	2	0	25
APPROACH %'s :	0.00%	87.50%	12.50%	0.00%	0.00%	92.31%	7.69%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	33.33%	66.67%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	3	0	0	0	4	1	0	0	1	0	0	0	0	1	0	10
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.417
	0.375				0.313				0.250				0.250				

NS/EW Streets:	Sierra Ave				Sierra Ave				Highland Ave				Highland Ave				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
4:00 PM	0	1	1	0	0	0	0	0	0	1	0	0	0	1	0	0	4
4:15 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
4:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	6	2	0	0	2	0	0	0	2	0	0	0	2	0	0	14
APPROACH %'s :	0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	3	1	0	0	2	0	0	0	0	0	0	0	1	0	0	7
PEAK HR FACTOR :	0.000	0.750	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.875
	1.000				0.500								0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Highland Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-009
Date: 9/15/2021

Data - 4axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Highland Ave				Highland Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	4
7:30 AM	0	3	0	0	2	0	0	0	0	0	0	0	0	0	1	0	6
7:45 AM	0	1	0	0	3	1	0	0	0	0	0	0	0	0	2	0	7
8:00 AM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
8:15 AM	0	0	0	0	2	2	0	0	0	0	1	0	0	1	1	0	7
8:30 AM	0	2	0	0	2	1	0	0	0	0	0	0	0	0	1	0	6
8:45 AM	0	1	0	0	1	2	0	0	0	0	0	0	0	0	1	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	9	0	0	13	8	0	0	1	0	1	0	0	1	6	0	39
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	61.90%	38.10%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	14.29%	85.71%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	5	0	0	7	4	0	0	1	0	1	0	0	1	4	0	23
PEAK HR FACTOR :	0.000	0.417	0.000	0.000	0.583	0.500	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.250	0.500	0.000	0.821
	0.417				0.688				0.500				0.625				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
4:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4
4:45 PM	0	1	0	0	2	1	0	0	0	0	0	0	0	0	1	0	5
5:00 PM	0	3	0	0	0	2	0	0	1	0	0	0	0	0	0	0	6
5:15 PM	0	0	0	0	1	2	0	0	0	0	0	0	0	0	1	0	4
5:30 PM	0	1	1	0	1	1	0	0	0	0	0	0	1	1	0	0	6
5:45 PM	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	12	2	0	5	7	0	0	2	1	0	0	1	1	2	0	33
APPROACH %'s :	0.00%	85.71%	14.29%	0.00%	41.67%	58.33%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	25.00%	25.00%	50.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	7	0	0	3	4	0	0	2	0	0	0	0	0	1	0	17
PEAK HR FACTOR :	0.000	0.583	0.000	0.000	0.375	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.708
	0.583				0.583				0.500				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Base Line Rd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-010
Date: 9/8/2021

Data - Total

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Base Line Rd				Base Line Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	2	0	0	1	3	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	32	20	14	0	17	14	27	0	11	92	13	0	52	304	7	0	603
7:15 AM	15	58	26	0	24	43	25	0	44	99	11	1	41	295	45	0	727
7:30 AM	24	119	20	0	32	66	70	0	41	84	13	1	41	235	77	0	823
7:45 AM	26	69	29	0	35	67	94	0	30	95	14	5	42	267	82	0	855
8:00 AM	40	55	35	0	42	84	60	0	18	159	25	3	38	284	51	0	894
8:15 AM	19	24	17	0	37	69	33	0	8	161	25	1	49	308	24	0	775
8:30 AM	20	15	18	0	19	34	19	0	9	104	26	0	35	232	14	0	545
8:45 AM	14	10	19	0	8	23	8	0	9	85	21	0	62	249	8	0	516
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	190	370	178	0	214	400	336	0	170	879	148	11	360	2174	308	0	5738
APPROACH %'s :	25.75%	50.14%	24.12%	0.00%	22.53%	42.11%	35.37%	0.00%	14.07%	72.76%	12.25%	0.91%	12.67%	76.50%	10.84%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	109	267	101	0	146	286	257	0	97	499	77	10	170	1094	234	0	3347
PEAK HR FACTOR :	0.681	0.561	0.721	0.000	0.869	0.851	0.684	0.000	0.591	0.775	0.770	0.500	0.867	0.888	0.713	0.000	0.936
	0.732				0.879				0.833				0.958				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	2	0	0	1	3	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	19	42	41	0	14	20	25	0	21	209	30	1	45	148	16	0	631
4:15 PM	18	38	46	0	11	31	14	0	18	245	25	4	39	151	9	0	649
4:30 PM	29	53	54	0	14	28	17	0	17	229	31	0	29	129	7	0	637
4:45 PM	26	36	60	0	12	28	20	0	11	241	27	0	38	137	9	0	645
5:00 PM	28	41	54	0	13	22	11	0	14	223	32	1	31	142	12	0	624
5:15 PM	22	44	42	0	9	19	17	0	23	255	25	1	27	159	8	0	651
5:30 PM	26	41	47	0	13	18	12	0	24	261	26	0	31	180	16	0	695
5:45 PM	18	35	36	0	13	28	12	0	19	213	28	0	39	155	7	0	603
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	186	330	380	0	99	194	128	0	147	1876	224	7	279	1201	84	0	5135
APPROACH %'s :	20.76%	36.83%	42.41%	0.00%	23.52%	46.08%	30.40%	0.00%	6.52%	83.23%	9.94%	0.31%	17.84%	76.79%	5.37%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	102	162	203	0	47	87	60	0	72	980	110	2	127	618	45	0	2615
PEAK HR FACTOR :	0.911	0.920	0.846	0.000	0.904	0.777	0.750	0.000	0.750	0.939	0.859	0.500	0.836	0.858	0.703	0.000	0.941
	0.949				0.808				0.936				0.870				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Base Line Rd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-010
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Base Line Rd				Base Line Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	2	0	0	1	3	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	28	18	14	0	16	10	25	0	11	90	12	0	49	301	7	0	581
7:15 AM	15	58	25	0	23	42	25	0	44	98	11	1	39	290	45	0	716
7:30 AM	23	119	19	0	32	66	70	0	41	83	13	1	41	234	76	0	818
7:45 AM	26	69	29	0	35	67	94	0	30	95	14	5	42	261	82	0	849
8:00 AM	39	54	35	0	41	84	60	0	18	158	24	3	37	280	51	0	884
8:15 AM	17	24	16	0	36	69	33	0	8	156	25	1	49	301	23	0	758
8:30 AM	20	15	18	0	19	34	19	0	9	103	26	0	34	227	13	0	537
8:45 AM	12	10	19	0	8	22	8	0	9	81	20	0	60	244	8	0	501
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	180	367	175	0	210	394	334	0	170	864	145	11	351	2138	305	0	5644
APPROACH %'s :	24.93%	50.83%	24.24%	0.00%	22.39%	42.00%	35.61%	0.00%	14.29%	72.61%	12.18%	0.92%	12.56%	76.52%	10.92%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	105	266	99	0	144	286	257	0	97	492	76	10	169	1076	232	0	3309
PEAK HR FACTOR :	0.673	0.559	0.707	0.000	0.878	0.851	0.684	0.000	0.591	0.778	0.760	0.500	0.862	0.894	0.707	0.000	0.936
	0.730				0.876				0.831				0.959				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	2	0	0	1	3	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	18	40	41	0	14	20	25	0	21	209	28	1	44	145	16	0	622
4:15 PM	18	38	46	0	11	28	14	0	18	240	22	4	39	149	9	0	636
4:30 PM	28	51	54	0	13	25	16	0	17	229	26	0	29	128	7	0	623
4:45 PM	26	36	60	0	12	23	19	0	11	240	25	0	38	137	8	0	635
5:00 PM	28	41	54	0	11	22	11	0	14	223	30	1	31	142	12	0	620
5:15 PM	22	44	41	0	9	18	17	0	23	249	25	1	26	157	8	0	640
5:30 PM	26	40	46	0	13	18	12	0	24	259	25	0	31	178	16	0	688
5:45 PM	18	35	35	0	13	28	12	0	19	212	28	0	39	155	7	0	601
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	184	325	377	0	96	182	126	0	147	1861	209	7	277	1191	83	0	5065
APPROACH %'s :	20.77%	36.68%	42.55%	0.00%	23.76%	45.05%	31.19%	0.00%	6.61%	83.68%	9.40%	0.31%	17.86%	76.79%	5.35%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	102	161	201	0	45	81	59	0	72	971	105	2	126	614	44	0	2583
PEAK HR FACTOR :	0.911	0.915	0.838	0.000	0.865	0.880	0.776	0.000	0.750	0.937	0.875	0.500	0.829	0.862	0.688	0.000	0.939
	0.943				0.856				0.933				0.871				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Base Line Rd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-010
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Base Line Rd				Base Line Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	2	0	0	1	3	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	1	0	0	1	3	1	0	0	2	0	0	2	2	0	0	13
7:15 AM	0	0	1	0	0	1	0	0	0	1	0	0	0	5	0	0	8
7:30 AM	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	3
8:15 AM	0	0	1	0	1	0	0	0	0	2	0	0	0	5	1	0	10
8:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	4	1	0	7
8:45 AM	2	0	0	0	0	1	0	0	0	3	0	0	0	2	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	1	3	0	3	5	1	0	0	9	0	0	3	23	2	0	54
APPROACH %'s :	50.00%	12.50%	37.50%	0.00%	33.33%	55.56%	11.11%	0.00%	0.00%	100.00%	0.00%	0.00%	10.71%	82.14%	7.14%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	0	2	0	2	0	0	0	0	2	0	0	0	10	1	0	18
PEAK HR FACTOR :	0.250	0.000	0.500	0.000	0.500	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.500	0.250	0.000	0.450
	0.375				0.500				0.250				0.458				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	2	0	0	1	3	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	0	0	0	0	0	0	1	0	1	2	0	0	6
4:15 PM	0	0	0	0	0	1	0	0	0	4	0	0	0	2	0	0	7
4:30 PM	1	1	0	0	1	0	1	0	0	0	0	0	0	1	0	0	5
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	1	0	0	0	0	0	0	3	0	0	1	2	0	0	7
5:30 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	2	0	0	4
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	4	1	0	2	1	2	0	0	9	1	0	2	9	0	0	32
APPROACH %'s :	16.67%	66.67%	16.67%	0.00%	40.00%	20.00%	40.00%	0.00%	0.00%	90.00%	10.00%	0.00%	18.18%	81.82%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	1	1	0	1	0	1	0	0	5	0	0	1	4	0	0	14
PEAK HR FACTOR :	0.000	0.250	0.250	0.000	0.250	0.000	0.250	0.000	0.000	0.417	0.000	0.000	0.250	0.500	0.000	0.000	0.500
	0.500				0.500				0.417				0.417				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Base Line Rd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-010
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Base Line Rd				Base Line Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	2	0	0	1	3	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	1	0	0	0	1	1	0	0	0	1	0	1	0	0	0	7
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	1	1	0	0	0	0	0	0	0	0	1	0	0	2	0	0	5
8:15 AM	2	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	5
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	2	0	0	0	1	1	0	0	3	3	0	2	4	1	0	22
APPROACH %'s :	71.43%	28.57%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	50.00%	50.00%	0.00%	28.57%	57.14%	14.29%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	3	1	0	0	0	0	0	0	0	3	1	0	0	3	1	0	12
PEAK HR FACTOR :	0.375	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.250	0.000	0.000	0.375	0.250	0.000	0.600
	0.500				0.500				0.500				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	2	0	0	1	3	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	2	0	0	0	1	3	0	0	0	0	0	6
4:30 PM	0	0	0	0	0	3	0	0	0	0	5	0	0	0	0	0	8
4:45 PM	0	0	0	0	0	4	0	0	0	0	2	0	0	0	1	0	7
5:00 PM	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	1	10	0	0	0	1	14	0	0	0	1	0	28
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	9.09%	90.91%	0.00%	0.00%	0.00%	6.67%	93.33%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	1	5	0	0	0	0	5	0	0	0	1	0	12
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.313	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.250	0.000	0.429
					0.375				0.625				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Base Line Rd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-010
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Base Line Rd				Base Line Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	2	0	0	1	3	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	0	0	1	0	0	0	0	3	0	0	4	9	0	0	18
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	30.77%	69.23%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	2	0	0	1	5	0	0	8
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.313	0.000	0.000	0.500
									0.500				0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	2	0	0	1	3	0	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
5:30 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	1	0	0	1	0	0	0	5	0	0	0	1	0	0	10
APPROACH %'s :	33.33%	33.33%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	1	0	0	1	0	0	0	4	0	0	0	0	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.500
		0.250				0.250				0.333							

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 SB Ramps & Baseline Rd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-011
Date: 9/8/2021

Data - Total

NS/EW Streets:	I-15 SB Ramps				I-15 SB Ramps				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	2	0	0	3	1	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	65	0	157	0	0	75	60	0	0	204	0	0	561
7:15 AM	0	0	0	0	71	0	136	0	0	87	65	0	0	220	0	0	579
7:30 AM	0	0	0	0	87	0	160	0	0	103	53	0	0	227	0	0	630
7:45 AM	0	0	0	0	105	0	133	0	0	117	42	0	0	243	0	0	640
8:00 AM	0	0	0	0	99	0	141	0	0	157	72	0	0	250	0	0	719
8:15 AM	0	0	0	0	67	0	124	0	0	153	67	0	0	212	0	0	623
8:30 AM	0	0	0	0	52	0	125	0	0	119	67	0	0	177	0	0	540
8:45 AM	0	0	0	0	52	0	157	0	0	97	36	0	0	145	0	0	487
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	598	0	1133	0	0	908	462	0	0	1678	0	0	4779
APPROACH %'s :					34.55%	0.00%	65.45%	0.00%	0.00%	66.28%	33.72%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	358	0	558	0	0	530	234	0	0	932	0	0	2612
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.852	0.000	0.872	0.000	0.000	0.844	0.813	0.000	0.000	0.932	0.000	0.000	0.908
					0.927				0.834				0.932				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	2	0	0	3	1	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	69	0	76	0	0	215	40	0	0	118	0	0	518
4:15 PM	0	0	0	0	78	0	77	0	0	248	50	0	0	128	0	0	581
4:30 PM	0	0	0	0	71	0	69	0	0	227	51	0	0	108	0	0	526
4:45 PM	0	0	0	0	78	0	67	0	0	255	47	0	0	120	0	0	567
5:00 PM	0	0	0	0	64	0	61	0	0	249	38	0	0	132	0	0	544
5:15 PM	0	0	0	0	48	0	62	0	0	270	44	0	0	141	0	0	565
5:30 PM	0	0	0	0	61	0	60	0	0	261	39	0	0	160	0	0	581
5:45 PM	0	0	0	0	74	0	65	0	0	255	35	0	0	133	0	0	562
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	543	0	537	0	0	1980	344	0	0	1040	0	0	4444
APPROACH %'s :					50.28%	0.00%	49.72%	0.00%	0.00%	85.20%	14.80%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	251	0	250	0	0	1035	168	0	0	553	0	0	2257
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.804	0.000	0.933	0.000	0.000	0.958	0.894	0.000	0.000	0.864	0.000	0.000	0.971
					0.864				0.958				0.864				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 SB Ramps & Baseline Rd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-011
Date: 9/8/2021

Data - Cars

NS/EW Streets:	I-15 SB Ramps				I-15 SB Ramps				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	2	0	0	3	1	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	64	0	155	0	0	72	59	0	0	198	0	0	548
7:15 AM	0	0	0	0	69	0	135	0	0	85	64	0	0	212	0	0	565
7:30 AM	0	0	0	0	86	0	159	0	0	103	53	0	0	223	0	0	624
7:45 AM	0	0	0	0	103	0	130	0	0	116	41	0	0	240	0	0	630
8:00 AM	0	0	0	0	98	0	139	0	0	156	71	0	0	246	0	0	710
8:15 AM	0	0	0	0	66	0	123	0	0	149	66	0	0	207	0	0	611
8:30 AM	0	0	0	0	49	0	122	0	0	118	65	0	0	168	0	0	522
8:45 AM	0	0	0	0	49	0	152	0	0	94	35	0	0	142	0	0	472
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	584	0	1115	0	0	893	454	0	0	1636	0	0	4682
APPROACH %'s :					34.37%	0.00%	65.63%	0.00%	0.00%	66.30%	33.70%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	353	0	551	0	0	524	231	0	0	916	0	0	2575
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.857	0.000	0.866	0.000	0.000	0.840	0.813	0.000	0.000	0.931	0.000	0.000	0.907
					0.922				0.831				0.931				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	2	0	0	3	1	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	69	0	75	0	0	214	40	0	0	116	0	0	514
4:15 PM	0	0	0	0	71	0	77	0	0	246	48	0	0	126	0	0	568
4:30 PM	0	0	0	0	69	0	69	0	0	227	51	0	0	107	0	0	523
4:45 PM	0	0	0	0	76	0	67	0	0	253	47	0	0	118	0	0	561
5:00 PM	0	0	0	0	63	0	61	0	0	248	37	0	0	132	0	0	541
5:15 PM	0	0	0	0	48	0	62	0	0	266	43	0	0	140	0	0	559
5:30 PM	0	0	0	0	58	0	60	0	0	257	39	0	0	156	0	0	570
5:45 PM	0	0	0	0	72	0	65	0	0	253	34	0	0	133	0	0	557
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	526	0	536	0	0	1964	339	0	0	1028	0	0	4393
APPROACH %'s :					49.53%	0.00%	50.47%	0.00%	0.00%	85.28%	14.72%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	245	0	250	0	0	1024	166	0	0	546	0	0	2231
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.806	0.000	0.933	0.000	0.000	0.962	0.883	0.000	0.000	0.875	0.000	0.000	0.979
					0.865				0.963				0.875				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 SB Ramps & Baseline Rd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-011
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	I-15 SB Ramps				I-15 SB Ramps				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	2	0	0	3	1	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	1	0	2	0	0	3	1	0	0	5	0	0	12
7:15 AM	0	0	0	0	2	0	1	0	0	2	0	0	0	6	0	0	11
7:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	4
7:45 AM	0	0	0	0	0	0	1	0	0	1	1	0	0	1	0	0	4
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	3
8:15 AM	0	0	0	0	0	0	1	0	0	2	1	0	0	4	0	0	8
8:30 AM	0	0	0	0	1	0	1	0	0	0	2	0	0	8	0	0	12
8:45 AM	0	0	0	0	1	0	3	0	0	2	1	0	0	2	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	5	0	10	0	0	10	7	0	0	31	0	0	63
APPROACH %'s :					33.33%	0.00%	66.67%	0.00%	0.00%	58.82%	41.18%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	3	0	0	3	3	0	0	10	0	0	19
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.375	0.750	0.000	0.000	0.625	0.000	0.000	0.594
					0.750				0.500				0.625				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	2	0	0	3	1	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	4
4:15 PM	0	0	0	0	1	0	0	0	0	2	1	0	0	2	0	0	6
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
5:00 PM	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0	4
5:30 PM	0	0	0	0	2	0	0	0	0	2	0	0	0	3	0	0	7
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	4	0	1	0	0	10	3	0	0	10	0	0	28
APPROACH %'s :					80.00%	0.00%	20.00%	0.00%	0.00%	76.92%	23.08%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	3	0	0	0	0	6	2	0	0	5	0	0	16
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.750	0.500	0.000	0.000	0.417	0.000	0.000	0.571
					0.375				0.667				0.417				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 SB Ramps & Baseline Rd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-011
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	I-15 SB Ramps				I-15 SB Ramps				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	2	0	0	3	1	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
8:15 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	3
8:30 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	3
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	2	0	2	0	0	2	0	0	0	4	0	0	10
APPROACH %'s :					50.00%	0.00%	50.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	1	0	1	0	0	1	0	0	0	3	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.750	0.000	0.000	0.500
					0.500				0.250				0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	2	0	0	3	1	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	3	0	0	0	0	1	1	0	0	2	0	0	7
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	1	0	0	0	2	0	0	4
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.500
					0.250				0.250				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 SB Ramps & Baseline Rd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-011
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	I-15 SB Ramps				I-15 SB Ramps				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	2	0	0	3	1	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	3
7:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	2	0	0	6
8:00 AM	0	0	0	0	1	0	1	0	0	1	0	0	0	1	0	0	4
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	3
8:45 AM	0	0	0	0	2	0	1	0	0	1	0	0	0	1	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	7	0	6	0	0	3	1	0	0	7	0	0	24
APPROACH %'s :					53.85%	0.00%	46.15%	0.00%	0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	4	0	3	0	0	2	0	0	0	3	0	0	12
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.500	0.000	0.375	0.000	0.000	0.500	0.000	0.000	0.000	0.375	0.000	0.000	0.500
					0.438				0.500				0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	2	0	0	3	1	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	2	0	0	0	0	1	1	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	10	0	0	0	0	5	1	0	0	0	0	0	16
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%	83.33%	16.67%	0.00%					
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	2	0	0	0	0	4	0	0	0	0	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500
					0.500				0.500								

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 NB Ramps & Baseline Rd
City: Fontana
Control: Signalized

Project ID: 21-030070-012
Date: 9/15/2021

Data - Total

NS/EW Streets:	I-15 NB Ramps				I-15 NB Ramps				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	2	3	0	0	0	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	34	2	62	0	0	0	0	0	69	72	0	0	0	347	30	0	616
7:15 AM	62	1	58	0	0	0	0	0	57	93	0	0	0	409	30	0	710
7:30 AM	99	0	82	0	0	0	0	0	73	127	0	0	0	380	40	0	801
7:45 AM	76	0	77	0	0	0	0	0	70	124	0	0	0	440	56	0	843
8:00 AM	47	1	70	0	0	0	0	0	93	142	0	0	0	429	37	0	819
8:15 AM	46	1	67	0	0	0	0	0	110	164	0	0	0	326	34	0	748
8:30 AM	44	0	60	0	0	0	0	0	75	177	0	0	0	259	35	0	650
8:45 AM	38	0	58	0	0	0	0	0	66	111	0	0	0	225	24	0	522
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	446	5	534	0	0	0	0	0	613	1010	0	0	0	2815	286	0	5709
APPROACH %'s :	45.28%	0.51%	54.21%	0.00%					37.77%	62.23%	0.00%	0.00%	0.00%	90.78%	9.22%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	268	2	296	0	0	0	0	0	346	557	0	0	0	1575	167	0	3211
PEAK HR FACTOR :	0.677	0.500	0.902	0.000	0.000	0.000	0.000	0.000	0.786	0.849	0.000	0.000	0.000	0.895	0.746	0.000	0.952
	0.782								0.824				0.878				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	2	3	0	0	0	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	72	1	116	0	0	0	0	0	114	255	0	0	0	191	62	0	811
4:15 PM	58	0	105	0	0	0	0	0	109	188	0	0	0	171	38	0	669
4:30 PM	63	0	128	0	0	0	0	0	106	186	0	0	0	181	63	0	727
4:45 PM	75	0	116	0	0	0	0	0	106	209	0	0	0	186	52	0	744
5:00 PM	68	0	109	0	0	0	0	0	119	227	0	0	0	177	47	0	747
5:15 PM	71	0	122	0	0	0	0	0	109	216	0	0	0	177	44	0	739
5:30 PM	65	0	135	0	0	0	0	0	113	244	0	0	0	214	35	0	806
5:45 PM	69	0	145	0	0	0	0	0	93	218	0	0	0	216	27	0	768
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	541	1	976	0	0	0	0	0	869	1743	0	0	0	1513	368	0	6011
APPROACH %'s :	35.64%	0.07%	64.30%	0.00%					33.27%	66.73%	0.00%	0.00%	0.00%	80.44%	19.56%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	273	0	511	0	0	0	0	0	434	905	0	0	0	784	153	0	3060
PEAK HR FACTOR :	0.961	0.000	0.881	0.000	0.000	0.000	0.000	0.000	0.912	0.927	0.000	0.000	0.000	0.907	0.814	0.000	0.949
	0.916								0.938				0.941				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 NB Ramps & Baseline Rd
City: Fontana
Control: Signalized

Project ID: 21-030070-012
Date: 9/15/2021

Data - Cars

NS/EW Streets:	I-15 NB Ramps				I-15 NB Ramps				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	2	3	0	0	0	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	34	2	55	0	0	0	0	0	67	70	0	0	0	337	28	0	593
7:15 AM	58	1	54	0	0	0	0	0	56	92	0	0	0	397	29	0	687
7:30 AM	94	0	80	0	0	0	0	0	73	126	0	0	0	373	38	0	784
7:45 AM	74	0	75	0	0	0	0	0	68	122	0	0	0	435	52	0	826
8:00 AM	47	1	68	0	0	0	0	0	91	141	0	0	0	426	36	0	810
8:15 AM	45	1	63	0	0	0	0	0	107	162	0	0	0	318	33	0	729
8:30 AM	42	0	57	0	0	0	0	0	74	173	0	0	0	253	34	0	633
8:45 AM	34	0	58	0	0	0	0	0	65	107	0	0	0	216	24	0	504
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	428	5	510	0	0	0	0	0	601	993	0	0	0	2755	274	0	5566
APPROACH %'s :	45.39%	0.53%	54.08%	0.00%					37.70%	62.30%	0.00%	0.00%	0.00%	90.95%	9.05%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	260	2	286	0	0	0	0	0	339	551	0	0	0	1552	159	0	3149
PEAK HR FACTOR :	0.691	0.500	0.894	0.000	0.000	0.000	0.000	0.000	0.792	0.850	0.000	0.000	0.000	0.892	0.764	0.000	0.953
	0.787								0.827				0.878				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	2	3	0	0	0	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	71	1	114	0	0	0	0	0	111	253	0	0	0	190	58	0	798
4:15 PM	57	0	103	0	0	0	0	0	108	185	0	0	0	167	36	0	656
4:30 PM	62	0	126	0	0	0	0	0	105	182	0	0	0	179	62	0	716
4:45 PM	74	0	114	0	0	0	0	0	105	206	0	0	0	180	49	0	728
5:00 PM	68	0	109	0	0	0	0	0	119	226	0	0	0	175	45	0	742
5:15 PM	70	0	122	0	0	0	0	0	109	216	0	0	0	172	43	0	732
5:30 PM	63	0	134	0	0	0	0	0	111	240	0	0	0	205	34	0	787
5:45 PM	69	0	141	0	0	0	0	0	92	215	0	0	0	215	25	0	757
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	534	1	963	0	0	0	0	0	860	1723	0	0	0	1483	352	0	5916
APPROACH %'s :	35.65%	0.07%	64.29%	0.00%					33.29%	66.71%	0.00%	0.00%	0.00%	80.82%	19.18%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	270	0	506	0	0	0	0	0	431	897	0	0	0	767	147	0	3018
PEAK HR FACTOR :	0.964	0.000	0.897	0.000	0.000	0.000	0.000	0.000	0.905	0.934	0.000	0.000	0.000	0.892	0.817	0.000	0.959
	0.924								0.946				0.952				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 NB Ramps & Baseline Rd
City: Fontana
Control: Signalized

Project ID: 21-030070-012
Date: 9/15/2021

Data - 2axle

NS/EW Streets:	I-15 NB Ramps				I-15 NB Ramps				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	2	3	0	0	0	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	5	0	0	0	0	0	1	2	0	0	0	5	1	0	14
7:15 AM	2	0	3	0	0	0	0	0	1	1	0	0	0	6	1	0	14
7:30 AM	3	0	2	0	0	0	0	0	0	1	0	0	0	4	0	0	10
7:45 AM	0	0	2	0	0	0	0	0	1	1	0	0	0	3	3	0	10
8:00 AM	0	0	2	0	0	0	0	0	1	0	0	0	0	2	0	0	5
8:15 AM	1	0	1	0	0	0	0	0	0	1	0	0	0	5	0	0	8
8:30 AM	1	0	1	0	0	0	0	0	1	1	0	0	0	4	0	0	8
8:45 AM	4	0	0	0	0	0	0	0	1	1	0	0	0	4	0	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	11	0	16	0	0	0	0	0	6	8	0	0	0	33	5	0	79
APPROACH %'s :	40.74%	0.00%	59.26%	0.00%					42.86%	57.14%	0.00%	0.00%	0.00%	86.84%	13.16%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	4	0	7	0	0	0	0	0	2	3	0	0	0	14	3	0	33
PEAK HR FACTOR :	0.333	0.000	0.875	0.000	0.000	0.000	0.000	0.000	0.500	0.750	0.000	0.000	0.000	0.700	0.250	0.000	0.825
	0.550								0.625				0.708				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	2	3	0	0	0	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	2	0	0	0	0	0	1	1	0	0	0	1	1	0	7
4:15 PM	0	0	1	0	0	0	0	0	1	1	0	0	0	4	0	0	7
4:30 PM	1	0	1	0	0	0	0	0	0	2	0	0	0	2	0	0	6
4:45 PM	1	0	2	0	0	0	0	0	0	2	0	0	0	3	1	0	9
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	5
5:30 PM	1	0	1	0	0	0	0	0	1	3	0	0	0	4	1	0	11
5:45 PM	0	0	3	0	0	0	0	0	0	2	0	0	0	1	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	0	10	0	0	0	0	0	3	12	0	0	0	21	4	0	54
APPROACH %'s :	28.57%	0.00%	71.43%	0.00%					20.00%	80.00%	0.00%	0.00%	0.00%	84.00%	16.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	1	0	4	0	0	0	0	0	1	6	0	0	0	11	2	0	25
PEAK HR FACTOR :	0.250	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.250	0.500	0.000	0.000	0.000	0.688	0.500	0.000	0.568
	0.417								0.438				0.650				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 NB Ramps & Baseline Rd
City: Fontana
Control: Signalized

Project ID: 21-030070-012
Date: 9/15/2021

Data - 3axle

NS/EW Streets:	I-15 NB Ramps				I-15 NB Ramps				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	2	3	0	0	0	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	5
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	3	0	0	5
8:30 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	3	4	0	0	0	14	1	0	22
APPROACH %'s :									42.86%	57.14%	0.00%	0.00%	0.00%	93.33%	6.67%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	3	0	0	0	0	5	0	0	8
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.417	0.000	0.000	0.400
									0.375				0.417				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	2	3	0	0	0	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
5:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	4
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	0	1	0	0	0	0	0	1	5	0	0	0	7	0	0	16
APPROACH %'s :	66.67%	0.00%	33.33%	0.00%					16.67%	83.33%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	2	0	1	0	0	0	0	0	0	0	0	0	0	4	0	0	7
PEAK HR FACTOR :	0.500	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.438
		0.750												0.333			

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 NB Ramps & Baseline Rd
City: Fontana
Control: Signalized

Project ID: 21-030070-012
Date: 9/15/2021

Data - 4axle

NS/EW Streets:	I-15 NB Ramps				I-15 NB Ramps				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	2	3	0	0	0	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	2	0	0	0	0	0	1	0	0	0	0	1	0	0	4
7:15 AM	2	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	6
7:30 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	5
7:45 AM	2	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	6
8:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	4
8:15 AM	0	0	3	0	0	0	0	0	1	1	0	0	0	0	1	0	6
8:30 AM	1	0	2	0	0	0	0	0	0	0	0	0	0	2	1	0	6
8:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	0	8	0	0	0	0	0	3	5	0	0	0	13	6	0	42
APPROACH %'s :	46.67%	0.00%	53.33%	0.00%					37.50%	62.50%	0.00%	0.00%	0.00%	68.42%	31.58%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	4	0	3	0	0	0	0	0	2	3	0	0	0	4	5	0	21
PEAK HR FACTOR :	0.500	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500	0.750	0.000	0.000	0.000	0.500	0.625	0.000	0.875
	0.583								0.625				0.750				

NS/EW Streets:	I-15 NB Ramps				I-15 NB Ramps				Baseline Rd				Baseline Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	2	3	0	0	0	4	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	3	0	5
4:15 PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	4
4:30 PM	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	3
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	4
5:45 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	2	0	0	0	0	0	5	3	0	0	0	2	12	0	25
APPROACH %'s :	33.33%	0.00%	66.67%	0.00%					62.50%	37.50%	0.00%	0.00%	0.00%	14.29%	85.71%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	2	2	0	0	0	2	4	0	10
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.000	0.000	0.250	0.500	0.000	0.625
	0.000								0.500				0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-013
Date: 9/8/2021

Data - Total

NS/EW Streets:	Cherry Ave				Cherry Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	10	75	24	0	8	184	72	0	19	57	12	0	76	260	12	0	809
7:15 AM	10	82	17	0	8	144	57	0	30	63	16	0	85	283	20	0	815
7:30 AM	12	105	29	0	12	171	101	0	47	87	21	0	93	392	16	0	1086
7:45 AM	13	103	32	0	12	177	113	0	55	123	45	0	105	426	25	0	1229
8:00 AM	11	134	48	0	19	167	95	0	71	148	36	0	121	310	15	0	1175
8:15 AM	16	139	36	0	25	211	97	0	57	133	29	0	83	195	10	0	1031
8:30 AM	16	78	22	0	21	133	54	0	45	136	26	0	75	160	6	0	772
8:45 AM	17	100	14	0	11	168	45	0	44	79	23	0	61	124	7	0	693
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	105	816	222	0	116	1355	634	0	368	826	208	0	699	2150	111	0	7610
APPROACH %'s :	9.19%	71.39%	19.42%	0.00%	5.51%	64.37%	30.12%	0.00%	26.25%	58.92%	14.84%	0.00%	23.61%	72.64%	3.75%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	52	481	145	0	68	726	406	0	230	491	131	0	402	1323	66	0	4521
PEAK HR FACTOR :	0.813	0.865	0.755	0.000	0.680	0.860	0.898	0.000	0.810	0.829	0.728	0.000	0.831	0.776	0.660	0.000	0.920
	0.878				0.901				0.835				0.805				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	22	209	58	0	19	150	32	0	64	249	22	0	76	110	9	0	1020
4:15 PM	24	215	59	0	28	166	25	0	54	196	28	0	78	107	18	0	998
4:30 PM	40	263	83	0	23	129	30	0	68	225	23	0	61	117	11	0	1073
4:45 PM	47	248	81	0	24	140	22	0	79	252	20	0	72	128	13	0	1126
5:00 PM	28	201	84	0	17	85	17	0	77	247	18	0	60	136	15	0	985
5:15 PM	35	246	84	0	31	87	34	0	68	236	21	0	81	149	16	0	1088
5:30 PM	31	186	75	0	34	87	13	0	80	320	21	0	71	166	15	0	1099
5:45 PM	27	184	95	0	29	94	38	0	65	274	19	0	64	124	19	0	1032
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	254	1752	619	0	205	938	211	0	555	1999	172	0	563	1037	116	0	8421
APPROACH %'s :	9.68%	66.74%	23.58%	0.00%	15.14%	69.28%	15.58%	0.00%	20.36%	73.33%	6.31%	0.00%	32.81%	60.43%	6.76%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	141	881	324	0	106	399	86	0	304	1055	80	0	284	579	59	0	4298
PEAK HR FACTOR :	0.750	0.888	0.964	0.000	0.779	0.713	0.632	0.000	0.950	0.824	0.952	0.000	0.877	0.872	0.922	0.000	0.954
	0.895				0.794				0.855				0.915				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-013
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Cherry Ave				Cherry Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	8	70	23	0	8	175	71	0	19	56	11	0	72	255	11	0	779
7:15 AM	8	81	16	0	8	134	55	0	29	61	16	0	85	281	20	0	794
7:30 AM	11	95	28	0	11	157	99	0	46	82	19	0	89	390	16	0	1043
7:45 AM	11	95	27	0	12	169	113	0	54	123	43	0	103	424	25	0	1199
8:00 AM	9	119	48	0	19	144	94	0	71	144	36	0	119	306	15	0	1124
8:15 AM	12	129	33	0	25	188	94	0	56	131	27	0	81	191	10	0	977
8:30 AM	13	61	19	0	20	122	54	0	45	132	25	0	67	156	5	0	719
8:45 AM	14	89	14	0	11	158	42	0	44	76	20	0	58	121	7	0	654
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	86	739	208	0	114	1247	622	0	364	805	197	0	674	2124	109	0	7289
APPROACH %'s :	8.33%	71.54%	20.14%	0.00%	5.75%	62.88%	31.37%	0.00%	26.65%	58.93%	14.42%	0.00%	23.19%	73.07%	3.75%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	43	438	136	0	67	658	400	0	227	480	125	0	392	1311	66	0	4343
PEAK HR FACTOR :	0.896	0.849	0.708	0.000	0.670	0.875	0.885	0.000	0.799	0.833	0.727	0.000	0.824	0.773	0.660	0.000	0.906
	0.876				0.916				0.829				0.801				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	22	203	55	0	18	137	32	0	63	247	20	0	72	108	9	0	986
4:15 PM	22	200	57	0	28	157	25	0	53	195	27	0	74	104	18	0	960
4:30 PM	38	255	80	0	23	120	30	0	67	221	22	0	59	116	11	0	1042
4:45 PM	45	239	80	0	23	128	21	0	79	250	20	0	70	125	13	0	1093
5:00 PM	27	194	80	0	17	81	16	0	77	245	18	0	60	134	14	0	963
5:15 PM	32	240	83	0	31	82	33	0	68	236	21	0	75	144	16	0	1061
5:30 PM	28	179	73	0	34	81	13	0	79	317	20	0	71	162	15	0	1072
5:45 PM	27	177	93	0	29	92	38	0	65	272	19	0	64	124	18	0	1018
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	241	1687	601	0	203	878	208	0	551	1983	167	0	545	1017	114	0	8195
APPROACH %'s :	9.53%	66.71%	23.76%	0.00%	15.75%	68.11%	16.14%	0.00%	20.40%	73.42%	6.18%	0.00%	32.52%	60.68%	6.80%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	132	852	316	0	105	372	83	0	303	1048	79	0	276	565	58	0	4189
PEAK HR FACTOR :	0.733	0.888	0.952	0.000	0.772	0.727	0.629	0.000	0.959	0.826	0.940	0.000	0.920	0.872	0.906	0.000	0.958
	0.893				0.814				0.859				0.906				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-013
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
7:00 AM	1	2	0	0	0	4	1	0	0	1	1	0	3	4	1	0	18
7:15 AM	0	0	0	0	0	2	0	0	1	2	0	0	0	2	0	0	7
7:30 AM	0	4	1	0	0	2	2	0	1	4	0	0	2	2	0	0	18
7:45 AM	1	3	2	0	0	2	0	0	1	0	1	0	0	0	0	0	10
8:00 AM	2	7	0	0	0	5	1	0	0	2	0	0	1	4	0	0	22
8:15 AM	1	6	2	0	0	6	2	0	1	1	1	0	1	1	0	0	22
8:30 AM	2	7	0	0	1	3	0	0	0	1	1	0	2	4	0	0	21
8:45 AM	0	4	0	0	0	6	2	0	0	1	1	0	2	2	0	0	18
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	33	5	0	1	30	8	0	4	12	5	0	11	19	1	0	136
APPROACH %'s :	15.56%	73.33%	11.11%	0.00%	2.56%	76.92%	20.51%	0.00%	19.05%	57.14%	23.81%	0.00%	35.48%	61.29%	3.23%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	4	20	5	0	0	15	5	0	3	7	2	0	4	7	0	0	72
PEAK HR FACTOR :	0.500	0.714	0.625	0.000	0.000	0.625	0.625	0.000	0.750	0.438	0.500	0.000	0.500	0.438	0.000	0.000	0.818
	0.806				0.625				0.600				0.550				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
4:00 PM	0	3	0	0	1	3	0	0	1	0	0	0	2	1	0	0	11
4:15 PM	0	6	0	0	0	2	0	0	1	1	0	0	0	2	0	0	12
4:30 PM	0	0	1	0	0	1	0	0	0	3	0	0	2	1	0	0	8
4:45 PM	1	1	0	0	1	1	1	0	0	2	0	0	1	3	0	0	11
5:00 PM	0	0	1	0	0	1	1	0	0	2	0	0	0	1	0	0	6
5:15 PM	1	1	0	0	0	1	1	0	0	0	0	0	2	3	0	0	9
5:30 PM	1	0	0	0	0	1	0	0	1	2	0	0	0	3	0	0	8
5:45 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	12	2	0	2	10	3	0	3	11	0	0	7	14	0	0	67
APPROACH %'s :	17.65%	70.59%	11.76%	0.00%	13.33%	66.67%	20.00%	0.00%	21.43%	78.57%	0.00%	0.00%	33.33%	66.67%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	3	2	1	0	1	4	3	0	1	6	0	0	3	10	0	0	34
PEAK HR FACTOR :	0.750	0.500	0.250	0.000	0.250	1.000	0.750	0.000	0.250	0.750	0.000	0.000	0.375	0.833	0.000	0.000	0.773
	0.750				0.667				0.583				0.650				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-013
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
7:00 AM	1	2	1	0	0	2	0	0	0	0	0	0	1	0	0	0	7
7:15 AM	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
7:30 AM	0	3	0	0	1	5	0	0	0	0	1	0	0	0	0	0	10
7:45 AM	0	1	1	0	0	2	0	0	0	0	0	0	1	0	0	0	5
8:00 AM	0	3	0	0	0	3	0	0	0	1	0	0	1	0	0	0	8
8:15 AM	1	1	0	0	0	2	1	0	0	0	0	0	0	1	0	0	6
8:30 AM	0	1	2	0	0	1	0	0	0	2	0	0	3	0	0	0	9
8:45 AM	0	2	0	0	0	1	1	0	0	0	2	0	0	0	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	14	4	0	1	17	2	0	0	3	3	0	6	1	0	0	54
APPROACH %'s :	14.29%	66.67%	19.05%	0.00%	5.00%	85.00%	10.00%	0.00%	0.00%	50.00%	50.00%	0.00%	85.71%	14.29%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	8	1	0	1	12	1	0	0	1	1	0	2	1	0	0	29
PEAK HR FACTOR :	0.250	0.667	0.250	0.000	0.250	0.600	0.250	0.000	0.000	0.250	0.250	0.000	0.500	0.250	0.000	0.000	0.725
	0.833				0.583				0.500				0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
4:00 PM	0	0	2	0	0	3	0	0	0	1	0	0	2	1	0	0	9
4:15 PM	0	2	0	0	0	2	0	0	0	0	1	0	3	1	0	0	9
4:30 PM	1	3	0	0	0	3	0	0	1	1	0	0	0	0	0	0	9
4:45 PM	0	3	0	0	0	6	0	0	0	0	0	0	1	0	0	0	10
5:00 PM	0	2	1	0	0	2	0	0	0	0	0	0	0	1	0	0	6
5:15 PM	0	3	0	0	0	2	0	0	0	0	0	0	3	1	0	0	9
5:30 PM	1	2	0	0	0	2	0	0	0	0	1	0	0	0	0	0	6
5:45 PM	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	17	4	0	0	21	0	0	1	2	2	0	9	4	0	0	62
APPROACH %'s :	8.70%	73.91%	17.39%	0.00%	0.00%	100.00%	0.00%	0.00%	20.00%	40.00%	40.00%	0.00%	69.23%	30.77%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	1	10	1	0	0	12	0	0	0	0	1	0	4	2	0	0	31
PEAK HR FACTOR :	0.250	0.833	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.250	0.000	0.333	0.500	0.000	0.000	0.775
	1.000				0.500				0.250				0.375				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-013
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
7:00 AM	0	1	0	0	0	3	0	0	0	0	0	0	0	1	0	0	5
7:15 AM	1	0	1	0	0	7	2	0	0	0	0	0	0	0	0	0	11
7:30 AM	1	3	0	0	0	7	0	0	0	1	1	0	2	0	0	0	15
7:45 AM	1	4	2	0	0	4	0	0	0	0	1	0	1	2	0	0	15
8:00 AM	0	5	0	0	0	15	0	0	0	1	0	0	0	0	0	0	21
8:15 AM	2	3	1	0	0	15	0	0	0	1	1	0	1	2	0	0	26
8:30 AM	1	9	1	0	0	7	0	0	0	1	0	0	3	0	1	0	23
8:45 AM	3	5	0	0	0	3	0	0	0	2	0	0	1	1	0	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	30	5	0	0	61	2	0	0	6	3	0	8	6	1	0	131
APPROACH %'s :	20.45%	68.18%	11.36%	0.00%	0.00%	96.83%	3.17%	0.00%	0.00%	66.67%	33.33%	0.00%	53.33%	40.00%	6.67%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	4	15	3	0	0	41	0	0	0	3	3	0	4	4	0	0	77
PEAK HR FACTOR :	0.500	0.750	0.375	0.000	0.000	0.683	0.000	0.000	0.000	0.750	0.750	0.000	0.500	0.500	0.000	0.000	0.740
	0.786				0.683				0.750				0.667				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
4:00 PM	0	3	1	0	0	7	0	0	0	1	2	0	0	0	0	0	14
4:15 PM	2	7	2	0	0	5	0	0	0	0	0	0	1	0	0	0	17
4:30 PM	1	5	2	0	0	5	0	0	0	0	1	0	0	0	0	0	14
4:45 PM	1	5	1	0	0	5	0	0	0	0	0	0	0	0	0	0	12
5:00 PM	1	5	2	0	0	1	0	0	0	0	0	0	0	0	1	0	10
5:15 PM	2	2	1	0	0	2	0	0	0	0	0	0	1	1	0	0	9
5:30 PM	1	5	2	0	0	3	0	0	0	1	0	0	0	1	0	0	13
5:45 PM	0	4	1	0	0	1	0	0	0	1	0	0	0	0	1	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	8	36	12	0	0	29	0	0	0	3	3	0	2	2	2	0	97
APPROACH %'s :	14.29%	64.29%	21.43%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	33.33%	33.33%	33.33%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	5	17	6	0	0	11	0	0	0	1	0	0	1	2	1	0	44
PEAK HR FACTOR :	0.625	0.850	0.750	0.000	0.000	0.550	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.500	0.250	0.000	0.846
	0.875				0.550				0.250				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-014
Date: 9/8/2021

Data - Total

NS/EW Streets:	Beech Ave				Beech Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	20	78	5	0	20	45	70	0	42	95	6	0	7	184	30	4	606
7:15 AM	12	92	2	0	31	84	60	0	31	122	15	0	4	148	28	6	635
7:30 AM	13	41	3	0	20	68	40	0	34	95	6	0	1	117	14	9	461
7:45 AM	19	28	3	0	22	41	24	0	24	89	10	0	7	116	10	7	400
8:00 AM	14	17	7	0	11	23	24	0	12	79	11	0	3	89	14	7	311
8:15 AM	11	34	2	0	13	19	25	0	16	78	6	0	5	78	10	13	310
8:30 AM	12	30	4	0	10	20	15	0	11	72	5	0	5	65	17	5	271
8:45 AM	16	23	5	0	16	27	13	0	18	64	5	0	4	70	12	8	281
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	117	343	31	0	143	327	271	0	188	694	64	0	36	867	135	59	3275
APPROACH %'s :	23.83%	69.86%	6.31%	0.00%	19.30%	44.13%	36.57%	0.00%	19.87%	73.36%	6.77%	0.00%	3.28%	79.03%	12.31%	5.38%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	64	239	13	0	93	238	194	0	131	401	37	0	19	565	82	26	2102
PEAK HR FACTOR :	0.800	0.649	0.650	0.000	0.750	0.708	0.693	0.000	0.780	0.822	0.617	0.000	0.679	0.768	0.683	0.722	0.828
	0.745				0.750				0.847				0.769				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	43	7	0	21	40	22	0	51	226	18	0	5	102	17	2	570
4:15 PM	20	51	4	0	30	41	18	0	49	239	14	0	5	135	28	7	641
4:30 PM	24	45	5	0	32	47	27	0	50	250	17	0	10	126	29	6	668
4:45 PM	25	70	9	0	33	46	23	0	61	281	20	0	7	145	30	1	751
5:00 PM	21	61	6	0	33	50	13	0	54	207	17	0	18	153	33	4	670
5:15 PM	24	73	3	0	32	46	27	0	46	226	18	0	13	113	29	4	654
5:30 PM	12	64	5	0	26	56	28	0	40	190	22	0	5	105	21	6	580
5:45 PM	21	31	4	0	27	46	17	0	45	161	16	0	4	90	17	4	483
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	163	438	43	0	234	372	175	0	396	1780	142	0	67	969	204	34	5017
APPROACH %'s :	25.31%	68.01%	6.68%	0.00%	29.96%	47.63%	22.41%	0.00%	17.08%	76.79%	6.13%	0.00%	5.26%	76.06%	16.01%	2.67%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	94	249	23	0	130	189	90	0	211	964	72	0	48	537	121	15	2743
PEAK HR FACTOR :	0.940	0.853	0.639	0.000	0.985	0.945	0.833	0.000	0.865	0.858	0.900	0.000	0.667	0.877	0.917	0.625	0.913
	0.880				0.965				0.861				0.867				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-014
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Beech Ave				Beech Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	19	78	5	0	19	45	70	0	42	93	6	0	7	181	30	4	599
7:15 AM	12	92	2	0	31	84	58	0	30	119	15	0	4	142	28	6	623
7:30 AM	13	41	3	0	20	67	38	0	34	92	6	0	1	112	14	9	450
7:45 AM	19	28	3	0	22	40	24	0	24	85	10	0	7	112	10	7	391
8:00 AM	14	17	7	0	11	23	24	0	12	78	11	0	3	87	14	7	308
8:15 AM	11	32	2	0	12	18	25	0	16	74	6	0	5	74	10	13	298
8:30 AM	12	29	4	0	10	19	15	0	10	67	5	0	5	64	17	5	262
8:45 AM	16	23	5	0	15	27	13	0	17	60	4	0	3	69	12	8	272
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	116	340	31	0	140	323	267	0	185	668	63	0	35	841	135	59	3203
APPROACH %'s :	23.82%	69.82%	6.37%	0.00%	19.18%	44.25%	36.58%	0.00%	20.20%	72.93%	6.88%	0.00%	3.27%	78.60%	12.62%	5.51%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	63	239	13	0	92	236	190	0	130	389	37	0	19	547	82	26	2063
PEAK HR FACTOR :	0.829	0.649	0.650	0.000	0.742	0.702	0.679	0.000	0.774	0.817	0.617	0.000	0.679	0.756	0.683	0.722	0.828
	0.743				0.749				0.848				0.759				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	42	7	0	21	40	22	0	50	221	18	0	5	100	17	2	561
4:15 PM	20	51	4	0	30	41	16	0	48	236	14	0	5	128	28	7	628
4:30 PM	24	44	5	0	31	47	27	0	50	246	16	0	9	122	29	6	656
4:45 PM	25	70	8	0	33	45	23	0	61	280	20	0	7	145	30	1	748
5:00 PM	21	61	6	0	32	50	13	0	54	203	17	0	17	146	33	4	657
5:15 PM	24	72	3	0	32	46	27	0	46	224	18	0	13	112	29	4	650
5:30 PM	12	64	5	0	26	56	28	0	39	186	22	0	5	103	21	6	573
5:45 PM	21	30	4	0	27	46	17	0	45	161	16	0	4	90	16	4	481
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	163	434	42	0	232	371	173	0	393	1757	141	0	65	946	203	34	4954
APPROACH %'s :	25.51%	67.92%	6.57%	0.00%	29.90%	47.81%	22.29%	0.00%	17.15%	76.69%	6.15%	0.00%	5.21%	75.80%	16.27%	2.72%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	94	247	22	0	128	188	90	0	211	953	71	0	46	525	121	15	2711
PEAK HR FACTOR :	0.940	0.858	0.688	0.000	0.970	0.940	0.833	0.000	0.865	0.851	0.888	0.000	0.676	0.899	0.917	0.625	0.906
	0.881				0.967				0.855				0.884				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-014
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Beech Ave				Beech Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	0	0	1	0	0	0	0	1	0	0	0	2	0	0	5
7:15 AM	0	0	0	0	0	0	1	0	1	1	0	0	0	2	0	0	5
7:30 AM	0	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	4
7:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	1	0	0	1	1	0	0	0	3	0	0	0	2	0	0	8
8:30 AM	0	1	0	0	0	0	0	0	1	3	0	0	0	0	0	0	5
8:45 AM	0	0	0	0	1	0	0	0	1	3	1	0	1	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	2	0	0	3	3	2	0	3	12	1	0	1	9	0	0	37
APPROACH %'s :	33.33%	66.67%	0.00%	0.00%	37.50%	37.50%	25.00%	0.00%	18.75%	75.00%	6.25%	0.00%	10.00%	90.00%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	1	0	0	0	1	2	2	0	1	3	0	0	0	7	0	0	17
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.250	0.500	0.500	0.000	0.250	0.750	0.000	0.000	0.000	0.875	0.000	0.000	0.850
	0.250				0.625				0.500				0.875				

NS/EW Streets:	Beech Ave				Beech Ave				Baseline Ave				Baseline Ave				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	3
4:15 PM	0	0	0	0	0	0	2	0	1	1	0	0	0	2	0	0	6
4:30 PM	0	1	0	0	1	0	0	0	0	2	1	0	1	2	0	0	8
4:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	2	0	0	4
5:15 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	1	0	2	0	2	0	3	8	1	0	1	8	1	0	29
APPROACH %'s :	0.00%	66.67%	33.33%	0.00%	50.00%	0.00%	50.00%	0.00%	25.00%	66.67%	8.33%	0.00%	10.00%	80.00%	10.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	2	1	0	2	0	0	0	0	4	1	0	1	5	0	0	16
PEAK HR FACTOR :	0.000	0.500	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.250	0.000	0.250	0.625	0.000	0.000	0.500
	0.750				0.500				0.417				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-014
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Beech Ave				Beech Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:30 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	1	2	0	0	4	0	0	0	5	0	0	12
APPROACH %'s :					0.00%	33.33%	66.67%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	2	0	0	2	0	0	0	2	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.750
					0.500				0.250				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	0	0	0	0	2	0	0	1	7	0	0	12
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%					0.00%	100.00%	0.00%	0.00%	12.50%	87.50%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	4
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.500	0.000	0.000	0.333
									0.250				0.375				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-014
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Beech Ave				Beech Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	6
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5
7:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
8:15 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3
8:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	0	0	0	10	0	0	0	12	0	0	23
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	7	0	0	0	9	0	0	16
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.875	0.000	0.000	0.000	0.563	0.000	0.000	0.667
									0.875				0.563				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4
4:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
4:45 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	6
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	1	0	0	0	13	0	0	0	8	0	0	22
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	6	0	0	0	5	0	0	12
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.313	0.000	0.000	0.500
						0.250				0.750				0.313			

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-015
Date: 9/8/2021

Data - Total

NS/EW Streets:	Citrus Ave				Citrus Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	13	87	18	0	15	141	56	8	46	47	10	0	9	99	12	2	563
7:15 AM	14	99	8	0	23	164	44	6	32	65	12	1	17	141	11	2	639
7:30 AM	22	123	19	0	15	166	67	3	60	84	15	0	26	168	22	3	793
7:45 AM	37	137	16	0	27	200	61	4	73	100	26	1	40	152	20	2	896
8:00 AM	31	129	21	0	28	179	59	6	58	85	26	4	32	126	28	0	812
8:15 AM	26	153	17	0	27	189	44	8	70	67	39	3	38	193	28	2	904
8:30 AM	16	114	10	0	34	176	34	12	47	69	18	2	20	85	17	3	657
8:45 AM	14	106	10	0	11	123	31	10	49	60	17	4	18	69	12	7	541
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	173	948	119	0	180	1338	396	57	435	577	163	15	200	1033	150	21	5805
APPROACH %'s :	13.95%	76.45%	9.60%	0.00%	9.13%	67.88%	20.09%	2.89%	36.55%	48.49%	13.70%	1.26%	14.25%	73.58%	10.68%	1.50%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	116	542	73	0	97	734	231	21	261	336	106	8	136	639	98	7	3405
PEAK HR FACTOR :	0.784	0.886	0.869	0.000	0.866	0.918	0.862	0.656	0.894	0.840	0.679	0.500	0.850	0.828	0.875	0.583	0.942
	0.932				0.927				0.889				0.843				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	29	130	22	0	24	108	28	6	62	142	20	2	30	74	11	8	696
4:15 PM	23	156	14	0	20	143	34	5	51	137	26	4	23	82	14	4	736
4:30 PM	22	156	15	0	25	152	26	5	57	132	29	5	25	51	14	3	717
4:45 PM	23	143	16	0	18	141	20	9	50	163	33	6	22	89	9	4	746
5:00 PM	25	145	10	0	16	118	22	4	81	167	28	5	22	103	14	8	768
5:15 PM	26	165	20	0	31	104	23	7	59	167	28	5	35	116	13	3	802
5:30 PM	22	132	26	0	32	85	23	9	70	189	30	9	36	157	13	4	837
5:45 PM	22	156	9	0	19	123	32	8	63	179	29	3	38	133	18	6	838
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	192	1183	132	0	185	974	208	53	493	1276	223	39	231	805	106	40	6140
APPROACH %'s :	12.74%	78.50%	8.76%	0.00%	13.03%	68.59%	14.65%	3.73%	24.27%	62.83%	10.98%	1.92%	19.54%	68.10%	8.97%	3.38%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	95	598	65	0	98	430	100	28	273	702	115	22	131	509	58	21	3245
PEAK HR FACTOR :	0.913	0.906	0.625	0.000	0.766	0.874	0.781	0.778	0.843	0.929	0.958	0.611	0.862	0.811	0.806	0.656	0.968
	0.898				0.901				0.933				0.856				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-015
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Citrus Ave				Citrus Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	13	80	16	0	12	136	55	8	46	45	10	0	8	95	12	2	538
7:15 AM	14	87	7	0	21	159	42	5	32	64	12	1	15	134	11	2	606
7:30 AM	20	119	19	0	15	158	66	3	59	82	14	0	26	164	22	3	770
7:45 AM	35	131	16	0	26	192	59	4	71	97	26	1	38	152	19	2	869
8:00 AM	31	127	21	0	26	174	58	6	57	83	26	4	29	122	25	0	789
8:15 AM	25	145	17	0	25	184	42	7	68	66	38	3	34	185	26	2	867
8:30 AM	16	108	9	0	33	167	33	12	44	66	18	2	20	80	16	3	627
8:45 AM	14	101	9	0	10	116	30	10	49	59	17	4	17	67	10	7	520
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	168	898	114	0	168	1286	385	55	426	562	161	15	187	999	141	21	5586
APPROACH %'s :	14.24%	76.10%	9.66%	0.00%	8.87%	67.90%	20.33%	2.90%	36.60%	48.28%	13.83%	1.29%	13.87%	74.11%	10.46%	1.56%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	111	522	73	0	92	708	225	20	255	328	104	8	127	623	92	7	3295
PEAK HR FACTOR :	0.793	0.900	0.869	0.000	0.885	0.922	0.852	0.714	0.898	0.845	0.684	0.500	0.836	0.842	0.885	0.583	0.948
	0.944				0.930				0.891				0.859				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	29	126	19	0	22	107	27	6	61	139	20	2	28	71	11	8	676
4:15 PM	23	154	14	0	20	134	32	5	50	134	26	4	20	80	13	4	713
4:30 PM	22	151	13	0	25	148	26	5	56	129	29	5	24	51	13	3	700
4:45 PM	23	139	14	0	17	137	20	9	49	161	32	6	22	88	9	4	730
5:00 PM	25	141	9	0	16	115	20	4	79	162	28	5	21	100	14	8	747
5:15 PM	26	163	20	0	31	103	22	7	58	165	28	5	34	109	13	3	787
5:30 PM	22	131	25	0	31	83	23	9	69	185	30	9	34	157	13	4	825
5:45 PM	22	154	9	0	18	121	30	8	63	177	29	3	36	130	18	6	824
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	192	1159	123	0	180	948	200	53	485	1252	222	39	219	786	104	40	6002
APPROACH %'s :	13.03%	78.63%	8.34%	0.00%	13.03%	68.65%	14.48%	3.84%	24.27%	62.66%	11.11%	1.95%	19.06%	68.41%	9.05%	3.48%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	95	589	63	0	96	422	95	28	269	689	115	22	125	496	58	21	3183
PEAK HR FACTOR :	0.913	0.903	0.630	0.000	0.774	0.872	0.792	0.778	0.851	0.931	0.958	0.611	0.868	0.790	0.806	0.656	0.965
	0.894				0.905				0.934				0.841				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-015
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	3	1	0	2	2	0	0	0	1	0	0	1	2	0	0	12
7:15 AM	0	7	0	0	2	3	1	0	0	0	0	0	1	3	0	0	17
7:30 AM	2	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	6
7:45 AM	1	3	0	0	1	3	2	0	0	1	0	0	1	0	1	0	13
8:00 AM	0	1	0	0	0	0	1	0	1	1	0	0	1	2	1	0	8
8:15 AM	1	3	0	0	0	3	1	1	2	0	0	0	1	3	2	0	17
8:30 AM	0	2	1	0	1	1	0	0	2	0	0	0	0	2	1	0	10
8:45 AM	0	0	0	0	1	3	0	0	0	0	0	0	1	1	2	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	19	2	0	7	16	5	1	6	4	0	0	6	14	7	0	91
APPROACH %'s :	16.00%	76.00%	8.00%	0.00%	24.14%	55.17%	17.24%	3.45%	60.00%	40.00%	0.00%	0.00%	22.22%	51.85%	25.93%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	4	7	0	0	1	7	4	1	4	3	0	0	3	6	4	0	44
PEAK HR FACTOR :	0.500	0.583	0.000	0.000	0.250	0.583	0.500	0.250	0.500	0.750	0.000	0.000	0.750	0.500	0.500	0.000	0.647
	0.688				0.542				0.875				0.542				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	2	0	0	0	0	1	0	0	2	0	0	0	7
4:15 PM	0	2	0	0	0	4	1	0	1	1	0	0	1	0	0	0	10
4:30 PM	0	2	1	0	0	0	0	0	1	1	0	0	0	0	0	0	5
4:45 PM	0	1	0	0	1	1	0	0	0	1	0	0	0	1	0	0	5
5:00 PM	0	2	0	0	0	0	1	0	1	3	0	0	0	1	0	0	8
5:15 PM	0	1	0	0	0	1	1	0	1	1	0	0	0	1	0	0	6
5:30 PM	0	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	4
5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	11	1	0	5	6	3	0	5	9	0	0	3	4	0	0	47
APPROACH %'s :	0.00%	91.67%	8.33%	0.00%	35.71%	42.86%	21.43%	0.00%	35.71%	64.29%	0.00%	0.00%	42.86%	57.14%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	4	0	0	2	1	2	0	3	5	0	0	0	3	0	0	20
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.500	0.250	0.500	0.000	0.750	0.417	0.000	0.000	0.000	0.750	0.000	0.000	0.625
	0.500				0.625				0.500				0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-015
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	1	0	0	1	1	0	0	0	0	0	0	0	0	0	5
7:15 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0	4
7:30 AM	0	0	0	0	0	3	0	0	0	1	1	0	0	1	0	0	6
7:45 AM	0	1	0	0	0	1	0	0	1	1	0	0	1	0	0	0	5
8:00 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	1	2	0	5
8:15 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	3
8:30 AM	0	2	0	0	0	2	0	0	1	1	0	0	0	0	0	0	6
8:45 AM	0	3	1	0	0	1	0	0	0	1	0	0	0	0	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	8	3	0	3	9	2	0	2	4	1	0	1	5	2	0	40
APPROACH %'s :	0.00%	72.73%	27.27%	0.00%	21.43%	64.29%	14.29%	0.00%	28.57%	57.14%	14.29%	0.00%	12.50%	62.50%	25.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1	0	0	3	5	0	0	1	2	1	0	1	3	2	0	19
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.375	0.417	0.000	0.000	0.250	0.500	0.250	0.000	0.250	0.750	0.250	0.000	0.792
	0.250				0.667				0.500				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	2	0	0	1	1	0	0	1	0	0	0	2	0	0	9
4:15 PM	0	0	0	0	0	3	1	0	0	0	0	0	1	1	0	0	6
4:30 PM	0	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	6
4:45 PM	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	4
5:00 PM	0	2	0	0	0	1	0	0	0	1	0	0	1	1	0	0	6
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	3
5:45 PM	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	8	4	0	0	11	3	0	0	2	0	0	5	8	0	0	41
APPROACH %'s :	0.00%	66.67%	33.33%	0.00%	0.00%	78.57%	21.43%	0.00%	0.00%	100.00%	0.00%	0.00%	38.46%	61.54%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	3	0	0	0	2	1	0	0	1	0	0	4	5	0	0	16
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.250	0.000	0.000	0.500	0.313	0.000	0.000	0.667
	0.375				0.750				0.250				0.563				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-015
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	0	0	1	2	0	0	0	1	0	0	0	2	0	0	8
7:15 AM	0	5	0	0	0	2	0	1	0	1	0	0	1	2	0	0	12
7:30 AM	0	4	0	0	0	4	1	0	0	0	0	0	0	2	0	0	11
7:45 AM	1	2	0	0	0	4	0	0	1	1	0	0	0	0	0	0	9
8:00 AM	0	1	0	0	0	5	0	0	0	1	0	0	2	1	0	0	10
8:15 AM	0	5	0	0	1	1	1	0	0	1	1	0	3	4	0	0	17
8:30 AM	0	2	0	0	0	6	1	0	0	2	0	0	0	3	0	0	14
8:45 AM	0	2	0	0	0	3	1	0	0	0	0	0	0	1	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	23	0	0	2	27	4	1	1	7	1	0	6	15	0	0	88
APPROACH %'s :	4.17%	95.83%	0.00%	0.00%	5.88%	79.41%	11.76%	2.94%	11.11%	77.78%	11.11%	0.00%	28.57%	71.43%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	12	0	0	1	14	2	0	1	3	1	0	5	7	0	0	47
PEAK HR FACTOR :	0.250	0.600	0.000	0.000	0.250	0.700	0.500	0.000	0.250	0.750	0.250	0.000	0.417	0.438	0.000	0.000	0.691
	0.650				0.850				0.625				0.429				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	1	0	0	0	0	0	1	1	0	0	0	1	0	0	4
4:15 PM	0	0	0	0	0	2	0	0	0	2	0	0	1	1	1	0	7
4:30 PM	0	1	0	0	0	1	0	0	0	2	0	0	1	0	1	0	6
4:45 PM	0	2	1	0	0	1	0	0	1	1	1	0	0	0	0	0	7
5:00 PM	0	0	1	0	0	2	1	0	1	1	0	0	0	1	0	0	7
5:15 PM	0	1	0	0	0	0	0	0	0	1	0	0	1	2	0	0	5
5:30 PM	0	0	1	0	0	1	0	0	0	3	0	0	0	0	0	0	5
5:45 PM	0	1	0	0	0	2	1	0	0	2	0	0	1	2	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	5	4	0	0	9	2	0	3	13	1	0	4	7	2	0	50
APPROACH %'s :	0.00%	55.56%	44.44%	0.00%	0.00%	81.82%	18.18%	0.00%	17.65%	76.47%	5.88%	0.00%	30.77%	53.85%	15.38%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	2	2	0	0	5	2	0	1	7	0	0	2	5	0	0	26
PEAK HR FACTOR :	0.000	0.500	0.500	0.000	0.000	0.625	0.500	0.000	0.250	0.583	0.000	0.000	0.500	0.625	0.000	0.000	0.722
	1.000				0.583				0.667				0.583				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-016
Date: 9/8/2021

Data - Total

NS/EW Streets:	Sierra Ave				Sierra Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	16	106	5	2	39	174	22	0	11	56	10	0	14	76	27	6	564
7:15 AM	30	120	12	1	36	206	28	1	15	67	19	1	14	116	28	7	701
7:30 AM	44	165	19	1	41	269	36	1	28	71	32	1	17	118	25	7	875
7:45 AM	40	196	15	2	46	285	32	3	26	111	29	0	13	118	38	9	963
8:00 AM	35	141	10	3	60	269	23	2	17	93	22	0	14	127	42	11	869
8:15 AM	30	102	8	1	64	210	9	0	19	123	25	1	10	90	27	5	724
8:30 AM	22	144	4	1	43	219	19	0	13	62	11	0	7	47	19	2	613
8:45 AM	18	112	4	0	35	216	14	0	8	46	17	0	9	47	26	7	559
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	235	1086	77	11	364	1848	183	7	137	629	165	3	98	739	232	54	5868
APPROACH %'s :	16.68%	77.08%	5.46%	0.78%	15.15%	76.94%	7.62%	0.29%	14.67%	67.34%	17.67%	0.32%	8.73%	65.81%	20.66%	4.81%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	149	604	52	7	211	1033	100	6	90	398	108	2	54	453	132	32	3431
PEAK HR FACTOR :	0.847	0.770	0.684	0.583	0.824	0.906	0.694	0.500	0.804	0.809	0.844	0.500	0.794	0.892	0.786	0.727	0.891
	0.802				0.922				0.890				0.865				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	21	216	15	1	39	172	24	2	45	123	16	0	14	71	39	5	803
4:15 PM	25	232	12	0	56	166	16	1	25	85	18	0	20	49	26	4	735
4:30 PM	20	237	11	1	58	145	16	0	35	125	24	1	9	66	34	5	787
4:45 PM	23	264	21	1	35	127	22	0	26	128	18	0	18	79	35	7	804
5:00 PM	25	265	15	1	59	143	9	2	37	115	17	1	10	133	59	5	896
5:15 PM	21	255	12	0	56	121	13	2	36	168	22	0	13	142	59	7	927
5:30 PM	25	241	21	0	57	108	20	1	31	147	26	1	23	161	60	6	928
5:45 PM	31	202	13	1	47	128	13	1	28	148	25	1	21	175	46	5	885
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	191	1912	120	5	407	1110	133	9	263	1039	166	4	128	876	358	44	6765
APPROACH %'s :	8.57%	85.82%	5.39%	0.22%	24.53%	66.91%	8.02%	0.54%	17.87%	70.58%	11.28%	0.27%	9.10%	62.30%	25.46%	3.13%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	102	963	61	2	219	500	55	6	132	578	90	3	67	611	224	23	3636
PEAK HR FACTOR :	0.823	0.908	0.726	0.500	0.928	0.874	0.688	0.750	0.892	0.860	0.865	0.750	0.728	0.873	0.933	0.821	0.980
	0.922				0.915				0.888				0.925				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-016
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Sierra Ave				Sierra Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
7:00 AM	15	99	5	2	37	171	20	0	10	49	10	0	13	74	24	6	535
7:15 AM	28	117	12	1	35	201	25	1	15	65	19	1	14	112	26	7	679
7:30 AM	43	163	18	1	41	263	36	1	28	70	31	1	16	115	25	7	859
7:45 AM	40	188	14	2	44	280	30	3	26	109	29	0	12	108	36	9	930
8:00 AM	35	135	9	3	60	266	20	2	17	92	21	0	14	119	39	11	843
8:15 AM	30	99	8	1	62	206	9	0	17	122	25	1	9	82	27	5	703
8:30 AM	22	140	4	1	43	213	16	0	13	56	11	0	6	44	17	2	588
8:45 AM	18	109	4	0	33	213	11	0	8	42	17	0	8	47	25	7	542
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	231	1050	74	11	355	1813	167	7	134	605	163	3	92	701	219	54	5679
APPROACH %'s :	16.91%	76.87%	5.42%	0.81%	15.16%	77.41%	7.13%	0.30%	14.81%	66.85%	18.01%	0.33%	8.63%	65.76%	20.54%	5.07%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	148	585	49	7	207	1015	95	6	88	393	106	2	51	424	127	32	3335
PEAK HR FACTOR :	0.860	0.778	0.681	0.583	0.835	0.906	0.660	0.500	0.786	0.805	0.855	0.500	0.797	0.891	0.814	0.727	0.897
	0.808				0.926				0.892				0.866				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
4:00 PM	20	210	14	1	38	169	23	2	43	118	16	0	13	67	38	5	777
4:15 PM	25	230	12	0	56	165	16	1	24	85	18	0	20	48	26	4	730
4:30 PM	19	235	11	1	58	140	16	0	35	120	24	1	8	65	31	5	769
4:45 PM	23	260	21	1	34	124	22	0	26	123	18	0	17	78	35	6	788
5:00 PM	25	261	15	1	58	143	9	2	37	110	17	1	9	126	58	5	877
5:15 PM	21	253	12	0	56	119	13	2	36	165	22	0	13	137	54	7	910
5:30 PM	25	239	21	0	57	104	20	1	31	145	26	1	23	158	59	6	916
5:45 PM	31	199	13	1	46	124	13	1	27	145	25	1	21	167	44	5	863
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	189	1887	119	5	403	1088	132	9	259	1011	166	4	124	846	345	43	6630
APPROACH %'s :	8.59%	85.77%	5.41%	0.23%	24.69%	66.67%	8.09%	0.55%	17.99%	70.21%	11.53%	0.28%	9.13%	62.30%	25.41%	3.17%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	102	952	61	2	217	490	55	6	131	565	90	3	66	588	215	23	3566
PEAK HR FACTOR :	0.823	0.912	0.726	0.500	0.935	0.857	0.688	0.750	0.885	0.856	0.865	0.750	0.717	0.880	0.911	0.821	0.973
	0.925				0.906				0.885				0.907				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-016
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
7:00 AM	1	5	0	0	2	3	0	0	0	3	0	0	0	1	1	0	16
7:15 AM	2	1	0	0	1	4	2	0	0	2	0	0	0	0	1	0	13
7:30 AM	0	1	0	0	0	4	0	0	0	0	1	0	0	1	0	0	7
7:45 AM	0	3	0	0	1	1	1	0	0	0	0	0	0	5	1	0	12
8:00 AM	0	2	1	0	0	3	1	0	0	1	1	0	0	2	1	0	12
8:15 AM	0	2	0	0	1	1	0	0	1	0	0	0	0	1	0	0	6
8:30 AM	0	3	0	0	0	3	1	0	0	1	0	0	0	1	1	0	10
8:45 AM	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	18	1	0	6	21	5	0	1	9	2	0	0	11	5	0	82
APPROACH %'s :	13.64%	81.82%	4.55%	0.00%	18.75%	65.63%	15.63%	0.00%	8.33%	75.00%	16.67%	0.00%	0.00%	68.75%	31.25%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	8	1	0	2	9	2	0	1	1	2	0	0	9	2	0	37
PEAK HR FACTOR :	0.000	0.667	0.250	0.000	0.500	0.563	0.500	0.000	0.250	0.250	0.500	0.000	0.000	0.450	0.500	0.000	0.771
	0.750				0.813				0.500				0.458				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
4:00 PM	1	3	0	0	1	2	0	0	0	1	0	0	0	0	1	0	9
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:30 PM	1	2	0	0	0	3	0	0	0	1	0	0	1	0	1	0	9
4:45 PM	0	4	0	0	1	2	0	0	0	3	0	0	0	1	0	0	11
5:00 PM	0	3	0	0	1	0	0	0	0	2	0	0	0	0	1	0	7
5:15 PM	0	2	0	0	0	1	0	0	0	1	0	0	0	2	3	0	9
5:30 PM	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4
5:45 PM	0	1	0	0	1	2	0	0	0	1	0	0	0	3	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	16	0	0	4	13	0	0	0	9	0	0	1	7	6	0	58
APPROACH %'s :	11.11%	88.89%	0.00%	0.00%	23.53%	76.47%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	7.14%	50.00%	42.86%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	7	0	0	2	6	0	0	0	4	0	0	0	5	4	0	28
PEAK HR FACTOR :	0.000	0.583	0.000	0.000	0.500	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.417	0.333	0.000	0.778
	0.583				0.667				0.500				0.450				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-016
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
7:00 AM	0	0	0	0	0	0	2	0	1	3	0	0	1	0	1	0	8
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
7:30 AM	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	4
7:45 AM	0	0	1	0	1	1	1	0	0	1	0	0	1	3	0	0	9
8:00 AM	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	0	0	0	1	1	0	0	1	0	0	0	0	2	0	0	5
8:30 AM	0	0	0	0	0	1	2	0	0	2	0	0	1	0	0	0	6
8:45 AM	0	0	0	0	0	1	3	0	0	1	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	1	0	2	4	11	0	2	8	0	0	4	6	1	0	41
APPROACH %'s :	33.33%	33.33%	33.33%	0.00%	11.76%	23.53%	64.71%	0.00%	20.00%	80.00%	0.00%	0.00%	36.36%	54.55%	9.09%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	1	1	0	2	2	3	0	1	2	0	0	2	6	0	0	21
PEAK HR FACTOR :	0.250	0.250	0.250	0.000	0.500	0.500	0.375	0.000	0.250	0.500	0.000	0.000	0.500	0.500	0.000	0.000	0.583
	0.750				0.583				0.750				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
4:00 PM	0	1	1	0	0	0	0	0	2	1	0	0	0	2	0	0	7
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	3
5:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	4	0	0	6
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	1	0	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	1	0	0	2	0	0	3	4	0	0	0	12	1	1	27
APPROACH %'s :	0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	42.86%	57.14%	0.00%	0.00%	0.00%	85.71%	7.14%	7.14%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	1	0	0	1	1	0	0	0	10	1	0	15
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.625	0.250	0.000	0.625
	0.250				0.250				0.500				0.688				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Baseline Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-016
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Baseline Ave				Baseline Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
7:00 AM	0	2	0	0	0	0	0	0	0	1	0	0	0	1	1	0	5
7:15 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	4	1	0	8
7:30 AM	0	1	1	0	0	2	0	0	0	0	0	0	0	1	0	0	5
7:45 AM	0	5	0	0	0	3	0	0	0	1	0	0	0	2	1	0	12
8:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	6	2	0	11
8:15 AM	0	1	0	0	0	2	0	0	0	1	0	0	1	5	0	0	10
8:30 AM	0	1	0	0	0	2	0	0	0	3	0	0	0	2	1	0	9
8:45 AM	0	2	0	0	1	0	0	0	0	1	0	0	1	0	1	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	17	1	0	1	10	0	0	0	7	0	0	2	21	7	0	66
APPROACH %'s :	0.00%	94.44%	5.56%	0.00%	9.09%	90.91%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	6.67%	70.00%	23.33%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	10	1	0	0	7	0	0	0	2	0	0	1	14	3	0	38
PEAK HR FACTOR :	0.000	0.500	0.250	0.000	0.000	0.583	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.583	0.375	0.000	0.792
	0.550				0.583				0.500				0.563				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
4:00 PM	0	2	0	0	0	1	1	0	0	3	0	0	1	2	0	0	10
4:15 PM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	2	0	0	0	3	0	0	0	1	2	0	8
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	1	3	0	0	6
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	1	0	4
5:30 PM	0	1	0	0	0	1	0	0	0	2	0	0	0	2	1	0	7
5:45 PM	0	2	0	0	0	2	0	0	0	2	0	0	0	2	2	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	6	0	0	0	7	1	0	1	15	0	0	3	11	6	0	50
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	87.50%	12.50%	0.00%	6.25%	93.75%	0.00%	0.00%	15.00%	55.00%	30.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	3	0	0	0	3	0	0	0	8	0	0	1	8	4	0	27
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.000	0.375	0.000	0.000	0.000	1.000	0.000	0.000	0.250	0.667	0.500	0.000	0.675
	0.375				0.375				1.000				0.813				

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of Fontana
N/S: Etiwanda Avenue
E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	44	15	60	14	47	5	66	15	49	12	76	7	25	12	44	246
07:15 AM	8	71	17	96	14	74	17	105	20	48	11	79	42	36	24	102	382
07:30 AM	20	56	29	105	18	103	23	144	33	91	20	144	35	58	27	120	513
07:45 AM	19	72	45	136	24	134	13	171	38	49	40	127	17	64	23	104	538
Total	48	243	106	397	70	358	58	486	106	237	83	426	101	183	86	370	1679
08:00 AM	21	79	29	129	20	142	21	183	30	60	70	160	23	86	31	140	612
08:15 AM	15	74	18	107	31	84	11	126	40	37	14	91	11	40	26	77	401
08:30 AM	4	59	22	85	13	55	5	73	13	40	10	63	7	43	34	84	305
08:45 AM	4	21	8	33	7	32	4	43	17	25	4	46	6	13	9	28	150
Total	44	233	77	354	71	313	41	425	100	162	98	360	47	182	100	329	1468
Grand Total	92	476	183	751	141	671	99	911	206	399	181	786	148	365	186	699	3147
Apprch %	12.3	63.4	24.4		15.5	73.7	10.9		26.2	50.8	23		21.2	52.2	26.6		
Total %	2.9	15.1	5.8	23.9	4.5	21.3	3.1	28.9	6.5	12.7	5.8	25	4.7	11.6	5.9	22.2	
Passenger Vehicles	91	470	182	743	139	666	98	903	202	386	177	765	144	363	185	692	3103
% Passenger Vehicles	98.9	98.7	99.5	98.9	98.6	99.3	99	99.1	98.1	96.7	97.8	97.3	97.3	99.5	99.5	99	98.6
Large 2 Axle Vehicles	1	5	1	7	2	5	1	8	3	11	4	18	4	2	1	7	40
% Large 2 Axle Vehicles	1.1	1.1	0.5	0.9	1.4	0.7	1	0.9	1.5	2.8	2.2	2.3	2.7	0.5	0.5	1	1.3
3 Axle Vehicles	0	1	0	1	0	0	0	0	1	1	0	2	0	0	0	0	3
% 3 Axle Vehicles	0	0.2	0	0.1	0	0	0	0	0.5	0.3	0	0.3	0	0	0	0	0.1
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0.3	0	0.1	0	0	0	0	0

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	20	56	29	105	18	103	**23**	144	33	**91**	20	144	**35**	58	27	120	513
07:45 AM	19	72	**45**	**136**	24	134	13	171	38	49	40	127	17	64	23	104	538
08:00 AM	**21**	**79**	29	129	20	**142**	21	**183**	30	60	**70**	**160**	23	**86**	**31**	**140**	**612**
08:15 AM	15	74	18	107	**31**	84	11	126	**40**	37	14	91	11	40	26	77	401
Total Volume	75	281	121	477	93	463	68	624	141	237	144	522	86	248	107	441	2064
% App. Total	15.7	58.9	25.4		14.9	74.2	10.9		27	45.4	27.6		19.5	56.2	24.3		
PHF	.893	.889	.672	.877	.750	.815	.739	.852	.881	.651	.514	.816	.614	.721	.863	.788	.843

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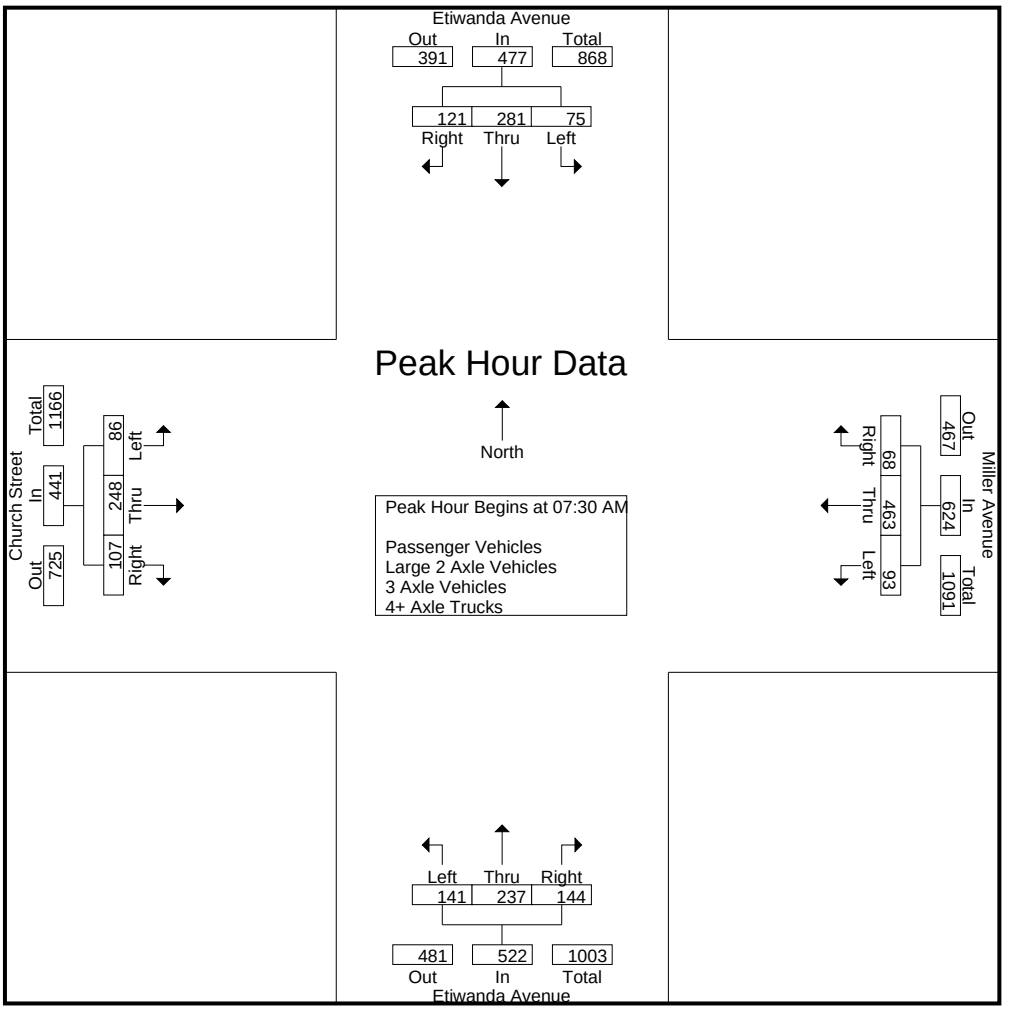
City of Fontana
N/S: Etiwanda Avenue
E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:15 AM			
+0 mins.	20	56	29	105	18	103	**23**	144	33	**91**	20	144	**42**	36	24	102
+15 mins.	19	72	**45**	**136**	24	134	13	171	38	49	40	127	35	58	27	120
+30 mins.	**21**	**79**	29	129	20	**142**	21	**183**	30	60	**70**	**160**	17	64	23	104
+45 mins.	15	74	18	107	**31**	84	11	126	**40**	37	14	91	23	**86**	**31**	**140**
Total Volume	75	281	121	477	93	463	68	624	141	237	144	522	117	244	105	466
% App. Total	15.7	58.9	25.4		14.9	74.2	10.9		27	45.4	27.6		25.1	52.4	22.5	
PHF	.893	.889	.672	.877	.750	.815	.739	.852	.881	.651	.514	.816	.696	.709	.847	.832

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City of Fontana
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Weather: Clear

File Name : 11_FON_Etiwanda_Church AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	43	14	58	14	45	5	64	14	46	11	71	6	24	12	42	235
07:15 AM	8	69	17	94	14	74	17	105	18	48	11	77	42	36	24	102	378
07:30 AM	19	56	29	104	17	102	23	142	33	91	20	144	35	58	27	120	510
07:45 AM	19	71	45	135	24	134	12	170	38	49	38	125	17	63	23	103	533
Total	47	239	105	391	69	355	57	481	103	234	80	417	100	181	86	367	1656
08:00 AM	21	79	29	129	20	142	21	183	30	58	70	158	21	86	31	138	608
08:15 AM	15	74	18	107	30	84	11	125	40	36	14	90	11	40	25	76	398
08:30 AM	4	59	22	85	13	55	5	73	13	35	10	58	7	43	34	84	300
08:45 AM	4	19	8	31	7	30	4	41	16	23	3	42	5	13	9	27	141
Total	44	231	77	352	70	311	41	422	99	152	97	348	44	182	99	325	1447
Grand Total	91	470	182	743	139	666	98	903	202	386	177	765	144	363	185	692	3103
Apprch %	12.2	63.3	24.5		15.4	73.8	10.9		26.4	50.5	23.1		20.8	52.5	26.7		
Total %	2.9	15.1	5.9	23.9	4.5	21.5	3.2	29.1	6.5	12.4	5.7	24.7	4.6	11.7	6	22.3	

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	19	56	29	104	17	102	**23**	142	33	**91**	20	144	**35**	58	27	120	510
07:45 AM	19	71	**45**	**135**	24	134	12	170	38	49	38	125	17	63	23	103	533
08:00 AM	**21**	**79**	29	129	20	**142**	21	**183**	30	58	**70**	**158**	21	**86**	**31**	**138**	**608**
08:15 AM	15	74	18	107	**30**	84	11	125	**40**	36	14	90	11	40	25	76	398
Total Volume	74	280	121	475	91	462	67	620	141	234	142	517	84	247	106	437	2049
% App. Total	15.6	58.9	25.5		14.7	74.5	10.8		27.3	45.3	27.5		19.2	56.5	24.3		
PHF	.881	.886	.672	.880	.758	.813	.728	.847	.881	.643	.507	.818	.600	.718	.855	.792	.843

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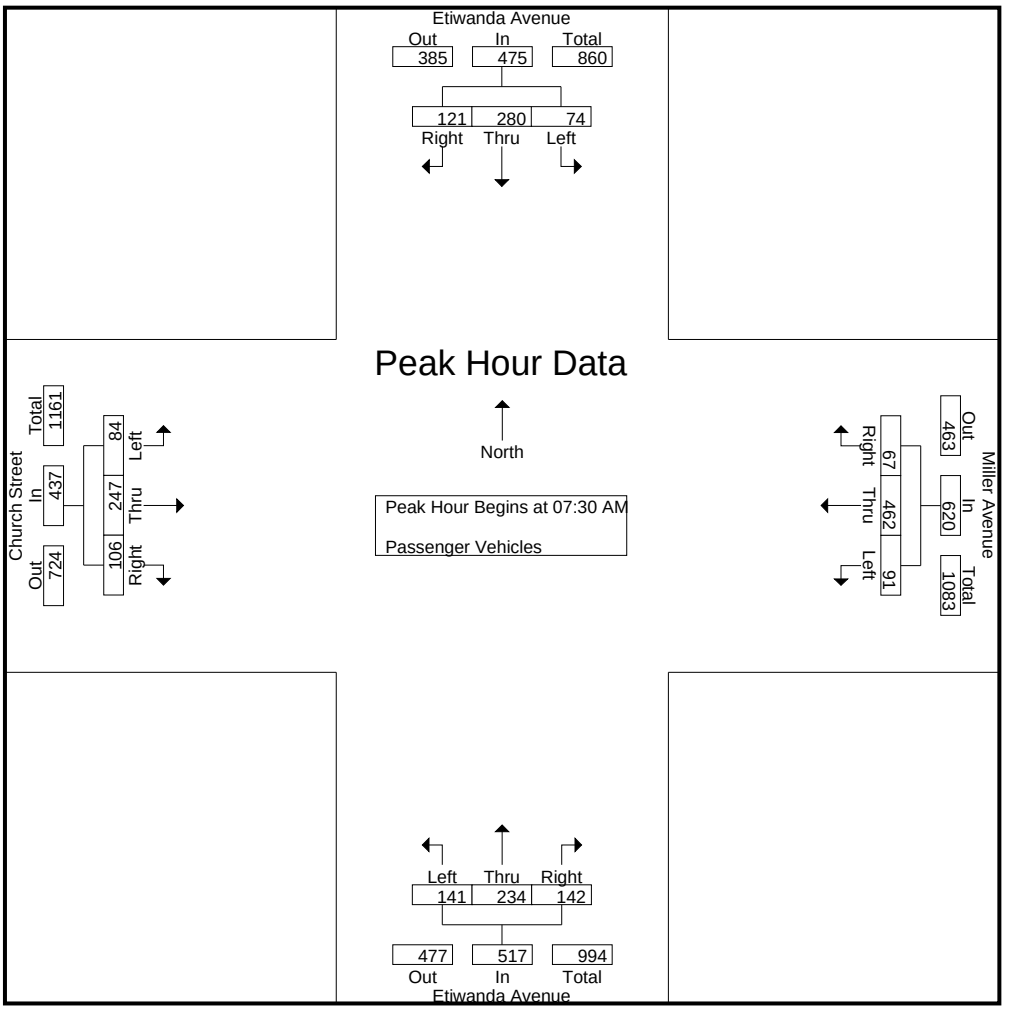
City of Fontana
N/S: Etiwanda Avenue
E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	19	56	29	104	17	102	**23**	142	33	**91**	20	144	**35**	58	27	120
+15 mins.	19	71	**45**	**135**	24	134	12	170	38	49	38	125	17	63	23	103
+30 mins.	**21**	**79**	29	129	20	**142**	21	**183**	30	58	**70**	**158**	21	**86**	**31**	**138**
+45 mins.	15	74	18	107	**30**	84	11	125	**40**	36	14	90	11	40	25	76
Total Volume	74	280	121	475	91	462	67	620	141	234	142	517	84	247	106	437
% App. Total	15.6	58.9	25.5		14.7	74.5	10.8		27.3	45.3	27.5		19.2	56.5	24.3	
PHF	.881	.886	.672	.880	.758	.813	.728	.847	.881	.643	.507	.818	.600	.718	.855	.792

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City of Fontana
N/S: Etiwanda Avenue
E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	1	1	2	0	2	0	2	0	2	1	3	1	1	0	2	9
07:15 AM	0	2	0	2	0	0	0	0	2	0	0	2	0	0	0	0	4
07:30 AM	1	0	0	1	1	1	0	2	0	0	0	0	0	0	0	0	3
07:45 AM	0	1	0	1	0	0	1	1	0	0	2	2	0	1	0	1	5
Total	1	4	1	6	1	3	1	5	2	2	3	7	1	2	0	3	21
08:00 AM	0	0	0	0	0	0	0	0	0	2	0	2	2	0	0	2	4
08:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	2
08:30 AM	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	5
08:45 AM	0	1	0	1	0	2	0	2	1	2	1	4	1	0	0	1	8
Total	0	1	0	1	1	2	0	3	1	9	1	11	3	0	1	4	19
Grand Total	1	5	1	7	2	5	1	8	3	11	4	18	4	2	1	7	40
Apprch %	14.3	71.4	14.3		25	62.5	12.5		16.7	61.1	22.2		57.1	28.6	14.3		
Total %	2.5	12.5	2.5	17.5	5	12.5	2.5	20	7.5	27.5	10	45	10	5	2.5	17.5	

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**1**	0	0	**1**	**1**	**1**	0	**2**	0	0	0	0	0	0	0	0	3
07:45 AM	0	**1**	0	1	0	0	**1**	1	0	0	**2**	**2**	0	**1**	0	1	**5**
08:00 AM	0	0	0	0	0	0	0	0	0	**2**	0	2	**2**	0	0	**2**	4
08:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	**1**	1	2
Total Volume	1	1	0	2	2	1	1	4	0	2	2	4	2	1	1	4	14
% App. Total	50	50	0		50	25	25		0	50	50		50	25	25		
PHF	.250	.250	.000	.500	.500	.250	.250	.500	.000	.250	.250	.500	.250	.250	.250	.500	.700

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City of Fontana
N/S: Etiwanda Avenue
E/W: Church Street/Miller Avenue
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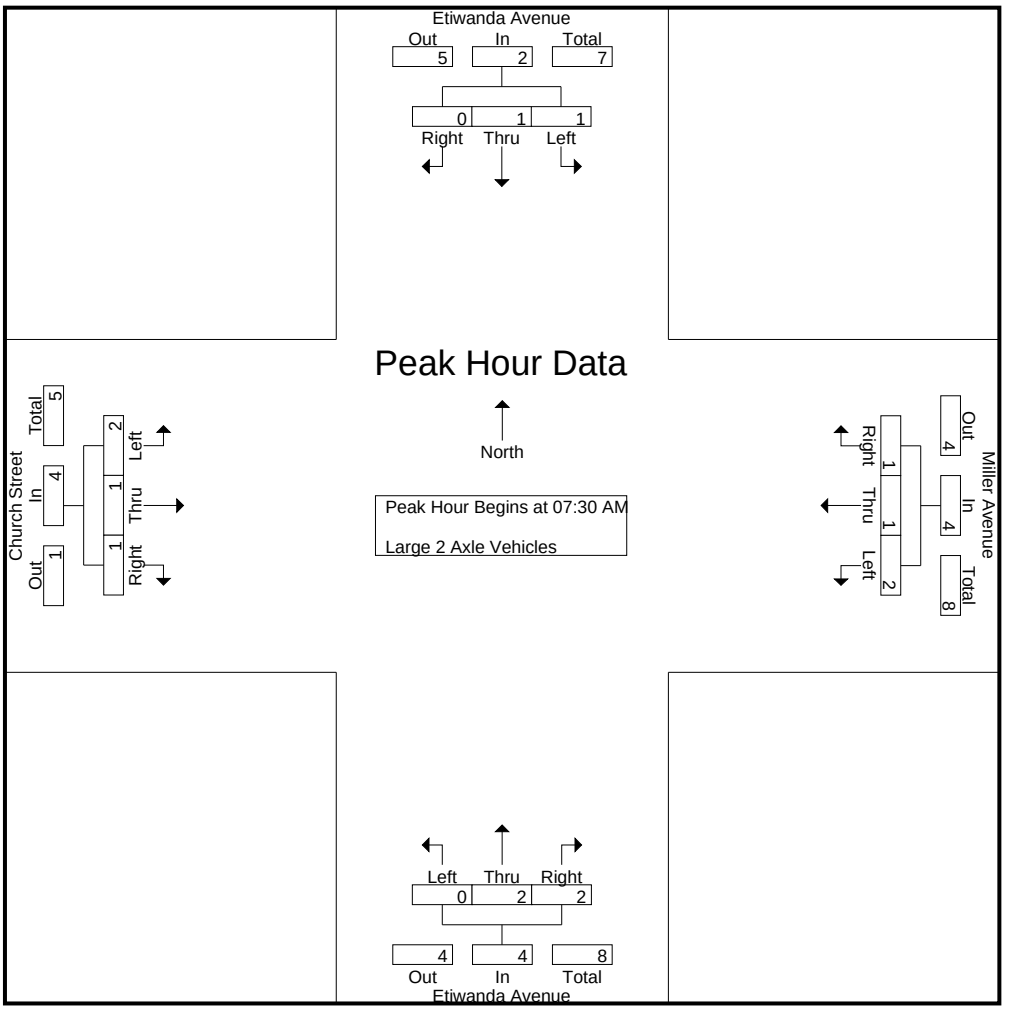
File Name : 11_FON_Etiwanda_Church AM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**1**	0	0	**1**	**1**	**1**	0	**2**	0	0	0	0	0	0	0	0
+15 mins.	0	**1**	0	1	0	0	**1**	1	0	0	**2**	**2**	0	**1**	0	1
+30 mins.	0	0	0	0	0	0	0	0	0	**2**	0	2	**2**	0	0	**2**
+45 mins.	0	0	0	0	1	0	0	1	0	0	0	0	0	0	**1**	1
Total Volume	1	1	0	2	2	1	1	4	0	2	2	4	2	1	1	4
% App. Total	50	50	0		50	25	25		0	50	50		50	25	25	
PHF	.250	.250	.000	.500	.500	.250	.250	.500	.000	.250	.250	.500	.250	.250	.250	.500

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City of Fontana
N/S: Etiwanda Avenue
E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
Grand Total	0	1	0	1	0	0	0	0	1	1	0	2	0	0	0	0	3
Apprch %	0	100	0		0	0	0		50	50	0		0	0	0		
Total %	0	33.3	0	33.3	0	0	0	0	33.3	33.3	0	66.7	0	0	0	0	

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0	**1**
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250

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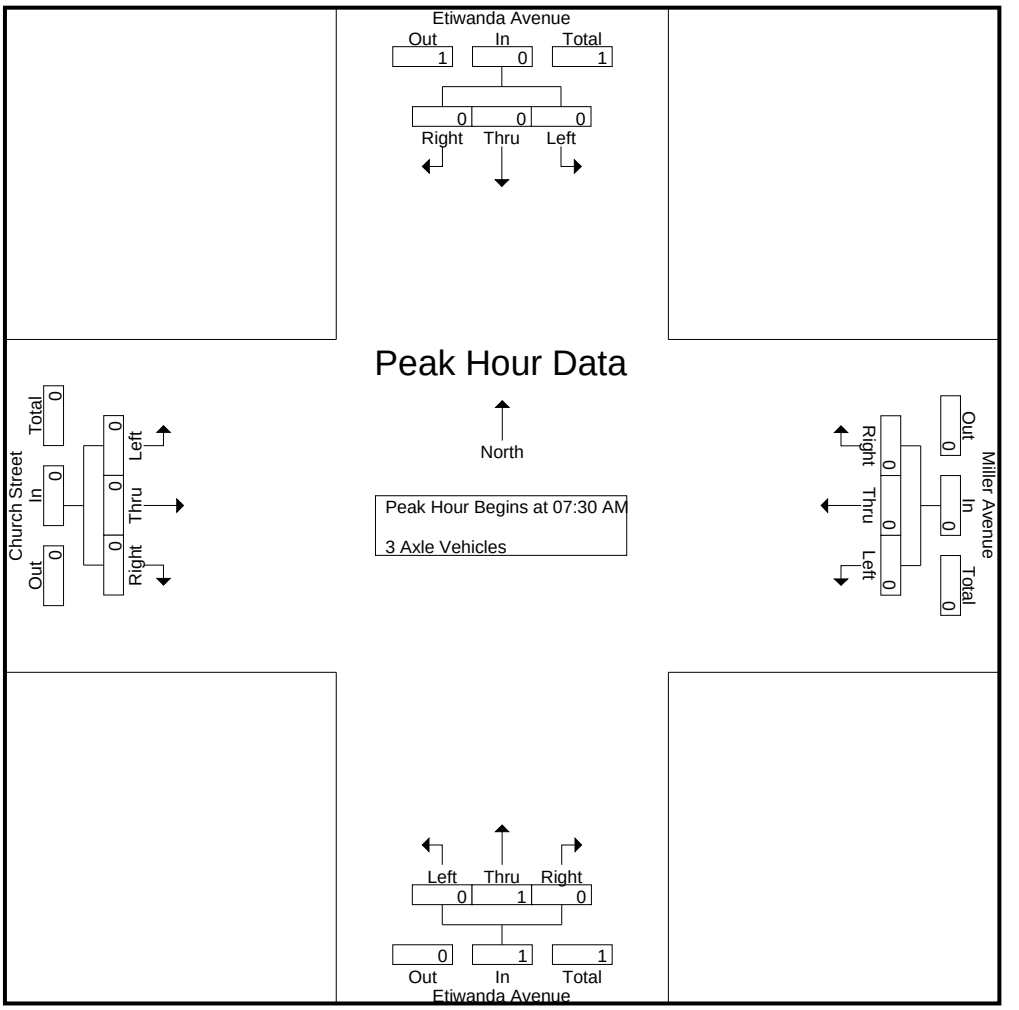
City of Fontana
N/S: Etiwanda Avenue
E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000

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City of Fontana
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E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Apprch %	0	0	0		0	0	0		0	100	0		0	0	0		
Total %	0	0	0	0	0	0	0	0	0	100	0	100	0	0	0	0	

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Fontana
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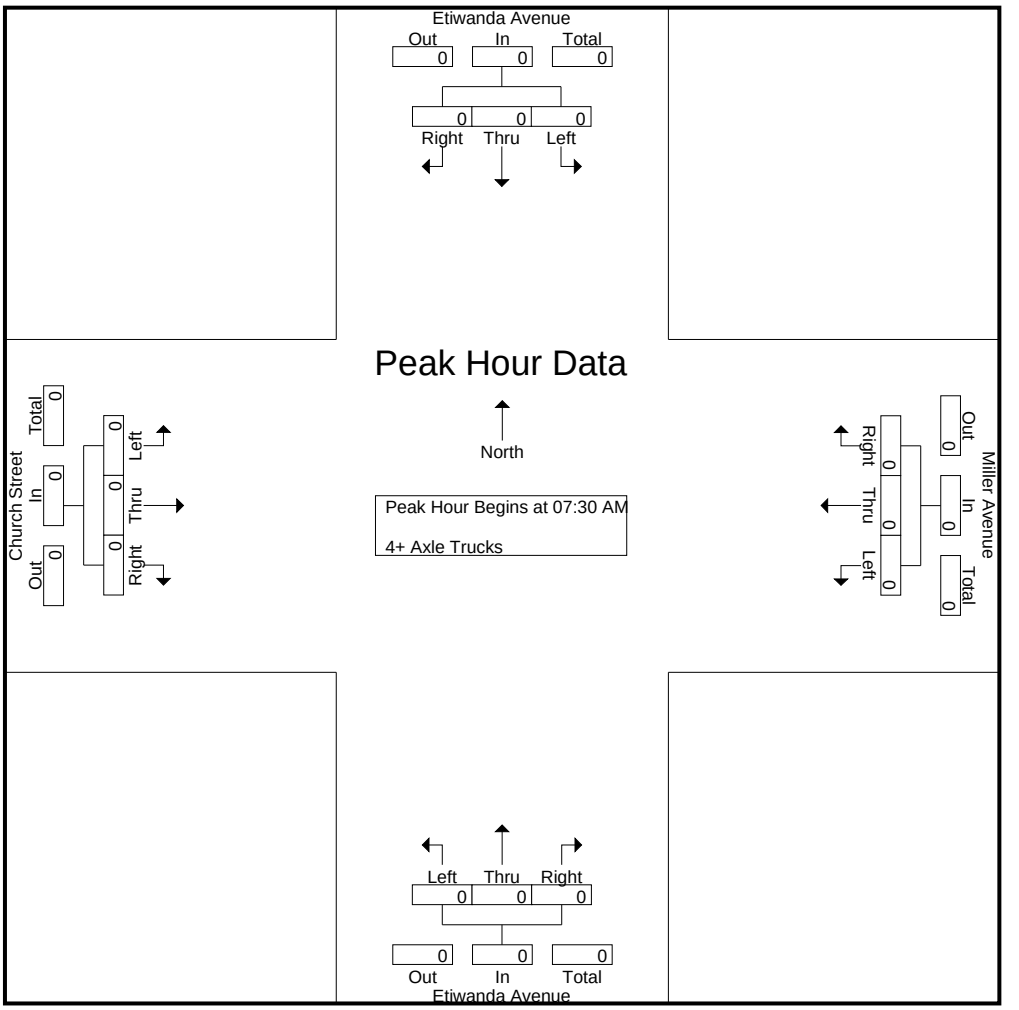
File Name : 11_FON_Etiwanda_Church AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Fontana
N/S: Etiwanda Avenue
E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	10	46	33	89	11	59	4	74	34	52	16	102	42	108	33	183	448
04:15 PM	6	45	26	77	10	65	4	79	30	64	31	125	35	95	37	167	448
04:30 PM	7	61	27	95	16	63	11	90	28	52	22	102	37	98	41	176	463
04:45 PM	7	57	24	88	12	63	8	83	28	65	28	121	28	97	47	172	464
Total	30	209	110	349	49	250	27	326	120	233	97	450	142	398	158	698	1823
05:00 PM	2	51	14	67	7	66	5	78	38	65	25	128	33	113	39	185	458
05:15 PM	7	37	28	72	7	63	6	76	36	73	21	130	39	129	38	206	484
05:30 PM	5	50	23	78	12	57	5	74	27	62	19	108	44	103	40	187	447
05:45 PM	5	36	30	71	14	63	5	82	36	58	19	113	31	129	33	193	459
Total	19	174	95	288	40	249	21	310	137	258	84	479	147	474	150	771	1848
Grand Total	49	383	205	637	89	499	48	636	257	491	181	929	289	872	308	1469	3671
Apprch %	7.7	60.1	32.2		14	78.5	7.5		27.7	52.9	19.5		19.7	59.4	21		
Total %	1.3	10.4	5.6	17.4	2.4	13.6	1.3	17.3	7	13.4	4.9	25.3	7.9	23.8	8.4	40	
Passenger Vehicles	48	360	204	612	89	498	48	635	252	488	176	916	288	868	302	1458	3621
% Passenger Vehicles	98	94	99.5	96.1	100	99.8	100	99.8	98.1	99.4	97.2	98.6	99.7	99.5	98.1	99.3	98.6
Large 2 Axle Vehicles	1	3	1	5	0	1	0	1	3	3	4	10	1	3	2	6	22
% Large 2 Axle Vehicles	2	0.8	0.5	0.8	0	0.2	0	0.2	1.2	0.6	2.2	1.1	0.3	0.3	0.6	0.4	0.6
3 Axle Vehicles	0	20	0	20	0	0	0	0	2	0	1	3	0	1	4	5	28
% 3 Axle Vehicles	0	5.2	0	3.1	0	0	0	0	0.8	0	0.6	0.3	0	0.1	1.3	0.3	0.8
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**7**	**61**	27	**95**	**16**	63	**11**	**90**	28	52	22	102	37	98	41	176	463
04:45 PM	7	57	24	88	12	63	8	83	28	65	**28**	121	28	97	**47**	172	464
05:00 PM	2	51	14	67	7	**66**	5	78	**38**	65	25	128	33	113	39	185	458
05:15 PM	7	37	**28**	72	7	63	6	76	36	**73**	21	**130**	**39**	**129**	38	**206**	**484**
Total Volume	23	206	93	322	42	255	30	327	130	255	96	481	137	437	165	739	1869
% App. Total	7.1	64	28.9		12.8	78	9.2		27	53	20		18.5	59.1	22.3		
PHF	.821	.844	.830	.847	.656	.966	.682	.908	.855	.873	.857	.925	.878	.847	.878	.897	.965

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File Name : 11_FON_Etiwanda_Church PM
Site Code : 10821516
Start Date : 9/28/2021
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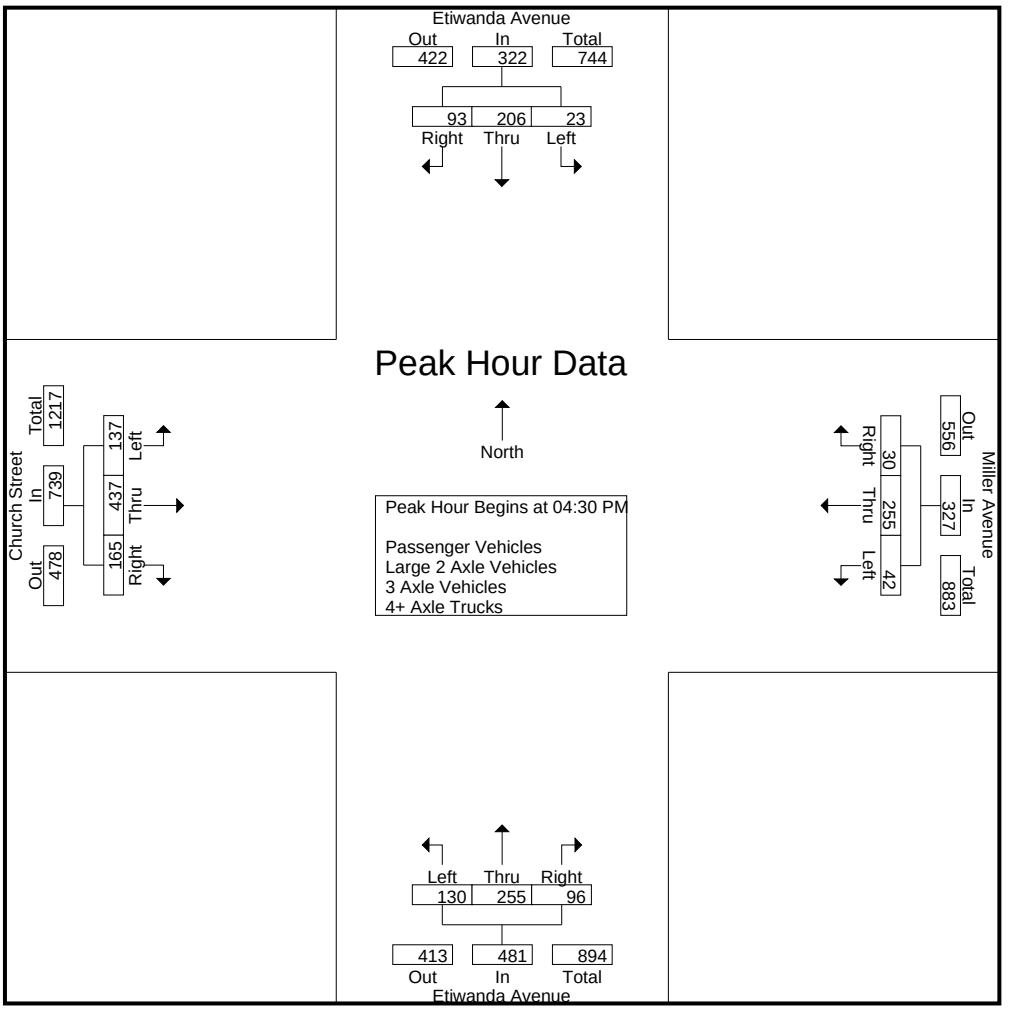

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:45 PM				05:00 PM			
+0 mins.	**10**	46	**33**	89	10	65	4	79	28	65	**28**	121	33	113	39	185
+15 mins.	6	45	26	77	**16**	63	**11**	**90**	**38**	65	25	128	39	**129**	38	**206**
+30 mins.	7	**61**	27	**95**	12	63	8	83	36	**73**	21	**130**	**44**	103	**40**	187
+45 mins.	7	57	24	88	7	**66**	5	78	27	62	19	108	31	129	33	193
Total Volume	30	209	110	349	45	257	28	330	129	265	93	487	147	474	150	771
% App. Total	8.6	59.9	31.5		13.6	77.9	8.5		26.5	54.4	19.1		19.1	61.5	19.5	
PHF	.750	.857	.833	.918	.703	.973	.636	.917	.849	.908	.830	.937	.835	.919	.938	.936

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City of Fontana
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E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	10	45	33	88	11	59	4	74	33	52	16	101	41	108	31	180	443
04:15 PM	6	43	26	75	10	65	4	79	30	63	29	122	35	94	37	166	442
04:30 PM	7	55	27	89	16	63	11	90	27	52	21	100	37	97	41	175	454
04:45 PM	7	53	24	84	12	63	8	83	27	65	28	120	28	96	47	171	458
Total	30	196	110	336	49	250	27	326	117	232	94	443	141	395	156	692	1797
05:00 PM	2	44	14	60	7	65	5	77	36	64	24	124	33	113	38	184	445
05:15 PM	7	35	28	70	7	63	6	76	36	73	20	129	39	129	37	205	480
05:30 PM	4	49	22	75	12	57	5	74	27	61	19	107	44	102	39	185	441
05:45 PM	5	36	30	71	14	63	5	82	36	58	19	113	31	129	32	192	458
Total	18	164	94	276	40	248	21	309	135	256	82	473	147	473	146	766	1824
Grand Total	48	360	204	612	89	498	48	635	252	488	176	916	288	868	302	1458	3621
Apprch %	7.8	58.8	33.3		14	78.4	7.6		27.5	53.3	19.2		19.8	59.5	20.7		
Total %	1.3	9.9	5.6	16.9	2.5	13.8	1.3	17.5	7	13.5	4.9	25.3	8	24	8.3	40.3	

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**7**	**55**	27	**89**	**16**	63	**11**	**90**	27	52	21	100	37	97	41	175	454
04:45 PM	7	53	24	84	12	63	8	83	27	65	**28**	120	28	96	**47**	171	458
05:00 PM	2	44	14	60	7	**65**	5	77	**36**	64	24	124	33	113	38	184	445
05:15 PM	7	35	**28**	70	7	63	6	76	36	**73**	20	**129**	**39**	**129**	37	**205**	**480**
Total Volume	23	187	93	303	42	254	30	326	126	254	93	473	137	435	163	735	1837
% App. Total	7.6	61.7	30.7		12.9	77.9	9.2		26.6	53.7	19.7		18.6	59.2	22.2		
PHF	.821	.850	.830	.851	.656	.977	.682	.906	.875	.870	.830	.917	.878	.843	.867	.896	.957

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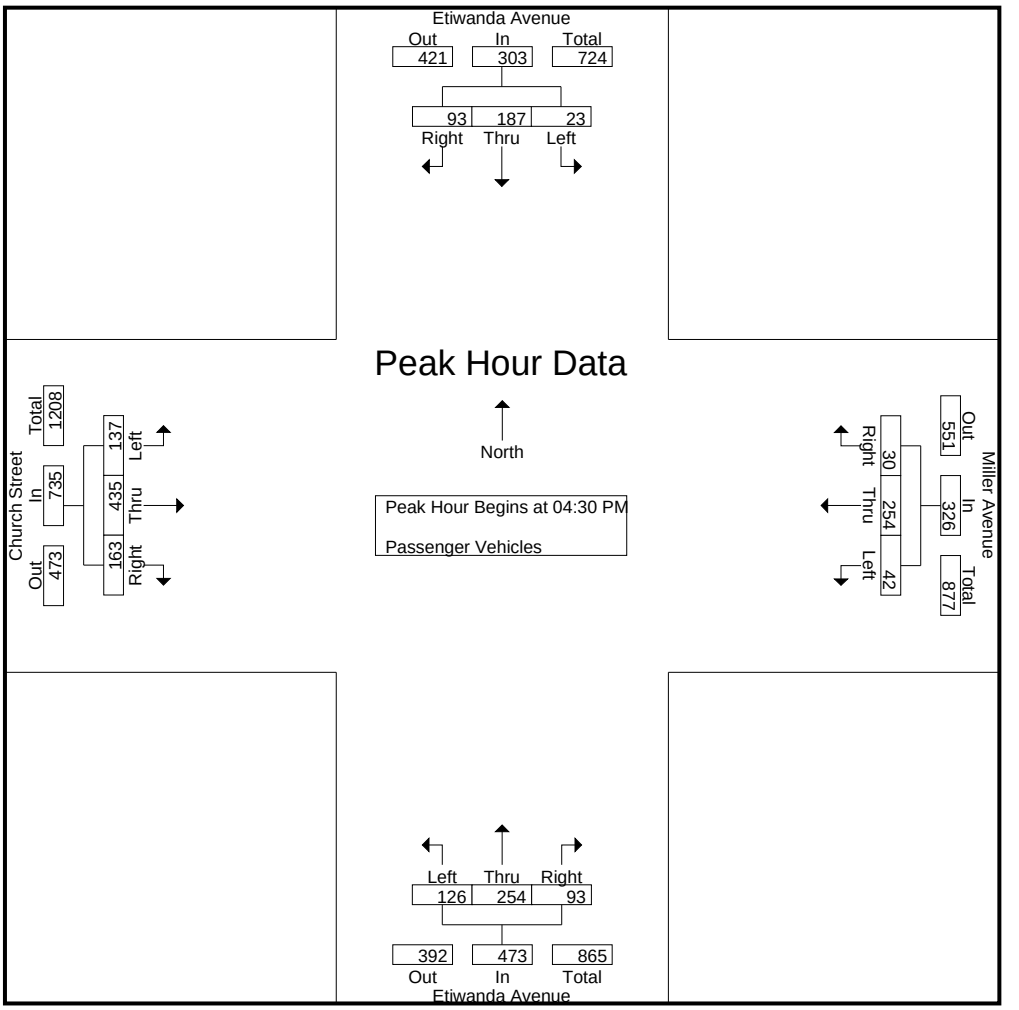

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	**7**	**55**	27	**89**	**16**	63	**11**	**90**	27	52	21	100	37	97	41	175
+15 mins.	7	53	24	84	12	63	8	83	27	65	**28**	120	28	96	**47**	171
+30 mins.	2	44	14	60	7	**65**	5	77	**36**	64	24	124	33	113	38	184
+45 mins.	7	35	**28**	70	7	63	6	76	36	**73**	20	**129**	**39**	**129**	37	**205**
Total Volume	23	187	93	303	42	254	30	326	126	254	93	473	137	435	163	735
% App. Total	7.6	61.7	30.7		12.9	77.9	9.2		26.6	53.7	19.7		18.6	59.2	22.2	
PHF	.821	.850	.830	.851	.656	.977	.682	.906	.875	.870	.830	.917	.878	.843	.867	.896

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E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
04:15 PM	0	1	0	1	0	0	0	0	0	1	1	2	0	1	0	1	4
04:30 PM	0	1	0	1	0	0	0	0	0	0	1	1	0	1	0	1	3
04:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
Total	0	2	0	2	0	0	0	0	1	1	2	4	1	2	0	3	9
05:00 PM	0	1	0	1	0	1	0	1	2	1	1	4	0	0	0	0	6
05:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
05:30 PM	1	0	1	2	0	0	0	0	0	1	0	1	0	1	1	2	5
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	1	1	1	3	0	1	0	1	2	2	2	6	0	1	2	3	13
Grand Total	1	3	1	5	0	1	0	1	3	3	4	10	1	3	2	6	22
Apprch %	20	60	20		0	100	0		30	30	40		16.7	50	33.3		
Total %	4.5	13.6	4.5	22.7	0	4.5	0	4.5	13.6	13.6	18.2	45.5	4.5	13.6	9.1	27.3	

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	**1**	0	**1**	0	0	0	0	0	0	**1**	1	0	**1**	0	**1**	3
04:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
05:00 PM	0	1	0	1	0	**1**	0	**1**	**2**	**1**	1	**4**	0	0	0	0	**6**
05:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Total Volume	0	2	0	2	0	1	0	1	3	1	3	7	0	1	0	1	11
% App. Total	0	100	0		0	100	0		42.9	14.3	42.9		0	100	0		
PHF	.000	.500	.000	.500	.000	.250	.000	.250	.375	.250	.750	.438	.000	.250	.000	.250	.458

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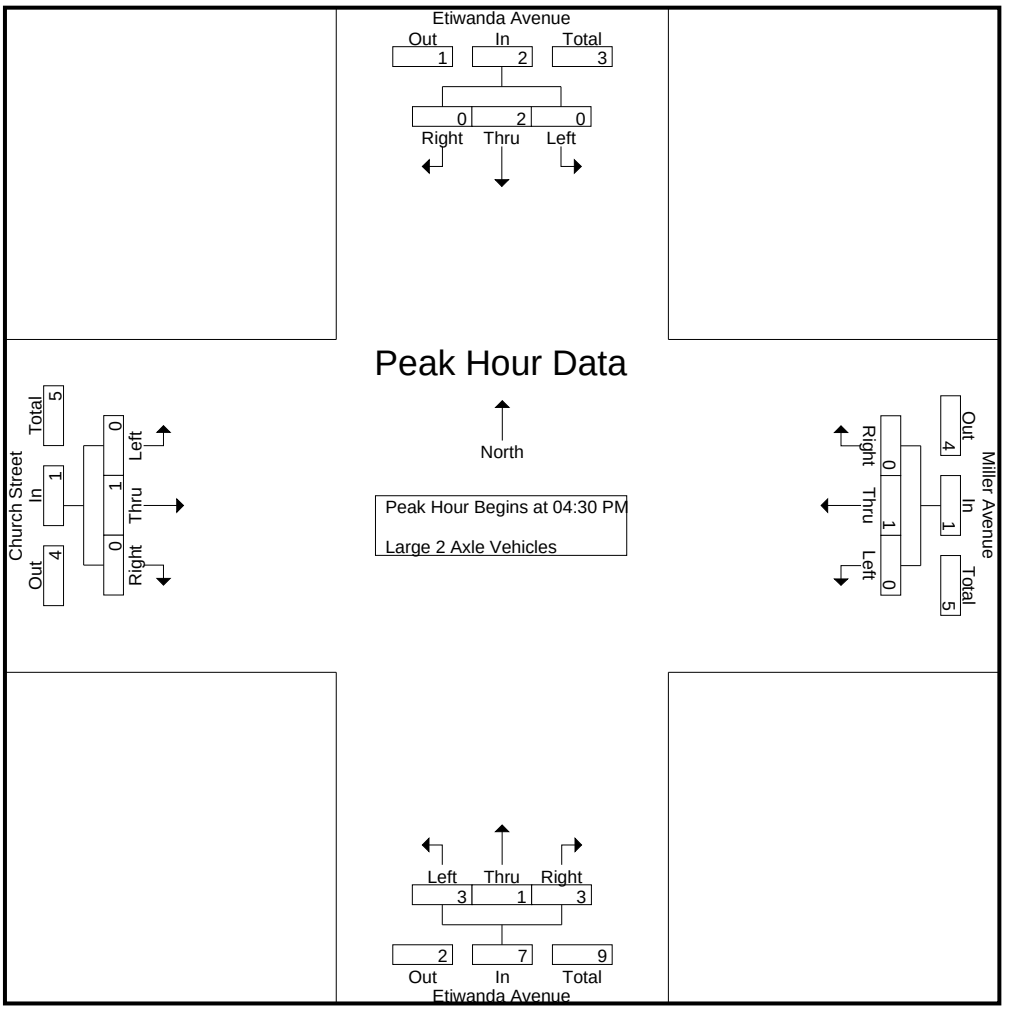
City of Fontana
N/S: Etiwanda Avenue
E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church PM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	**1**	0	**1**	0	0	0	0	0	0	**1**	1	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
+30 mins.	0	1	0	1	0	**1**	0	**1**	**2**	**1**	1	**4**	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
Total Volume	0	2	0	2	0	1	0	1	3	1	3	7	0	1	0	1
% App. Total	0	100	0		0	100	0		42.9	14.3	42.9		0	100	0	
PHF	.000	.500	.000	.500	.000	.250	.000	.250	.375	.250	.750	.438	.000	.250	.000	.250

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City of Fontana
N/S: Etiwanda Avenue
E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	1	0	1	0	0	0	0	1	0	0	1	0	0	2	2	4
04:15 PM	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	2
04:30 PM	0	5	0	5	0	0	0	0	1	0	0	1	0	0	0	0	6
04:45 PM	0	4	0	4	0	0	0	0	0	0	0	0	0	1	0	1	5
Total	0	11	0	11	0	0	0	0	2	0	1	3	0	1	2	3	17
05:00 PM	0	6	0	6	0	0	0	0	0	0	0	0	0	0	1	1	7
05:15 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	1	1	3
05:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	9	0	9	0	0	0	0	0	0	0	0	0	0	2	2	11
Grand Total	0	20	0	20	0	0	0	0	2	0	1	3	0	1	4	5	28
Apprch %	0	100	0		0	0	0		66.7	0	33.3		0	20	80		
Total %	0	71.4	0	71.4	0	0	0	0	7.1	0	3.6	10.7	0	3.6	14.3	17.9	

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	5	0	5	0	0	0	0	**1**	0	0	**1**	0	0	0	0	6
04:45 PM	0	4	0	4	0	0	0	0	0	0	0	0	0	**1**	0	**1**	5
05:00 PM	0	**6**	0	**6**	0	0	0	0	0	0	0	0	0	0	**1**	1	**7**
05:15 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	1	1	3
Total Volume	0	17	0	17	0	0	0	0	1	0	0	1	0	1	2	3	21
% App. Total	0	100	0		0	0	0		100	0	0		0	33.3	66.7		
PHF	.000	.708	.000	.708	.000	.000	.000	.000	.250	.000	.000	.250	.000	.250	.500	.750	.750

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City of Fontana
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File Name : 11_FON_Etiwanda_Church PM
Site Code : 10821516
Start Date : 9/28/2021
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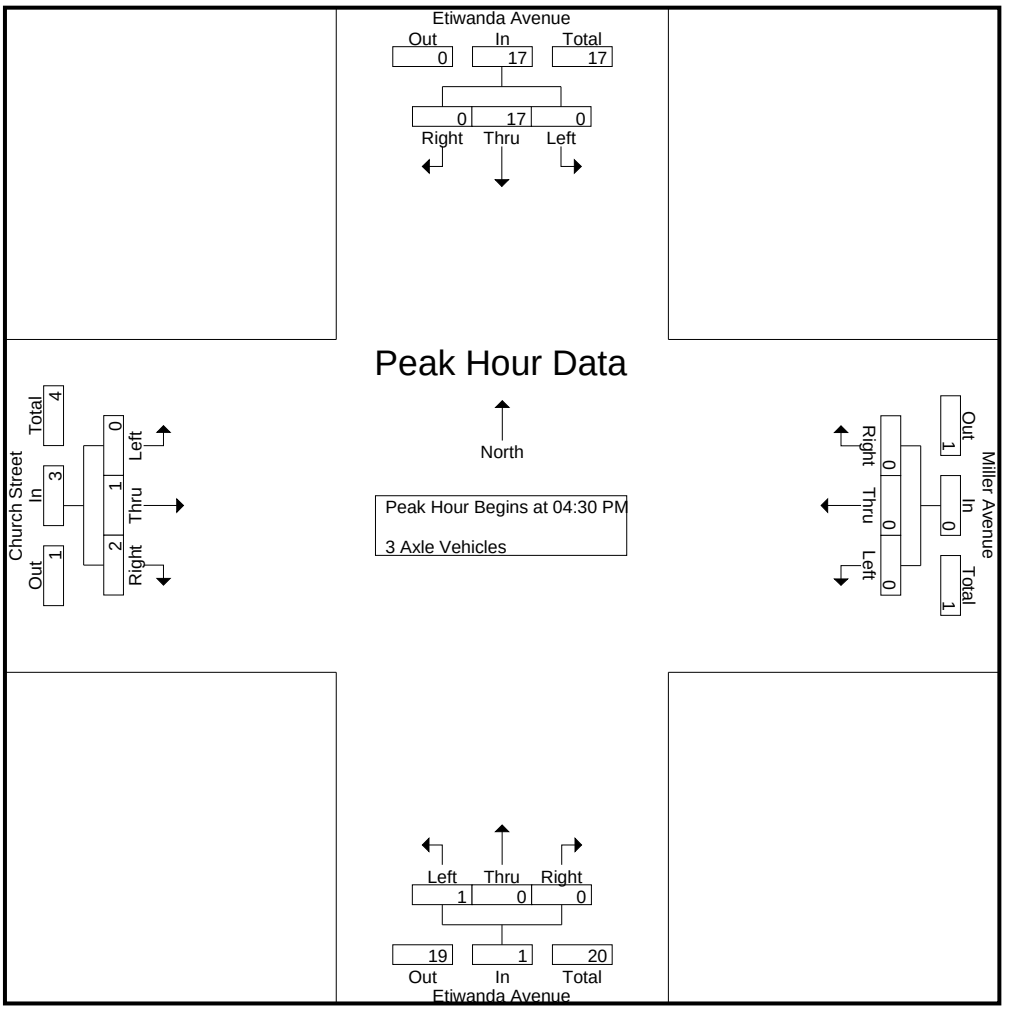

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	5	0	5	0	0	0	0	**1**	0	0	**1**	0	0	0	0
+15 mins.	0	4	0	4	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+30 mins.	0	**6**	0	**6**	0	0	0	0	0	0	0	0	0	0	**1**	1
+45 mins.	0	2	0	2	0	0	0	0	0	0	0	0	0	0	1	1
Total Volume	0	17	0	17	0	0	0	0	1	0	0	1	0	1	2	3
% App. Total	0	100	0		0	0	0		100	0	0		0	33.3	66.7	
PHF	.000	.708	.000	.708	.000	.000	.000	.000	.250	.000	.000	.250	.000	.250	.500	.750

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City of Fontana
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E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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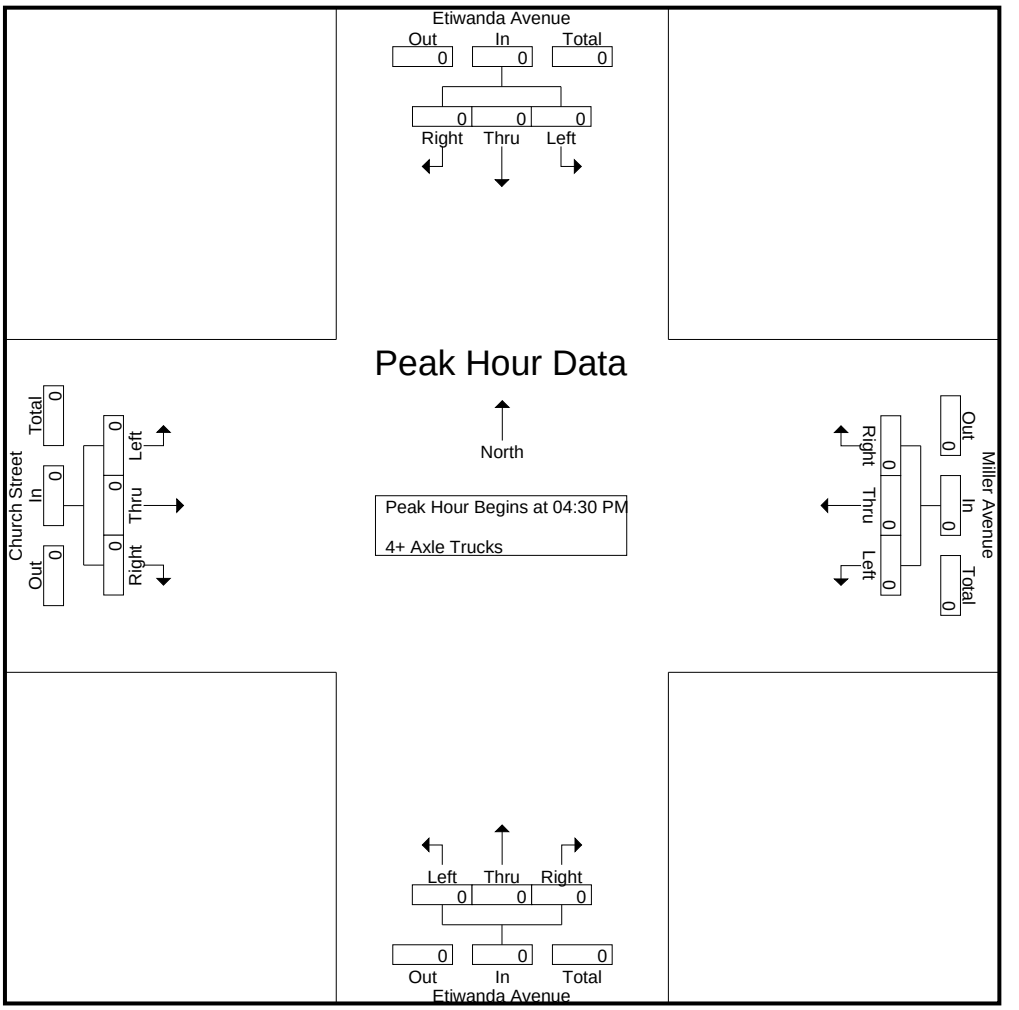
City of Fontana
N/S: Etiwanda Avenue
E/W: Church Street/Miller Avenue
Weather: Clear

File Name : 11_FON_Etiwanda_Church PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 09_FON_15S_Foothill AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	23	0	193	216	0	235	137	372	0	0	0	0	0	89	174	263	851
07:15 AM	25	0	206	231	0	299	139	438	0	0	0	0	0	125	209	334	1003
07:30 AM	40	0	224	264	0	354	146	500	0	0	0	0	0	107	171	278	1042
07:45 AM	37	0	184	221	0	405	181	586	0	0	0	0	0	126	177	303	1110
Total	125	0	807	932	0	1293	603	1896	0	0	0	0	0	447	731	1178	4006
08:00 AM	23	0	201	224	0	330	144	474	0	0	0	0	0	134	211	345	1043
08:15 AM	32	0	170	202	0	323	125	448	0	0	0	0	0	142	192	334	984
08:30 AM	23	0	158	181	0	313	122	435	0	0	0	0	0	130	172	302	918
08:45 AM	28	0	193	221	0	329	101	430	0	0	0	0	0	150	144	294	945
Total	106	0	722	828	0	1295	492	1787	0	0	0	0	0	556	719	1275	3890
Grand Total	231	0	1529	1760	0	2588	1095	3683	0	0	0	0	0	1003	1450	2453	7896
Apprch %	13.1	0	86.9		0	70.3	29.7		0	0	0		0	40.9	59.1		
Total %	2.9	0	19.4	22.3	0	32.8	13.9	46.6	0	0	0	0	0	12.7	18.4	31.1	
Passenger Vehicles	195	0	1483	1678	0	2483	1033	3516	0	0	0	0	0	948	1403	2351	7545
% Passenger Vehicles	84.4	0	97	95.3	0	95.9	94.3	95.5	0	0	0	0	0	94.5	96.8	95.8	95.6
Large 2 Axle Vehicles	7	0	14	21	0	64	23	87	0	0	0	0	0	29	23	52	160
% Large 2 Axle Vehicles	3	0	0.9	1.2	0	2.5	2.1	2.4	0	0	0	0	0	2.9	1.6	2.1	2
3 Axle Vehicles	9	0	4	13	0	17	13	30	0	0	0	0	0	8	4	12	55
% 3 Axle Vehicles	3.9	0	0.3	0.7	0	0.7	1.2	0.8	0	0	0	0	0	0.8	0.3	0.5	0.7
4+ Axle Trucks	20	0	28	48	0	24	26	50	0	0	0	0	0	18	20	38	136
% 4+ Axle Trucks	8.7	0	1.8	2.7	0	0.9	2.4	1.4	0	0	0	0	0	1.8	1.4	1.5	1.7

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	25	0	206	231	0	299	139	438	0	0	0	0	0	125	209	334	1003
07:30 AM	**40**	0	**224**	**264**	0	354	146	500	0	0	0	0	0	107	171	278	1042
07:45 AM	37	0	184	221	0	**405**	**181**	**586**	0	0	0	0	0	126	177	303	**1110**
08:00 AM	23	0	201	224	0	330	144	474	0	0	0	0	0	**134**	**211**	**345**	1043
Total Volume	125	0	815	940	0	1388	610	1998	0	0	0	0	0	492	768	1260	4198
% App. Total	13.3	0	86.7		0	69.5	30.5		0	0	0		0	39	61		
PHF	.781	.000	.910	.890	.000	.857	.843	.852	.000	.000	.000	.000	.000	.918	.910	.913	.945

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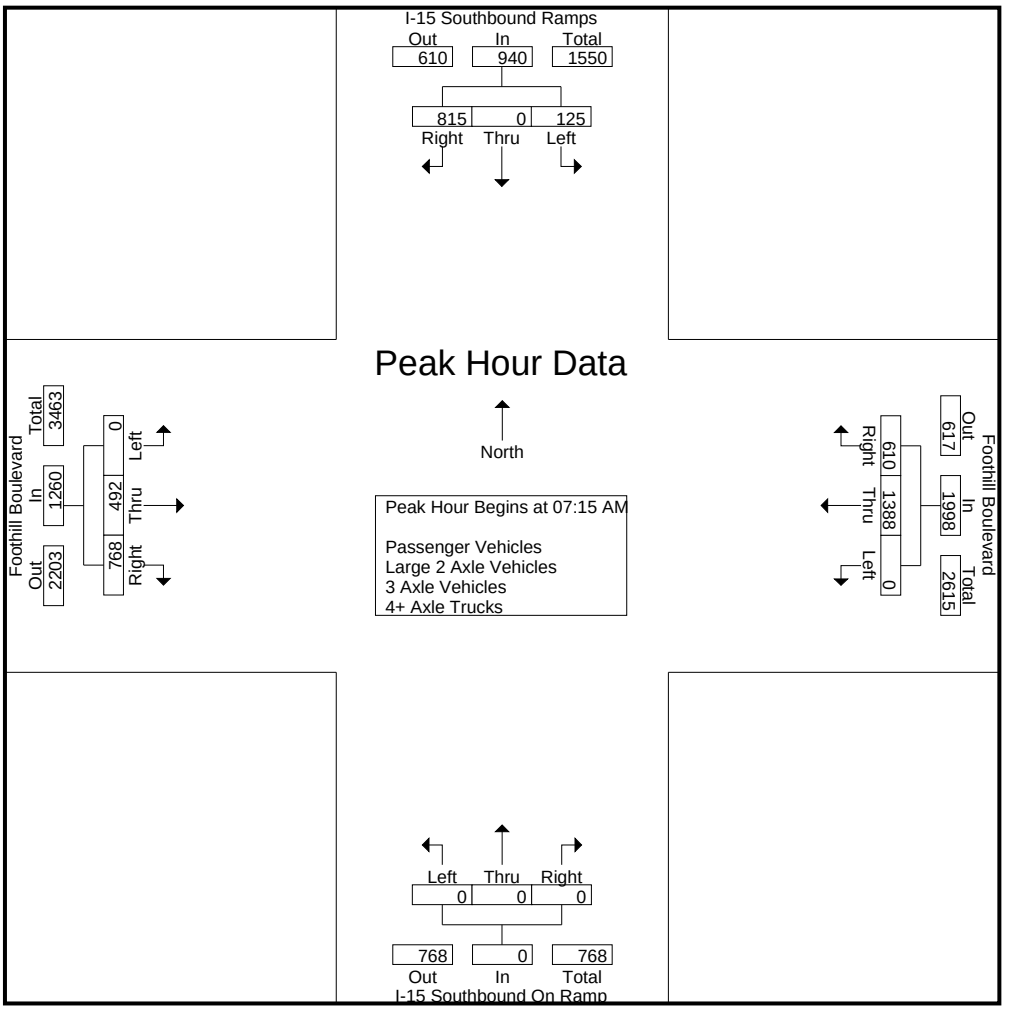
City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 09_FON_15S_Foothill AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:30 AM				07:00 AM				07:45 AM			
+0 mins.	25	0	206	231	0	354	146	500	0	0	0	0	0	126	177	303
+15 mins.	**40**	0	**224**	**264**	0	**405**	**181**	**586**	0	0	0	0	0	134	**211**	**345**
+30 mins.	37	0	184	221	0	330	144	474	0	0	0	0	0	**142**	192	334
+45 mins.	23	0	201	224	0	323	125	448	0	0	0	0	0	130	172	302
Total Volume	125	0	815	940	0	1412	596	2008	0	0	0	0	0	532	752	1284
% App. Total	13.3	0	86.7		0	70.3	29.7		0	0	0		0	41.4	58.6	
PHF	.781	.000	.910	.890	.000	.872	.823	.857	.000	.000	.000	.000	.000	.937	.891	.930

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City of Fontana
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Weather: Clear

File Name : 09_FON_15S_Foothill AM
Site Code : 10821516
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Groups Printed- Passenger Vehicles

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	18	0	188	206	0	227	132	359	0	0	0	0	0	85	169	254	819
07:15 AM	22	0	200	222	0	285	128	413	0	0	0	0	0	120	208	328	963
07:30 AM	35	0	220	255	0	342	140	482	0	0	0	0	0	101	163	264	1001
07:45 AM	32	0	180	212	0	395	176	571	0	0	0	0	0	123	171	294	1077
Total	107	0	788	895	0	1249	576	1825	0	0	0	0	0	429	711	1140	3860
08:00 AM	20	0	195	215	0	318	135	453	0	0	0	0	0	124	201	325	993
08:15 AM	27	0	161	188	0	302	120	422	0	0	0	0	0	133	189	322	932
08:30 AM	19	0	149	168	0	299	112	411	0	0	0	0	0	120	165	285	864
08:45 AM	22	0	190	212	0	315	90	405	0	0	0	0	0	142	137	279	896
Total	88	0	695	783	0	1234	457	1691	0	0	0	0	0	519	692	1211	3685
Grand Total	195	0	1483	1678	0	2483	1033	3516	0	0	0	0	0	948	1403	2351	7545
Apprch %	11.6	0	88.4		0	70.6	29.4		0	0	0		0	40.3	59.7		
Total %	2.6	0	19.7	22.2	0	32.9	13.7	46.6	0	0	0	0	0	12.6	18.6	31.2	

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	22	0	200	222	0	285	128	413	0	0	0	0	0	120	**208**	**328**	963
07:30 AM	**35**	0	**220**	**255**	0	342	140	482	0	0	0	0	0	101	163	264	1001
07:45 AM	32	0	180	212	0	**395**	**176**	**571**	0	0	0	0	0	123	171	294	**1077**
08:00 AM	20	0	195	215	0	318	135	453	0	0	0	0	0	**124**	201	325	993
Total Volume	109	0	795	904	0	1340	579	1919	0	0	0	0	0	468	743	1211	4034
% App. Total	12.1	0	87.9		0	69.8	30.2		0	0	0		0	38.6	61.4		
PHF	.779	.000	.903	.886	.000	.848	.822	.840	.000	.000	.000	.000	.000	.944	.893	.923	.936

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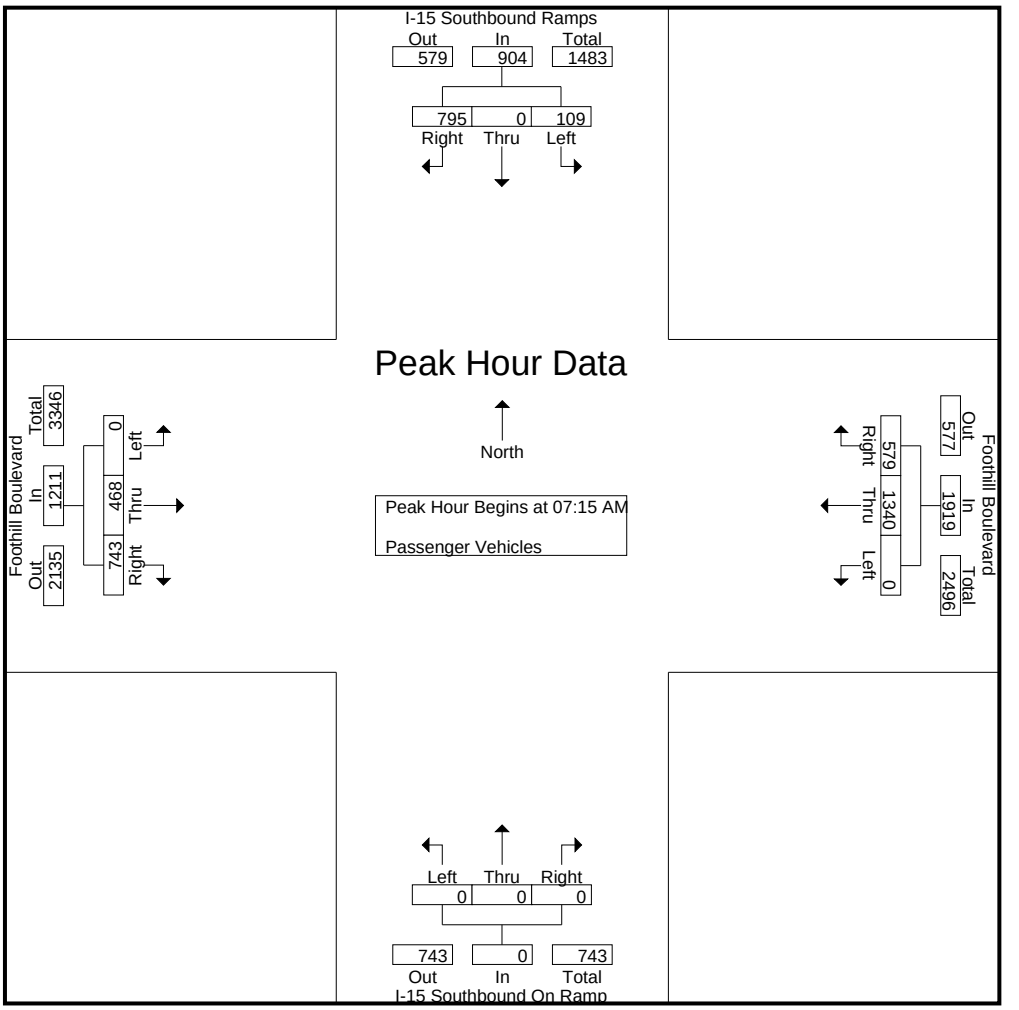
City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 09_FON_15S_Foothill AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	22	0	200	222	0	285	128	413	0	0	0	0	0	120	**208**	**328**
+15 mins.	**35**	0	**220**	**255**	0	342	140	482	0	0	0	0	0	101	163	264
+30 mins.	32	0	180	212	0	**395**	**176**	**571**	0	0	0	0	0	123	171	294
+45 mins.	20	0	195	215	0	318	135	453	0	0	0	0	0	**124**	201	325
Total Volume	109	0	795	904	0	1340	579	1919	0	0	0	0	0	468	743	1211
% App. Total	12.1	0	87.9		0	69.8	30.2		0	0	0		0	38.6	61.4	
PHF	.779	.000	.903	.886	.000	.848	.822	.840	.000	.000	.000	.000	.000	.944	.893	.923

Counts Unlimited, Inc.
PO Box 1178
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City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 09_FON_15S_Foothill AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	5	5	0	5	3	8	0	0	0	0	0	1	4	5	18
07:15 AM	0	0	1	1	0	8	4	12	0	0	0	0	0	2	1	3	16
07:30 AM	1	0	1	2	0	5	3	8	0	0	0	0	0	5	3	8	18
07:45 AM	1	0	1	2	0	6	1	7	0	0	0	0	0	0	2	2	11
Total	2	0	8	10	0	24	11	35	0	0	0	0	0	8	10	18	63
08:00 AM	1	0	0	1	0	9	5	14	0	0	0	0	0	2	6	8	23
08:15 AM	1	0	3	4	0	13	1	14	0	0	0	0	0	7	1	8	26
08:30 AM	0	0	2	2	0	10	1	11	0	0	0	0	0	6	2	8	21
08:45 AM	3	0	1	4	0	8	5	13	0	0	0	0	0	6	4	10	27
Total	5	0	6	11	0	40	12	52	0	0	0	0	0	21	13	34	97
Grand Total	7	0	14	21	0	64	23	87	0	0	0	0	0	29	23	52	160
Apprch %	33.3	0	66.7		0	73.6	26.4		0	0	0		0	55.8	44.2		
Total %	4.4	0	8.8	13.1	0	40	14.4	54.4	0	0	0	0	0	18.1	14.4	32.5	

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	**1**	1	0	8	4	12	0	0	0	0	0	2	1	3	16
07:30 AM	**1**	0	1	**2**	0	5	3	8	0	0	0	0	0	**5**	3	**8**	18
07:45 AM	1	0	1	2	0	6	1	7	0	0	0	0	0	0	2	2	11
08:00 AM	1	0	0	1	0	**9**	**5**	**14**	0	0	0	0	0	2	**6**	8	**23**
Total Volume	3	0	3	6	0	28	13	41	0	0	0	0	0	9	12	21	68
% App. Total	50	0	50		0	68.3	31.7		0	0	0		0	42.9	57.1		
PHF	.750	.000	.750	.750	.000	.778	.650	.732	.000	.000	.000	.000	.000	.450	.500	.656	.739

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City of Fontana
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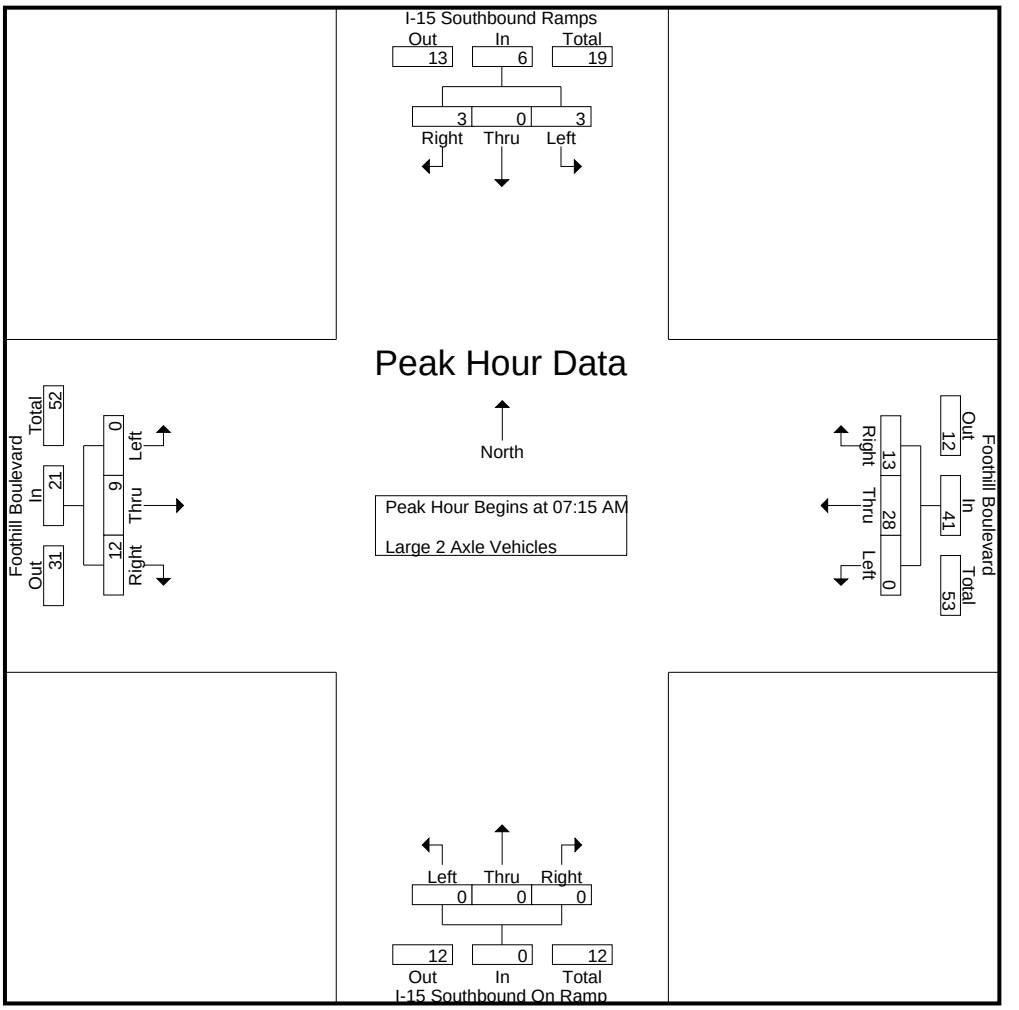

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	**1**	1	0	8	4	12	0	0	0	0	0	2	1	3
+15 mins.	**1**	0	1	**2**	0	5	3	8	0	0	0	0	0	**5**	3	**8**
+30 mins.	1	0	1	2	0	6	1	7	0	0	0	0	0	0	2	2
+45 mins.	1	0	0	1	0	**9**	**5**	**14**	0	0	0	0	0	2	**6**	8
Total Volume	3	0	3	6	0	28	13	41	0	0	0	0	0	9	12	21
% App. Total	50	0	50		0	68.3	31.7		0	0	0		0	42.9	57.1	
PHF	.750	.000	.750	.750	.000	.778	.650	.732	.000	.000	.000	.000	.000	.450	.500	.656

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City of Fontana
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E/W: Foothill Boulevard
Weather: Clear

File Name : 09_FON_15S_Foothill AM
Site Code : 10821516
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Groups Printed- 3 Axle Vehicles

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	2
07:15 AM	0	0	1	1	0	3	3	6	0	0	0	0	0	0	0	0	7
07:30 AM	1	0	0	1	0	2	1	3	0	0	0	0	0	0	0	0	4
07:45 AM	1	0	1	2	0	2	1	3	0	0	0	0	0	1	0	1	6
Total	2	0	2	4	0	8	6	14	0	0	0	0	0	1	0	1	19
08:00 AM	1	0	0	1	0	0	1	1	0	0	0	0	0	6	2	8	10
08:15 AM	1	0	0	1	0	8	1	9	0	0	0	0	0	0	1	1	11
08:30 AM	4	0	1	5	0	1	2	3	0	0	0	0	0	1	0	1	9
08:45 AM	1	0	1	2	0	0	3	3	0	0	0	0	0	0	1	1	6
Total	7	0	2	9	0	9	7	16	0	0	0	0	0	7	4	11	36
Grand Total	9	0	4	13	0	17	13	30	0	0	0	0	0	8	4	12	55
Apprch %	69.2	0	30.8		0	56.7	43.3		0	0	0		0	66.7	33.3		
Total %	16.4	0	7.3	23.6	0	30.9	23.6	54.5	0	0	0	0	0	14.5	7.3	21.8	

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	**1**	1	0	**3**	**3**	**6**	0	0	0	0	0	0	0	0	7
07:30 AM	**1**	0	0	1	0	2	1	3	0	0	0	0	0	0	0	0	4
07:45 AM	1	0	1	**2**	0	2	1	3	0	0	0	0	0	1	0	1	6
08:00 AM	1	0	0	1	0	0	1	1	0	0	0	0	0	**6**	**2**	**8**	**10**
Total Volume	3	0	2	5	0	7	6	13	0	0	0	0	0	7	2	9	27
% App. Total	60	0	40		0	53.8	46.2		0	0	0		0	77.8	22.2		
PHF	.750	.000	.500	.625	.000	.583	.500	.542	.000	.000	.000	.000	.000	.292	.250	.281	.675

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File Name : 09_FON_15S_Foothill AM
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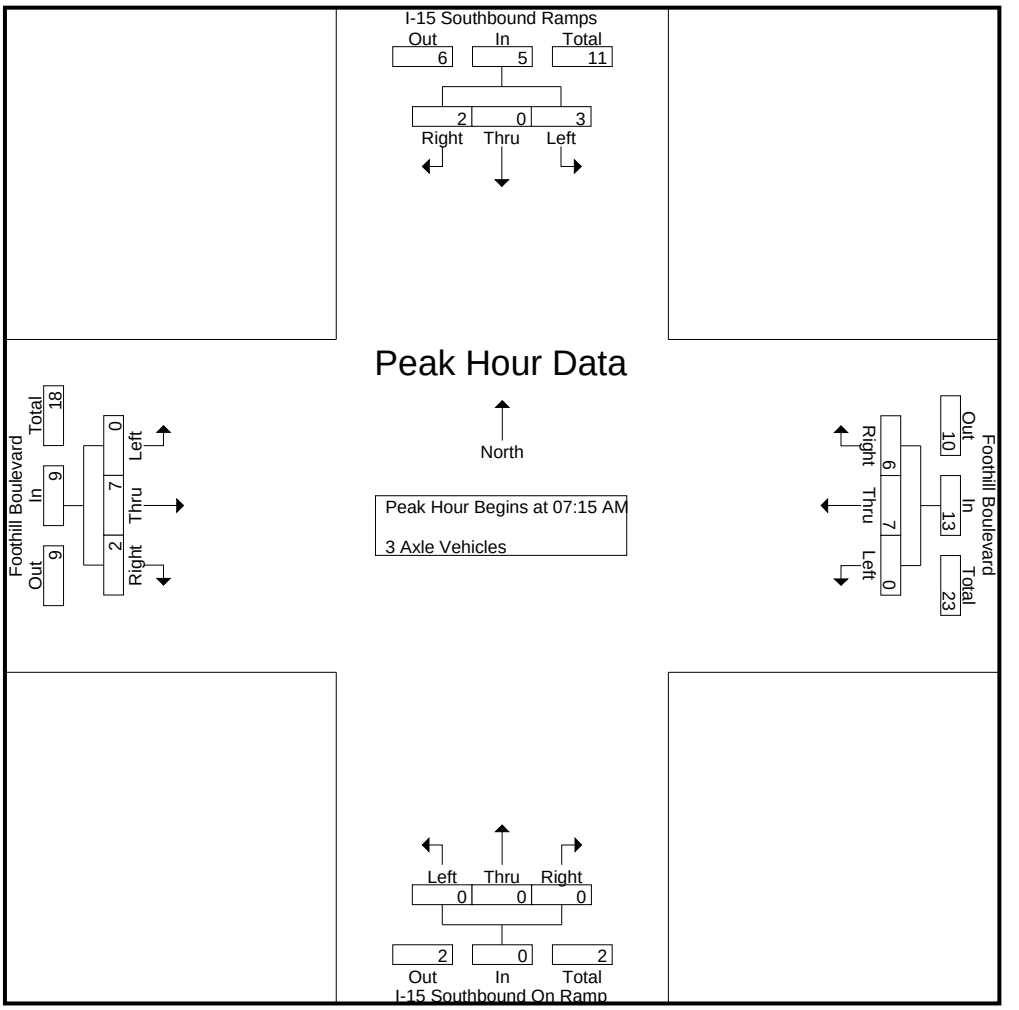

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	**1**	1	0	**3**	**3**	**6**	0	0	0	0	0	0	0	0
+15 mins.	**1**	0	0	1	0	2	1	3	0	0	0	0	0	0	0	0
+30 mins.	1	0	1	**2**	0	2	1	3	0	0	0	0	0	1	0	1
+45 mins.	1	0	0	1	0	0	1	1	0	0	0	0	0	**6**	**2**	**8**
Total Volume	3	0	2	5	0	7	6	13	0	0	0	0	0	7	2	9
% App. Total	60	0	40		0	53.8	46.2		0	0	0		0	77.8	22.2	
PHF	.750	.000	.500	.625	.000	.583	.500	.542	.000	.000	.000	.000	.000	.292	.250	.281

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File Name : 09_FON_15S_Foothill AM
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Groups Printed- 4+ Axle Trucks

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	5	0	0	5	0	2	1	3	0	0	0	0	0	3	1	4	12
07:15 AM	3	0	4	7	0	3	4	7	0	0	0	0	0	3	0	3	17
07:30 AM	3	0	3	6	0	5	2	7	0	0	0	0	0	1	5	6	19
07:45 AM	3	0	2	5	0	2	3	5	0	0	0	0	0	2	4	6	16
Total	14	0	9	23	0	12	10	22	0	0	0	0	0	9	10	19	64
08:00 AM	1	0	6	7	0	3	3	6	0	0	0	0	0	2	2	4	17
08:15 AM	3	0	6	9	0	0	3	3	0	0	0	0	0	2	1	3	15
08:30 AM	0	0	6	6	0	3	7	10	0	0	0	0	0	3	5	8	24
08:45 AM	2	0	1	3	0	6	3	9	0	0	0	0	0	2	2	4	16
Total	6	0	19	25	0	12	16	28	0	0	0	0	0	9	10	19	72
Grand Total	20	0	28	48	0	24	26	50	0	0	0	0	0	18	20	38	136
Apprch %	41.7	0	58.3		0	48	52		0	0	0		0	47.4	52.6		
Total %	14.7	0	20.6	35.3	0	17.6	19.1	36.8	0	0	0	0	0	13.2	14.7	27.9	

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**3**	0	4	**7**	0	3	**4**	**7**	0	0	0	0	0	**3**	0	3	17
07:30 AM	3	0	3	6	0	**5**	2	7	0	0	0	0	0	1	**5**	**6**	**19**
07:45 AM	3	0	2	5	0	2	3	5	0	0	0	0	0	2	4	6	16
08:00 AM	1	0	**6**	7	0	3	3	6	0	0	0	0	0	2	2	4	17
Total Volume	10	0	15	25	0	13	12	25	0	0	0	0	0	8	11	19	69
% App. Total	40	0	60		0	52	48		0	0	0		0	42.1	57.9		
PHF	.833	.000	.625	.893	.000	.650	.750	.893	.000	.000	.000	.000	.000	.667	.550	.792	.908

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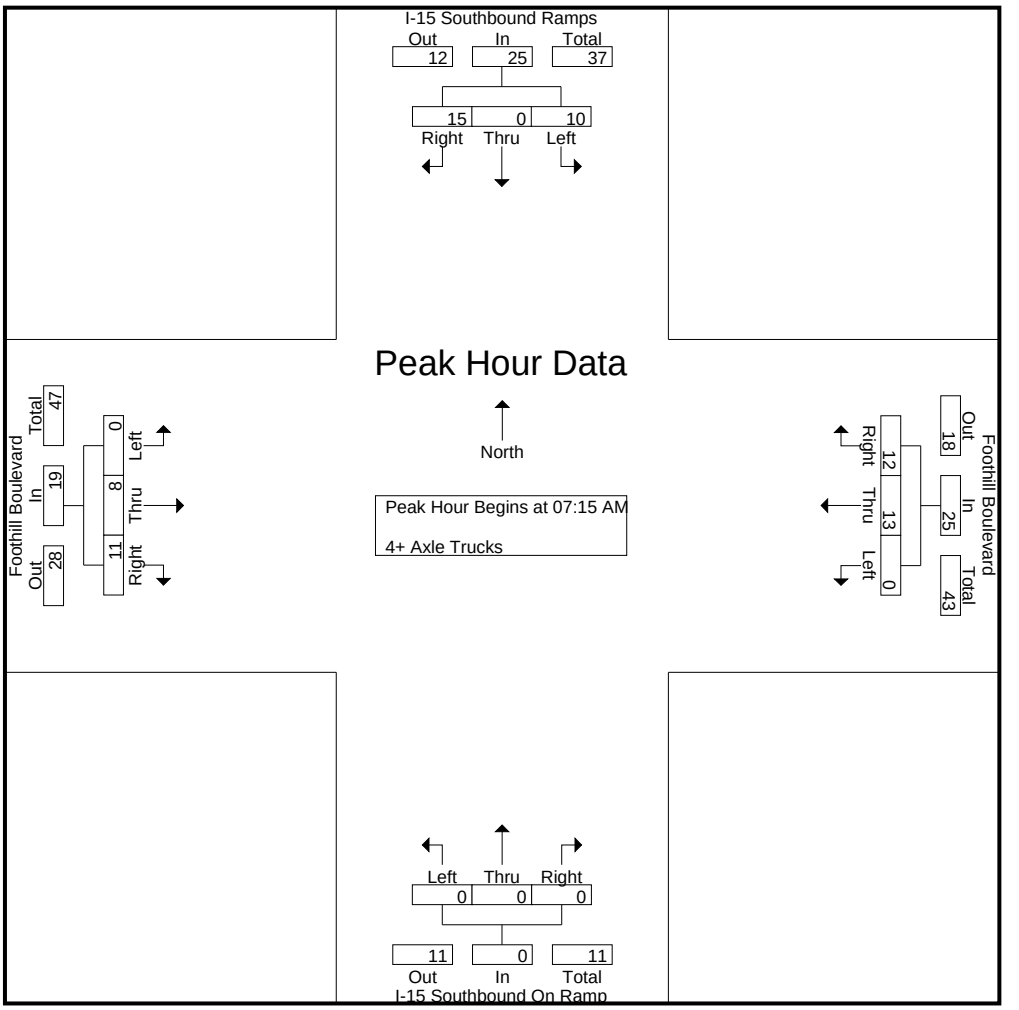

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	**3**	0	4	**7**	0	3	**4**	**7**	0	0	0	0	0	**3**	0	3
+15 mins.	3	0	3	6	0	**5**	2	7	0	0	0	0	0	1	**5**	**6**
+30 mins.	3	0	2	5	0	2	3	5	0	0	0	0	0	2	4	6
+45 mins.	1	0	**6**	7	0	3	3	6	0	0	0	0	0	2	2	4
Total Volume	10	0	15	25	0	13	12	25	0	0	0	0	0	8	11	19
% App. Total	40	0	60		0	52	48		0	0	0		0	42.1	57.9	
PHF	.833	.000	.625	.893	.000	.650	.750	.893	.000	.000	.000	.000	.000	.667	.550	.792

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City of Fontana
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File Name : 09_FON_15S_Foothill PM
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	29	0	142	171	0	293	112	405	0	0	0	0	0	414	224	638	1214
04:15 PM	42	0	167	209	0	305	94	399	0	0	0	0	0	460	246	706	1314
04:30 PM	43	0	97	140	0	348	125	473	0	0	0	0	0	448	207	655	1268
04:45 PM	38	0	123	161	0	306	97	403	0	0	0	0	0	446	206	652	1216
Total	152	0	529	681	0	1252	428	1680	0	0	0	0	0	1768	883	2651	5012
05:00 PM	32	0	109	141	0	329	91	420	0	0	0	0	0	460	216	676	1237
05:15 PM	46	0	123	169	0	346	124	470	0	0	0	0	0	509	270	779	1418
05:30 PM	21	0	145	166	0	336	109	445	0	0	0	0	0	457	223	680	1291
05:45 PM	37	0	144	181	0	323	111	434	0	0	0	0	0	433	211	644	1259
Total	136	0	521	657	0	1334	435	1769	0	0	0	0	0	1859	920	2779	5205
Grand Total	288	0	1050	1338	0	2586	863	3449	0	0	0	0	0	3627	1803	5430	10217
Apprch %	21.5	0	78.5		0	75	25		0	0	0		0	66.8	33.2		
Total %	2.8	0	10.3	13.1	0	25.3	8.4	33.8	0	0	0	0	0	35.5	17.6	53.1	
Passenger Vehicles	249	0	1032	1281	0	2562	815	3377	0	0	0	0	0	3563	1774	5337	9995
% Passenger Vehicles	86.5	0	98.3	95.7	0	99.1	94.4	97.9	0	0	0	0	0	98.2	98.4	98.3	97.8
Large 2 Axle Vehicles	5	0	7	12	0	13	9	22	0	0	0	0	0	26	17	43	77
% Large 2 Axle Vehicles	1.7	0	0.7	0.9	0	0.5	1	0.6	0	0	0	0	0	0.7	0.9	0.8	0.8
3 Axle Vehicles	7	0	0	7	0	4	5	9	0	0	0	0	0	7	3	10	26
% 3 Axle Vehicles	2.4	0	0	0.5	0	0.2	0.6	0.3	0	0	0	0	0	0.2	0.2	0.2	0.3
4+ Axle Trucks	27	0	11	38	0	7	34	41	0	0	0	0	0	31	9	40	119
% 4+ Axle Trucks	9.4	0	1	2.8	0	0.3	3.9	1.2	0	0	0	0	0	0.9	0.5	0.7	1.2

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	32	0	109	141	0	329	91	420	0	0	0	0	0	460	216	676	1237
05:15 PM	**46**	0	123	169	0	**346**	**124**	**470**	0	0	0	0	0	**509**	**270**	**779**	**1418**
05:30 PM	21	0	**145**	166	0	336	109	445	0	0	0	0	0	457	223	680	1291
05:45 PM	37	0	144	**181**	0	323	111	434	0	0	0	0	0	433	211	644	1259
Total Volume	136	0	521	657	0	1334	435	1769	0	0	0	0	0	1859	920	2779	5205
% App. Total	20.7	0	79.3		0	75.4	24.6		0	0	0		0	66.9	33.1		
PHF	.739	.000	.898	.907	.000	.964	.877	.941	.000	.000	.000	.000	.000	.913	.852	.892	.918

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Weather: Clear

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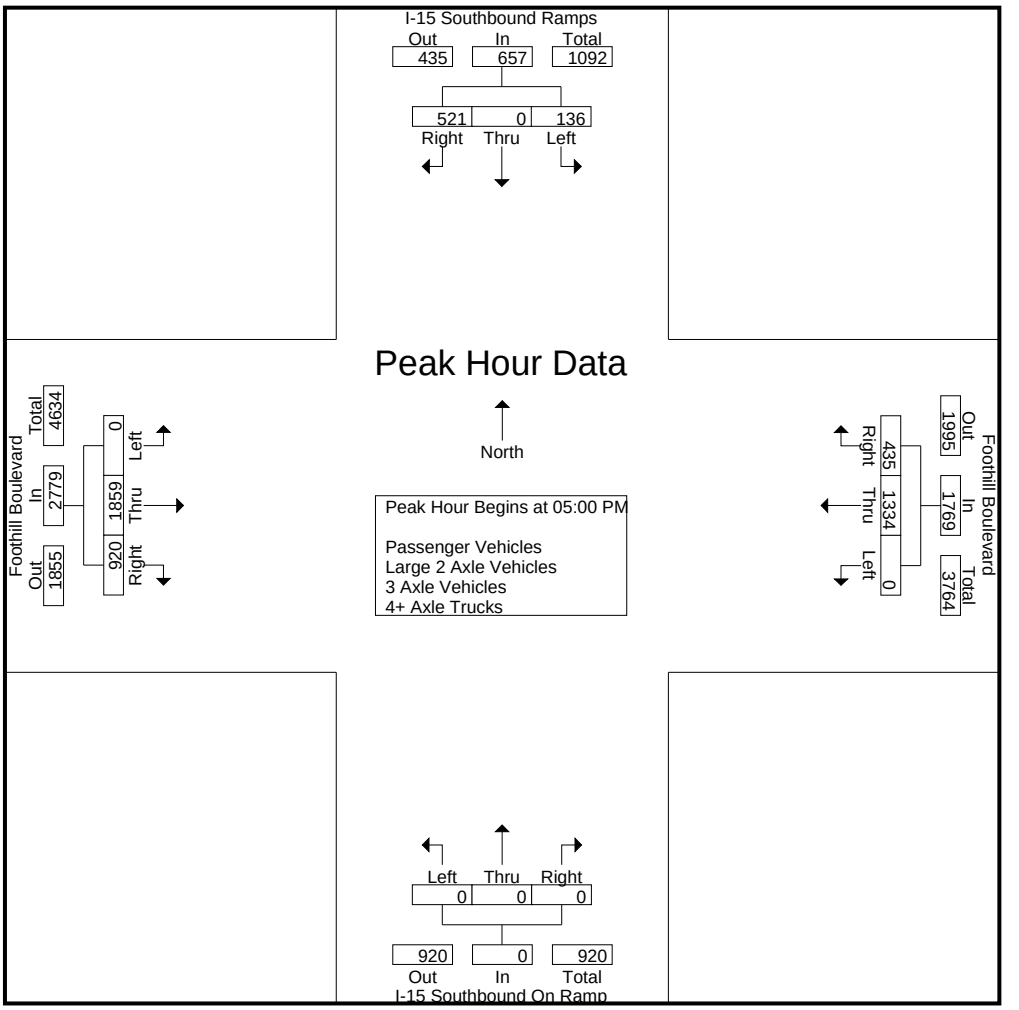

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:00 PM				04:45 PM			
+0 mins.	29	0	142	171	0	329	91	420	0	0	0	0	0	446	206	652
+15 mins.	42	0	**167**	**209**	0	**346**	**124**	**470**	0	0	0	0	0	460	216	676
+30 mins.	**43**	0	97	140	0	336	109	445	0	0	0	0	0	**509**	**270**	**779**
+45 mins.	38	0	123	161	0	323	111	434	0	0	0	0	0	457	223	680
Total Volume	152	0	529	681	0	1334	435	1769	0	0	0	0	0	1872	915	2787
% App. Total	22.3	0	77.7		0	75.4	24.6		0	0	0		0	67.2	32.8	
PHF	.884	.000	.792	.815	.000	.964	.877	.941	.000	.000	.000	.000	.000	.919	.847	.894

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City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 09_FON_15S_Foothill PM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- Passenger Vehicles

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	25	0	140	165	0	291	100	391	0	0	0	0	0	403	219	622	1178
04:15 PM	37	0	161	198	0	303	86	389	0	0	0	0	0	451	245	696	1283
04:30 PM	37	0	96	133	0	345	116	461	0	0	0	0	0	442	202	644	1238
04:45 PM	32	0	122	154	0	302	94	396	0	0	0	0	0	439	203	642	1192
Total	131	0	519	650	0	1241	396	1637	0	0	0	0	0	1735	869	2604	4891
05:00 PM	27	0	108	135	0	325	90	415	0	0	0	0	0	455	213	668	1218
05:15 PM	39	0	121	160	0	345	120	465	0	0	0	0	0	502	265	767	1392
05:30 PM	16	0	144	160	0	333	105	438	0	0	0	0	0	450	220	670	1268
05:45 PM	36	0	140	176	0	318	104	422	0	0	0	0	0	421	207	628	1226
Total	118	0	513	631	0	1321	419	1740	0	0	0	0	0	1828	905	2733	5104
Grand Total	249	0	1032	1281	0	2562	815	3377	0	0	0	0	0	3563	1774	5337	9995
Apprch %	19.4	0	80.6		0	75.9	24.1		0	0	0		0	66.8	33.2		
Total %	2.5	0	10.3	12.8	0	25.6	8.2	33.8	0	0	0	0	0	35.6	17.7	53.4	

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	27	0	108	135	0	325	90	415	0	0	0	0	0	455	213	668	1218
05:15 PM	**39**	0	121	160	0	**345**	**120**	**465**	0	0	0	0	0	**502**	**265**	**767**	**1392**
05:30 PM	16	0	**144**	160	0	333	105	438	0	0	0	0	0	450	220	670	1268
05:45 PM	36	0	140	**176**	0	318	104	422	0	0	0	0	0	421	207	628	1226
Total Volume	118	0	513	631	0	1321	419	1740	0	0	0	0	0	1828	905	2733	5104
% App. Total	18.7	0	81.3		0	75.9	24.1		0	0	0		0	66.9	33.1		
PHF	.756	.000	.891	.896	.000	.957	.873	.935	.000	.000	.000	.000	.000	.910	.854	.891	.917

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City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 09_FON_15S_Foothill PM
Site Code : 10821516
Start Date : 9/28/2021
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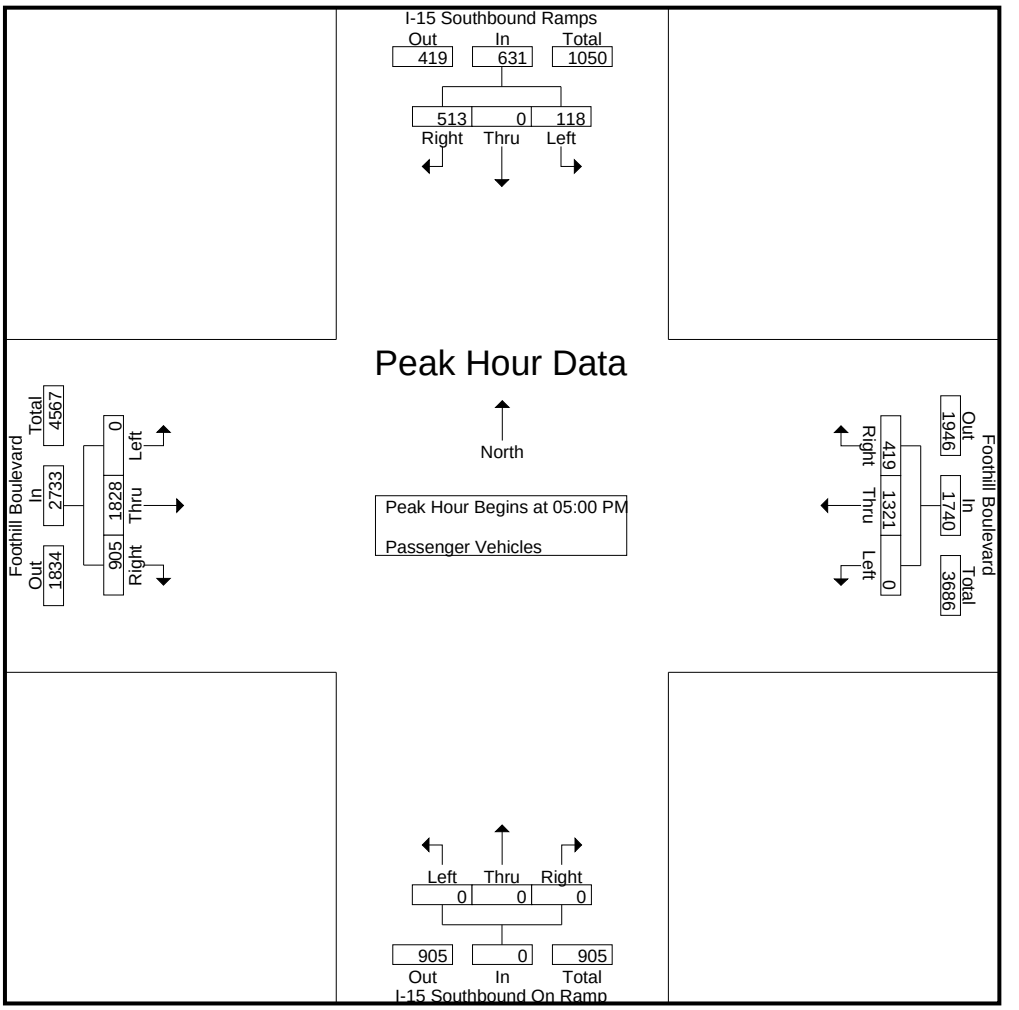

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	27	0	108	135	0	325	90	415	0	0	0	0	0	455	213	668
+15 mins.	**39**	0	121	160	0	**345**	**120**	**465**	0	0	0	0	0	**502**	**265**	**767**
+30 mins.	16	0	**144**	160	0	333	105	438	0	0	0	0	0	450	220	670
+45 mins.	36	0	140	**176**	0	318	104	422	0	0	0	0	0	421	207	628
Total Volume	118	0	513	631	0	1321	419	1740	0	0	0	0	0	1828	905	2733
% App. Total	18.7	0	81.3		0	75.9	24.1		0	0	0		0	66.9	33.1	
PHF	.756	.000	.891	.896	.000	.957	.873	.935	.000	.000	.000	.000	.000	.910	.854	.891

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City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 09_FON_15S_Foothill PM
Site Code : 10821516
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Groups Printed- Large 2 Axle Vehicles

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	1	1	0	2	1	3	0	0	0	0	0	4	2	6	10
04:15 PM	0	0	5	5	0	2	2	4	0	0	0	0	0	4	0	4	13
04:30 PM	2	0	0	2	0	2	2	4	0	0	0	0	0	2	3	5	11
04:45 PM	1	0	0	1	0	1	0	1	0	0	0	0	0	3	2	5	7
Total	3	0	6	9	0	7	5	12	0	0	0	0	0	13	7	20	41
05:00 PM	1	0	0	1	0	1	0	1	0	0	0	0	0	4	2	6	8
05:15 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	3	4	7	9
05:30 PM	1	0	1	2	0	1	1	2	0	0	0	0	0	2	2	4	8
05:45 PM	0	0	0	0	0	3	2	5	0	0	0	0	0	4	2	6	11
Total	2	0	1	3	0	6	4	10	0	0	0	0	0	13	10	23	36
Grand Total	5	0	7	12	0	13	9	22	0	0	0	0	0	26	17	43	77
Apprch %	41.7	0	58.3		0	59.1	40.9		0	0	0		0	60.5	39.5		
Total %	6.5	0	9.1	15.6	0	16.9	11.7	28.6	0	0	0	0	0	33.8	22.1	55.8	

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**1**	0	0	1	0	1	0	1	0	0	0	0	0	**4**	2	6	8
05:15 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	3	**4**	**7**	9
05:30 PM	1	0	**1**	**2**	0	1	1	2	0	0	0	0	0	2	2	4	8
05:45 PM	0	0	0	0	0	**3**	**2**	**5**	0	0	0	0	0	4	2	6	**11**
Total Volume	2	0	1	3	0	6	4	10	0	0	0	0	0	13	10	23	36
% App. Total	66.7	0	33.3		0	60	40		0	0	0		0	56.5	43.5		
PHF	.500	.000	.250	.375	.000	.500	.500	.500	.000	.000	.000	.000	.000	.813	.625	.821	.818

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City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 09_FON_15S_Foothill PM
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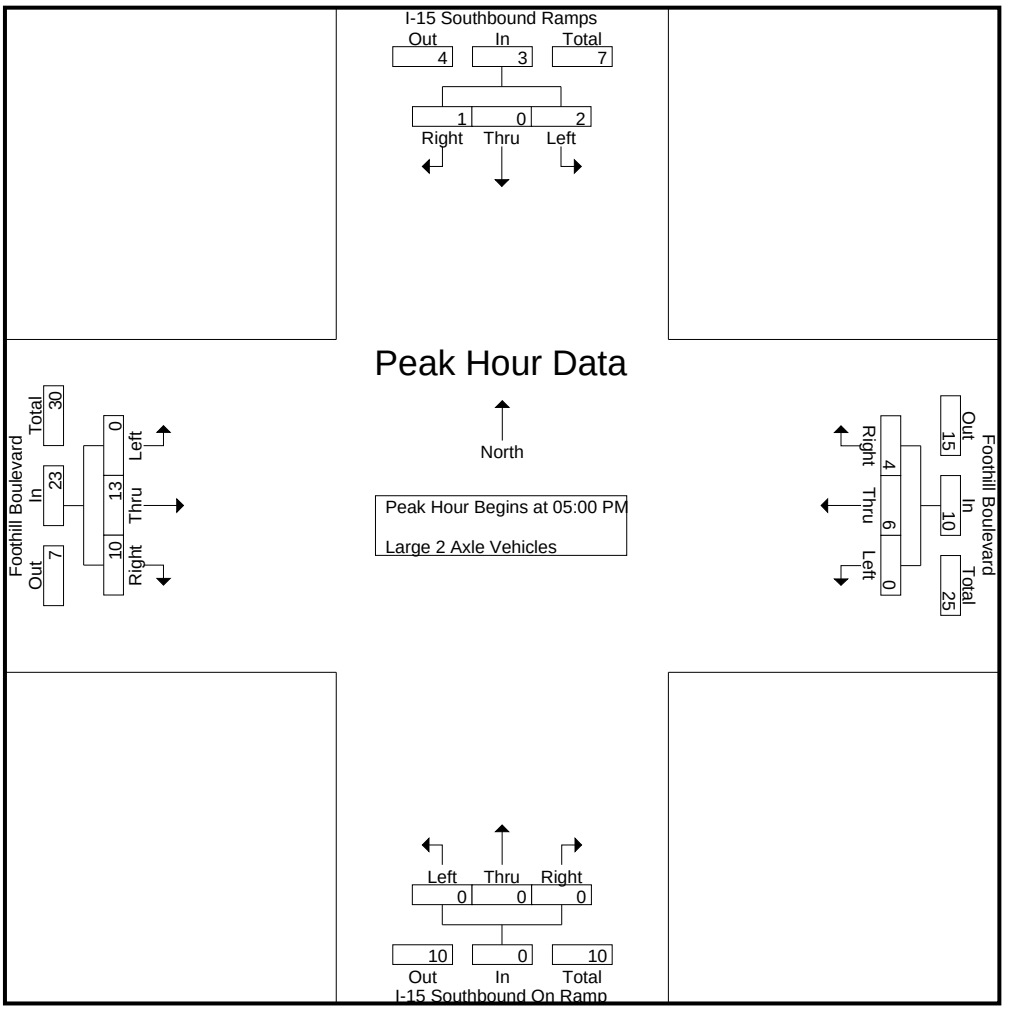

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	**1**	0	0	1	0	1	0	1	0	0	0	0	0	**4**	2	6
+15 mins.	0	0	0	0	0	1	1	2	0	0	0	0	0	3	**4**	**7**
+30 mins.	1	0	**1**	**2**	0	1	1	2	0	0	0	0	0	2	2	4
+45 mins.	0	0	0	0	0	**3**	**2**	**5**	0	0	0	0	0	4	2	6
Total Volume	2	0	1	3	0	6	4	10	0	0	0	0	0	13	10	23
% App. Total	66.7	0	33.3		0	60	40		0	0	0		0	56.5	43.5	
PHF	.500	.000	.250	.375	.000	.500	.500	.500	.000	.000	.000	.000	.000	.813	.625	.821

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City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

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Groups Printed- 3 Axle Vehicles

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	0	0	1	0	0	2	2	0	0	0	0	0	1	1	2	5
04:15 PM	2	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	3
04:30 PM	2	0	0	2	0	0	2	2	0	0	0	0	0	0	1	1	5
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
Total	5	0	0	5	0	1	5	6	0	0	0	0	0	3	2	5	16
05:00 PM	1	0	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
05:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	2	3
Total	2	0	0	2	0	3	0	3	0	0	0	0	0	4	1	5	10
Grand Total	7	0	0	7	0	4	5	9	0	0	0	0	0	7	3	10	26
Apprch %	100	0	0		0	44.4	55.6		0	0	0		0	70	30		
Total %	26.9	0	0	26.9	0	15.4	19.2	34.6	0	0	0	0	0	26.9	11.5	38.5	

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**1**	0	0	**1**	0	**2**	0	**2**	0	0	0	0	0	0	0	0	**3**
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	**2**	0	**2**	3
05:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	1	**1**	2	3
Total Volume	2	0	0	2	0	3	0	3	0	0	0	0	0	4	1	5	10
% App. Total	100	0	0		0	100	0		0	0	0		0	80	20		
PHF	.500	.000	.000	.500	.000	.375	.000	.375	.000	.000	.000	.000	.000	.500	.250	.625	.833

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City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 09_FON_15S_Foothill PM
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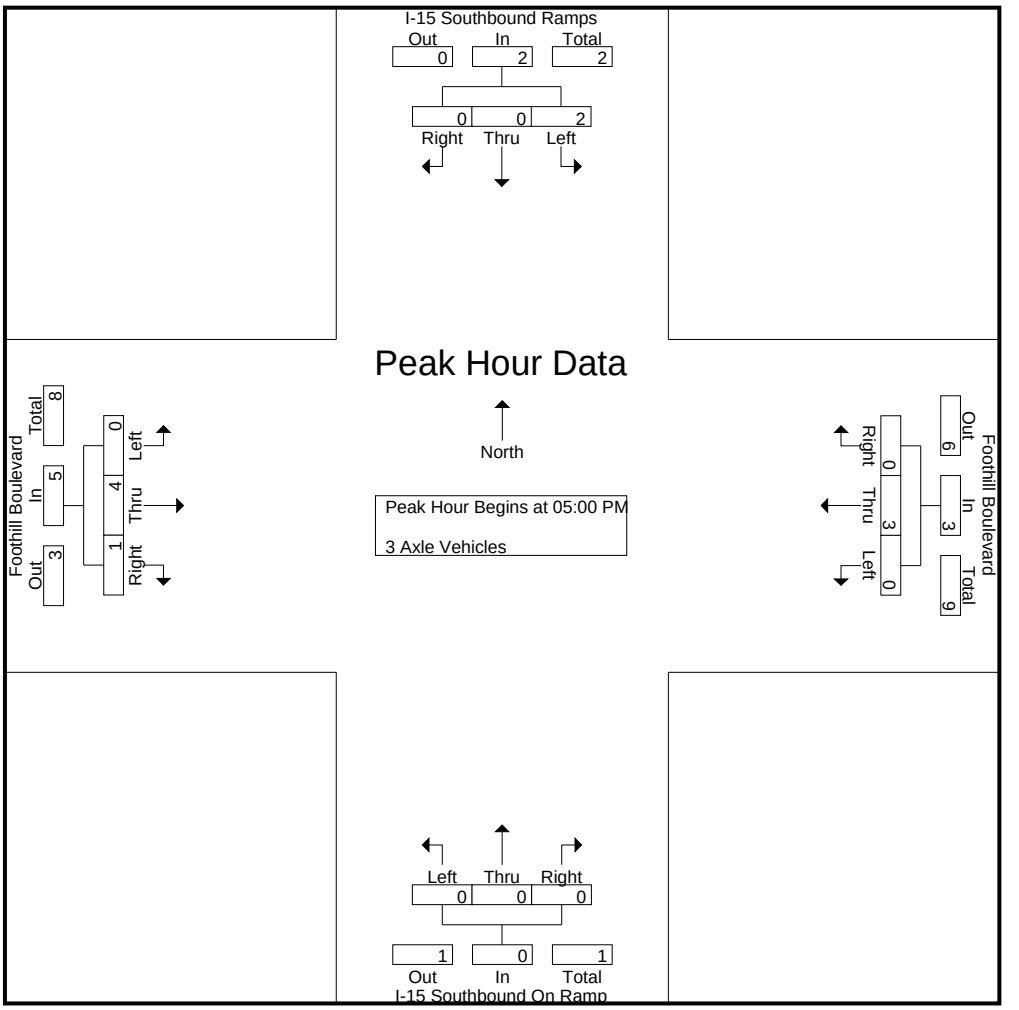

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	**1**	0	0	**1**	0	**2**	0	**2**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	**2**	0	**2**
+45 mins.	1	0	0	1	0	0	0	0	0	0	0	0	0	1	**1**	2
Total Volume	2	0	0	2	0	3	0	3	0	0	0	0	0	4	1	5
% App. Total	100	0	0		0	100	0		0	0	0		0	80	20	
PHF	.500	.000	.000	.500	.000	.375	.000	.375	.000	.000	.000	.000	.000	.500	.250	.625

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City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 09_FON_15S_Foothill PM
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Groups Printed- 4+ Axle Trucks

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	3	0	1	4	0	0	9	9	0	0	0	0	0	6	2	8	21
04:15 PM	3	0	1	4	0	0	5	5	0	0	0	0	0	5	1	6	15
04:30 PM	2	0	1	3	0	1	5	6	0	0	0	0	0	4	1	5	14
04:45 PM	5	0	1	6	0	2	3	5	0	0	0	0	0	2	1	3	14
Total	13	0	4	17	0	3	22	25	0	0	0	0	0	17	5	22	64
05:00 PM	3	0	1	4	0	1	1	2	0	0	0	0	0	1	1	2	8
05:15 PM	7	0	2	9	0	0	3	3	0	0	0	0	0	3	1	4	16
05:30 PM	4	0	0	4	0	1	3	4	0	0	0	0	0	3	1	4	12
05:45 PM	0	0	4	4	0	2	5	7	0	0	0	0	0	7	1	8	19
Total	14	0	7	21	0	4	12	16	0	0	0	0	0	14	4	18	55
Grand Total	27	0	11	38	0	7	34	41	0	0	0	0	0	31	9	40	119
Apprch %	71.1	0	28.9		0	17.1	82.9		0	0	0		0	77.5	22.5		
Total %	22.7	0	9.2	31.9	0	5.9	28.6	34.5	0	0	0	0	0	26.1	7.6	33.6	

	I-15 Southbound Ramps Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	3	0	1	4	0	1	1	2	0	0	0	0	0	1	**1**	2	8
05:15 PM	**7**	0	2	**9**	0	0	3	3	0	0	0	0	0	3	1	4	16
05:30 PM	4	0	0	4	0	1	3	4	0	0	0	0	0	3	1	4	12
05:45 PM	0	0	**4**	4	0	**2**	**5**	**7**	0	0	0	0	0	**7**	1	**8**	**19**
Total Volume	14	0	7	21	0	4	12	16	0	0	0	0	0	14	4	18	55
% App. Total	66.7	0	33.3		0	25	75		0	0	0		0	77.8	22.2		
PHF	.500	.000	.438	.583	.000	.500	.600	.571	.000	.000	.000	.000	.000	.500	1.00	.563	.724

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City of Fontana
N/S: I-15 Southbound Ramps
E/W: Foothill Boulevard
Weather: Clear

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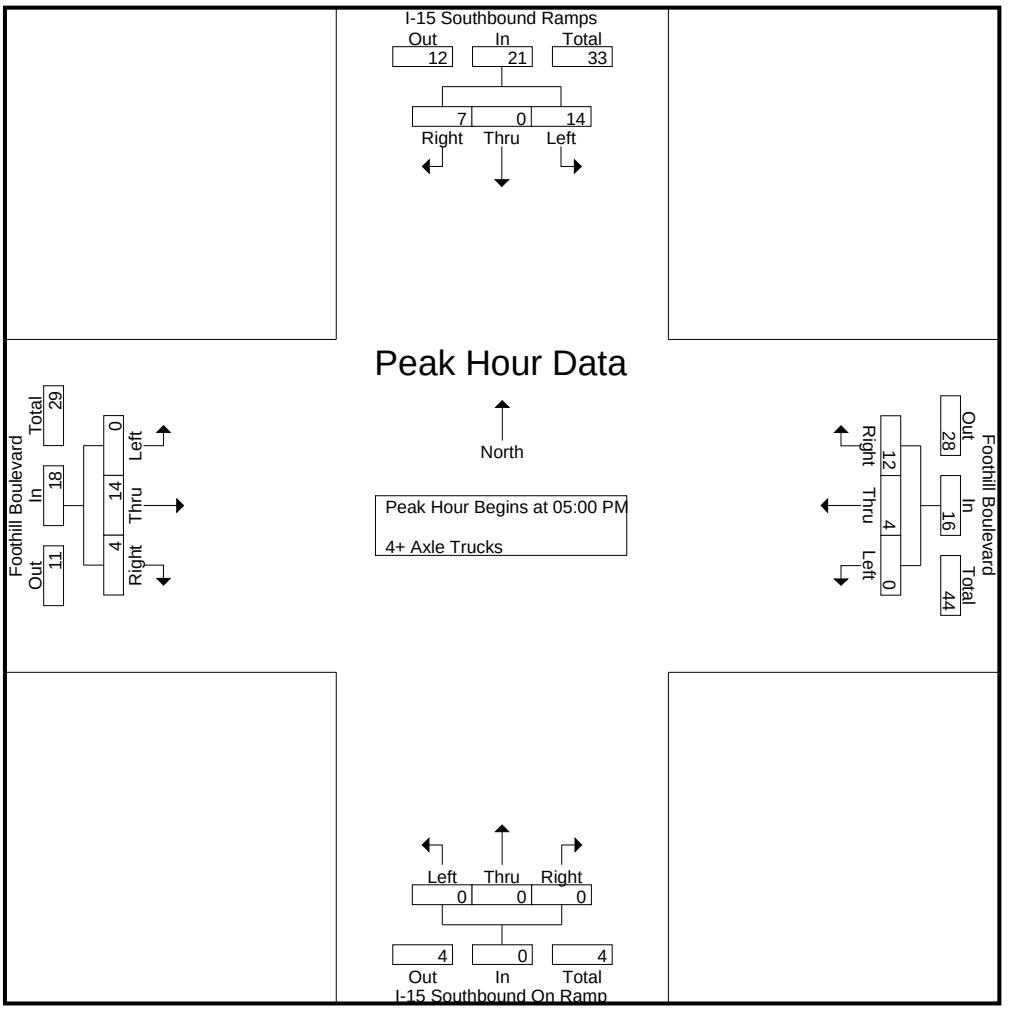

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	3	0	1	4	0	1	1	2	0	0	0	0	0	1	**1**	2
+15 mins.	**7**	0	2	**9**	0	0	3	3	0	0	0	0	0	3	1	4
+30 mins.	4	0	0	4	0	1	3	4	0	0	0	0	0	3	1	4
+45 mins.	0	0	**4**	4	0	**2**	**5**	**7**	0	0	0	0	0	**7**	1	**8**
Total Volume	14	0	7	21	0	4	12	16	0	0	0	0	0	14	4	18
% App. Total	66.7	0	33.3		0	25	75		0	0	0		0	77.8	22.2	
PHF	.500	.000	.438	.583	.000	.500	.600	.571	.000	.000	.000	.000	.000	.500	1.000	.563

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill AM
Site Code : 10821516
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	245	31	276	131	0	85	216	0	58	55	113	605
07:15 AM	0	0	0	0	0	287	24	311	161	0	90	251	0	87	55	142	704
07:30 AM	0	0	0	0	0	282	40	322	221	0	102	323	0	94	49	143	788
07:45 AM	0	0	0	0	0	341	42	383	244	0	132	376	0	94	71	165	924
Total	0	0	0	0	0	1155	137	1292	757	0	409	1166	0	333	230	563	3021
08:00 AM	0	0	0	0	0	292	32	324	184	0	96	280	0	87	76	163	767
08:15 AM	0	0	0	0	0	257	46	303	192	0	106	298	0	121	49	170	771
08:30 AM	0	0	0	0	0	228	41	269	210	0	104	314	0	108	54	162	745
08:45 AM	0	0	0	0	0	197	24	221	238	0	97	335	0	124	47	171	727
Total	0	0	0	0	0	974	143	1117	824	0	403	1227	0	440	226	666	3010
Grand Total	0	0	0	0	0	2129	280	2409	1581	0	812	2393	0	773	456	1229	6031
Apprch %	0	0	0		0	88.4	11.6		66.1	0	33.9		0	62.9	37.1		
Total %	0	0	0	0	0	35.3	4.6	39.9	26.2	0	13.5	39.7	0	12.8	7.6	20.4	
Passenger Vehicles	0	0	0	0	0	2027	241	2268	1522	0	726	2248	0	701	430	1131	5647
% Passenger Vehicles	0	0	0	0	0	95.2	86.1	94.1	96.3	0	89.4	93.9	0	90.7	94.3	92	93.6
Large 2 Axle Vehicles	0	0	0	0	0	47	10	57	34	0	32	66	0	29	11	40	163
% Large 2 Axle Vehicles	0	0	0	0	0	2.2	3.6	2.4	2.2	0	3.9	2.8	0	3.8	2.4	3.3	2.7
3 Axle Vehicles	0	0	0	0	0	22	1	23	3	0	9	12	0	16	1	17	52
% 3 Axle Vehicles	0	0	0	0	0	1	0.4	1	0.2	0	1.1	0.5	0	2.1	0.2	1.4	0.9
4+ Axle Trucks	0	0	0	0	0	33	28	61	22	0	45	67	0	27	14	41	169
% 4+ Axle Trucks	0	0	0	0	0	1.6	10	2.5	1.4	0	5.5	2.8	0	3.5	3.1	3.3	2.8

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	282	40	322	221	0	102	323	0	94	49	143	788
07:45 AM	0	0	0	0	0	**341**	42	**383**	**244**	0	**132**	**376**	0	94	71	165	**924**
08:00 AM	0	0	0	0	0	292	32	324	184	0	96	280	0	87	**76**	163	767
08:15 AM	0	0	0	0	0	257	**46**	303	192	0	106	298	0	**121**	49	**170**	771
Total Volume	0	0	0	0	0	1172	160	1332	841	0	436	1277	0	396	245	641	3250
% App. Total	0	0	0		0	88	12		65.9	0	34.1		0	61.8	38.2		
PHF	.000	.000	.000	.000	.000	.859	.870	.869	.862	.000	.826	.849	.000	.818	.806	.943	.879

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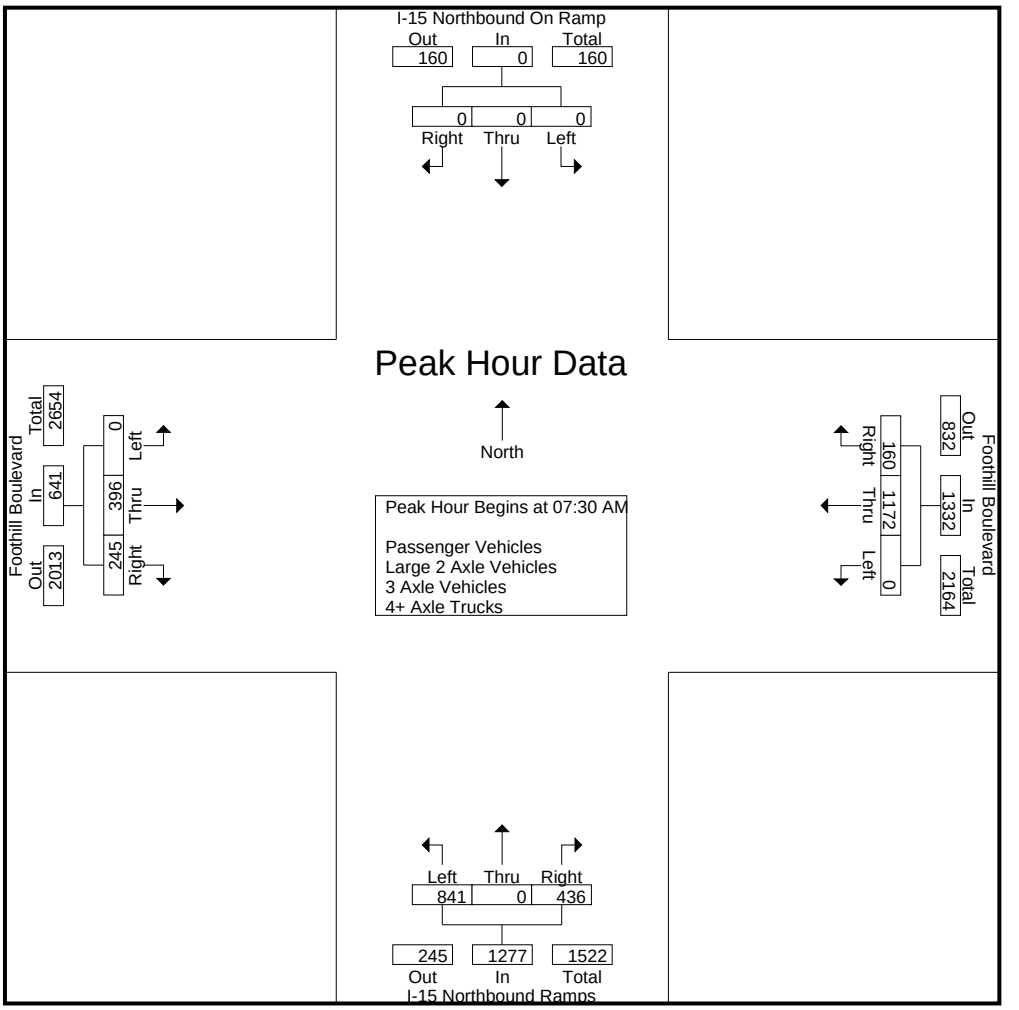
City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:30 AM				08:00 AM			
+0 mins.	0	0	0	0	0	287	24	311	221	0	102	323	0	87	**76**	163
+15 mins.	0	0	0	0	0	282	40	322	**244**	0	**132**	**376**	0	121	49	170
+30 mins.	0	0	0	0	0	**341**	**42**	**383**	184	0	96	280	0	108	54	162
+45 mins.	0	0	0	0	0	292	32	324	192	0	106	298	0	**124**	47	**171**
Total Volume	0	0	0	0	0	1202	138	1340	841	0	436	1277	0	440	226	666
% App. Total	0	0	0		0	89.7	10.3		65.9	0	34.1		0	66.1	33.9	
PHF	.000	.000	.000	.000	.000	.881	.821	.875	.862	.000	.826	.849	.000	.887	.743	.974

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	236	28	264	127	0	79	206	0	50	52	102	572
07:15 AM	0	0	0	0	0	270	22	292	152	0	84	236	0	81	52	133	661
07:30 AM	0	0	0	0	0	273	35	308	213	0	92	305	0	87	46	133	746
07:45 AM	0	0	0	0	0	333	40	373	234	0	122	356	0	86	69	155	884
Total	0	0	0	0	0	1112	125	1237	726	0	377	1103	0	304	219	523	2863
08:00 AM	0	0	0	0	0	281	25	306	178	0	83	261	0	76	73	149	716
08:15 AM	0	0	0	0	0	240	37	277	186	0	92	278	0	109	46	155	710
08:30 AM	0	0	0	0	0	215	33	248	201	0	90	291	0	98	49	147	686
08:45 AM	0	0	0	0	0	179	21	200	231	0	84	315	0	114	43	157	672
Total	0	0	0	0	0	915	116	1031	796	0	349	1145	0	397	211	608	2784
Grand Total	0	0	0	0	0	2027	241	2268	1522	0	726	2248	0	701	430	1131	5647
Apprch %	0	0	0		0	89.4	10.6		67.7	0	32.3		0	62	38		
Total %	0	0	0	0	0	35.9	4.3	40.2	27	0	12.9	39.8	0	12.4	7.6	20	

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	273	35	308	213	0	92	305	0	87	46	133	746
07:45 AM	0	0	0	0	0	**333**	**40**	**373**	**234**	0	**122**	**356**	0	86	69	**155**	**884**
08:00 AM	0	0	0	0	0	281	25	306	178	0	83	261	0	76	**73**	149	716
08:15 AM	0	0	0	0	0	240	37	277	186	0	92	278	0	**109**	46	155	710
Total Volume	0	0	0	0	0	1127	137	1264	811	0	389	1200	0	358	234	592	3056
% App. Total	0	0	0		0	89.2	10.8		67.6	0	32.4		0	60.5	39.5		
PHF	.000	.000	.000	.000	.000	.846	.856	.847	.866	.000	.797	.843	.000	.821	.801	.955	.864

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill AM
Site Code : 10821516
Start Date : 9/28/2021
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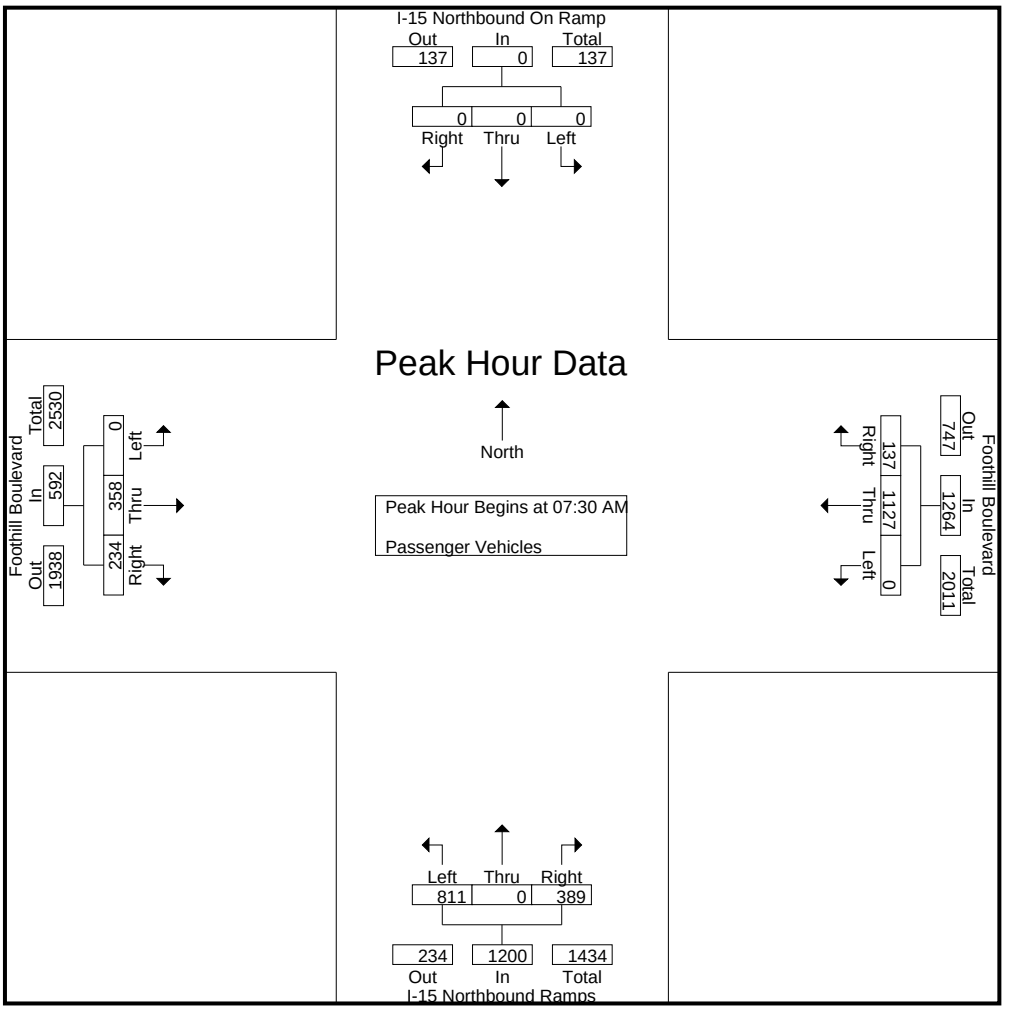

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	273	35	308	213	0	92	305	0	87	46	133
+15 mins.	0	0	0	0	0	**333**	**40**	**373**	**234**	0	**122**	**356**	0	86	69	**155**
+30 mins.	0	0	0	0	0	281	25	306	178	0	83	261	0	76	**73**	149
+45 mins.	0	0	0	0	0	240	37	277	186	0	92	278	0	**109**	46	155
Total Volume	0	0	0	0	0	1127	137	1264	811	0	389	1200	0	358	234	592
% App. Total	0	0	0		0	89.2	10.8		67.6	0	32.4		0	60.5	39.5	
PHF	.000	.000	.000	.000	.000	.846	.856	.847	.866	.000	.797	.843	.000	.821	.801	.955

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	4	1	5	3	0	2	5	0	1	0	1	11
07:15 AM	0	0	0	0	0	6	0	6	7	0	2	9	0	3	0	3	18
07:30 AM	0	0	0	0	0	5	0	5	3	0	5	8	0	4	2	6	19
07:45 AM	0	0	0	0	0	4	0	4	6	0	4	10	0	2	1	3	17
Total	0	0	0	0	0	19	1	20	19	0	13	32	0	10	3	13	65
08:00 AM	0	0	0	0	0	7	3	10	2	0	5	7	0	3	1	4	21
08:15 AM	0	0	0	0	0	7	3	10	6	0	6	12	0	6	1	7	29
08:30 AM	0	0	0	0	0	6	2	8	3	0	5	8	0	4	4	8	24
08:45 AM	0	0	0	0	0	8	1	9	4	0	3	7	0	6	2	8	24
Total	0	0	0	0	0	28	9	37	15	0	19	34	0	19	8	27	98
Grand Total	0	0	0	0	0	47	10	57	34	0	32	66	0	29	11	40	163
Apprch %	0	0	0		0	82.5	17.5		51.5	0	48.5		0	72.5	27.5		
Total %	0	0	0	0	0	28.8	6.1	35	20.9	0	19.6	40.5	0	17.8	6.7	24.5	

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	5	0	5	3	0	5	8	0	4	**2**	6	19
07:45 AM	0	0	0	0	0	4	0	4	**6**	0	4	10	0	2	1	3	17
08:00 AM	0	0	0	0	0	**7**	**3**	**10**	2	0	5	7	0	3	1	4	21
08:15 AM	0	0	0	0	0	7	3	10	6	0	**6**	**12**	0	**6**	1	**7**	**29**
Total Volume	0	0	0	0	0	23	6	29	17	0	20	37	0	15	5	20	86
% App. Total	0	0	0		0	79.3	20.7		45.9	0	54.1		0	75	25		
PHF	.000	.000	.000	.000	.000	.821	.500	.725	.708	.000	.833	.771	.000	.625	.625	.714	.741

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill AM
Site Code : 10821516
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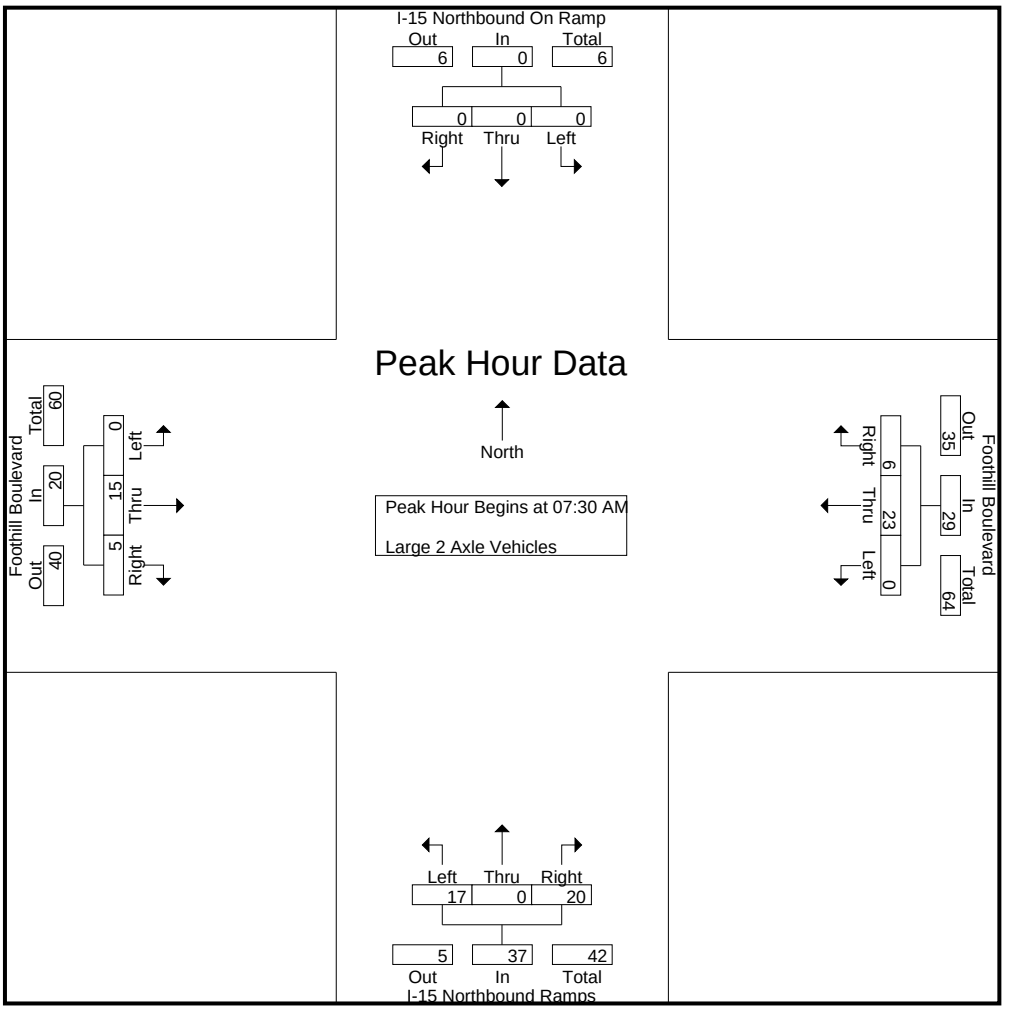

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	5	0	5	3	0	5	8	0	4	**2**	6
+15 mins.	0	0	0	0	0	4	0	4	**6**	0	4	10	0	2	1	3
+30 mins.	0	0	0	0	0	**7**	**3**	**10**	2	0	5	7	0	3	1	4
+45 mins.	0	0	0	0	0	7	3	10	6	0	**6**	**12**	0	**6**	1	**7**
Total Volume	0	0	0	0	0	23	6	29	17	0	20	37	0	15	5	20
% App. Total	0	0	0		0	79.3	20.7		45.9	0	54.1		0	75	25	
PHF	.000	.000	.000	.000	.000	.821	.500	.725	.708	.000	.833	.771	.000	.625	.625	.714

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
07:15 AM	0	0	0	0	0	6	0	6	0	0	0	0	0	0	0	0	6
07:30 AM	0	0	0	0	0	1	0	1	2	0	2	4	0	1	0	1	6
07:45 AM	0	0	0	0	0	1	0	1	1	0	1	2	0	2	0	2	5
Total	0	0	0	0	0	10	0	10	3	0	3	6	0	3	0	3	19
08:00 AM	0	0	0	0	0	1	0	1	0	0	1	1	0	5	1	6	8
08:15 AM	0	0	0	0	0	6	0	6	0	0	2	2	0	1	0	1	9
08:30 AM	0	0	0	0	0	3	1	4	0	0	1	1	0	5	0	5	10
08:45 AM	0	0	0	0	0	2	0	2	0	0	2	2	0	2	0	2	6
Total	0	0	0	0	0	12	1	13	0	0	6	6	0	13	1	14	33
Grand Total	0	0	0	0	0	22	1	23	3	0	9	12	0	16	1	17	52
Apprch %	0	0	0		0	95.7	4.3		25	0	75		0	94.1	5.9		
Total %	0	0	0	0	0	42.3	1.9	44.2	5.8	0	17.3	23.1	0	30.8	1.9	32.7	

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	1	0	1	**2**	0	**2**	**4**	0	1	0	1	6
07:45 AM	0	0	0	0	0	1	0	1	1	0	1	2	0	2	0	2	5
08:00 AM	0	0	0	0	0	1	0	1	0	0	1	1	0	**5**	**1**	**6**	8
08:15 AM	0	0	0	0	0	**6**	0	**6**	0	0	2	2	0	1	0	1	**9**
Total Volume	0	0	0	0	0	9	0	9	3	0	6	9	0	9	1	10	28
% App. Total	0	0	0		0	100	0		33.3	0	66.7		0	90	10		
PHF	.000	.000	.000	.000	.000	.375	.000	.375	.375	.000	.750	.563	.000	.450	.250	.417	.778

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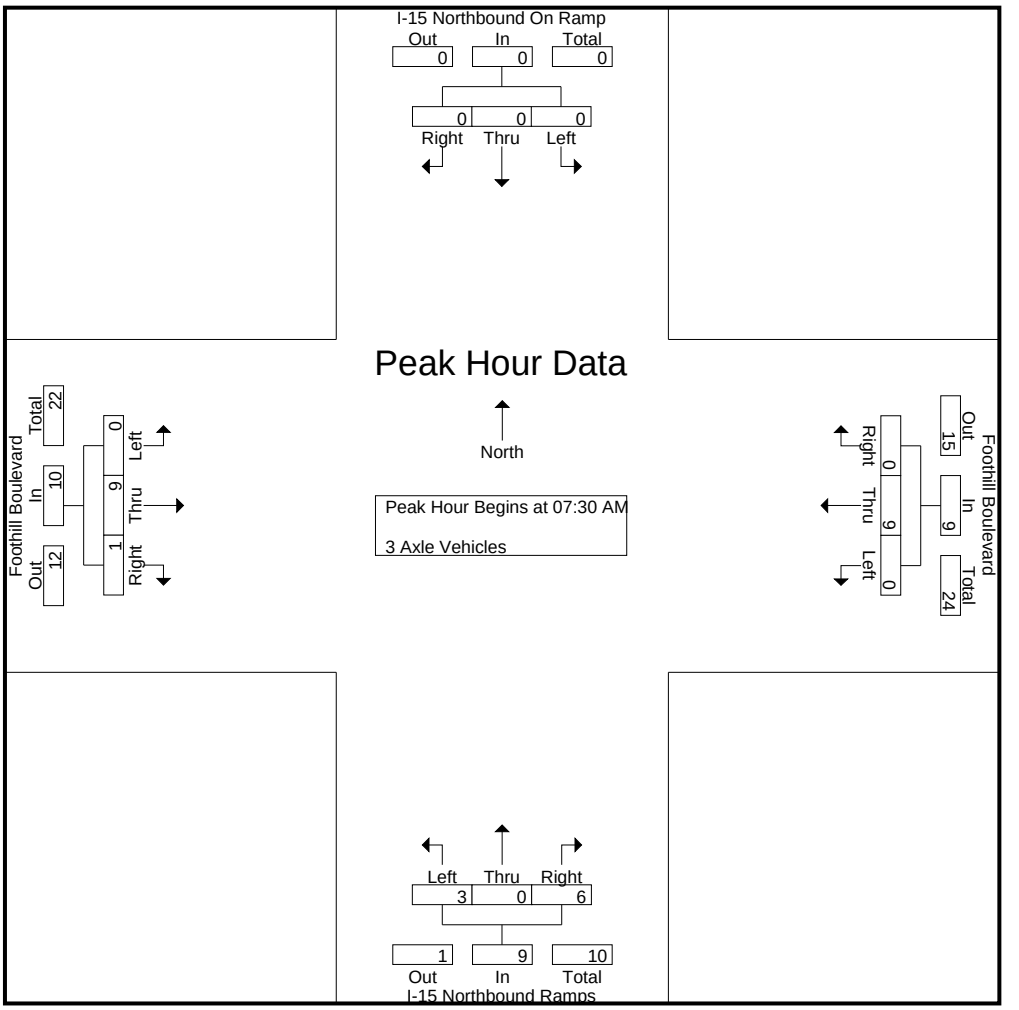
City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	1	0	1	**2**	0	**2**	**4**	0	1	0	1
+15 mins.	0	0	0	0	0	1	0	1	1	0	1	2	0	2	0	2
+30 mins.	0	0	0	0	0	1	0	1	0	0	1	1	0	**5**	**1**	**6**
+45 mins.	0	0	0	0	0	**6**	0	**6**	0	0	2	2	0	1	0	1
Total Volume	0	0	0	0	0	9	0	9	3	0	6	9	0	9	1	10
% App. Total	0	0	0		0	100	0		33.3	0	66.7		0	90	10	
PHF	.000	.000	.000	.000	.000	.375	.000	.375	.375	.000	.750	.563	.000	.450	.250	.417

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill AM
Site Code : 10821516
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Groups Printed- 4+ Axle Trucks

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	3	2	5	1	0	4	5	0	7	3	10	20
07:15 AM	0	0	0	0	0	5	2	7	2	0	4	6	0	3	3	6	19
07:30 AM	0	0	0	0	0	3	5	8	3	0	3	6	0	2	1	3	17
07:45 AM	0	0	0	0	0	3	2	5	3	0	5	8	0	4	1	5	18
Total	0	0	0	0	0	14	11	25	9	0	16	25	0	16	8	24	74
08:00 AM	0	0	0	0	0	3	4	7	4	0	7	11	0	3	1	4	22
08:15 AM	0	0	0	0	0	4	6	10	0	0	6	6	0	5	2	7	23
08:30 AM	0	0	0	0	0	4	5	9	6	0	8	14	0	1	1	2	25
08:45 AM	0	0	0	0	0	8	2	10	3	0	8	11	0	2	2	4	25
Total	0	0	0	0	0	19	17	36	13	0	29	42	0	11	6	17	95
Grand Total	0	0	0	0	0	33	28	61	22	0	45	67	0	27	14	41	169
Apprch %	0	0	0		0	54.1	45.9		32.8	0	67.2		0	65.9	34.1		
Total %	0	0	0	0	0	19.5	16.6	36.1	13	0	26.6	39.6	0	16	8.3	24.3	

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	3	5	8	3	0	3	6	0	2	1	3	17
07:45 AM	0	0	0	0	0	3	2	5	3	0	5	8	0	4	1	5	18
08:00 AM	0	0	0	0	0	3	4	7	**4**	0	**7**	**11**	0	3	1	4	22
08:15 AM	0	0	0	0	0	**4**	**6**	**10**	0	0	6	6	0	**5**	**2**	**7**	**23**
Total Volume	0	0	0	0	0	13	17	30	10	0	21	31	0	14	5	19	80
% App. Total	0	0	0		0	43.3	56.7		32.3	0	67.7		0	73.7	26.3		
PHF	.000	.000	.000	.000	.000	.813	.708	.750	.625	.000	.750	.705	.000	.700	.625	.679	.870

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill AM
Site Code : 10821516
Start Date : 9/28/2021
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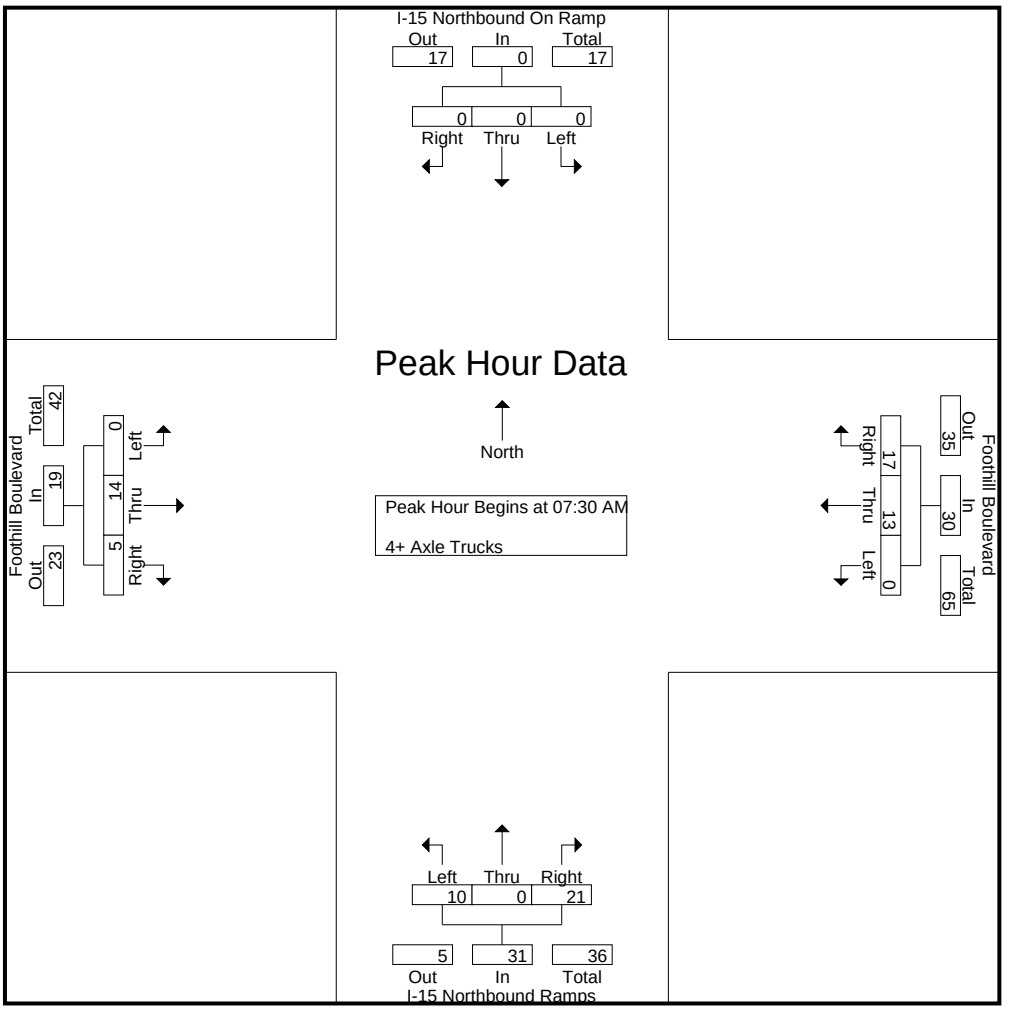

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	3	5	8	3	0	3	6	0	2	1	3
+15 mins.	0	0	0	0	0	3	2	5	3	0	5	8	0	4	1	5
+30 mins.	0	0	0	0	0	3	4	7	**4**	0	**7**	**11**	0	3	1	4
+45 mins.	0	0	0	0	0	**4**	**6**	**10**	0	0	6	6	0	**5**	**2**	**7**
Total Volume	0	0	0	0	0	13	17	30	10	0	21	31	0	14	5	19
% App. Total	0	0	0		0	43.3	56.7		32.3	0	67.7		0	73.7	26.3	
PHF	.000	.000	.000	.000	.000	.813	.708	.750	.625	.000	.750	.705	.000	.700	.625	.679

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill PM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	272	83	355	137	0	90	227	0	219	223	442	1024
04:15 PM	0	0	0	0	0	252	75	327	143	0	105	248	0	297	207	504	1079
04:30 PM	0	0	0	0	0	299	58	357	186	0	102	288	0	257	238	495	1140
04:45 PM	0	0	0	0	0	238	68	306	174	0	125	299	0	258	223	481	1086
Total	0	0	0	0	0	1061	284	1345	640	0	422	1062	0	1031	891	1922	4329
05:00 PM	0	0	0	0	0	254	78	332	174	0	102	276	0	250	233	483	1091
05:15 PM	0	0	0	0	0	291	67	358	186	0	109	295	0	280	271	551	1204
05:30 PM	0	0	0	0	0	264	69	333	182	0	92	274	0	261	231	492	1099
05:45 PM	0	0	0	0	0	251	57	308	177	0	119	296	0	269	195	464	1068
Total	0	0	0	0	0	1060	271	1331	719	0	422	1141	0	1060	930	1990	4462
Grand Total	0	0	0	0	0	2121	555	2676	1359	0	844	2203	0	2091	1821	3912	8791
Apprch %	0	0	0		0	79.3	20.7		61.7	0	38.3		0	53.5	46.5		
Total %	0	0	0	0	0	24.1	6.3	30.4	15.5	0	9.6	25.1	0	23.8	20.7	44.5	
Passenger Vehicles	0	0	0	0	0	2064	522	2586	1346	0	809	2155	0	2021	1779	3800	8541
% Passenger Vehicles	0	0	0	0	0	97.3	94.1	96.6	99	0	95.9	97.8	0	96.7	97.7	97.1	97.2
Large 2 Axle Vehicles	0	0	0	0	0	20	8	28	3	0	13	16	0	30	11	41	85
% Large 2 Axle Vehicles	0	0	0	0	0	0.9	1.4	1	0.2	0	1.5	0.7	0	1.4	0.6	1	1
3 Axle Vehicles	0	0	0	0	0	8	7	15	4	0	5	9	0	13	2	15	39
% 3 Axle Vehicles	0	0	0	0	0	0.4	1.3	0.6	0.3	0	0.6	0.4	0	0.6	0.1	0.4	0.4
4+ Axle Trucks	0	0	0	0	0	29	18	47	6	0	17	23	0	27	29	56	126
% 4+ Axle Trucks	0	0	0	0	0	1.4	3.2	1.8	0.4	0	2	1	0	1.3	1.6	1.4	1.4

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	**299**	58	357	**186**	0	102	288	0	257	238	495	1140
04:45 PM	0	0	0	0	0	238	68	306	174	0	**125**	**299**	0	258	223	481	1086
05:00 PM	0	0	0	0	0	254	**78**	332	174	0	102	276	0	250	233	483	1091
05:15 PM	0	0	0	0	0	291	67	**358**	186	0	109	295	0	**280**	**271**	**551**	**1204**
Total Volume	0	0	0	0	0	1082	271	1353	720	0	438	1158	0	1045	965	2010	4521
% App. Total	0	0	0		0	80	20		62.2	0	37.8		0	52	48		
PHF	.000	.000	.000	.000	.000	.905	.869	.945	.968	.000	.876	.968	.000	.933	.890	.912	.939

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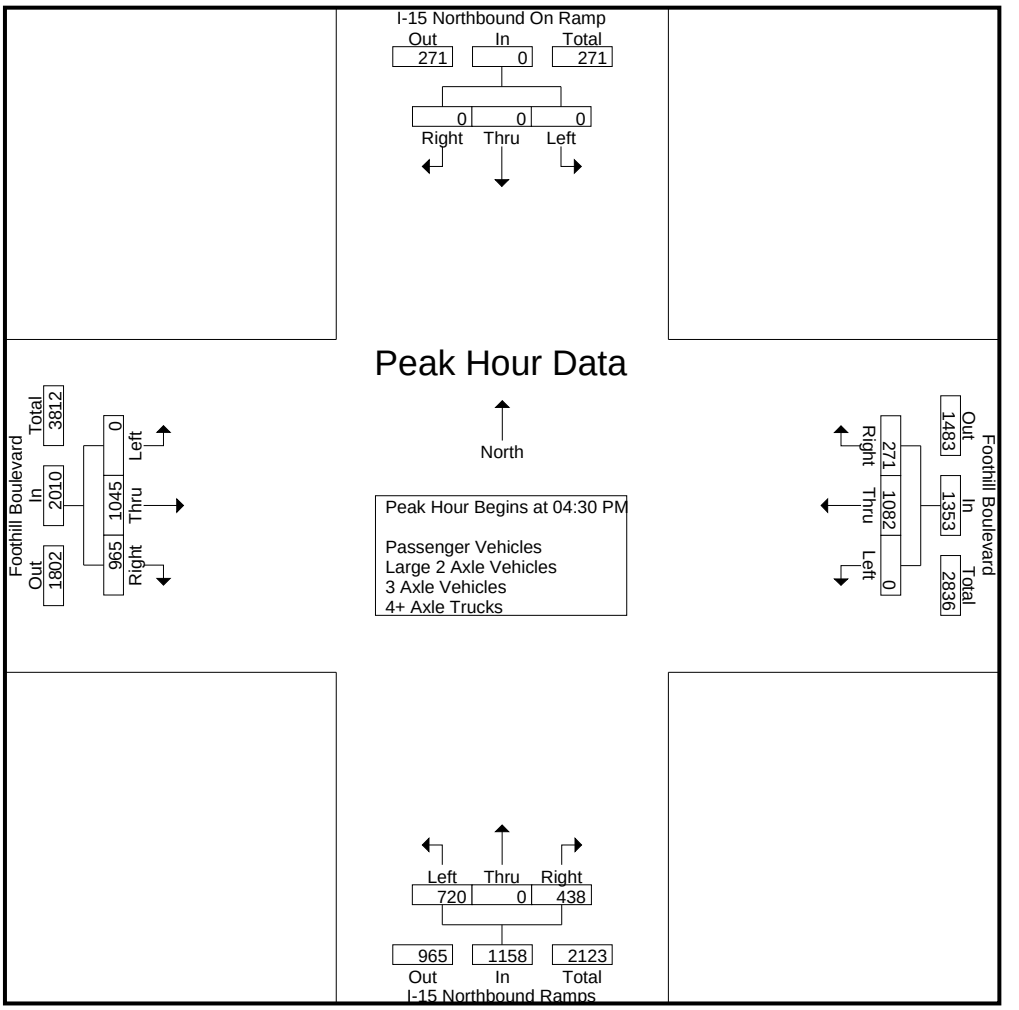
City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill PM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	**299**	58	357	**186**	0	102	288	0	257	238	495
+15 mins.	0	0	0	0	0	238	68	306	174	0	**125**	**299**	0	258	223	481
+30 mins.	0	0	0	0	0	254	**78**	332	174	0	102	276	0	250	233	483
+45 mins.	0	0	0	0	0	291	67	**358**	186	0	109	295	0	**280**	**271**	**551**
Total Volume	0	0	0	0	0	1082	271	1353	720	0	438	1158	0	1045	965	2010
% App. Total	0	0	0		0	80	20		62.2	0	37.8		0	52	48	
PHF	.000	.000	.000	.000	.000	.905	.869	.945	.968	.000	.876	.968	.000	.933	.890	.912

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill PM
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Groups Printed- Passenger Vehicles

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	259	82	341	137	0	85	222	0	209	214	423	986
04:15 PM	0	0	0	0	0	243	67	310	143	0	101	244	0	288	202	490	1044
04:30 PM	0	0	0	0	0	290	53	343	184	0	96	280	0	250	233	483	1106
04:45 PM	0	0	0	0	0	233	66	299	169	0	119	288	0	249	219	468	1055
Total	0	0	0	0	0	1025	268	1293	633	0	401	1034	0	996	868	1864	4191
05:00 PM	0	0	0	0	0	250	73	323	172	0	95	267	0	240	231	471	1061
05:15 PM	0	0	0	0	0	286	63	349	186	0	107	293	0	269	267	536	1178
05:30 PM	0	0	0	0	0	259	66	325	181	0	90	271	0	254	225	479	1075
05:45 PM	0	0	0	0	0	244	52	296	174	0	116	290	0	262	188	450	1036
Total	0	0	0	0	0	1039	254	1293	713	0	408	1121	0	1025	911	1936	4350
Grand Total	0	0	0	0	0	2064	522	2586	1346	0	809	2155	0	2021	1779	3800	8541
Apprch %	0	0	0		0	79.8	20.2		62.5	0	37.5		0	53.2	46.8		
Total %	0	0	0	0	0	24.2	6.1	30.3	15.8	0	9.5	25.2	0	23.7	20.8	44.5	

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	**290**	53	343	184	0	96	280	0	250	233	483	1106
04:45 PM	0	0	0	0	0	233	66	299	169	0	**119**	288	0	249	219	468	1055
05:00 PM	0	0	0	0	0	250	**73**	323	172	0	95	267	0	240	231	471	1061
05:15 PM	0	0	0	0	0	286	63	**349**	**186**	0	107	**293**	0	**269**	**267**	**536**	**1178**
Total Volume	0	0	0	0	0	1059	255	1314	711	0	417	1128	0	1008	950	1958	4400
% App. Total	0	0	0		0	80.6	19.4		63	0	37		0	51.5	48.5		
PHF	.000	.000	.000	.000	.000	.913	.873	.941	.956	.000	.876	.962	.000	.937	.890	.913	.934

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City of Fontana
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File Name : 10_FON_15N_Foothill PM
Site Code : 10821516
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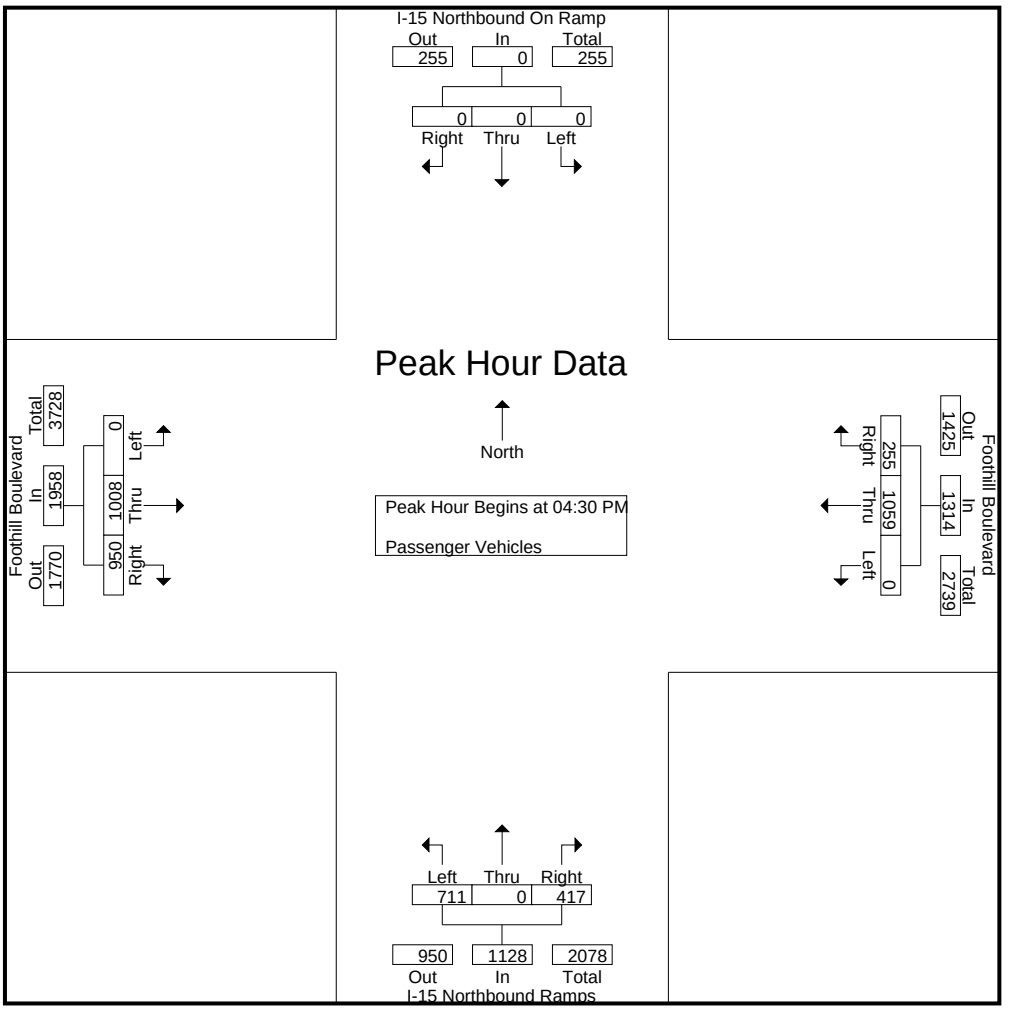

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	**290**	53	343	184	0	96	280	0	250	233	483
+15 mins.	0	0	0	0	0	233	66	299	169	0	**119**	288	0	249	219	468
+30 mins.	0	0	0	0	0	250	**73**	323	172	0	95	267	0	240	231	471
+45 mins.	0	0	0	0	0	286	63	**349**	**186**	0	107	**293**	0	**269**	**267**	**536**
Total Volume	0	0	0	0	0	1059	255	1314	711	0	417	1128	0	1008	950	1958
% App. Total	0	0	0		0	80.6	19.4		63	0	37		0	51.5	48.5	
PHF	.000	.000	.000	.000	.000	.913	.873	.941	.956	.000	.876	.962	.000	.937	.890	.913

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	3	0	3	0	0	2	2	0	4	3	7	12
04:15 PM	0	0	0	0	0	5	0	5	0	0	1	1	0	4	1	5	11
04:30 PM	0	0	0	0	0	3	1	4	1	0	3	4	0	3	1	4	12
04:45 PM	0	0	0	0	0	1	0	1	0	0	4	4	0	2	2	4	9
Total	0	0	0	0	0	12	1	13	1	0	10	11	0	13	7	20	44
05:00 PM	0	0	0	0	0	1	3	4	1	0	1	2	0	6	1	7	13
05:15 PM	0	0	0	0	0	2	3	5	0	0	1	1	0	3	2	5	11
05:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	1	4	6
05:45 PM	0	0	0	0	0	3	1	4	1	0	1	2	0	5	0	5	11
Total	0	0	0	0	0	8	7	15	2	0	3	5	0	17	4	21	41
Grand Total	0	0	0	0	0	20	8	28	3	0	13	16	0	30	11	41	85
Apprch %	0	0	0		0	71.4	28.6		18.8	0	81.2		0	73.2	26.8		
Total %	0	0	0	0	0	23.5	9.4	32.9	3.5	0	15.3	18.8	0	35.3	12.9	48.2	

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	**3**	1	4	**1**	0	3	**4**	0	3	1	4	12
04:45 PM	0	0	0	0	0	1	0	1	0	0	**4**	4	0	2	**2**	4	9
05:00 PM	0	0	0	0	0	1	**3**	4	1	0	1	2	0	**6**	1	**7**	**13**
05:15 PM	0	0	0	0	0	2	3	**5**	0	0	1	1	0	3	2	5	11
Total Volume	0	0	0	0	0	7	7	14	2	0	9	11	0	14	6	20	45
% App. Total	0	0	0		0	50	50		18.2	0	81.8		0	70	30		
PHF	.000	.000	.000	.000	.000	.583	.583	.700	.500	.000	.563	.688	.000	.583	.750	.714	.865

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File Name : 10_FON_15N_Foothill PM
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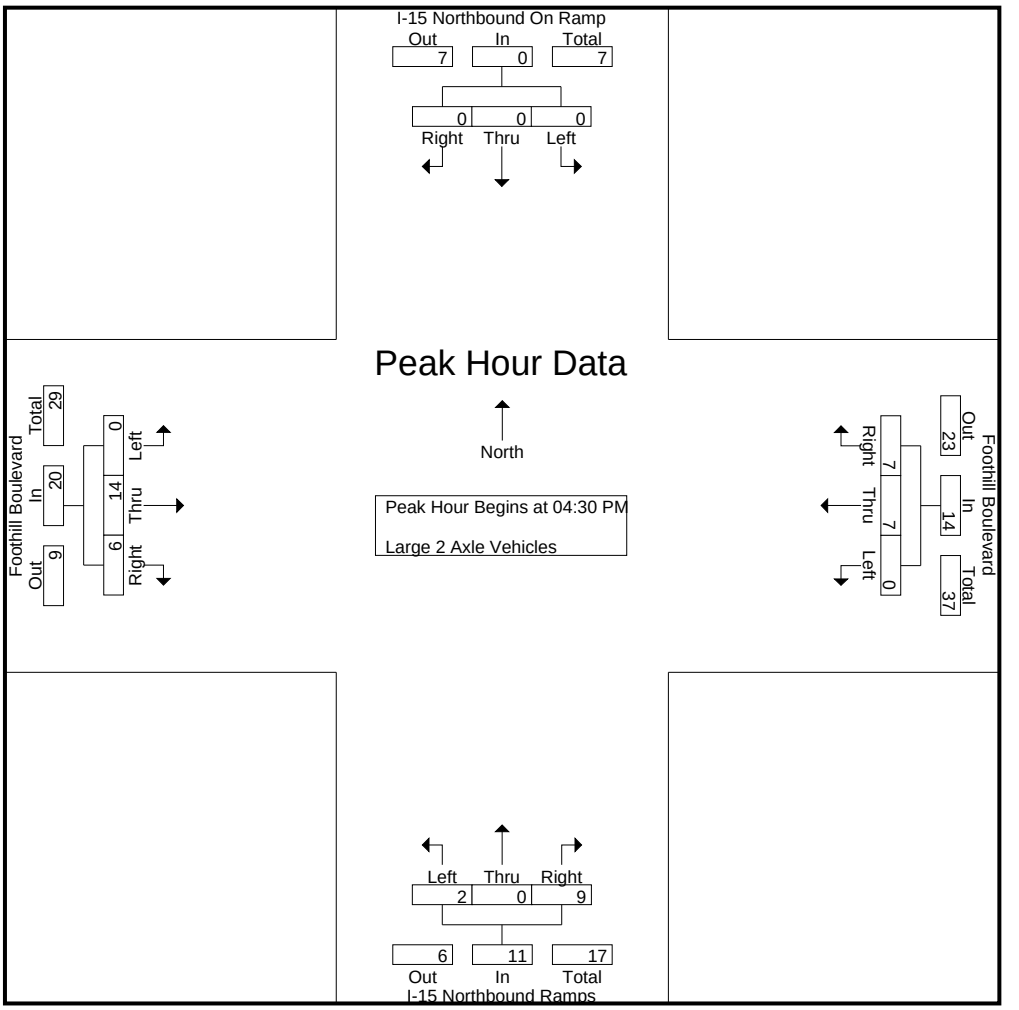

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	**3**	1	4	**1**	0	3	**4**	0	3	1	4
+15 mins.	0	0	0	0	0	1	0	1	0	0	**4**	4	0	2	**2**	4
+30 mins.	0	0	0	0	0	1	**3**	4	1	0	1	2	0	**6**	1	**7**
+45 mins.	0	0	0	0	0	2	3	**5**	0	0	1	1	0	3	2	5
Total Volume	0	0	0	0	0	7	7	14	2	0	9	11	0	14	6	20
% App. Total	0	0	0		0	50	50		18.2	0	81.8		0	70	30	
PHF	.000	.000	.000	.000	.000	.583	.583	.700	.500	.000	.563	.688	.000	.583	.750	.714

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City of Fontana
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File Name : 10_FON_15N_Foothill PM
Site Code : 10821516
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Groups Printed- 3 Axle Vehicles

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
04:15 PM	0	0	0	0	0	1	5	6	0	0	2	2	0	2	0	2	10
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
04:45 PM	0	0	0	0	0	0	1	1	3	0	0	3	0	2	0	2	6
Total	0	0	0	0	0	5	6	11	3	0	2	5	0	9	0	9	25
05:00 PM	0	0	0	0	0	1	0	1	1	0	1	2	0	1	0	1	4
05:15 PM	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1	3
05:30 PM	0	0	0	0	0	1	1	2	0	0	1	1	0	0	2	2	5
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	0	0	0	0	0	3	1	4	1	0	3	4	0	4	2	6	14
Grand Total	0	0	0	0	0	8	7	15	4	0	5	9	0	13	2	15	39
Apprch %	0	0	0		0	53.3	46.7		44.4	0	55.6		0	86.7	13.3		
Total %	0	0	0	0	0	20.5	17.9	38.5	10.3	0	12.8	23.1	0	33.3	5.1	38.5	

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	**2**	0	**2**	4
04:45 PM	0	0	0	0	0	0	**1**	1	**3**	0	0	**3**	0	2	0	2	**6**
05:00 PM	0	0	0	0	0	1	0	1	1	0	**1**	2	0	1	0	1	4
05:15 PM	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1	3
Total Volume	0	0	0	0	0	4	1	5	4	0	2	6	0	6	0	6	17
% App. Total	0	0	0		0	80	20		66.7	0	33.3		0	100	0		
PHF	.000	.000	.000	.000	.000	.500	.250	.625	.333	.000	.500	.500	.000	.750	.000	.750	.708

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City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill PM
Site Code : 10821516
Start Date : 9/28/2021
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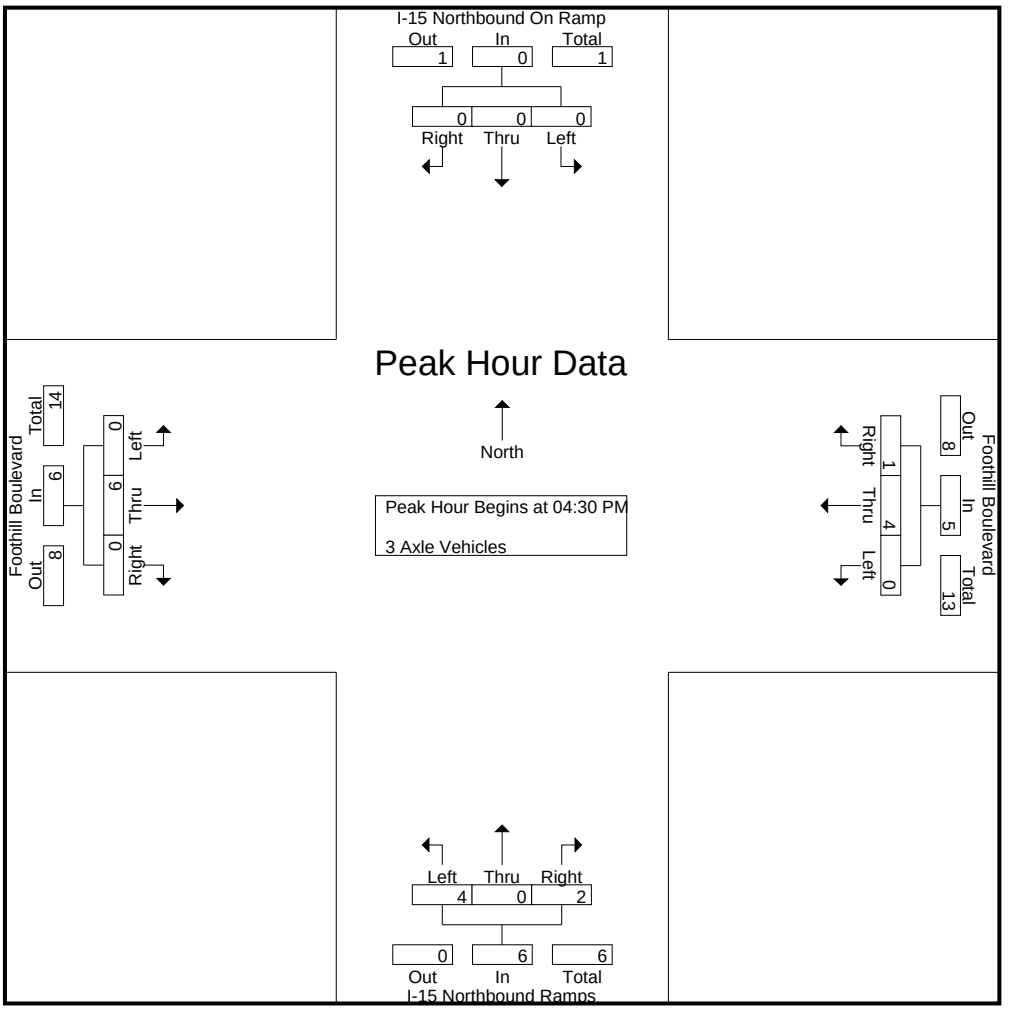

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	**2**	0	**2**
+15 mins.	0	0	0	0	0	0	**1**	1	**3**	0	0	**3**	0	2	0	2
+30 mins.	0	0	0	0	0	1	0	1	1	0	**1**	2	0	1	0	1
+45 mins.	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1
Total Volume	0	0	0	0	0	4	1	5	4	0	2	6	0	6	0	6
% App. Total	0	0	0		0	80	20		66.7	0	33.3		0	100	0	
PHF	.000	.000	.000	.000	.000	.500	.250	.625	.333	.000	.500	.500	.000	.750	.000	.750

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	8	1	9	0	0	3	3	0	3	6	9	21
04:15 PM	0	0	0	0	0	3	3	6	0	0	1	1	0	3	4	7	14
04:30 PM	0	0	0	0	0	4	4	8	1	0	3	4	0	2	4	6	18
04:45 PM	0	0	0	0	0	4	1	5	2	0	2	4	0	5	2	7	16
Total	0	0	0	0	0	19	9	28	3	0	9	12	0	13	16	29	69
05:00 PM	0	0	0	0	0	2	2	4	0	0	5	5	0	3	1	4	13
05:15 PM	0	0	0	0	0	2	1	3	0	0	0	0	0	7	2	9	12
05:30 PM	0	0	0	0	0	2	2	4	1	0	1	2	0	4	3	7	13
05:45 PM	0	0	0	0	0	4	4	8	2	0	2	4	0	0	7	7	19
Total	0	0	0	0	0	10	9	19	3	0	8	11	0	14	13	27	57
Grand Total	0	0	0	0	0	29	18	47	6	0	17	23	0	27	29	56	126
Apprch %	0	0	0		0	61.7	38.3		26.1	0	73.9		0	48.2	51.8		
Total %	0	0	0	0	0	23	14.3	37.3	4.8	0	13.5	18.3	0	21.4	23	44.4	

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Ramps Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	**4**	**4**	**8**	1	0	3	4	0	2	**4**	6	**18**
04:45 PM	0	0	0	0	0	4	1	5	**2**	0	2	4	0	5	2	7	16
05:00 PM	0	0	0	0	0	2	2	4	0	0	**5**	**5**	0	3	1	4	13
05:15 PM	0	0	0	0	0	2	1	3	0	0	0	0	0	**7**	2	**9**	12
Total Volume	0	0	0	0	0	12	8	20	3	0	10	13	0	17	9	26	59
% App. Total	0	0	0		0	60	40		23.1	0	76.9		0	65.4	34.6		
PHF	.000	.000	.000	.000	.000	.750	.500	.625	.375	.000	.500	.650	.000	.607	.563	.722	.819

Counts Unlimited, Inc.
PO Box 1178
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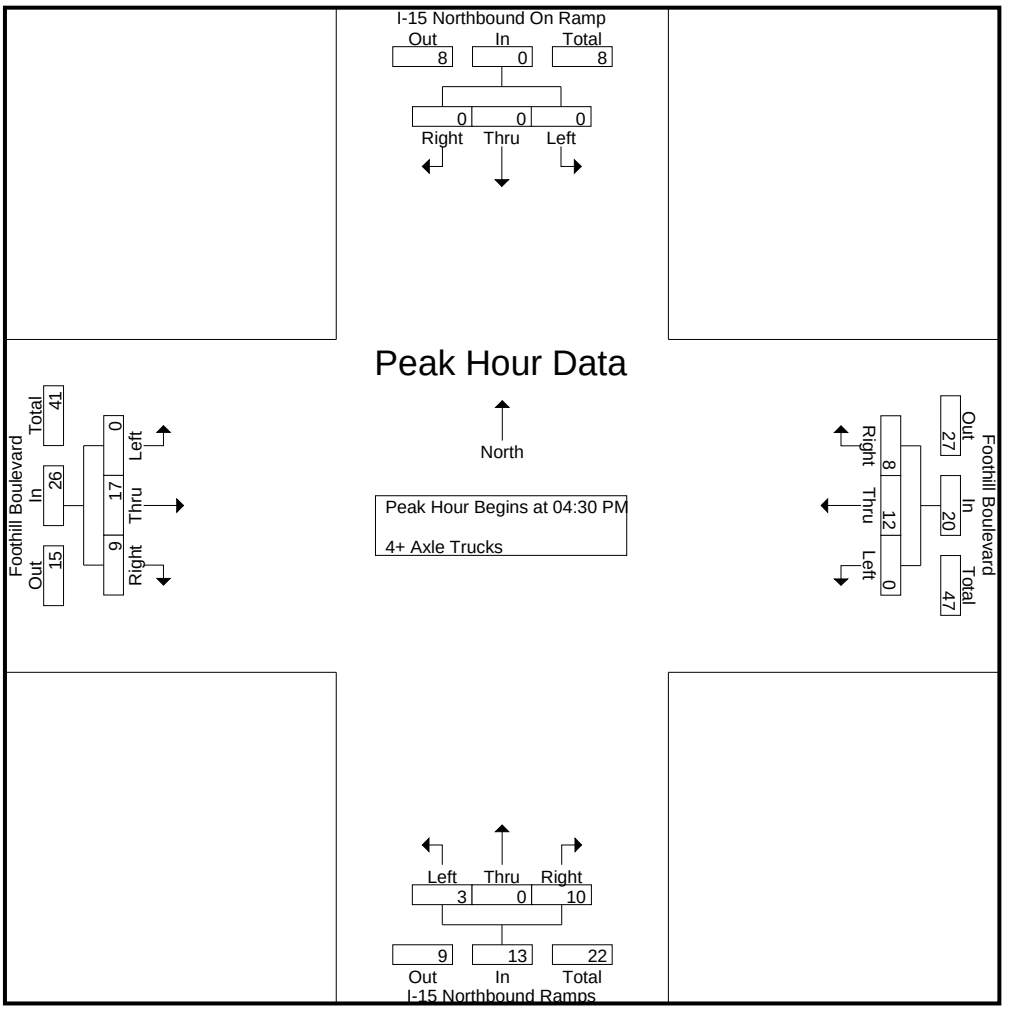
City of Fontana
N/S: I-15 Northbound Ramps
E/W: Foothill Boulevard
Weather: Clear

File Name : 10_FON_15N_Foothill PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	**4**	**4**	**8**	1	0	3	4	0	2	**4**	6
+15 mins.	0	0	0	0	0	4	1	5	**2**	0	2	4	0	5	2	7
+30 mins.	0	0	0	0	0	2	2	4	0	0	**5**	**5**	0	3	1	4
+45 mins.	0	0	0	0	0	2	1	3	0	0	0	0	0	**7**	2	**9**
Total Volume	0	0	0	0	0	12	8	20	3	0	10	13	0	17	9	26
% App. Total	0	0	0		0	60	40		23.1	0	76.9		0	65.4	34.6	
PHF	.000	.000	.000	.000	.000	.750	.500	.625	.375	.000	.500	.650	.000	.607	.563	.722

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Foothill Blvd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-020
Date: 9/8/2021

Data - Total

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	22	16	9	0	2	71	28	0	3	84	28	1	65	201	8	0	538
7:15 AM	28	22	8	0	15	71	31	0	14	60	48	0	46	189	15	0	547
7:30 AM	28	36	18	0	4	76	43	0	9	75	32	0	66	263	15	0	665
7:45 AM	38	54	19	0	4	76	55	0	15	74	37	2	83	302	23	0	782
8:00 AM	34	51	22	0	12	80	55	0	23	115	43	1	102	311	34	0	883
8:15 AM	24	60	11	0	11	104	63	0	35	110	38	0	68	301	37	0	862
8:30 AM	31	28	11	0	22	76	54	0	19	99	37	3	82	244	20	1	727
8:45 AM	35	25	20	0	18	71	51	0	27	99	42	3	44	207	8	0	650
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	240	292	118	0	88	625	380	0	145	716	305	10	556	2018	160	1	5654
APPROACH %'s :	36.92%	44.92%	18.15%	0.00%	8.05%	57.18%	34.77%	0.00%	12.33%	60.88%	25.94%	0.85%	20.33%	73.78%	5.85%	0.04%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	127	193	63	0	49	336	227	0	92	398	155	6	335	1158	114	1	3254
PEAK HR FACTOR :	0.836	0.804	0.716	0.000	0.557	0.808	0.901	0.000	0.657	0.865	0.901	0.500	0.821	0.931	0.770	0.250	0.921
	0.863				0.860				0.889				0.899				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	60	58	45	0	25	50	34	0	35	185	35	14	33	159	14	0	747
4:15 PM	41	68	43	0	11	43	41	0	42	186	47	20	20	162	9	0	733
4:30 PM	64	62	70	0	18	44	24	0	29	191	43	3	28	165	6	0	747
4:45 PM	47	81	50	0	13	54	36	0	43	206	40	13	25	193	11	0	812
5:00 PM	52	102	56	0	12	45	27	0	46	231	39	7	23	181	20	0	841
5:15 PM	66	78	37	0	17	52	52	0	50	245	33	11	25	158	9	0	833
5:30 PM	67	85	46	0	19	36	37	0	50	225	37	16	26	190	7	0	841
5:45 PM	67	78	48	0	18	28	37	0	31	250	37	14	22	153	11	0	794
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	464	612	395	0	133	352	288	0	326	1719	311	98	202	1361	87	0	6348
APPROACH %'s :	31.54%	41.60%	26.85%	0.00%	17.21%	45.54%	37.26%	0.00%	13.28%	70.05%	12.67%	3.99%	12.24%	82.48%	5.27%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	232	346	189	0	61	187	152	0	189	907	149	47	99	722	47	0	3327
PEAK HR FACTOR :	0.866	0.848	0.844	0.000	0.803	0.866	0.731	0.000	0.945	0.926	0.931	0.734	0.952	0.935	0.588	0.000	0.989
	0.913				0.826				0.953				0.948				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Foothill Blvd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-020
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	17	14	9	0	2	71	28	0	3	74	26	1	62	197	8	0	512
7:15 AM	21	18	8	0	13	71	30	0	13	55	41	0	46	180	15	0	511
7:30 AM	20	35	17	0	3	71	43	0	9	72	23	0	65	258	14	0	630
7:45 AM	32	53	18	0	4	74	55	0	15	65	32	2	82	295	23	0	750
8:00 AM	29	51	21	0	12	79	55	0	23	111	34	0	101	305	34	0	855
8:15 AM	21	59	9	0	11	102	62	0	34	100	27	0	68	292	36	0	821
8:30 AM	27	25	11	0	21	76	53	0	19	88	27	3	81	237	20	1	689
8:45 AM	30	25	18	0	18	70	50	0	27	87	38	3	42	202	8	0	618
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	197	280	111	0	84	614	376	0	143	652	248	9	547	1966	158	1	5386
APPROACH %'s :	33.50%	47.62%	18.88%	0.00%	7.82%	57.17%	35.01%	0.00%	13.59%	61.98%	23.57%	0.86%	20.47%	73.58%	5.91%	0.04%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	109	188	59	0	48	331	225	0	91	364	120	5	332	1129	113	1	3115
PEAK HR FACTOR :	0.852	0.797	0.702	0.000	0.571	0.811	0.907	0.000	0.669	0.820	0.882	0.417	0.822	0.925	0.785	0.250	0.911
	0.864				0.863				0.863				0.895				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	55	57	44	0	24	49	34	0	35	182	30	14	33	153	14	0	724
4:15 PM	37	66	43	0	11	40	40	0	42	176	39	20	19	155	9	0	697
4:30 PM	61	62	70	0	18	36	24	0	28	189	34	3	27	155	6	0	713
4:45 PM	42	80	50	0	12	46	36	0	43	201	36	13	23	187	11	0	780
5:00 PM	49	102	56	0	12	36	25	0	46	229	35	7	23	177	20	0	817
5:15 PM	63	78	37	0	17	49	52	0	50	237	27	11	24	153	9	0	807
5:30 PM	62	83	46	0	19	33	37	0	50	221	34	16	25	184	7	0	817
5:45 PM	66	77	47	0	18	27	37	0	31	245	31	14	21	149	11	0	774
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	435	605	393	0	131	316	285	0	325	1680	266	98	195	1313	87	0	6129
APPROACH %'s :	30.36%	42.22%	27.42%	0.00%	17.90%	43.17%	38.93%	0.00%	13.72%	70.92%	11.23%	4.14%	12.23%	82.32%	5.45%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	216	343	189	0	60	164	150	0	189	888	132	47	95	701	47	0	3221
PEAK HR FACTOR :	0.857	0.841	0.844	0.000	0.789	0.837	0.721	0.000	0.945	0.937	0.917	0.734	0.950	0.937	0.588	0.000	0.986
	0.903				0.792				0.966				0.954				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Foothill Blvd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-020
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	0	0	0	0	0	0	0	3	0	0	1	1	0	0	6
7:15 AM	1	2	0	0	1	0	0	0	1	2	4	0	0	2	0	0	13
7:30 AM	0	1	0	0	1	3	0	0	0	2	2	0	1	2	1	0	13
7:45 AM	1	1	1	0	0	1	0	0	0	3	1	0	0	1	0	0	9
8:00 AM	2	0	1	0	0	1	0	0	0	2	1	0	0	1	0	0	8
8:15 AM	0	0	1	0	0	1	0	0	0	3	3	0	0	2	0	0	10
8:30 AM	0	0	0	0	1	0	1	0	0	4	2	0	0	2	0	0	10
8:45 AM	0	0	1	0	0	1	0	0	0	7	3	0	1	4	0	0	17
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	4	4	0	3	7	1	0	1	26	16	0	3	15	1	0	86
APPROACH %'s :	38.46%	30.77%	30.77%	0.00%	27.27%	63.64%	9.09%	0.00%	2.33%	60.47%	37.21%	0.00%	15.79%	78.95%	5.26%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	3	1	3	0	1	3	1	0	0	12	7	0	0	6	0	0	37
PEAK HR FACTOR :	0.375	0.250	0.750	0.000	0.250	0.750	0.250	0.000	0.000	0.750	0.583	0.000	0.000	0.750	0.000	0.000	0.925
	0.583				0.625				0.792				0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	1	0	1	0	0	0	0	1	1	0	0	3	0	0	8
4:15 PM	0	1	0	0	0	1	1	0	0	4	1	0	0	2	0	0	10
4:30 PM	0	0	0	0	0	4	0	0	1	0	2	0	0	5	0	0	12
4:45 PM	1	1	0	0	0	1	0	0	0	3	0	0	0	3	0	0	9
5:00 PM	0	0	0	0	0	1	0	0	0	2	2	0	0	1	0	0	6
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	4
5:30 PM	0	1	0	0	0	2	0	0	0	2	0	0	0	3	0	0	8
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	3	1	0	1	9	1	0	1	15	6	0	1	21	0	0	61
APPROACH %'s :	33.33%	50.00%	16.67%	0.00%	9.09%	81.82%	9.09%	0.00%	4.55%	68.18%	27.27%	0.00%	4.55%	95.45%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	1	2	0	0	0	4	0	0	0	8	2	0	0	10	0	0	27
PEAK HR FACTOR :	0.250	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.667	0.250	0.000	0.000	0.833	0.000	0.000	0.750
	0.375				0.500				0.625				0.833				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Foothill Blvd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-020
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5
7:15 AM	1	2	0	0	1	0	1	0	0	1	0	0	0	1	0	0	7
7:30 AM	1	0	1	0	0	1	0	0	0	0	2	0	0	2	0	0	7
7:45 AM	2	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	5
8:00 AM	1	0	0	0	0	0	0	0	0	0	2	1	0	1	0	0	5
8:15 AM	2	1	0	0	0	1	0	0	1	0	1	0	0	3	1	0	10
8:30 AM	1	2	0	0	0	0	0	0	0	0	1	0	0	1	0	0	5
8:45 AM	1	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	11	7	2	0	1	2	2	0	1	2	7	1	1	10	1	0	48
APPROACH %'s :	55.00%	35.00%	10.00%	0.00%	20.00%	40.00%	40.00%	0.00%	9.09%	18.18%	63.64%	9.09%	8.33%	83.33%	8.33%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	6	3	0	0	0	1	0	0	1	0	5	1	0	7	1	0	25
PEAK HR FACTOR :	0.750	0.375	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.625	0.250	0.000	0.583	0.250	0.000	0.625
	0.750				0.250				0.583				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	4
4:15 PM	2	0	0	0	0	2	0	0	0	2	1	0	1	0	0	0	8
4:30 PM	1	0	0	0	0	4	0	0	0	0	3	0	1	1	0	0	10
4:45 PM	1	0	0	0	1	7	0	0	0	1	1	0	2	0	0	0	13
5:00 PM	0	0	0	0	0	7	1	0	0	0	0	0	0	1	0	0	9
5:15 PM	2	0	0	0	0	3	0	0	0	1	2	0	0	0	0	0	8
5:30 PM	0	1	0	0	0	1	0	0	0	0	1	0	1	0	0	0	4
5:45 PM	1	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	8	2	0	0	1	26	1	0	0	6	8	0	5	3	0	0	60
APPROACH %'s :	80.00%	20.00%	0.00%	0.00%	3.57%	92.86%	3.57%	0.00%	0.00%	42.86%	57.14%	0.00%	62.50%	37.50%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	3	1	0	0	1	18	1	0	0	2	4	0	3	1	0	0	34
PEAK HR FACTOR :	0.375	0.250	0.000	0.000	0.250	0.643	0.250	0.000	0.000	0.500	0.500	0.000	0.375	0.250	0.000	0.000	0.654
	0.500				0.625				0.500				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Foothill Blvd
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-020
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	0	0	0	0	0	0	0	0	7	2	0	1	3	0	0	15
7:15 AM	5	0	0	0	0	0	0	0	0	2	3	0	0	6	0	0	16
7:30 AM	7	0	0	0	0	1	0	0	0	1	5	0	0	1	0	0	15
7:45 AM	3	0	0	0	0	1	0	0	0	6	3	0	1	4	0	0	18
8:00 AM	2	0	0	0	0	0	0	0	0	2	6	0	1	4	0	0	15
8:15 AM	1	0	1	0	0	0	1	0	0	7	7	0	0	4	0	0	21
8:30 AM	3	1	0	0	0	0	0	0	0	7	7	0	1	4	0	0	23
8:45 AM	4	0	0	0	0	0	0	0	0	4	1	0	1	1	0	0	11
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	27	1	1	0	0	2	1	0	0	36	34	0	5	27	0	0	134
APPROACH %'s :	93.10%	3.45%	3.45%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	51.43%	48.57%	0.00%	15.63%	84.38%	0.00%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	9	1	1	0	0	1	1	0	0	22	23	0	3	16	0	0	77
PEAK HR FACTOR :	0.750	0.250	0.250	0.000	0.000	0.250	0.250	0.000	0.000	0.786	0.821	0.000	0.750	1.000	0.000	0.000	0.837
	0.688				0.500				0.804				0.950				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	0	0	0	0	0	0	0	0	1	4	0	0	3	0	0	11
4:15 PM	2	1	0	0	0	0	0	0	0	4	6	0	0	5	0	0	18
4:30 PM	2	0	0	0	0	0	0	0	0	2	4	0	0	4	0	0	12
4:45 PM	3	0	0	0	0	0	0	0	0	1	3	0	0	3	0	0	10
5:00 PM	3	0	0	0	0	1	1	0	0	0	2	0	0	2	0	0	9
5:15 PM	1	0	0	0	0	0	0	0	0	6	4	0	1	2	0	0	14
5:30 PM	5	0	0	0	0	0	0	0	0	2	2	0	0	3	0	0	12
5:45 PM	0	1	1	0	0	0	0	0	0	2	6	0	0	2	0	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	19	2	1	0	0	1	1	0	0	18	31	0	1	24	0	0	98
APPROACH %'s :	86.36%	9.09%	4.55%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	36.73%	63.27%	0.00%	4.00%	96.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	12	0	0	0	0	1	1	0	0	9	11	0	1	10	0	0	45
PEAK HR FACTOR :	0.600	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.375	0.688	0.000	0.250	0.833	0.000	0.000	0.804
	0.600				0.250				0.500				0.917				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-021
Date: 9/8/2021

Data - Total

NS/EW Streets:	Cherry Ave				Cherry Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	1	0	1	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	29	70	15	1	19	183	32	13	22	69	27	4	38	184	15	2	723
7:15 AM	46	79	14	5	27	156	36	9	27	76	38	2	69	276	16	3	879
7:30 AM	46	75	34	2	28	175	57	11	44	92	50	0	60	321	18	2	1015
7:45 AM	60	99	34	2	25	171	44	6	39	109	28	3	76	320	35	6	1057
8:00 AM	43	103	24	3	41	211	49	14	52	113	33	1	45	194	18	4	948
8:15 AM	46	90	30	1	42	143	47	8	36	88	32	4	39	141	25	7	779
8:30 AM	33	89	21	3	53	133	39	15	33	72	37	3	32	154	22	6	745
8:45 AM	31	80	21	1	28	135	33	20	34	108	24	3	38	164	21	5	746
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	334	685	193	18	263	1307	337	96	287	727	269	20	397	1754	170	35	6892
APPROACH %'s :	27.15%	55.69%	15.69%	1.46%	13.13%	65.25%	16.82%	4.79%	22.03%	55.79%	20.64%	1.53%	16.85%	74.45%	7.22%	1.49%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	195	356	106	12	121	713	186	40	162	390	149	6	250	1111	87	15	3899
PEAK HR FACTOR :	0.813	0.864	0.779	0.600	0.738	0.845	0.816	0.714	0.779	0.863	0.745	0.500	0.822	0.865	0.621	0.625	0.922
	0.858				0.841				0.888				0.837				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	1	0	1	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	71	222	59	6	45	138	38	19	50	196	21	1	27	116	42	3	1054
4:15 PM	49	176	49	4	54	113	46	12	66	234	29	2	28	158	36	6	1062
4:30 PM	69	193	50	6	78	152	52	14	52	188	17	3	25	134	24	3	1060
4:45 PM	52	171	55	5	37	134	36	11	66	220	30	2	24	143	17	7	1010
5:00 PM	65	216	38	4	47	91	33	16	45	196	29	1	35	149	31	8	1004
5:15 PM	51	206	50	6	44	100	34	14	44	205	29	2	21	142	35	7	990
5:30 PM	51	146	53	4	56	104	34	12	72	180	36	0	39	139	18	6	950
5:45 PM	59	160	54	2	42	106	35	23	57	200	41	1	26	132	15	7	960
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	467	1490	408	37	403	938	308	121	452	1619	232	12	225	1113	218	47	8090
APPROACH %'s :	19.44%	62.03%	16.99%	1.54%	22.77%	52.99%	17.40%	6.84%	19.52%	69.94%	10.02%	0.52%	14.04%	69.43%	13.60%	2.93%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	241	762	213	21	214	537	172	56	234	838	97	8	104	551	119	19	4186
PEAK HR FACTOR :	0.849	0.858	0.903	0.875	0.686	0.883	0.827	0.737	0.886	0.895	0.808	0.667	0.929	0.872	0.708	0.679	0.985
	0.864				0.827				0.889				0.870				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-021
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Cherry Ave				Cherry Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	1	0	1	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	25	63	14	1	18	174	30	12	19	62	25	3	37	180	14	2	679
7:15 AM	43	74	13	4	25	142	34	9	26	74	37	2	65	272	14	3	837
7:30 AM	45	67	32	2	28	165	52	11	43	82	50	0	55	316	16	2	966
7:45 AM	58	87	30	2	25	161	43	6	35	105	27	3	74	313	33	6	1008
8:00 AM	43	91	23	3	41	187	46	14	48	109	31	1	41	190	17	4	889
8:15 AM	42	75	28	1	41	127	44	7	35	79	32	4	39	133	23	7	717
8:30 AM	33	75	19	3	51	109	36	15	30	66	34	2	28	146	21	6	674
8:45 AM	28	63	13	1	28	125	32	18	30	105	23	3	35	153	18	5	680
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	317	595	172	17	257	1190	317	92	266	682	259	18	374	1703	156	35	6450
APPROACH %'s :	28.79%	54.04%	15.62%	1.54%	13.85%	64.12%	17.08%	4.96%	21.71%	55.67%	21.14%	1.47%	16.49%	75.09%	6.88%	1.54%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	189	319	98	11	119	655	175	40	152	370	145	6	235	1091	80	15	3700
PEAK HR FACTOR :	0.815	0.876	0.766	0.688	0.726	0.876	0.841	0.714	0.792	0.849	0.725	0.500	0.794	0.863	0.606	0.625	0.918
	0.871				0.859				0.890				0.834				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	1	0	1	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	68	208	55	6	44	114	35	19	48	187	20	1	25	112	41	3	986
4:15 PM	46	160	46	4	52	98	41	12	66	229	29	2	25	151	36	6	1003
4:30 PM	67	184	46	6	72	135	50	14	51	181	17	3	22	132	22	3	1005
4:45 PM	49	160	53	5	37	118	33	11	66	217	28	2	22	138	15	7	961
5:00 PM	65	202	36	4	45	85	32	16	43	193	28	1	33	146	31	8	968
5:15 PM	50	190	48	6	44	91	31	14	44	203	27	2	19	139	35	7	950
5:30 PM	50	136	51	4	56	99	33	12	69	176	35	0	32	138	18	6	915
5:45 PM	58	151	52	2	41	99	32	23	55	194	40	1	22	128	15	7	920
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	453	1391	387	37	391	839	287	121	442	1580	224	12	200	1084	213	47	7708
APPROACH %'s :	19.97%	61.33%	17.06%	1.63%	23.87%	51.22%	17.52%	7.39%	19.57%	69.97%	9.92%	0.53%	12.95%	70.21%	13.80%	3.04%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	230	712	200	21	205	465	159	56	231	814	94	8	94	533	114	19	3955
PEAK HR FACTOR :	0.846	0.856	0.909	0.875	0.712	0.861	0.795	0.737	0.875	0.889	0.810	0.667	0.940	0.882	0.695	0.679	0.984
	0.863				0.816				0.880				0.872				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-021
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	1	0	1	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	1	1	0	1	3	1	1	2	5	1	0	0	2	0	0	20
7:15 AM	2	2	1	1	0	3	0	0	0	2	1	0	0	1	1	0	14
7:30 AM	1	3	1	0	0	2	2	0	0	4	0	0	3	3	0	0	19
7:45 AM	1	4	1	0	0	4	0	0	3	3	1	0	1	2	1	0	21
8:00 AM	0	5	1	0	0	6	0	0	0	1	1	0	0	1	0	0	15
8:15 AM	2	3	1	0	0	5	3	1	0	5	0	0	0	4	1	0	25
8:30 AM	0	4	1	0	0	8	2	0	0	2	1	1	1	5	1	0	26
8:45 AM	0	8	4	0	0	4	1	1	2	2	1	0	1	6	1	0	31
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	8	30	11	1	1	35	9	3	7	24	6	1	6	24	5	0	171
APPROACH %'s :	16.00%	60.00%	22.00%	2.00%	2.08%	72.92%	18.75%	6.25%	18.42%	63.16%	15.79%	2.63%	17.14%	68.57%	14.29%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	4	14	4	1	0	15	2	0	3	10	3	0	4	7	2	0	69
PEAK HR FACTOR :	0.500	0.700	1.000	0.250	0.000	0.625	0.250	0.000	0.250	0.625	0.750	0.000	0.333	0.583	0.500	0.000	0.821
	0.958				0.708				0.571				0.542				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	1	0	1	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	5	1	0	1	3	0	0	0	5	0	0	0	3	1	0	19
4:15 PM	0	5	1	0	2	6	0	0	0	4	0	0	1	5	0	0	24
4:30 PM	1	2	0	0	2	2	0	0	0	3	0	0	1	2	2	0	15
4:45 PM	2	2	1	0	0	6	0	0	0	3	2	0	2	3	1	0	22
5:00 PM	0	4	0	0	1	2	0	0	0	0	0	0	0	2	0	0	9
5:15 PM	0	4	0	0	0	1	1	0	0	1	2	0	0	3	0	0	12
5:30 PM	0	1	0	0	0	0	0	0	1	2	1	0	1	1	0	0	7
5:45 PM	1	2	0	0	0	2	1	0	1	2	0	0	1	3	0	0	13
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	25	3	0	6	22	2	0	2	20	5	0	6	22	4	0	121
APPROACH %'s :	12.50%	78.13%	9.38%	0.00%	20.00%	73.33%	6.67%	0.00%	7.41%	74.07%	18.52%	0.00%	18.75%	68.75%	12.50%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	3	14	3	0	5	17	0	0	0	15	2	0	4	13	4	0	80
PEAK HR FACTOR :	0.375	0.700	0.750	0.000	0.625	0.708	0.000	0.000	0.000	0.750	0.250	0.000	0.500	0.650	0.500	0.000	0.833
	0.833				0.688				0.850				0.875				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-021
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	1	0	1	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	4	0	0	0	2	0	0	0	1	0	1	1	2	0	0	12
7:15 AM	0	0	0	0	1	4	0	0	1	0	0	0	2	1	0	0	9
7:30 AM	0	1	0	0	0	3	2	0	0	0	0	0	1	1	0	0	8
7:45 AM	0	2	1	0	0	2	0	0	0	0	0	0	0	1	0	0	6
8:00 AM	0	2	0	0	0	5	0	0	0	1	0	0	2	0	0	0	10
8:15 AM	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4
8:30 AM	0	1	0	0	1	4	1	0	1	1	1	0	2	0	0	0	12
8:45 AM	1	2	0	0	0	2	0	0	1	0	0	0	0	3	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	13	1	0	2	25	3	0	3	3	1	1	8	8	0	0	70
APPROACH %'s :	12.50%	81.25%	6.25%	0.00%	6.67%	83.33%	10.00%	0.00%	37.50%	37.50%	12.50%	12.50%	50.00%	50.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	5	1	0	1	14	2	0	1	1	0	0	5	3	0	0	33
PEAK HR FACTOR :	0.000	0.625	0.250	0.000	0.250	0.700	0.250	0.000	0.250	0.250	0.000	0.000	0.625	0.750	0.000	0.000	0.825
	0.500				0.850				0.500				0.667				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	1	0	1	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	4	2	0	0	8	2	0	1	2	0	0	1	0	0	0	20
4:15 PM	2	4	2	0	0	4	0	0	0	0	0	0	1	1	0	0	14
4:30 PM	1	3	1	0	0	4	0	0	0	2	0	0	0	0	0	0	11
4:45 PM	1	2	0	0	0	6	1	0	0	0	0	0	0	0	0	0	10
5:00 PM	0	3	2	0	1	1	0	0	0	0	0	0	0	0	0	0	7
5:15 PM	1	4	1	0	0	6	1	0	0	0	0	0	1	0	0	0	14
5:30 PM	1	2	0	0	0	2	0	0	1	1	0	0	5	0	0	0	12
5:45 PM	0	0	1	0	0	1	1	0	0	1	1	0	1	0	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	22	9	0	1	32	5	0	2	6	1	0	9	1	0	0	94
APPROACH %'s :	16.22%	59.46%	24.32%	0.00%	2.63%	84.21%	13.16%	0.00%	22.22%	66.67%	11.11%	0.00%	90.00%	10.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	4	13	5	0	0	22	3	0	1	4	0	0	2	1	0	0	55
PEAK HR FACTOR :	0.500	0.813	0.625	0.000	0.000	0.688	0.375	0.000	0.250	0.500	0.000	0.000	0.500	0.250	0.000	0.000	0.688
	0.688				0.625				0.417				0.375				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-021
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	1	0	1	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	2	0	0	0	4	1	0	1	1	1	0	0	0	1	0	12
7:15 AM	1	3	0	0	1	7	2	0	0	0	0	0	2	2	1	0	19
7:30 AM	0	4	1	0	0	5	1	0	1	6	0	0	1	1	2	0	22
7:45 AM	1	6	2	0	0	4	1	0	1	1	0	0	1	4	1	0	22
8:00 AM	0	5	0	0	0	13	3	0	4	2	1	0	2	3	1	0	34
8:15 AM	2	11	1	0	1	8	0	0	1	4	0	0	0	4	1	0	33
8:30 AM	0	9	1	0	1	12	0	0	2	3	1	0	1	3	0	0	33
8:45 AM	2	7	4	0	0	4	0	1	1	1	0	0	2	2	2	0	26
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	47	9	0	3	57	8	1	11	18	3	0	9	19	9	0	201
APPROACH %'s :	11.11%	74.60%	14.29%	0.00%	4.35%	82.61%	11.59%	1.45%	34.38%	56.25%	9.38%	0.00%	24.32%	51.35%	24.32%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	2	18	3	0	1	29	7	0	6	9	1	0	6	10	5	0	97
PEAK HR FACTOR :	0.500	0.750	0.375	0.000	0.250	0.558	0.583	0.000	0.375	0.375	0.250	0.000	0.750	0.625	0.625	0.000	0.713
	0.639				0.578				0.571				0.875				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND								
	1	3	1	0	1	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	5	1	0	0	13	1	0	1	2	1	0	1	1	0	0	29
4:15 PM	1	7	0	0	0	5	5	0	0	1	0	0	1	1	0	0	21
4:30 PM	0	4	3	0	4	11	2	0	1	2	0	0	2	0	0	0	29
4:45 PM	0	7	1	0	0	4	2	0	0	0	0	0	0	2	1	0	17
5:00 PM	0	7	0	0	0	3	1	0	2	3	1	0	2	1	0	0	20
5:15 PM	0	8	1	0	0	2	1	0	0	1	0	0	1	0	0	0	14
5:30 PM	0	7	2	0	0	3	1	0	1	1	0	0	1	0	0	0	16
5:45 PM	0	7	1	0	1	4	1	0	1	3	0	0	2	1	0	0	21
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	52	9	0	5	45	14	0	6	13	2	0	10	6	1	0	167
APPROACH %'s :	6.15%	80.00%	13.85%	0.00%	7.81%	70.31%	21.88%	0.00%	28.57%	61.90%	9.52%	0.00%	58.82%	35.29%	5.88%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	4	23	5	0	4	33	10	0	2	5	1	0	4	4	1	0	96
PEAK HR FACTOR :	0.333	0.821	0.417	0.000	0.250	0.635	0.500	0.000	0.500	0.625	0.250	0.000	0.500	0.500	0.250	0.000	0.828
	0.889				0.691				0.500				0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beach Ave & Foothill Blvd
City: Fontana
Control: 1-Way Stop (NB)

Project ID: 21-030070-022
Date: 9/8/2021

Data - Total

NS/EW Streets:	Beach Ave				Beach Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	0	16	0	0	0	0	0	0	88	10	0	42	236	0	0	394
7:15 AM	7	0	17	0	0	0	0	0	0	120	7	0	43	338	0	0	532
7:30 AM	5	0	26	0	0	0	0	0	0	147	10	0	41	387	0	0	616
7:45 AM	5	0	33	0	0	0	0	0	0	174	11	0	57	461	0	0	741
8:00 AM	3	0	20	0	0	0	0	0	0	153	5	0	54	314	0	0	549
8:15 AM	6	0	27	0	0	0	0	0	0	138	9	0	40	222	0	0	442
8:30 AM	7	0	23	0	0	0	0	0	0	123	9	0	26	247	0	0	435
8:45 AM	9	0	22	0	0	0	0	0	0	158	13	0	15	205	0	0	422
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	44	0	184	0	0	0	0	0	0	1101	74	0	318	2410	0	0	4131
APPROACH %'s :	19.30%	0.00%	80.70%	0.00%					0.00%	93.70%	6.30%	0.00%	11.66%	88.34%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	20	0	96	0	0	0	0	0	0	594	33	0	195	1500	0	0	2438
PEAK HR FACTOR :	0.714	0.000	0.727	0.000	0.000	0.000	0.000	0.000	0.000	0.853	0.750	0.000	0.855	0.813	0.000	0.000	0.823
	0.763								0.847				0.818				

NS/EW Streets:	Beach Ave				Beach Ave				Foothill Blvd				Foothill Blvd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	0	25	0	0	0	0	0	0	300	11	0	25	189	0	0	566
4:15 PM	14	0	42	0	0	0	0	0	0	328	18	0	31	192	0	0	625
4:30 PM	16	0	30	0	0	0	0	0	0	305	13	0	25	189	0	0	578
4:45 PM	12	0	21	0	0	0	0	0	0	360	10	0	21	171	0	0	595
5:00 PM	6	0	39	0	0	0	0	0	0	313	9	0	21	170	0	0	558
5:15 PM	10	0	33	0	0	0	0	0	0	279	12	0	25	173	0	1	533
5:30 PM	7	0	29	0	0	0	0	0	0	303	17	0	34	183	0	0	573
5:45 PM	4	0	38	0	0	0	0	0	0	281	8	0	35	184	0	0	550
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	85	0	257	0	0	0	0	0	0	2469	98	0	217	1451	0	1	4578
APPROACH %'s :	24.85%	0.00%	75.15%	0.00%					0.00%	96.18%	3.82%	0.00%	13.00%	86.94%	0.00%	0.06%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	58	0	118	0	0	0	0	0	0	1293	52	0	102	741	0	0	2364
PEAK HR FACTOR :	0.906	0.000	0.702	0.000	0.000	0.000	0.000	0.000	0.000	0.898	0.722	0.000	0.823	0.965	0.000	0.000	0.946
	0.786								0.909				0.945				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beach Ave & Foothill Blvd
City: Fontana
Control: 1-Way Stop (NB)

Project ID: 21-030070-022
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Beach Ave				Beach Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	0	13	0	0	0	0	0	0	81	9	0	41	231	0	0	377
7:15 AM	7	0	15	0	0	0	0	0	0	116	7	0	41	336	0	0	522
7:30 AM	4	0	24	0	0	0	0	0	0	139	10	0	41	380	0	0	598
7:45 AM	5	0	31	0	0	0	0	0	0	164	10	0	56	457	0	0	723
8:00 AM	3	0	19	0	0	0	0	0	0	148	4	0	52	305	0	0	531
8:15 AM	6	0	27	0	0	0	0	0	0	132	9	0	39	212	0	0	425
8:30 AM	6	0	22	0	0	0	0	0	0	117	7	0	26	240	0	0	418
8:45 AM	6	0	21	0	0	0	0	0	0	143	13	0	15	193	0	0	391
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	39	0	172	0	0	0	0	0	0	1040	69	0	311	2354	0	0	3985
APPROACH %'s :	18.48%	0.00%	81.52%	0.00%					0.00%	93.78%	6.22%	0.00%	11.67%	88.33%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	19	0	89	0	0	0	0	0	0	567	31	0	190	1478	0	0	2374
PEAK HR FACTOR :	0.679	0.000	0.718	0.000	0.000	0.000	0.000	0.000	0.000	0.864	0.775	0.000	0.848	0.809	0.000	0.000	0.821
	0.750								0.859				0.813				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	0	25	0	0	0	0	0	0	293	11	0	25	185	0	0	555
4:15 PM	14	0	42	0	0	0	0	0	0	321	18	0	30	184	0	0	609
4:30 PM	15	0	30	0	0	0	0	0	0	291	10	0	23	184	0	0	553
4:45 PM	12	0	21	0	0	0	0	0	0	350	10	0	21	166	0	0	580
5:00 PM	6	0	39	0	0	0	0	0	0	309	9	0	21	165	0	0	549
5:15 PM	10	0	33	0	0	0	0	0	0	276	12	0	24	168	0	1	524
5:30 PM	7	0	27	0	0	0	0	0	0	301	17	0	31	178	0	0	561
5:45 PM	4	0	37	0	0	0	0	0	0	273	8	0	35	178	0	0	535
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	84	0	254	0	0	0	0	0	0	2414	95	0	210	1408	0	1	4466
APPROACH %'s :	24.85%	0.00%	75.15%	0.00%					0.00%	96.21%	3.79%	0.00%	12.97%	86.97%	0.00%	0.06%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	57	0	118	0	0	0	0	0	0	1255	49	0	99	719	0	0	2297
PEAK HR FACTOR :	0.891	0.000	0.702	0.000	0.000	0.000	0.000	0.000	0.000	0.896	0.681	0.000	0.825	0.972	0.000	0.000	0.943
	0.781								0.906				0.956				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beach Ave & Foothill Blvd
City: Fontana
Control: 1-Way Stop (NB)

Project ID: 21-030070-022
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Beach Ave				Beach Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	0	0	0	0	0	5	1	0	0	3	0	0	10
7:15 AM	0	0	2	0	0	0	0	0	0	3	0	0	2	1	0	0	8
7:30 AM	1	0	1	0	0	0	0	0	0	2	0	0	0	4	0	0	8
7:45 AM	0	0	2	0	0	0	0	0	0	7	0	0	1	4	0	0	14
8:00 AM	0	0	0	0	0	0	0	0	0	5	1	0	2	1	0	0	9
8:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	0	11
8:30 AM	1	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	6
8:45 AM	2	0	1	0	0	0	0	0	0	8	0	0	0	7	0	0	18
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	0	7	0	0	0	0	0	0	37	2	0	5	29	0	0	84
APPROACH %'s :	36.36%	0.00%	63.64%	0.00%					0.00%	94.87%	5.13%	0.00%	14.71%	85.29%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	0	5	0	0	0	0	0	0	17	1	0	5	10	0	0	39
PEAK HR FACTOR :	0.250	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.607	0.250	0.000	0.625	0.625	0.000	0.000	0.696
	0.750								0.643				0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
4:15 PM	0	0	0	0	0	0	0	0	0	4	0	0	1	5	0	0	10
4:30 PM	0	0	0	0	0	0	0	0	0	10	3	0	2	5	0	0	20
4:45 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	0	9
5:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	4	0	0	6
5:30 PM	0	0	2	0	0	0	0	0	0	1	0	0	3	1	0	0	7
5:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	2	0	0	0	0	0	0	31	3	0	7	24	0	0	67
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	91.18%	8.82%	0.00%	22.58%	77.42%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	24	3	0	3	14	0	0	44
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.600	0.250	0.000	0.375	0.700	0.000	0.000	0.550
									0.519				0.607				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beach Ave & Foothill Blvd
City: Fontana
Control: 1-Way Stop (NB)

Project ID: 21-030070-022
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Beach Ave				Beach Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	3
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	3
8:30 AM	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	2	0	0	0	0	0	0	10	1	0	2	6	0	0	21
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	90.91%	9.09%	0.00%	25.00%	75.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	0	0	2	0	0	0	3	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.375	0.000	0.000	0.500
	0.250								0.500				0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4
4:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	4
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	11	0	0	0	11	0	0	22
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	7	0	0	0	4	0	0	11
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.000	0.000	0.000	0.500	0.000	0.000	0.688
									0.583				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beach Ave & Foothill Blvd
City: Fontana
Control: 1-Way Stop (NB)

Project ID: 21-030070-022
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Beach Ave				Beach Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	0	4
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:30 AM	0	0	1	0	0	0	0	0	0	5	0	0	0	3	0	0	9
7:45 AM	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
8:30 AM	0	0	1	0	0	0	0	0	0	2	1	0	0	4	0	0	8
8:45 AM	1	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	3	0	0	0	0	0	0	14	2	0	0	21	0	0	41
APPROACH %'s :	25.00%	0.00%	75.00%	0.00%					0.00%	87.50%	12.50%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	0	0	8	1	0	0	9	0	0	19
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.250	0.000	0.000	0.375	0.000	0.000	0.528
	0.250								0.450				0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
4:30 PM	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
4:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:45 PM	0	0	1	0	0	0	0	0	0	4	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	1	0	0	0	0	0	0	13	0	0	0	8	0	0	23
APPROACH %'s :	50.00%	0.00%	50.00%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	0	0	7	0	0	0	4	0	0	12
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.000	0.000	0.000	0.500	0.000	0.000	0.600
	0.250								0.583				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-023
Date: 9/8/2021

Data - Total

NS/EW Streets:	Citrus Ave				Citrus Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	23	78	13	0	19	126	22	0	18	59	17	4	42	182	14	5	622
7:15 AM	33	88	15	0	20	164	33	0	22	74	21	1	35	213	15	3	737
7:30 AM	34	132	14	0	31	153	40	0	25	93	35	1	48	295	27	7	935
7:45 AM	42	121	21	0	23	200	44	0	37	116	24	4	39	210	11	11	903
8:00 AM	32	113	9	0	32	163	41	0	27	95	36	7	49	149	21	12	786
8:15 AM	33	127	27	0	41	167	28	0	35	109	18	6	44	126	18	16	795
8:30 AM	20	102	18	0	41	133	28	0	23	90	13	4	41	158	20	19	710
8:45 AM	28	78	23	0	34	115	26	0	35	116	24	4	42	119	20	11	675
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	245	839	140	0	241	1221	262	0	222	752	188	31	340	1452	146	84	6163
APPROACH %'s :	20.02%	68.55%	11.44%	0.00%	13.98%	70.82%	15.20%	0.00%	18.61%	63.03%	15.76%	2.60%	16.82%	71.81%	7.22%	4.15%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	141	493	71	0	127	683	153	0	124	413	113	18	180	780	77	46	3419
PEAK HR FACTOR :	0.839	0.934	0.657	0.000	0.774	0.854	0.869	0.000	0.838	0.890	0.785	0.643	0.918	0.661	0.713	0.719	0.914
	0.943				0.902				0.923				0.718				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	28	163	26	0	24	117	24	0	59	196	54	2	39	132	30	21	915
4:15 PM	31	161	23	0	34	121	14	0	58	204	41	4	49	146	32	20	938
4:30 PM	46	168	25	0	31	131	26	0	53	195	48	4	60	147	30	14	978
4:45 PM	30	162	21	0	30	138	14	0	61	232	40	5	52	112	30	21	948
5:00 PM	29	161	16	0	35	135	11	0	69	195	45	1	48	140	26	20	931
5:15 PM	37	173	26	0	32	117	15	0	55	184	37	5	42	126	22	21	892
5:30 PM	34	178	29	0	20	120	27	0	66	185	38	1	39	128	18	23	906
5:45 PM	32	155	25	0	31	135	13	0	47	191	33	5	46	125	33	25	896
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	267	1321	191	0	237	1014	144	0	468	1582	336	27	375	1056	221	165	7404
APPROACH %'s :	15.01%	74.26%	10.74%	0.00%	16.99%	72.69%	10.32%	0.00%	19.39%	65.56%	13.92%	1.12%	20.64%	58.12%	12.16%	9.08%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	136	652	85	0	130	525	65	0	241	826	174	14	209	545	118	75	3795
PEAK HR FACTOR :	0.739	0.970	0.850	0.000	0.929	0.951	0.625	0.000	0.873	0.890	0.906	0.700	0.871	0.927	0.922	0.893	0.970
	0.913				0.957				0.928				0.943				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-023
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Citrus Ave				Citrus Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	22	70	10	0	18	118	21	0	18	53	15	4	39	180	13	5	586
7:15 AM	32	80	13	0	20	158	31	0	20	73	21	1	35	209	15	3	711
7:30 AM	33	127	13	0	29	148	37	0	25	88	35	1	45	295	27	7	910
7:45 AM	41	119	20	0	22	189	44	0	33	112	23	4	38	204	10	11	870
8:00 AM	32	107	9	0	30	156	39	0	26	89	36	7	49	144	20	12	756
8:15 AM	32	121	21	0	41	159	28	0	33	102	18	6	42	121	18	16	758
8:30 AM	19	95	17	0	40	124	27	0	23	89	13	4	41	152	18	19	681
8:45 AM	28	73	21	0	34	108	26	0	34	110	21	4	42	113	20	11	645
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	239	792	124	0	234	1160	253	0	212	716	182	31	331	1418	141	84	5917
APPROACH %'s :	20.69%	68.57%	10.74%	0.00%	14.21%	70.43%	15.36%	0.00%	18.58%	62.75%	15.95%	2.72%	16.77%	71.83%	7.14%	4.26%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	138	474	63	0	122	652	148	0	117	391	112	18	174	764	75	46	3294
PEAK HR FACTOR :	0.841	0.933	0.750	0.000	0.744	0.862	0.841	0.000	0.886	0.873	0.778	0.643	0.888	0.647	0.694	0.719	0.905
	0.938				0.904				0.927				0.708				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	26	157	24	0	24	113	22	0	58	194	53	2	38	130	30	21	892
4:15 PM	30	155	23	0	34	112	12	0	57	202	41	4	47	143	32	20	912
4:30 PM	45	164	25	0	30	127	26	0	53	190	46	4	59	146	29	14	958
4:45 PM	29	157	20	0	30	133	12	0	61	229	39	5	51	111	30	21	928
5:00 PM	29	156	15	0	35	131	11	0	69	191	45	1	48	133	26	20	910
5:15 PM	37	172	26	0	31	114	15	0	55	182	37	5	42	124	22	21	883
5:30 PM	34	176	29	0	20	119	23	0	65	182	38	1	39	124	18	23	891
5:45 PM	32	153	25	0	31	132	12	0	47	185	33	5	45	122	33	25	880
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	262	1290	187	0	235	981	133	0	465	1555	332	27	369	1033	220	165	7254
APPROACH %'s :	15.07%	74.18%	10.75%	0.00%	17.42%	72.72%	9.86%	0.00%	19.55%	65.36%	13.96%	1.13%	20.65%	57.81%	12.31%	9.23%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	133	632	83	0	129	503	61	0	240	812	171	14	205	533	117	75	3708
PEAK HR FACTOR :	0.739	0.963	0.830	0.000	0.921	0.945	0.587	0.000	0.870	0.886	0.929	0.700	0.869	0.913	0.914	0.893	0.968
	0.906				0.947				0.926				0.938				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-023
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	2	0	0	0	4	1	0	0	4	0	0	2	2	1	0	17
7:15 AM	1	2	1	0	0	3	1	0	2	1	0	0	0	2	0	0	13
7:30 AM	1	3	1	0	1	1	0	0	0	2	0	0	2	0	0	0	11
7:45 AM	1	2	0	0	1	5	0	0	2	4	1	0	0	5	1	0	22
8:00 AM	0	2	0	0	1	1	0	0	1	6	0	0	0	2	1	0	14
8:15 AM	1	3	3	0	0	3	0	0	2	6	0	0	2	1	0	0	21
8:30 AM	1	1	1	0	1	1	1	0	0	0	0	0	0	2	0	0	8
8:45 AM	0	1	1	0	0	2	0	0	1	1	0	0	0	4	0	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	16	7	0	4	20	3	0	8	24	1	0	6	18	3	0	116
APPROACH %'s :	20.69%	55.17%	24.14%	0.00%	14.81%	74.07%	11.11%	0.00%	24.24%	72.73%	3.03%	0.00%	22.22%	66.67%	11.11%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	3	10	4	0	3	10	0	0	5	18	1	0	4	8	2	0	68
PEAK HR FACTOR :	0.750	0.833	0.333	0.000	0.750	0.500	0.000	0.000	0.625	0.750	0.250	0.000	0.500	0.400	0.500	0.000	0.773
	0.607				0.542				0.750				0.583				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	3	2	0	0	2	1	0	0	1	0	0	1	1	0	0	12
4:15 PM	1	3	0	0	0	4	0	0	1	1	0	0	1	3	0	0	14
4:30 PM	1	2	0	0	1	1	0	0	0	3	1	0	0	1	1	0	11
4:45 PM	0	2	1	0	0	1	1	0	0	3	1	0	1	1	0	0	11
5:00 PM	0	1	0	0	0	1	0	0	0	2	0	0	0	6	0	0	10
5:15 PM	0	0	0	0	1	2	0	0	0	1	0	0	0	1	0	0	5
5:30 PM	0	2	0	0	0	1	0	0	0	2	0	0	0	2	0	0	7
5:45 PM	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	14	3	0	2	12	2	0	1	15	2	0	3	17	1	0	75
APPROACH %'s :	15.00%	70.00%	15.00%	0.00%	12.50%	75.00%	12.50%	0.00%	5.56%	83.33%	11.11%	0.00%	14.29%	80.95%	4.76%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	2	8	1	0	1	7	1	0	1	9	2	0	2	11	1	0	46
PEAK HR FACTOR :	0.500	0.667	0.250	0.000	0.250	0.438	0.250	0.000	0.250	0.750	0.500	0.000	0.500	0.458	0.250	0.000	0.821
	0.688				0.563				0.750				0.583				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-023
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	4	1	0	0	1	0	0	0	1	0	0	0	0	0	0	7
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:30 AM	0	1	0	0	1	3	0	0	0	1	0	0	0	0	0	0	6
7:45 AM	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
8:15 AM	0	0	2	0	0	1	0	0	0	1	0	0	0	2	0	0	6
8:30 AM	0	3	0	0	0	3	0	0	0	0	0	0	0	1	1	0	8
8:45 AM	0	2	1	0	0	1	0	0	0	3	2	0	0	1	0	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	10	5	0	1	11	1	0	0	6	2	0	0	6	1	0	43
APPROACH %'s :	0.00%	66.67%	33.33%	0.00%	7.69%	84.62%	7.69%	0.00%	0.00%	75.00%	25.00%	0.00%	0.00%	85.71%	14.29%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1	3	0	1	6	1	0	0	2	0	0	0	3	0	0	17
PEAK HR FACTOR :	0.000	0.250	0.375	0.000	0.250	0.500	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.375	0.000	0.000	0.708
	0.500				0.500				0.500				0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	0	2	1	0	1	0	1	0	0	1	0	0	8
4:15 PM	0	2	0	0	0	3	1	0	0	1	0	0	1	0	0	0	8
4:30 PM	0	1	0	0	0	1	0	0	0	2	0	0	1	0	0	0	5
4:45 PM	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
5:00 PM	0	2	1	0	0	2	0	0	0	1	0	0	0	0	0	0	6
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:30 PM	0	0	0	0	0	0	3	0	0	1	0	0	0	2	0	0	6
5:45 PM	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	10	1	0	0	10	6	0	1	7	1	0	2	4	0	0	43
APPROACH %'s :	8.33%	83.33%	8.33%	0.00%	0.00%	62.50%	37.50%	0.00%	11.11%	77.78%	11.11%	0.00%	33.33%	66.67%	0.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	1	7	1	0	0	8	1	0	0	4	0	0	2	0	0	0	24
PEAK HR FACTOR :	0.250	0.875	0.250	0.000	0.000	0.667	0.250	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.750
	0.750				0.563				0.500				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-023
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	2	0	1	3	0	0	0	1	2	0	1	0	0	0	12
7:15 AM	0	6	1	0	0	3	1	0	0	0	0	0	0	1	0	0	12
7:30 AM	0	1	0	0	0	1	3	0	0	2	0	0	1	0	0	0	8
7:45 AM	0	0	0	0	0	4	0	0	2	0	0	0	1	1	0	0	8
8:00 AM	0	4	0	0	1	6	1	0	0	0	0	0	0	2	0	0	14
8:15 AM	0	3	1	0	0	4	0	0	0	0	0	0	0	2	0	0	10
8:30 AM	0	3	0	0	0	5	0	0	0	1	0	0	0	3	1	0	13
8:45 AM	0	2	0	0	0	4	0	0	0	2	1	0	0	1	0	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	21	4	0	2	30	5	0	2	6	3	0	3	10	1	0	87
APPROACH %'s :	0.00%	84.00%	16.00%	0.00%	5.41%	81.08%	13.51%	0.00%	18.18%	54.55%	27.27%	0.00%	21.43%	71.43%	7.14%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	8	1	0	1	15	4	0	2	2	0	0	2	5	0	0	40
PEAK HR FACTOR :	0.000	0.500	0.250	0.000	0.250	0.625	0.333	0.000	0.250	0.250	0.000	0.000	0.500	0.625	0.000	0.000	0.714
	0.563				0.625				0.500				0.875				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
4:15 PM	0	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	4
4:30 PM	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	0	4
4:45 PM	0	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	4
5:00 PM	0	2	0	0	0	1	0	0	0	1	0	0	0	1	0	0	5
5:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	3	0	0	0	3	0	0	1	1	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	7	0	0	0	11	3	0	1	5	1	0	1	2	0	0	32
APPROACH %'s :	12.50%	87.50%	0.00%	0.00%	0.00%	78.57%	21.43%	0.00%	14.29%	71.43%	14.29%	0.00%	33.33%	66.67%	0.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	5	0	0	0	7	2	0	0	1	1	0	0	1	0	0	17
PEAK HR FACTOR :	0.000	0.625	0.000	0.000	0.000	0.875	0.500	0.000	0.000	0.250	0.250	0.000	0.000	0.250	0.000	0.000	0.850
	0.625				0.750				0.500				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-024
Date: 9/8/2021

Data - Total

NS/EW Streets:	Sierra Ave				Sierra Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	11	67	7	0	18	133	30	0	12	54	14	1	12	134	13	1	507
7:15 AM	16	61	9	0	34	144	40	0	16	72	20	2	19	194	20	4	651
7:30 AM	23	93	13	0	23	165	45	0	21	77	21	1	25	176	37	8	728
7:45 AM	22	127	18	0	65	202	31	0	31	93	18	1	31	195	29	3	866
8:00 AM	17	87	19	0	50	241	28	0	39	82	20	2	31	131	37	5	789
8:15 AM	17	90	13	0	38	175	28	0	29	110	31	2	25	125	27	8	718
8:30 AM	21	106	27	0	33	180	33	0	26	81	26	2	31	142	30	15	753
8:45 AM	23	80	18	0	47	145	21	0	20	77	26	1	41	110	26	15	650
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	150	711	124	0	308	1385	256	0	194	646	176	12	215	1207	219	59	5662
APPROACH %'s :	15.23%	72.18%	12.59%	0.00%	15.80%	71.06%	13.13%	0.00%	18.87%	62.84%	17.12%	1.17%	12.65%	71.00%	12.88%	3.47%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	77	410	77	0	186	798	120	0	125	366	95	7	118	593	123	31	3126
PEAK HR FACTOR :	0.875	0.807	0.713	0.000	0.715	0.828	0.909	0.000	0.801	0.832	0.766	0.875	0.952	0.760	0.831	0.517	0.902
	0.844				0.865				0.862				0.838				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	35	165	37	1	34	145	23	0	37	156	31	2	29	129	56	16	896
4:15 PM	18	201	38	0	44	135	26	0	58	153	30	5	32	114	36	12	902
4:30 PM	20	176	37	0	29	122	31	0	43	175	39	3	35	150	47	15	922
4:45 PM	34	182	27	0	36	132	27	0	43	179	31	3	44	109	31	21	899
5:00 PM	31	232	30	0	36	95	32	0	39	176	32	3	28	124	46	9	913
5:15 PM	31	178	25	0	31	74	25	0	45	164	38	0	31	110	55	18	825
5:30 PM	42	195	25	0	57	89	22	0	49	136	16	2	32	120	37	11	833
5:45 PM	28	171	38	0	44	107	29	0	43	162	32	1	43	129	46	10	883
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	239	1500	257	1	311	899	215	0	357	1301	249	19	274	985	354	112	7073
APPROACH %'s :	11.97%	75.11%	12.87%	0.05%	21.82%	63.09%	15.09%	0.00%	18.54%	67.55%	12.93%	0.99%	15.88%	57.10%	20.52%	6.49%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	103	791	132	0	145	484	116	0	183	683	132	14	139	497	160	57	3636
PEAK HR FACTOR :	0.757	0.852	0.868	0.000	0.824	0.896	0.906	0.000	0.789	0.954	0.846	0.700	0.790	0.828	0.851	0.679	0.986
	0.875				0.909				0.973				0.863				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-024
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Sierra Ave				Sierra Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	10	62	6	0	18	133	30	0	11	49	13	1	11	133	12	1	490
7:15 AM	16	58	8	0	34	142	38	0	15	69	20	2	18	193	18	4	635
7:30 AM	23	90	13	0	23	163	44	0	19	76	21	1	23	172	35	8	711
7:45 AM	19	118	17	0	63	195	29	0	28	90	16	1	29	191	28	3	827
8:00 AM	17	82	18	0	49	239	28	0	36	77	19	2	31	130	37	5	770
8:15 AM	17	89	12	0	36	171	28	0	28	106	29	2	24	118	27	8	695
8:30 AM	21	103	26	0	32	178	32	0	26	78	25	2	30	140	29	15	737
8:45 AM	22	78	17	0	44	143	18	0	20	71	25	1	38	109	24	15	625
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	145	680	117	0	299	1364	247	0	183	616	168	12	204	1186	210	59	5490
APPROACH %'s :	15.39%	72.19%	12.42%	0.00%	15.65%	71.41%	12.93%	0.00%	18.69%	62.92%	17.16%	1.23%	12.30%	71.49%	12.66%	3.56%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	74	392	73	0	180	783	117	0	118	351	89	7	114	579	121	31	3029
PEAK HR FACTOR :	0.881	0.831	0.702	0.000	0.714	0.819	0.914	0.000	0.819	0.828	0.767	0.875	0.919	0.758	0.818	0.517	0.916
	0.875				0.854				0.856				0.842				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	35	162	36	1	33	144	22	0	37	156	31	2	28	126	51	16	880
4:15 PM	18	197	37	0	41	135	25	0	57	151	28	5	31	111	35	12	883
4:30 PM	20	175	36	0	28	122	31	0	43	173	38	3	33	150	47	15	914
4:45 PM	34	178	25	0	35	128	27	0	42	178	31	3	44	107	31	21	884
5:00 PM	31	230	29	0	35	95	30	0	38	174	32	3	26	122	46	9	900
5:15 PM	31	175	24	0	31	74	24	0	45	161	38	0	30	109	55	18	815
5:30 PM	42	193	24	0	56	87	21	0	48	135	16	2	30	118	37	11	820
5:45 PM	28	169	38	0	44	106	28	0	43	161	32	1	41	127	46	10	874
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	239	1479	249	1	303	891	208	0	353	1289	246	19	263	970	348	112	6970
APPROACH %'s :	12.14%	75.15%	12.65%	0.05%	21.61%	63.55%	14.84%	0.00%	18.51%	67.59%	12.90%	1.00%	15.53%	57.29%	20.56%	6.62%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	103	780	127	0	139	480	113	0	180	676	129	14	134	490	159	57	3581
PEAK HR FACTOR :	0.757	0.848	0.858	0.000	0.848	0.889	0.911	0.000	0.789	0.949	0.849	0.700	0.761	0.817	0.846	0.679	0.979
	0.871				0.910				0.972				0.857				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-024
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	4	1	0	0	0	0	0	1	1	1	0	1	0	0	0	10
7:15 AM	0	2	1	0	0	2	0	0	1	1	0	0	1	1	1	0	10
7:30 AM	0	1	0	0	0	1	1	0	1	0	0	0	1	3	0	0	8
7:45 AM	3	2	1	0	1	4	0	0	1	3	1	0	2	2	1	0	21
8:00 AM	0	2	1	0	0	1	0	0	2	5	0	0	0	1	0	0	12
8:15 AM	0	0	1	0	1	2	0	0	0	4	2	0	1	2	0	0	13
8:30 AM	0	1	1	0	0	2	0	0	0	2	1	0	1	0	0	0	8
8:45 AM	1	2	1	0	1	1	3	0	0	3	1	0	3	0	0	0	16
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	14	7	0	3	13	4	0	6	19	6	0	10	9	2	0	98
APPROACH %'s :	19.23%	53.85%	26.92%	0.00%	15.00%	65.00%	20.00%	0.00%	19.35%	61.29%	19.35%	0.00%	47.62%	42.86%	9.52%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	3	5	4	0	2	9	0	0	3	14	4	0	4	5	1	0	54
PEAK HR FACTOR :	0.250	0.625	1.000	0.000	0.500	0.563	0.000	0.000	0.375	0.700	0.500	0.000	0.500	0.625	0.250	0.000	0.643
	0.500				0.550				0.750				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	3	1	0	0	1	1	0	0	0	0	0	1	2	2	0	11
4:15 PM	0	3	1	0	1	0	1	0	0	1	2	0	1	3	0	0	13
4:30 PM	0	1	1	0	0	0	0	0	0	2	1	0	2	0	0	0	7
4:45 PM	0	4	2	0	1	3	0	0	1	1	0	0	0	2	0	0	14
5:00 PM	0	2	1	0	0	0	1	0	0	1	0	0	1	1	0	0	7
5:15 PM	0	3	1	0	0	0	0	0	0	1	0	0	1	1	0	0	7
5:30 PM	0	1	1	0	0	2	1	0	1	1	0	0	2	0	0	0	9
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	2	1	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	17	8	0	2	7	4	0	2	7	3	0	10	10	2	0	72
APPROACH %'s :	0.00%	68.00%	32.00%	0.00%	15.38%	53.85%	30.77%	0.00%	16.67%	58.33%	25.00%	0.00%	45.45%	45.45%	9.09%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	10	5	0	2	3	2	0	1	5	3	0	4	6	0	0	41
PEAK HR FACTOR :	0.000	0.625	0.625	0.000	0.500	0.250	0.500	0.000	0.250	0.625	0.375	0.000	0.500	0.500	0.000	0.000	0.732
	0.625				0.438				0.750				0.625				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-024
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
7:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	2	0	0	1	0	0	0	1	0	1	0	0	0	0	0	5
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1	0	4
8:45 AM	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	3	2	1	0	1	4	1	0	0	3	2	0	20
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	50.00%	33.33%	16.67%	0.00%	16.67%	66.67%	16.67%	0.00%	0.00%	60.00%	40.00%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	0	3	0	0	3	1	0	0	1	0	1	0	0	3	1	0	13
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.750	0.250	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.375	0.250	0.000	0.650
	0.375				1.000				0.250				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	3
4:15 PM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	3
5:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	2	0	1	0	2	2	0	0	0	4	1	0	12
APPROACH %'s :					66.67%	0.00%	33.33%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	2	1	0	0	0	1	0	0	5
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.417
					0.250				0.375				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Foothill Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-024
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Foothill Blvd				Foothill Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	0	0	0	0	2	0	0	0	1	1	0	5
7:15 AM	0	1	0	0	0	0	1	0	0	2	0	0	0	0	1	0	5
7:30 AM	0	2	0	0	0	1	0	0	1	1	0	0	1	1	1	0	8
7:45 AM	0	7	0	0	0	3	2	0	2	0	1	0	0	2	0	0	17
8:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	1	0	0	1	1	0	0	1	0	0	0	0	3	0	0	7
8:30 AM	0	1	0	0	0	0	1	0	0	1	0	0	0	1	0	0	4
8:45 AM	0	0	0	0	2	0	0	0	0	1	0	0	0	1	2	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	14	0	0	3	6	4	0	4	7	1	0	1	9	5	0	54
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	23.08%	46.15%	30.77%	0.00%	33.33%	58.33%	8.33%	0.00%	6.67%	60.00%	33.33%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	0	10	0	0	1	5	3	0	3	1	1	0	0	6	0	0	30
PEAK HR FACTOR :	0.000	0.357	0.000	0.000	0.250	0.417	0.375	0.000	0.375	0.250	0.250	0.000	0.000	0.500	0.000	0.000	0.441
	0.357				0.450				0.417				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
4:15 PM	0	1	0	0	1	0	0	0	0	1	0	0	0	0	1	0	4
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	2	0	0	0	0	1	0	0	1	0	0	0	1	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	0	0	4	1	2	0	0	3	0	0	1	1	3	0	19
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	57.14%	14.29%	28.57%	0.00%	0.00%	100.00%	0.00%	0.00%	20.00%	20.00%	60.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	1	0	0	3	1	1	0	0	1	0	0	1	0	1	0	9
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.750	0.250	0.250	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.250	0.000	0.563
	0.250				0.625				0.250				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Arrow Route
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-025
Date: 9/15/2021

Data - Total

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Arrow Route				Arrow Route				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	2 EL	1 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	38	26	10	0	13	77	80	0	12	50	28	0	21	122	26	0	503
7:15 AM	43	24	6	0	28	56	74	0	11	56	25	0	16	179	28	0	546
7:30 AM	78	24	7	0	20	74	92	0	14	63	25	0	39	205	28	0	669
7:45 AM	77	41	6	0	24	78	111	0	29	54	42	0	34	207	29	0	732
8:00 AM	53	35	11	0	36	74	72	0	19	55	24	0	23	129	31	0	562
8:15 AM	69	34	6	0	33	70	85	0	13	57	21	0	20	135	26	0	569
8:30 AM	48	44	6	0	15	59	54	0	25	59	39	0	24	111	13	0	497
8:45 AM	40	40	7	0	21	46	56	0	24	43	25	0	20	111	8	0	441
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	446	268	59	0	190	534	624	0	147	437	229	0	197	1199	189	0	4519
APPROACH %'s :	57.70%	34.67%	7.63%	0.00%	14.09%	39.61%	46.29%	0.00%	18.08%	53.75%	28.17%	0.00%	12.43%	75.65%	11.92%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	277	134	30	0	113	296	360	0	75	229	112	0	116	676	114	0	2532
PEAK HR FACTOR :	0.888	0.817	0.682	0.000	0.785	0.949	0.811	0.000	0.647	0.909	0.667	0.000	0.744	0.816	0.919	0.000	0.865
	0.889				0.903				0.832				0.833				

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Arrow Route				Arrow Route				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	2 EL	1 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	25	110	23	0	19	47	24	0	86	130	63	0	12	71	46	0	656
4:15 PM	30	105	38	0	26	48	27	0	100	172	75	0	19	89	35	0	764
4:30 PM	35	132	30	0	34	60	24	0	71	134	81	0	30	80	33	0	744
4:45 PM	31	115	25	0	21	51	32	0	93	156	76	0	15	85	37	0	737
5:00 PM	36	113	22	0	27	46	29	0	76	154	88	0	28	95	40	0	754
5:15 PM	37	127	34	0	31	42	27	0	101	159	89	0	20	89	30	0	786
5:30 PM	35	117	30	0	29	47	33	0	84	145	105	0	8	65	28	0	726
5:45 PM	32	100	38	0	23	39	20	0	78	157	73	0	18	74	34	0	686
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	261	919	240	0	210	380	216	0	689	1207	650	0	150	648	283	0	5853
APPROACH %'s :	18.38%	64.72%	16.90%	0.00%	26.05%	47.15%	26.80%	0.00%	27.06%	47.41%	25.53%	0.00%	13.88%	59.94%	26.18%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	139	487	111	0	113	199	112	0	341	603	334	0	93	349	140	0	3021
PEAK HR FACTOR :	0.939	0.922	0.816	0.000	0.831	0.829	0.875	0.000	0.844	0.948	0.938	0.000	0.775	0.918	0.875	0.000	0.961
	0.931				0.898				0.915				0.893				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Arrow Route
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-025
Date: 9/15/2021

Data - Cars

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Arrow Route				Arrow Route				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	2 EL	1 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	25	19	8	0	12	71	78	0	12	46	18	0	18	120	23	0	450
7:15 AM	33	23	3	0	27	55	68	0	10	50	19	0	15	170	24	0	497
7:30 AM	69	22	4	0	18	71	86	0	13	60	19	0	34	203	26	0	625
7:45 AM	65	37	5	0	24	71	107	0	23	54	32	0	30	201	28	0	677
8:00 AM	48	29	10	0	34	70	68	0	15	47	20	0	19	127	27	0	514
8:15 AM	62	29	5	0	33	66	82	0	13	54	13	0	18	125	23	0	523
8:30 AM	42	39	5	0	13	53	53	0	24	55	23	0	20	106	11	0	444
8:45 AM	32	34	2	0	19	44	54	0	20	41	10	0	19	111	7	0	393
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	376	232	42	0	180	501	596	0	130	407	154	0	173	1163	169	0	4123
APPROACH %'s :	57.85%	35.69%	6.46%	0.00%	14.10%	39.23%	46.67%	0.00%	18.81%	58.90%	22.29%	0.00%	11.50%	77.28%	11.23%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	244	117	24	0	109	278	343	0	64	215	84	0	101	656	104	0	2339
PEAK HR FACTOR :	0.884	0.791	0.600	0.000	0.801	0.979	0.801	0.000	0.696	0.896	0.656	0.000	0.743	0.808	0.929	0.000	0.864
	0.900				0.903				0.833				0.818				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	2 EL	1 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	19	100	23	0	17	37	21	0	79	117	49	0	9	67	44	0	582
4:15 PM	24	101	35	0	25	37	26	0	99	164	49	0	18	85	35	0	698
4:30 PM	32	126	29	0	31	47	24	0	68	129	68	0	28	75	33	0	690
4:45 PM	25	108	23	0	19	44	32	0	92	153	64	0	13	84	36	0	693
5:00 PM	33	107	21	0	25	37	29	0	74	150	77	0	26	94	39	0	712
5:15 PM	32	120	34	0	30	35	26	0	101	155	83	0	19	86	30	0	751
5:30 PM	28	114	28	0	27	43	33	0	82	139	96	0	8	64	28	0	690
5:45 PM	25	99	38	0	21	39	20	0	76	154	68	0	16	73	34	0	663
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	218	875	231	0	195	319	211	0	671	1161	554	0	137	628	279	0	5479
APPROACH %'s :	16.47%	66.09%	17.45%	0.00%	26.90%	44.00%	29.10%	0.00%	28.12%	48.66%	23.22%	0.00%	13.12%	60.15%	26.72%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	122	461	107	0	105	163	111	0	335	587	292	0	86	339	138	0	2846
PEAK HR FACTOR :	0.924	0.915	0.787	0.000	0.847	0.867	0.867	0.000	0.829	0.947	0.880	0.000	0.768	0.902	0.885	0.000	0.947
	0.922				0.929				0.895				0.885				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Arrow Route
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-025
Date: 9/15/2021

Data - 2axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Arrow Route				Arrow Route				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	2 EL	1 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	4	2	0	0	0	1	0	0	0	1	1	0	0	1	0	0	10
7:15 AM	2	0	2	0	0	0	2	0	0	2	1	0	0	4	1	0	14
7:30 AM	3	0	0	0	1	1	1	0	0	1	2	0	0	1	1	0	11
7:45 AM	2	0	0	0	0	2	0	0	1	0	1	0	0	3	0	0	9
8:00 AM	1	1	0	0	0	2	0	0	1	1	0	0	0	2	0	0	8
8:15 AM	0	1	0	0	0	0	0	0	0	2	0	0	1	3	0	0	7
8:30 AM	0	0	0	0	0	0	0	0	1	1	4	0	0	2	0	0	8
8:45 AM	0	3	1	0	0	0	1	0	0	1	3	0	1	0	0	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	12	7	3	0	1	6	4	0	3	9	12	0	2	16	2	0	77
APPROACH %'s :	54.55%	31.82%	13.64%	0.00%	9.09%	54.55%	36.36%	0.00%	12.50%	37.50%	50.00%	0.00%	10.00%	80.00%	10.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	6	2	0	0	1	5	1	0	2	4	3	0	1	9	1	0	35
PEAK HR FACTOR :	0.500	0.500	0.000	0.000	0.250	0.625	0.250	0.000	0.500	0.500	0.375	0.000	0.250	0.750	0.250	0.000	0.795
	0.667				0.583				0.750				0.688				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	2 EL	1 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	3	2	0	0	1	9	1	0	3	7	8	0	1	2	1	0	38
4:15 PM	1	0	1	0	0	7	0	0	0	8	7	0	1	2	0	0	27
4:30 PM	1	2	1	0	0	9	0	0	2	2	5	0	2	3	0	0	27
4:45 PM	2	2	1	0	0	5	0	0	0	0	5	0	1	1	0	0	17
5:00 PM	1	0	0	0	0	2	0	0	1	2	3	0	0	0	0	0	9
5:15 PM	1	3	0	0	0	3	0	0	0	2	2	0	0	1	0	0	12
5:30 PM	0	1	0	0	0	2	0	0	1	3	4	0	0	0	0	0	11
5:45 PM	0	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	10	3	0	2	37	1	0	8	25	34	0	6	9	1	0	145
APPROACH %'s :	40.91%	45.45%	13.64%	0.00%	5.00%	92.50%	2.50%	0.00%	11.94%	37.31%	50.75%	0.00%	37.50%	56.25%	6.25%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	5	7	2	0	0	19	0	0	3	6	15	0	3	5	0	0	65
PEAK HR FACTOR :	0.625	0.583	0.500	0.000	0.000	0.528	0.000	0.000	0.375	0.750	0.750	0.000	0.375	0.417	0.000	0.000	0.602
	0.700				0.528				0.667				0.400				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Arrow Route
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-025
Date: 9/15/2021

Data - 3axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Arrow Route				Arrow Route				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	2 EL	1 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	1	3	1	0	1	1	0	0	0	2	5	0	0	0	0	0	14
7:15 AM	2	1	0	0	0	0	0	0	0	2	4	0	1	3	0	0	13
7:30 AM	1	0	3	0	0	0	1	0	0	2	4	0	1	0	0	0	12
7:45 AM	5	1	1	0	0	0	0	0	0	0	6	0	1	1	0	0	15
8:00 AM	0	2	1	0	0	0	0	0	1	3	1	0	2	0	0	0	10
8:15 AM	3	1	1	0	0	1	0	0	0	1	5	0	0	3	0	0	15
8:30 AM	2	2	0	0	0	0	0	0	0	1	3	0	2	2	0	0	12
8:45 AM	1	0	3	0	2	0	0	0	1	0	5	0	0	0	0	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	15	10	10	0	3	2	1	0	2	11	33	0	7	9	0	0	103
APPROACH %'s :	42.86%	28.57%	28.57%	0.00%	50.00%	33.33%	16.67%	0.00%	4.35%	23.91%	71.74%	0.00%	43.75%	56.25%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	9	4	6	0	0	1	1	0	1	6	16	0	4	4	0	0	52
PEAK HR FACTOR :	0.450	0.500	0.500	0.000	0.000	0.250	0.250	0.000	0.250	0.500	0.667	0.000	0.500	0.333	0.000	0.000	0.867
	0.679				0.500				0.958				0.667				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	2 EL	1 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	0	1	0	0	0	0	1	0	0	2	3	0	1	1	1	0	10
4:15 PM	0	1	1	0	0	0	0	0	0	0	16	0	0	2	0	0	20
4:30 PM	0	1	0	0	2	1	0	0	0	2	3	0	0	1	0	0	10
4:45 PM	2	3	0	0	0	1	0	0	0	0	1	0	1	0	0	0	8
5:00 PM	1	4	0	0	0	4	0	0	0	2	3	0	1	0	0	0	15
5:15 PM	0	1	0	0	0	2	0	0	0	0	2	0	1	1	0	0	7
5:30 PM	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	4
5:45 PM	3	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	13	1	0	2	9	1	0	0	7	29	0	4	6	1	0	80
APPROACH %'s :	33.33%	61.90%	4.76%	0.00%	16.67%	75.00%	8.33%	0.00%	0.00%	19.44%	80.56%	0.00%	36.36%	54.55%	9.09%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	3	9	0	0	2	8	0	0	0	4	9	0	3	2	0	0	40
PEAK HR FACTOR :	0.375	0.563	0.000	0.000	0.250	0.500	0.000	0.000	0.000	0.500	0.750	0.000	0.750	0.500	0.000	0.000	0.667
	0.600				0.625				0.650				0.625				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Arrow Route
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-025
Date: 9/15/2021

Data - 4axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Arrow Route				Arrow Route				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	2 EL	1 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	8	2	1	0	0	4	2	0	0	1	4	0	3	1	3	0	29
7:15 AM	6	0	1	0	1	1	4	0	1	2	1	0	0	2	3	0	22
7:30 AM	5	2	0	0	1	2	4	0	1	0	0	0	4	1	1	0	21
7:45 AM	5	3	0	0	0	5	4	0	5	0	3	0	3	2	1	0	31
8:00 AM	4	3	0	0	2	2	4	0	2	4	3	0	2	0	4	0	30
8:15 AM	4	3	0	0	0	3	3	0	0	0	3	0	1	4	3	0	24
8:30 AM	4	3	1	0	2	6	1	0	0	2	9	0	2	1	2	0	33
8:45 AM	7	3	1	0	0	2	1	0	3	1	7	0	0	0	1	0	26
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	43	19	4	0	6	25	23	0	12	10	30	0	15	11	18	0	216
APPROACH %'s :	65.15%	28.79%	6.06%	0.00%	11.11%	46.30%	42.59%	0.00%	23.08%	19.23%	57.69%	0.00%	34.09%	25.00%	40.91%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	18	11	0	0	3	12	15	0	8	4	9	0	10	7	9	0	106
PEAK HR FACTOR :	0.900	0.917	0.000	0.000	0.375	0.600	0.938	0.000	0.400	0.250	0.750	0.000	0.625	0.438	0.563	0.000	0.855
	0.906				0.833				0.583				0.813				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	2 EL	1 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	3	7	0	0	1	1	1	0	4	4	3	0	1	1	0	0	26
4:15 PM	5	3	1	0	1	4	1	0	1	0	3	0	0	0	0	0	19
4:30 PM	2	3	0	0	1	3	0	0	1	1	5	0	0	1	0	0	17
4:45 PM	2	2	1	0	2	1	0	0	1	3	6	0	0	0	1	0	19
5:00 PM	1	2	1	0	2	3	0	0	1	0	5	0	1	1	1	0	18
5:15 PM	4	3	0	0	1	2	1	0	0	2	2	0	0	1	0	0	16
5:30 PM	6	1	2	0	2	1	0	0	1	2	5	0	0	1	0	0	21
5:45 PM	4	0	0	0	1	0	0	0	1	2	4	0	1	0	0	0	13
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	27	21	5	0	11	15	3	0	10	14	33	0	3	5	2	0	149
APPROACH %'s :	50.94%	39.62%	9.43%	0.00%	37.93%	51.72%	10.34%	0.00%	17.54%	24.56%	57.89%	0.00%	30.00%	50.00%	20.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	9	10	2	0	6	9	1	0	3	6	18	0	1	3	2	0	70
PEAK HR FACTOR :	0.563	0.833	0.500	0.000	0.750	0.750	0.250	0.000	0.750	0.500	0.750	0.000	0.250	0.750	0.500	0.000	0.921
	0.750				0.800				0.675				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Arrow Route
City: Fontana
Control: Signalized

Project ID: 21-030070-026
Date: 9/21/2021

Data - Total

NS/EW Streets:	Cherry Ave				Cherry Ave				Arrow Route				Arrow Route				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	12	129	16	1	12	191	19	2	11	71	19	0	16	102	12	0	613
7:15 AM	17	130	18	0	14	194	17	0	10	73	21	0	19	136	13	0	662
7:30 AM	23	137	32	2	11	217	18	2	16	84	20	0	41	169	16	0	788
7:45 AM	29	166	19	0	13	226	27	1	15	90	19	0	30	167	14	0	816
8:00 AM	18	170	32	2	9	243	20	2	14	98	20	0	37	131	12	0	808
8:15 AM	18	138	31	0	10	192	16	0	17	87	20	0	33	106	14	0	682
8:30 AM	16	138	16	1	11	219	19	2	13	73	12	0	16	78	11	0	625
8:45 AM	18	131	21	1	12	197	16	3	15	70	18	0	18	102	16	0	638
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	151	1139	185	7	92	1679	152	12	111	646	149	0	210	991	108	0	5632
APPROACH %'s :	10.19%	76.86%	12.48%	0.47%	4.75%	86.77%	7.86%	0.62%	12.25%	71.30%	16.45%	0.00%	16.04%	75.71%	8.25%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	88	611	114	4	43	878	81	5	62	359	79	0	141	573	56	0	3094
PEAK HR FACTOR :	0.759	0.899	0.891	0.500	0.827	0.903	0.750	0.625	0.912	0.916	0.988	0.000	0.860	0.848	0.875	0.000	0.948
	0.920				0.919				0.947				0.852				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	19	213	43	2	19	168	20	3	21	150	23	0	20	121	14	0	836
4:15 PM	36	239	52	1	15	181	17	3	17	134	22	0	28	127	11	0	883
4:30 PM	21	242	49	1	15	161	22	1	17	134	20	0	27	136	14	0	860
4:45 PM	20	262	52	3	17	171	23	2	19	158	23	0	33	132	13	0	928
5:00 PM	39	217	57	2	12	175	23	1	23	160	24	0	22	120	13	0	888
5:15 PM	25	246	47	1	14	158	20	2	18	154	22	0	27	122	10	0	866
5:30 PM	12	219	62	2	16	159	14	3	17	147	17	0	18	115	15	0	816
5:45 PM	34	244	60	1	15	147	19	2	18	145	19	0	24	117	12	0	857
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	206	1882	422	13	123	1320	158	17	150	1182	170	0	199	990	102	0	6934
APPROACH %'s :	8.16%	74.59%	16.73%	0.52%	7.60%	81.58%	9.77%	1.05%	9.99%	78.70%	11.32%	0.00%	15.41%	76.68%	7.90%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	116	960	210	7	59	688	85	7	76	586	89	0	110	515	51	0	3559
PEAK HR FACTOR :	0.744	0.916	0.921	0.583	0.868	0.950	0.924	0.583	0.826	0.916	0.927	0.000	0.833	0.947	0.911	0.000	0.959
	0.959				0.971				0.907				0.949				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Arrow Route
City: Fontana
Control: Signalized

Project ID: 21-030070-026
Date: 9/21/2021

Data - Cars

NS/EW Streets:	Cherry Ave				Cherry Ave				Arrow Route				Arrow Route				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	11	120	16	1	12	180	18	2	11	64	18	0	14	99	12	0	578
7:15 AM	15	112	16	0	13	172	15	0	9	66	20	0	19	123	10	0	590
7:30 AM	21	132	31	2	10	196	13	2	13	78	17	0	35	160	15	0	725
7:45 AM	29	146	16	0	12	208	21	1	14	85	16	0	27	165	14	0	754
8:00 AM	14	160	31	2	9	215	17	2	12	91	19	0	36	126	11	0	745
8:15 AM	16	126	29	0	9	172	14	0	16	80	15	0	31	97	13	0	618
8:30 AM	14	119	16	1	10	191	18	2	10	68	12	0	14	72	10	0	557
8:45 AM	17	111	20	1	11	176	16	3	15	66	16	0	18	91	16	0	577
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	137	1026	175	7	86	1510	132	12	100	598	133	0	194	933	101	0	5144
APPROACH %'s :	10.19%	76.28%	13.01%	0.52%	4.94%	86.78%	7.59%	0.69%	12.03%	71.96%	16.00%	0.00%	15.80%	75.98%	8.22%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	80	564	107	4	40	791	65	5	55	334	67	0	129	548	53	0	2842
PEAK HR FACTOR :	0.690	0.881	0.863	0.500	0.833	0.920	0.774	0.625	0.859	0.918	0.882	0.000	0.896	0.830	0.883	0.000	0.942
	0.912				0.927				0.934				0.869				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	196	42	2	18	150	18	3	20	148	21	0	18	112	12	0	776
4:15 PM	34	213	50	1	15	156	16	3	16	129	20	0	26	121	11	0	811
4:30 PM	19	223	46	1	14	146	20	1	15	129	18	0	26	131	13	0	802
4:45 PM	19	236	52	3	16	158	22	2	19	154	22	0	33	128	10	0	874
5:00 PM	35	209	53	2	12	159	19	1	20	155	22	0	20	111	12	0	830
5:15 PM	20	221	46	1	14	145	17	2	16	151	19	0	26	116	10	0	804
5:30 PM	10	214	60	2	13	140	14	3	15	145	15	0	17	109	15	0	772
5:45 PM	32	226	59	1	15	139	18	2	18	140	18	0	24	114	11	0	817
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	185	1738	408	13	117	1193	144	17	139	1151	155	0	190	942	94	0	6486
APPROACH %'s :	7.89%	74.15%	17.41%	0.55%	7.95%	81.10%	9.79%	1.16%	9.62%	79.65%	10.73%	0.00%	15.50%	76.84%	7.67%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	107	881	201	7	57	619	77	7	70	567	82	0	105	491	46	0	3317
PEAK HR FACTOR :	0.764	0.933	0.948	0.583	0.891	0.973	0.875	0.583	0.875	0.915	0.932	0.000	0.795	0.937	0.885	0.000	0.949
	0.965				0.960				0.912				0.939				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Arrow Route
City: Fontana
Control: Signalized

Project ID: 21-030070-026
Date: 9/21/2021

Data - 2axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Arrow Route				Arrow Route				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	6	0	0	0	1	0	0	0	6	0	0	1	1	0	0	15
7:15 AM	1	3	1	0	1	2	2	0	0	1	1	0	0	3	1	0	16
7:30 AM	1	5	0	0	0	5	3	0	1	1	0	0	4	6	0	0	26
7:45 AM	0	4	2	0	0	0	6	0	1	2	1	0	1	1	0	0	18
8:00 AM	2	6	0	0	0	7	1	0	1	3	0	0	0	4	1	0	25
8:15 AM	0	4	1	0	0	5	1	0	0	2	3	0	1	1	0	0	18
8:30 AM	1	7	0	0	0	8	0	0	2	2	0	0	1	1	0	0	22
8:45 AM	0	8	1	0	0	5	0	0	0	2	1	0	0	4	0	0	21
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	43	5	0	1	33	13	0	5	19	6	0	8	21	2	0	161
APPROACH %'s :	9.43%	81.13%	9.43%	0.00%	2.13%	70.21%	27.66%	0.00%	16.67%	63.33%	20.00%	0.00%	25.81%	67.74%	6.45%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	3	19	3	0	0	17	11	0	3	8	4	0	6	12	1	0	87
PEAK HR FACTOR :	0.375	0.792	0.375	0.000	0.000	0.607	0.458	0.000	0.750	0.667	0.333	0.000	0.375	0.500	0.250	0.000	0.837
	0.781				0.875				0.750				0.475				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	4	0	0	0	3	1	0	0	1	0	0	0	5	1	0	16
4:15 PM	0	8	1	0	0	9	1	0	1	4	0	0	1	2	0	0	27
4:30 PM	1	7	0	0	0	6	0	0	1	3	1	0	0	1	0	0	20
4:45 PM	0	8	0	0	0	6	1	0	0	1	0	0	0	2	0	0	18
5:00 PM	1	1	1	0	0	0	2	0	0	1	1	0	1	4	1	0	13
5:15 PM	3	4	0	0	0	7	1	0	1	2	0	0	0	1	0	0	19
5:30 PM	0	1	0	0	1	5	0	0	1	1	1	0	0	1	0	0	11
5:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	1	1	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	33	2	0	1	36	6	0	4	16	3	0	2	17	3	0	129
APPROACH %'s :	14.63%	80.49%	4.88%	0.00%	2.33%	83.72%	13.95%	0.00%	17.39%	69.57%	13.04%	0.00%	9.09%	77.27%	13.64%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	2	24	2	0	0	21	4	0	2	9	2	0	2	9	1	0	78
PEAK HR FACTOR :	0.500	0.750	0.500	0.000	0.000	0.583	0.500	0.000	0.500	0.563	0.500	0.000	0.500	0.563	0.250	0.000	0.722
	0.778				0.625				0.650				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Arrow Route
City: Fontana
Control: Signalized

Project ID: 21-030070-026
Date: 9/21/2021

Data - 3axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Arrow Route				Arrow Route				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3
7:15 AM	1	5	1	0	0	6	0	0	1	1	0	0	0	1	0	0	16
7:30 AM	0	0	0	0	0	3	1	0	1	2	1	0	1	2	1	0	12
7:45 AM	0	5	1	0	0	4	0	0	0	1	2	0	0	1	0	0	14
8:00 AM	1	1	0	0	0	8	1	0	0	3	0	0	0	0	0	0	14
8:15 AM	0	0	1	0	1	4	0	0	1	1	1	0	1	1	1	0	12
8:30 AM	0	1	0	0	0	5	0	0	0	2	0	0	0	0	0	0	8
8:45 AM	0	4	0	0	1	8	0	0	0	1	0	0	0	1	0	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	17	3	0	2	39	2	0	3	11	4	0	2	7	2	0	94
APPROACH %'s :	9.09%	77.27%	13.64%	0.00%	4.65%	90.70%	4.65%	0.00%	16.67%	61.11%	22.22%	0.00%	18.18%	63.64%	18.18%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	6	2	0	1	19	2	0	2	7	4	0	2	4	2	0	52
PEAK HR FACTOR :	0.250	0.300	0.500	0.000	0.250	0.594	0.500	0.000	0.500	0.583	0.500	0.000	0.500	0.500	0.500	0.000	0.929
	0.375				0.611				0.813				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	2	1	0	0	4	0	0	0	1	0	0	0	3	0	0	12
4:15 PM	0	5	1	0	0	4	0	0	0	0	1	0	1	1	0	0	13
4:30 PM	0	2	2	0	0	1	1	0	0	1	0	0	0	2	1	0	10
4:45 PM	0	6	0	0	1	7	0	0	0	1	1	0	0	1	0	0	17
5:00 PM	0	0	3	0	0	6	1	0	1	3	0	0	0	4	0	0	18
5:15 PM	0	8	1	0	0	6	2	0	1	1	2	0	1	5	0	0	27
5:30 PM	1	0	1	0	1	5	0	0	0	0	1	0	0	2	0	0	11
5:45 PM	0	5	0	0	0	5	0	0	0	1	0	0	0	1	0	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	28	9	0	2	38	4	0	2	8	5	0	2	19	1	0	120
APPROACH %'s :	5.13%	71.79%	23.08%	0.00%	4.55%	86.36%	9.09%	0.00%	13.33%	53.33%	33.33%	0.00%	9.09%	86.36%	4.55%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	13	6	0	1	18	2	0	1	5	2	0	1	8	1	0	58
PEAK HR FACTOR :	0.000	0.542	0.500	0.000	0.250	0.643	0.500	0.000	0.250	0.417	0.500	0.000	0.250	0.500	0.250	0.000	0.806
	0.792				0.656				0.500				0.625				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Arrow Route
City: Fontana
Control: Signalized

Project ID: 21-030070-026
Date: 9/21/2021

Data - 4axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Arrow Route				Arrow Route				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	2	0	0	0	9	1	0	0	1	1	0	1	1	0	0	17
7:15 AM	0	10	0	0	0	14	0	0	0	5	0	0	0	9	2	0	40
7:30 AM	1	0	1	0	1	13	1	0	1	3	2	0	1	1	0	0	25
7:45 AM	0	11	0	0	1	14	0	0	0	2	0	0	2	0	0	0	30
8:00 AM	1	3	1	0	0	13	1	0	1	1	1	0	1	1	0	0	24
8:15 AM	2	8	0	0	0	11	1	0	0	4	1	0	0	7	0	0	34
8:30 AM	1	11	0	0	1	15	1	0	1	1	0	0	1	5	1	0	38
8:45 AM	1	8	0	0	0	8	0	0	0	1	1	0	0	6	0	0	25
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	53	2	0	3	97	5	0	3	18	6	0	6	30	3	0	233
APPROACH %'s :	11.29%	85.48%	3.23%	0.00%	2.86%	92.38%	4.76%	0.00%	11.11%	66.67%	22.22%	0.00%	15.38%	76.92%	7.69%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	4	22	2	0	2	51	3	0	2	10	4	0	4	9	0	0	113
PEAK HR FACTOR :	0.500	0.500	0.500	0.000	0.500	0.911	0.750	0.000	0.500	0.625	0.500	0.000	0.500	0.321	0.000	0.000	0.831
	0.636				0.933				0.667				0.464				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	11	0	0	1	11	1	0	1	0	2	0	2	1	1	0	32
4:15 PM	2	13	0	0	0	12	0	0	0	1	1	0	0	3	0	0	32
4:30 PM	1	10	1	0	1	8	1	0	1	1	1	0	1	2	0	0	28
4:45 PM	1	12	0	0	0	0	0	0	0	2	0	0	0	1	3	0	19
5:00 PM	3	7	0	0	0	10	1	0	2	1	1	0	1	1	0	0	27
5:15 PM	2	13	0	0	0	0	0	0	0	0	1	0	0	0	0	0	16
5:30 PM	1	4	1	0	1	9	0	0	1	1	0	0	1	3	0	0	22
5:45 PM	2	13	1	0	0	3	1	0	0	1	1	0	0	1	0	0	23
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	13	83	3	0	3	53	4	0	5	7	7	0	5	12	4	0	199
APPROACH %'s :	13.13%	83.84%	3.03%	0.00%	5.00%	88.33%	6.67%	0.00%	26.32%	36.84%	36.84%	0.00%	23.81%	57.14%	19.05%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	7	42	1	0	1	30	2	0	3	5	3	0	2	7	3	0	106
PEAK HR FACTOR :	0.583	0.808	0.250	0.000	0.250	0.625	0.500	0.000	0.375	0.625	0.750	0.000	0.500	0.583	0.250	0.000	0.828
	0.833				0.688				0.688				0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beach Ave & Arrow Route/Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-027
Date: 9/8/2021

Data - Total

NS/EW Streets:	Beach Ave				Beach Ave				Arrow Route/Arrow Blvd				Arrow Route/Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	12	18	16	0	1	33	10	0	4	60	11	0	19	105	4	0	293
7:15 AM	15	18	23	0	6	36	6	0	4	63	13	0	23	135	4	0	346
7:30 AM	22	28	23	0	3	41	16	0	9	71	12	0	36	156	5	0	422
7:45 AM	27	39	24	0	2	44	29	0	4	82	10	0	28	165	8	0	462
8:00 AM	16	30	33	0	1	39	22	0	14	88	14	0	35	141	6	0	439
8:15 AM	17	27	26	0	5	27	7	0	9	75	18	0	33	109	1	0	354
8:30 AM	16	26	17	0	2	27	7	0	4	61	11	0	21	86	4	0	282
8:45 AM	19	26	22	0	4	22	5	0	4	61	15	0	24	97	2	0	301
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	144	212	184	0	24	269	102	0	52	561	104	0	219	994	34	0	2899
APPROACH %'s :	26.67%	39.26%	34.07%	0.00%	6.08%	68.10%	25.82%	0.00%	7.25%	78.24%	14.50%	0.00%	17.56%	79.71%	2.73%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	82	124	106	0	11	151	74	0	36	316	54	0	132	571	20	0	1677
PEAK HR FACTOR :	0.759	0.795	0.803	0.000	0.550	0.858	0.638	0.000	0.643	0.898	0.750	0.000	0.917	0.865	0.625	0.000	0.907
	0.867				0.787				0.875				0.899				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	24	56	45	0	2	34	8	0	4	146	17	0	27	92	5	0	460
4:15 PM	36	44	50	0	1	42	6	0	5	138	10	0	28	99	10	0	469
4:30 PM	27	47	47	0	3	35	10	0	6	135	10	0	24	94	4	0	442
4:45 PM	24	26	53	0	5	31	2	0	4	165	16	0	32	97	8	0	463
5:00 PM	30	50	52	0	1	26	9	0	11	165	15	0	19	103	5	0	486
5:15 PM	25	38	44	0	4	33	5	0	6	150	19	0	21	110	6	0	461
5:30 PM	15	36	63	0	5	45	5	0	7	145	12	0	16	99	8	0	456
5:45 PM	32	31	59	0	2	41	5	0	6	151	15	0	23	84	6	0	455
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	213	328	413	0	23	287	50	0	49	1195	114	0	190	778	52	0	3692
APPROACH %'s :	22.33%	34.38%	43.29%	0.00%	6.39%	79.72%	13.89%	0.00%	3.61%	88.00%	8.39%	0.00%	18.63%	76.27%	5.10%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	94	150	212	0	15	135	21	0	28	625	62	0	88	409	27	0	1866
PEAK HR FACTOR :	0.783	0.750	0.841	0.000	0.750	0.750	0.583	0.000	0.636	0.947	0.816	0.000	0.688	0.930	0.844	0.000	0.960
	0.864				0.777				0.936				0.956				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beach Ave & Arrow Route/Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-027
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Beach Ave				Beach Ave				Arrow Route/Arrow Blvd				Arrow Route/Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	12	17	16	0	1	31	10	0	4	55	11	0	18	99	4	0	278
7:15 AM	13	16	21	0	5	34	6	0	4	57	13	0	23	122	4	0	318
7:30 AM	21	28	22	0	3	41	15	0	7	67	12	0	33	151	4	0	404
7:45 AM	27	36	21	0	1	43	25	0	3	78	9	0	26	157	8	0	434
8:00 AM	16	29	32	0	1	37	19	0	12	80	14	0	34	138	5	0	417
8:15 AM	17	27	24	0	4	27	5	0	8	71	15	0	31	101	1	0	331
8:30 AM	16	24	16	0	1	27	7	0	4	59	11	0	18	77	3	0	263
8:45 AM	18	24	21	0	3	21	5	0	4	57	13	0	24	91	2	0	283
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	140	201	173	0	19	261	92	0	46	524	98	0	207	936	31	0	2728
APPROACH %'s :	27.24%	39.11%	33.66%	0.00%	5.11%	70.16%	24.73%	0.00%	6.89%	78.44%	14.67%	0.00%	17.63%	79.73%	2.64%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	81	120	99	0	9	148	64	0	30	296	50	0	124	547	18	0	1586
PEAK HR FACTOR :	0.750	0.833	0.773	0.000	0.563	0.860	0.640	0.000	0.625	0.925	0.833	0.000	0.912	0.871	0.563	0.000	0.914
	0.893				0.801				0.887				0.902				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	22	55	44	0	2	33	7	0	3	144	17	0	27	85	4	0	443
4:15 PM	36	44	49	0	1	41	5	0	4	134	10	0	26	95	10	0	455
4:30 PM	26	47	45	0	2	32	10	0	5	131	9	0	24	92	4	0	427
4:45 PM	24	26	53	0	5	30	2	0	4	161	16	0	32	92	8	0	453
5:00 PM	29	50	49	0	1	26	8	0	10	162	14	0	19	102	5	0	475
5:15 PM	23	38	44	0	4	31	5	0	4	149	17	0	21	105	6	0	447
5:30 PM	15	35	61	0	3	41	5	0	6	143	12	0	15	94	8	0	438
5:45 PM	32	30	58	0	2	41	4	0	6	147	15	0	23	82	5	0	445
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	207	325	403	0	20	275	46	0	42	1171	110	0	187	747	50	0	3583
APPROACH %'s :	22.14%	34.76%	43.10%	0.00%	5.87%	80.65%	13.49%	0.00%	3.17%	88.51%	8.31%	0.00%	19.00%	75.91%	5.08%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	91	149	207	0	13	128	20	0	24	615	59	0	87	393	27	0	1813
PEAK HR FACTOR :	0.784	0.745	0.848	0.000	0.650	0.780	0.625	0.000	0.600	0.949	0.868	0.000	0.680	0.936	0.844	0.000	0.954
	0.873				0.821				0.938				0.960				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beach Ave & Arrow Route/Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-027
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Beach Ave				Beach Ave				Arrow Route/Arrow Blvd				Arrow Route/Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	1	0	0	0	2	0	0	1	1	0	0	5
7:15 AM	2	2	1	0	1	2	0	0	0	2	0	0	0	4	0	0	14
7:30 AM	1	0	0	0	0	0	0	0	1	2	0	0	2	4	0	0	10
7:45 AM	0	2	2	0	0	0	4	0	1	1	1	0	2	4	0	0	17
8:00 AM	0	0	0	0	0	2	2	0	2	3	0	0	0	2	1	0	12
8:15 AM	0	0	1	0	0	0	1	0	0	3	2	0	1	2	0	0	10
8:30 AM	0	2	0	0	0	0	0	0	0	2	0	0	2	3	0	0	9
8:45 AM	0	2	1	0	0	1	0	0	0	2	1	0	0	2	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	8	5	0	1	6	7	0	4	17	4	0	8	22	1	0	86
APPROACH %'s :	18.75%	50.00%	31.25%	0.00%	7.14%	42.86%	50.00%	0.00%	16.00%	68.00%	16.00%	0.00%	25.81%	70.97%	3.23%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	2	3	0	0	2	7	0	4	9	3	0	5	12	1	0	49
PEAK HR FACTOR :	0.250	0.250	0.375	0.000	0.000	0.250	0.438	0.000	0.500	0.750	0.375	0.000	0.625	0.750	0.250	0.000	0.721
	0.375				0.563				0.800				0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	0	0	0	1	1	0	0	1	0	0	0	5	0	0	9
4:15 PM	0	0	0	0	0	1	1	0	1	3	0	0	1	0	0	0	7
4:30 PM	1	0	0	0	0	2	0	0	1	2	1	0	0	1	0	0	8
4:45 PM	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	6
5:00 PM	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	4
5:15 PM	2	0	0	0	0	2	0	0	1	0	0	0	0	1	0	0	6
5:30 PM	0	1	0	0	1	1	0	0	1	1	0	0	0	1	0	0	6
5:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	1	1	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	1	1	0	1	8	2	0	4	13	2	0	1	12	1	0	51
APPROACH %'s :	71.43%	14.29%	14.29%	0.00%	9.09%	72.73%	18.18%	0.00%	21.05%	68.42%	10.53%	0.00%	7.14%	85.71%	7.14%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	3	1	1	0	1	4	0	0	2	4	1	0	0	5	0	0	22
PEAK HR FACTOR :	0.375	0.250	0.250	0.000	0.250	0.500	0.000	0.000	0.500	0.500	0.250	0.000	0.000	0.417	0.000	0.000	0.917
	0.625				0.625				0.875				0.417				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beach Ave & Arrow Route/Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-027
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Beach Ave				Beach Ave				Arrow Route/Arrow Blvd				Arrow Route/Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3
7:15 AM	0	0	1	0	0	0	0	0	0	2	0	0	0	2	0	0	5
7:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2
7:45 AM	0	1	1	0	0	0	0	0	0	1	0	0	0	2	0	0	5
8:00 AM	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	4
8:15 AM	0	0	1	0	1	0	0	0	1	1	0	0	1	1	0	0	6
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	3	0	2	1	0	0	1	9	0	0	1	6	1	0	27
APPROACH %'s :	0.00%	50.00%	50.00%	0.00%	66.67%	33.33%	0.00%	0.00%	10.00%	90.00%	0.00%	0.00%	12.50%	75.00%	12.50%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	2	2	0	1	0	0	0	1	6	0	0	1	3	1	0	17
PEAK HR FACTOR :	0.000	0.500	0.500	0.000	0.250	0.000	0.000	0.000	0.250	0.500	0.000	0.000	0.250	0.375	0.250	0.000	0.708
	0.500				0.250				0.583				0.625				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	4
4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	3
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
5:00 PM	0	0	2	0	0	0	1	0	1	0	0	0	0	0	0	0	4
5:15 PM	0	0	0	0	0	0	0	0	1	1	2	0	0	4	0	0	8
5:30 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	5	0	0	3	1	0	2	4	2	0	1	8	0	0	28
APPROACH %'s :	14.29%	14.29%	71.43%	0.00%	0.00%	75.00%	25.00%	0.00%	25.00%	50.00%	25.00%	0.00%	11.11%	88.89%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	3	0	0	2	1	0	2	3	2	0	0	5	0	0	18
PEAK HR FACTOR :	0.000	0.000	0.375	0.000	0.000	0.250	0.250	0.000	0.500	0.375	0.250	0.000	0.000	0.313	0.000	0.000	0.563
	0.375				0.375				0.438				0.313				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beach Ave & Arrow Route/Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-027
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Beach Ave				Beach Ave				Arrow Route/Arrow Blvd				Arrow Route/Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	0	7
7:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	7	0	0	9
7:30 AM	0	0	1	0	0	0	1	0	1	1	0	0	1	1	0	0	6
7:45 AM	0	0	0	0	1	1	0	0	0	2	0	0	0	2	0	0	6
8:00 AM	0	0	1	0	0	0	1	0	0	2	0	0	1	1	0	0	6
8:15 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	5	0	0	7
8:30 AM	0	0	1	0	1	0	0	0	0	0	0	0	1	6	1	0	10
8:45 AM	1	0	0	0	0	0	0	0	0	1	1	0	0	4	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	3	0	2	1	3	0	1	11	2	0	3	30	1	0	58
APPROACH %'s :	25.00%	0.00%	75.00%	0.00%	33.33%	16.67%	50.00%	0.00%	7.14%	78.57%	14.29%	0.00%	8.82%	88.24%	2.94%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	2	0	1	1	3	0	1	5	1	0	2	9	0	0	25
PEAK HR FACTOR :	0.000	0.000	0.500	0.000	0.250	0.250	0.750	0.000	0.250	0.625	0.250	0.000	0.500	0.450	0.000	0.000	0.893
	0.500				0.625				0.875				0.550				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	0	4
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	4
4:30 PM	0	0	2	0	1	0	0	0	0	2	0	0	0	0	0	0	5
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	1	0	1	1	0	0	0	1	0	0	1	4	0	0	9
5:45 PM	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	4	0	2	1	1	0	1	7	0	0	1	11	1	0	30
APPROACH %'s :	0.00%	20.00%	80.00%	0.00%	50.00%	25.00%	25.00%	0.00%	12.50%	87.50%	0.00%	0.00%	7.69%	84.62%	7.69%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	1	0	1	1	0	0	0	3	0	0	1	6	0	0	13
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.250	0.250	0.000	0.000	0.000	0.375	0.000	0.000	0.250	0.375	0.000	0.000	0.361
	0.250				0.250				0.375				0.350				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Arrow Route/Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-028
Date: 9/8/2021

Data - Total

NS/EW Streets:	Citrus Ave				Citrus Ave				Arrow Route/Arrow Blvd				Arrow Route/Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	41	107	17	5	14	152	18	0	9	34	19	0	40	98	14	0	568
7:15 AM	36	116	33	16	18	203	25	0	8	38	23	0	46	114	26	0	702
7:30 AM	29	145	57	6	20	176	37	0	18	61	29	0	47	129	29	0	783
7:45 AM	44	141	40	14	27	182	39	0	16	59	23	0	61	119	37	0	802
8:00 AM	35	164	44	16	24	200	36	0	15	66	22	0	60	106	25	0	813
8:15 AM	40	150	44	10	24	194	22	0	15	62	20	0	51	79	32	0	743
8:30 AM	31	136	44	8	25	143	17	0	6	50	26	0	29	82	22	0	619
8:45 AM	30	122	19	5	25	140	20	0	13	58	22	0	23	62	14	0	553
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	286	1081	298	80	177	1390	214	0	100	428	184	0	357	789	199	0	5583
APPROACH %'s :	16.39%	61.95%	17.08%	4.58%	9.94%	78.05%	12.02%	0.00%	14.04%	60.11%	25.84%	0.00%	26.54%	58.66%	14.80%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	148	600	185	46	95	752	134	0	64	248	94	0	219	433	123	0	3141
PEAK HR FACTOR :	0.841	0.915	0.811	0.719	0.880	0.940	0.859	0.000	0.889	0.939	0.810	0.000	0.898	0.839	0.831	0.000	0.966
	0.945				0.943				0.940				0.893				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	36	168	41	9	41	153	19	0	27	136	35	0	29	72	28	0	794
4:15 PM	31	226	34	5	25	163	17	0	20	133	41	0	51	69	27	0	842
4:30 PM	39	204	46	7	42	163	15	0	15	122	46	0	33	70	26	0	828
4:45 PM	34	208	39	11	33	192	14	0	14	142	38	0	30	92	18	0	865
5:00 PM	31	197	47	8	36	182	15	1	28	159	36	0	28	73	19	0	860
5:15 PM	38	236	41	10	23	156	12	0	27	128	34	0	28	79	24	0	836
5:30 PM	37	229	52	8	24	149	11	0	19	120	29	0	39	70	27	0	814
5:45 PM	27	237	34	10	35	175	17	0	26	123	30	0	36	56	23	0	829
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	273	1705	334	68	259	1333	120	1	176	1063	289	0	274	581	192	0	6668
APPROACH %'s :	11.47%	71.64%	14.03%	2.86%	15.12%	77.82%	7.01%	0.06%	11.52%	69.57%	18.91%	0.00%	26.17%	55.49%	18.34%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	135	835	166	31	136	700	61	1	77	556	161	0	142	304	90	0	3395
PEAK HR FACTOR :	0.865	0.924	0.883	0.705	0.810	0.911	0.897	0.250	0.688	0.874	0.875	0.000	0.696	0.826	0.833	0.000	0.981
	0.986				0.939				0.890				0.912				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Arrow Route/Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-028
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Citrus Ave				Citrus Ave				Arrow Route/Arrow Blvd				Arrow Route/Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	40	101	16	5	13	147	18	0	5	34	16	0	38	96	12	0	541
7:15 AM	33	110	31	16	17	193	23	0	6	35	20	0	46	110	25	0	665
7:30 AM	26	140	54	6	20	168	35	0	17	59	27	0	47	127	27	0	753
7:45 AM	42	139	37	14	27	175	36	0	14	58	21	0	57	117	36	0	773
8:00 AM	33	160	40	16	24	192	36	0	12	64	21	0	60	106	24	0	788
8:15 AM	37	142	42	10	22	186	21	0	12	61	17	0	49	77	29	0	705
8:30 AM	25	129	41	8	22	139	15	0	5	50	23	0	28	78	22	0	585
8:45 AM	29	116	17	5	24	135	16	0	12	56	19	0	23	62	13	0	527
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	265	1037	278	80	169	1335	200	0	83	417	164	0	348	773	188	0	5337
APPROACH %'s :	15.96%	62.47%	16.75%	4.82%	9.92%	78.35%	11.74%	0.00%	12.50%	62.80%	24.70%	0.00%	26.59%	59.05%	14.36%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	138	581	173	46	93	721	128	0	55	242	86	0	213	427	116	0	3019
PEAK HR FACTOR :	0.821	0.908	0.801	0.719	0.861	0.939	0.889	0.000	0.809	0.945	0.796	0.000	0.888	0.841	0.806	0.000	0.958
	0.942				0.935				0.930				0.900				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	35	163	40	9	41	150	19	0	27	132	35	0	29	70	26	0	776
4:15 PM	28	219	32	5	24	155	15	0	19	131	39	0	51	67	27	0	812
4:30 PM	39	195	46	7	42	156	14	0	15	117	46	0	32	68	25	0	802
4:45 PM	32	204	39	11	33	182	13	0	14	139	38	0	29	91	18	0	843
5:00 PM	30	191	47	8	36	179	13	1	28	159	33	0	27	72	18	0	842
5:15 PM	37	235	40	10	22	152	12	0	27	126	34	0	28	77	24	0	824
5:30 PM	35	224	51	8	24	148	11	0	18	119	28	0	39	68	27	0	800
5:45 PM	27	236	33	10	34	174	15	0	26	122	28	0	35	56	23	0	819
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	263	1667	328	68	256	1296	112	1	174	1045	281	0	270	569	188	0	6518
APPROACH %'s :	11.31%	71.67%	14.10%	2.92%	15.38%	77.84%	6.73%	0.06%	11.60%	69.67%	18.73%	0.00%	26.29%	55.40%	18.31%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	129	809	164	31	135	672	55	1	76	546	156	0	139	298	88	0	3299
PEAK HR FACTOR :	0.827	0.924	0.872	0.705	0.804	0.923	0.917	0.250	0.679	0.858	0.848	0.000	0.681	0.819	0.815	0.000	0.978
	0.987				0.942				0.884				0.905				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Arrow Route/Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-028
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Arrow Route/Arrow Blvd				Arrow Route/Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0		1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	1	0	0	0	3	0	0	1	0	3	0	1	0	1	0	11
7:15 AM	2	2	0	0	1	4	1	0	0	1	2	0	0	3	1	0	17
7:30 AM	1	4	0	0	0	4	2	0	0	0	0	0	0	2	1	0	14
7:45 AM	1	2	0	0	0	3	0	0	2	0	2	0	2	1	1	0	14
8:00 AM	0	2	1	0	0	1	0	0	1	2	0	0	0	0	1	0	8
8:15 AM	1	5	1	0	2	5	0	0	2	1	1	0	1	1	1	0	21
8:30 AM	1	2	0	0	0	2	0	0	1	0	1	0	1	2	0	0	10
8:45 AM	1	2	1	0	0	2	1	0	0	2	0	0	0	0	1	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	8	20	3	0	3	24	4	0	7	6	9	0	5	9	7	0	105
APPROACH %'s :	25.81%	64.52%	9.68%	0.00%	9.68%	77.42%	12.90%	0.00%	31.82%	27.27%	40.91%	0.00%	23.81%	42.86%	33.33%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	3	13	2	0	2	13	2	0	5	3	3	0	3	4	4	0	57
PEAK HR FACTOR :	0.750	0.650	0.500	0.000	0.250	0.650	0.250	0.000	0.625	0.375	0.375	0.000	0.375	0.500	1.000	0.000	0.679
	0.643				0.607				0.688				0.688				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	3	1	0	0	0	0	0	0	2	0	0	0	2	2	0	11
4:15 PM	0	6	1	0	1	4	1	0	0	2	1	0	0	2	0	0	18
4:30 PM	0	5	0	0	0	3	0	0	0	3	0	0	1	2	0	0	14
4:45 PM	1	2	0	0	0	4	0	0	0	1	0	0	1	0	0	0	9
5:00 PM	0	0	0	0	0	3	0	0	0	0	1	0	1	0	1	0	6
5:15 PM	0	0	0	0	1	2	0	0	0	1	0	0	0	0	0	0	4
5:30 PM	0	4	1	0	0	1	0	0	1	1	1	0	0	0	0	0	9
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	21	3	0	2	17	1	0	1	10	3	0	4	6	3	0	73
APPROACH %'s :	7.69%	80.77%	11.54%	0.00%	10.00%	85.00%	5.00%	0.00%	7.14%	71.43%	21.43%	0.00%	30.77%	46.15%	23.08%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	1	13	1	0	1	14	1	0	0	6	2	0	3	4	1	0	47
PEAK HR FACTOR :	0.250	0.542	0.250	0.000	0.250	0.875	0.250	0.000	0.000	0.500	0.500	0.000	0.750	0.500	0.250	0.000	0.653
	0.536				0.667				0.667				0.667				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Arrow Route/Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-028
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Arrow Route/Arrow Blvd				Arrow Route/Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	1	2	1	0	7
7:15 AM	1	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	4
7:30 AM	0	1	0	0	0	3	0	0	1	1	0	0	0	0	0	0	6
7:45 AM	0	0	1	0	0	1	2	0	0	0	0	0	0	1	0	0	5
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	1	0	0	0	0	0	0	1	0	1	0	1	1	0	0	7
8:30 AM	3	4	0	0	0	1	1	0	0	0	0	0	0	0	0	0	9
8:45 AM	0	2	0	0	0	1	2	0	1	0	1	0	0	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	11	1	0	0	7	5	0	3	2	2	0	2	5	1	0	45
APPROACH %'s :	33.33%	61.11%	5.56%	0.00%	0.00%	58.33%	41.67%	0.00%	42.86%	28.57%	28.57%	0.00%	25.00%	62.50%	12.50%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	2	1	0	0	4	2	0	2	1	1	0	1	2	0	0	18
PEAK HR FACTOR :	0.250	0.500	0.250	0.000	0.000	0.333	0.250	0.000	0.500	0.250	0.250	0.000	0.250	0.500	0.000	0.000	0.643
	0.417				0.500				0.500				0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0	0	5
4:15 PM	0	0	0	0	0	2	1	0	1	0	0	0	0	0	0	0	4
4:30 PM	0	3	0	0	0	2	1	0	0	0	0	0	0	0	1	0	7
4:45 PM	1	1	0	0	0	2	1	0	0	2	0	0	0	0	0	0	7
5:00 PM	1	3	0	0	0	0	2	0	0	0	0	0	0	1	0	0	7
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	8	1	0	0	9	5	0	1	6	1	0	0	2	1	0	36
APPROACH %'s :	18.18%	72.73%	9.09%	0.00%	0.00%	64.29%	35.71%	0.00%	12.50%	75.00%	12.50%	0.00%	0.00%	66.67%	33.33%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	2	7	0	0	0	6	5	0	1	2	0	0	0	1	1	0	25
PEAK HR FACTOR :	0.500	0.583	0.000	0.000	0.000	0.750	0.625	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.250	0.000	0.893
	0.563				0.917				0.375				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Arrow Route/Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-028
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Arrow Route/Arrow Blvd				Arrow Route/Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	1	0	1	2	0	0	3	0	0	0	0	0	0	0	9
7:15 AM	0	4	2	0	0	5	1	0	2	1	1	0	0	0	0	0	16
7:30 AM	2	0	3	0	0	1	0	0	0	1	2	0	0	0	1	0	10
7:45 AM	1	0	2	0	0	3	1	0	0	1	0	0	2	0	0	0	10
8:00 AM	2	2	3	0	0	7	0	0	2	0	1	0	0	0	0	0	17
8:15 AM	0	2	1	0	0	3	1	0	0	0	1	0	0	0	2	0	10
8:30 AM	2	1	3	0	3	1	1	0	0	0	2	0	0	2	0	0	15
8:45 AM	0	2	1	0	1	2	1	0	0	0	2	0	0	0	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	13	16	0	5	24	5	0	7	3	9	0	2	2	3	0	96
APPROACH %'s :	19.44%	36.11%	44.44%	0.00%	14.71%	70.59%	14.71%	0.00%	36.84%	15.79%	47.37%	0.00%	28.57%	28.57%	42.86%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	5	4	9	0	0	14	2	0	2	2	4	0	2	0	3	0	47
PEAK HR FACTOR :	0.625	0.500	0.750	0.000	0.000	0.500	0.500	0.000	0.250	0.500	0.500	0.000	0.250	0.000	0.375	0.000	0.691
	0.643				0.571				0.667				0.625				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	3	1	1	0	0	2	0	0	0	0	1	0	0	0	0	0	8
4:30 PM	0	1	0	0	0	2	0	0	0	2	0	0	0	0	0	0	5
4:45 PM	0	1	0	0	0	4	0	0	0	0	0	0	0	1	0	0	6
5:00 PM	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	5
5:15 PM	1	1	1	0	0	2	0	0	0	0	0	0	0	1	0	0	6
5:30 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	4
5:45 PM	0	0	0	0	1	1	2	0	0	0	1	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	9	2	0	1	11	2	0	0	2	4	0	0	4	0	0	41
APPROACH %'s :	35.29%	52.94%	11.76%	0.00%	7.14%	78.57%	14.29%	0.00%	0.00%	33.33%	66.67%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	3	6	1	0	0	8	0	0	0	2	3	0	0	1	0	0	24
PEAK HR FACTOR :	0.250	0.500	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.250	0.375	0.000	0.000	0.250	0.000	0.000	0.750
	0.500				0.500				0.625				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-029
Date: 9/8/2021

Data - Total

NS/EW Streets:	Sierra Ave				Sierra Ave				Arrow Blvd				Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	11	71	12	0	11	108	14	0	9	26	8	0	6	78	4	0	358
7:15 AM	19	85	8	0	11	129	14	0	10	78	6	0	8	129	9	0	506
7:30 AM	16	117	5	0	13	173	27	0	6	121	25	1	23	155	14	0	696
7:45 AM	18	150	12	0	13	173	9	0	16	132	15	1	16	178	21	0	754
8:00 AM	21	116	8	0	13	191	19	0	10	62	11	0	16	103	9	1	580
8:15 AM	29	111	8	0	18	157	13	0	12	75	31	2	10	83	8	0	557
8:30 AM	15	107	12	0	13	175	11	0	17	50	20	0	12	74	12	1	519
8:45 AM	12	117	9	0	12	162	12	0	14	61	18	2	13	81	21	0	534
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	141	874	74	0	104	1268	119	0	94	605	134	6	104	881	98	2	4504
APPROACH %'s :	12.95%	80.26%	6.80%	0.00%	6.98%	85.04%	7.98%	0.00%	11.20%	72.11%	15.97%	0.72%	9.59%	81.20%	9.03%	0.18%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	84	494	33	0	57	694	68	0	44	390	82	4	65	519	52	1	2587
PEAK HR FACTOR :	0.724	0.823	0.688	0.000	0.792	0.908	0.630	0.000	0.688	0.739	0.661	0.500	0.707	0.729	0.619	0.250	0.858
	0.849				0.918				0.793				0.741				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	19	181	11	0	16	141	21	0	30	131	17	0	6	57	12	2	644
4:15 PM	24	189	17	0	23	131	18	0	20	103	26	0	16	60	13	0	640
4:30 PM	22	189	12	0	30	123	23	0	24	110	18	0	22	76	13	1	663
4:45 PM	20	210	16	0	29	137	21	0	26	115	17	1	10	88	11	2	703
5:00 PM	18	172	8	0	25	106	13	0	30	139	27	0	11	80	15	1	645
5:15 PM	18	200	13	0	25	102	19	0	13	102	15	0	14	76	8	0	605
5:30 PM	16	214	6	0	23	84	13	0	14	126	16	0	16	75	11	0	614
5:45 PM	23	180	13	0	16	119	8	0	16	114	12	0	9	62	8	0	580
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	160	1535	96	0	187	943	136	0	173	940	148	1	104	574	91	6	5094
APPROACH %'s :	8.93%	85.71%	5.36%	0.00%	14.77%	74.49%	10.74%	0.00%	13.71%	74.48%	11.73%	0.08%	13.42%	74.06%	11.74%	0.77%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	84	760	53	0	107	497	75	0	100	467	88	1	59	304	52	4	2651
PEAK HR FACTOR :	0.875	0.905	0.779	0.000	0.892	0.907	0.815	0.000	0.833	0.840	0.815	0.250	0.670	0.864	0.867	0.500	0.943
	0.912				0.908				0.837				0.935				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-029
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Sierra Ave				Sierra Ave				Arrow Blvd				Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	10	67	12	0	11	106	14	0	9	25	8	0	6	75	4	0	347
7:15 AM	18	83	8	0	10	128	14	0	7	74	6	0	8	126	9	0	491
7:30 AM	15	115	5	0	12	169	26	0	5	116	25	1	22	150	13	0	674
7:45 AM	18	139	12	0	13	164	9	0	12	130	15	1	16	177	20	0	726
8:00 AM	20	112	8	0	12	187	19	0	6	60	11	0	15	101	9	1	561
8:15 AM	27	108	7	0	18	150	12	0	10	71	31	2	7	82	8	0	533
8:30 AM	14	106	11	0	13	171	9	0	14	47	20	0	11	71	10	1	498
8:45 AM	12	112	8	0	12	155	11	0	14	59	18	1	13	79	20	0	514
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	134	842	71	0	101	1230	114	0	77	582	134	5	98	861	93	2	4344
APPROACH %'s :	12.80%	80.42%	6.78%	0.00%	6.99%	85.12%	7.89%	0.00%	9.65%	72.93%	16.79%	0.63%	9.30%	81.69%	8.82%	0.19%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	80	474	32	0	55	670	66	0	33	377	82	4	60	510	50	1	2494
PEAK HR FACTOR :	0.741	0.853	0.667	0.000	0.764	0.896	0.635	0.000	0.688	0.725	0.661	0.500	0.682	0.720	0.625	0.250	0.859
	0.867				0.907				0.785				0.729				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	19	178	11	0	16	139	21	0	30	126	16	0	6	52	12	2	628
4:15 PM	24	184	17	0	23	128	17	0	20	102	26	0	15	58	13	0	627
4:30 PM	21	188	10	0	30	122	22	0	24	108	17	0	22	74	13	1	652
4:45 PM	20	203	16	0	28	133	21	0	26	113	17	1	10	85	10	2	685
5:00 PM	18	170	8	0	25	102	13	0	30	137	27	0	11	78	15	1	635
5:15 PM	18	196	13	0	25	101	19	0	12	100	15	0	13	74	7	0	593
5:30 PM	15	211	5	0	23	80	13	0	14	124	15	0	16	75	11	0	602
5:45 PM	23	177	13	0	15	118	8	0	16	111	12	0	9	62	8	0	572
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	158	1507	93	0	185	923	134	0	172	921	145	1	102	558	89	6	4994
APPROACH %'s :	8.99%	85.72%	5.29%	0.00%	14.90%	74.32%	10.79%	0.00%	13.88%	74.33%	11.70%	0.08%	13.51%	73.91%	11.79%	0.79%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	83	745	51	0	106	485	73	0	100	460	87	1	58	295	51	4	2599
PEAK HR FACTOR :	0.865	0.917	0.750	0.000	0.883	0.912	0.830	0.000	0.833	0.839	0.806	0.250	0.659	0.868	0.850	0.500	0.949
	0.919				0.912				0.835				0.927				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-029
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Arrow Blvd				Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	4	0	0	0	2	0	0	0	0	0	0	0	1	0	0	8
7:15 AM	0	2	0	0	1	1	0	0	0	1	0	0	0	2	0	0	7
7:30 AM	0	2	0	0	1	4	1	0	0	4	0	0	1	3	1	0	17
7:45 AM	0	8	0	0	0	5	0	0	0	1	0	0	0	1	0	0	15
8:00 AM	0	2	0	0	1	2	0	0	2	0	0	0	1	1	0	0	9
8:15 AM	2	3	0	0	0	5	1	0	0	3	0	0	3	0	0	0	17
8:30 AM	0	0	1	0	0	4	1	0	1	1	0	0	1	2	2	0	13
8:45 AM	0	5	1	0	0	3	1	0	0	1	0	1	0	0	0	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	26	2	0	3	26	4	0	3	11	0	1	6	10	3	0	98
APPROACH %'s :	9.68%	83.87%	6.45%	0.00%	9.09%	78.79%	12.12%	0.00%	20.00%	73.33%	0.00%	6.67%	31.58%	52.63%	15.79%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	15	0	0	2	16	2	0	2	8	0	0	5	5	1	0	58
PEAK HR FACTOR :	0.250	0.469	0.000	0.000	0.500	0.800	0.500	0.000	0.250	0.500	0.000	0.000	0.417	0.417	0.250	0.000	0.853
	0.531				0.833				0.625				0.550				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	3	0	0	0	2	0	0	0	3	1	0	0	5	0	0	14
4:15 PM	0	4	0	0	0	2	0	0	0	0	0	0	1	2	0	0	9
4:30 PM	1	1	1	0	0	1	1	0	0	1	1	0	0	2	0	0	9
4:45 PM	0	6	0	0	1	4	0	0	0	1	0	0	0	2	1	0	15
5:00 PM	0	2	0	0	0	2	0	0	0	2	0	0	0	1	0	0	7
5:15 PM	0	4	0	0	0	1	0	0	1	0	0	0	1	0	0	0	7
5:30 PM	1	2	1	0	0	4	0	0	0	2	1	0	0	0	0	0	11
5:45 PM	0	2	0	0	1	1	0	0	0	1	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	24	2	0	2	17	1	0	1	10	3	0	2	12	1	0	77
APPROACH %'s :	7.14%	85.71%	7.14%	0.00%	10.00%	85.00%	5.00%	0.00%	7.14%	71.43%	21.43%	0.00%	13.33%	80.00%	6.67%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	1	13	1	0	1	9	1	0	0	4	1	0	1	7	1	0	40
PEAK HR FACTOR :	0.250	0.542	0.250	0.000	0.250	0.563	0.250	0.000	0.000	0.500	0.250	0.000	0.250	0.875	0.250	0.000	0.667
	0.625				0.550				0.625				0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-029
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Arrow Blvd				Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:15 AM	1	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	4
7:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	1	1	0	0	0	0	0	0	0	2	0	0	0	1	0	0	5
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	1	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	2	0	0	0	3	0	0	0	4	0	0	0	7	1	0	20
APPROACH %'s :	60.00%	40.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	87.50%	12.50%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	1	0	0	0	1	0	0	0	2	0	0	0	3	0	0	9
PEAK HR FACTOR :	0.500	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.375	0.000	0.000	0.450
	0.375				0.250				0.250				0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	1	1	0	0	4	0	0	0	1	0	0	8
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	4
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.500
	0.250				0.500								0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Arrow Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-029
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Arrow Blvd				Arrow Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	4
7:30 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
7:45 AM	0	3	0	0	0	4	0	0	4	1	0	0	0	0	1	0	13
8:00 AM	0	1	0	0	0	2	0	0	2	0	0	0	0	0	0	0	5
8:15 AM	0	0	1	0	0	1	0	0	2	1	0	0	0	1	0	0	6
8:30 AM	1	0	0	0	0	0	1	0	2	2	0	0	0	1	0	0	7
8:45 AM	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	4	1	0	0	9	1	0	14	8	0	0	0	3	1	0	42
APPROACH %'s :	16.67%	66.67%	16.67%	0.00%	0.00%	90.00%	10.00%	0.00%	63.64%	36.36%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	4	1	0	0	7	0	0	9	3	0	0	0	1	1	0	26
PEAK HR FACTOR :	0.000	0.333	0.250	0.000	0.000	0.438	0.000	0.000	0.563	0.750	0.000	0.000	0.000	0.250	0.250	0.000	0.500
	0.417				0.438				0.600				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	3
4:30 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	4
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	1	0	0	2	0	0	0	5	0	0	0	3	1	0	15
APPROACH %'s :	0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	1	1	0	0	2	0	0	0	3	0	0	0	1	0	0	8
PEAK HR FACTOR :	0.000	0.250	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.250	0.000	0.000	0.667
	0.500				0.500				0.750				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Whittram Ave
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-030
Date: 9/8/2021

Data - Total

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	57	24	0	9	122	0	0	0	0	0	0	39	0	19	0	270
7:15 AM	0	73	31	0	16	102	0	0	0	0	0	0	34	0	21	0	277
7:30 AM	0	89	23	0	13	143	0	0	0	0	0	0	42	0	39	0	349
7:45 AM	0	113	29	0	13	125	0	0	0	0	0	0	59	0	43	0	382
8:00 AM	0	71	30	0	10	120	0	0	0	0	0	0	40	0	30	0	301
8:15 AM	0	78	26	0	5	108	0	0	0	0	0	0	33	0	20	0	270
8:30 AM	0	76	18	0	21	123	0	0	0	0	0	0	32	0	27	0	297
8:45 AM	0	55	27	0	12	110	0	0	0	0	0	0	32	0	19	0	255
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	612	208	0	99	953	0	0	0	0	0	0	311	0	218	0	2401
APPROACH %'s :	0.00%	74.63%	25.37%	0.00%	9.41%	90.59%	0.00%	0.00%					58.79%	0.00%	41.21%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	346	113	0	52	490	0	0	0	0	0	0	175	0	133	0	1309
PEAK HR FACTOR :	0.000	0.765	0.911	0.000	0.813	0.857	0.000	0.000	0.000	0.000	0.000	0.000	0.742	0.000	0.773	0.000	0.857
	0.808				0.869								0.755				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	135	45	0	29	94	0	0	0	0	0	0	43	0	19	0	365
4:15 PM	0	142	59	0	43	91	0	0	0	0	0	0	40	0	23	0	398
4:30 PM	0	158	43	0	45	119	0	0	0	0	0	0	49	0	21	0	435
4:45 PM	0	171	49	0	37	98	0	0	0	0	0	0	39	0	17	0	411
5:00 PM	0	141	61	0	53	116	0	0	0	0	0	0	38	0	19	0	428
5:15 PM	0	141	72	0	46	89	0	0	0	0	0	0	29	0	22	0	399
5:30 PM	0	189	61	0	49	89	0	0	0	0	0	0	23	0	17	0	428
5:45 PM	0	157	41	0	29	89	0	0	0	0	0	0	31	0	16	0	363
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1234	431	0	331	785	0	0	0	0	0	0	292	0	154	0	3227
APPROACH %'s :	0.00%	74.11%	25.89%	0.00%	29.66%	70.34%	0.00%	0.00%					65.47%	0.00%	34.53%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	611	225	0	181	422	0	0	0	0	0	0	155	0	79	0	1673
PEAK HR FACTOR :	0.000	0.893	0.781	0.000	0.854	0.887	0.000	0.000	0.000	0.000	0.000	0.000	0.791	0.000	0.898	0.000	0.961
	0.950				0.892								0.836				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Whittram Ave
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-030
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	39	16	0	9	110	0	0	0	0	0	0	27	0	17	0	218
7:15 AM	0	54	21	0	14	89	0	0	0	0	0	0	23	0	19	0	220
7:30 AM	0	81	16	0	13	125	0	0	0	0	0	0	33	0	38	0	306
7:45 AM	0	96	25	0	11	111	0	0	0	0	0	0	48	0	43	0	334
8:00 AM	0	61	23	0	6	106	0	0	0	0	0	0	29	0	30	0	255
8:15 AM	0	64	17	0	4	93	0	0	0	0	0	0	20	0	19	0	217
8:30 AM	0	65	13	0	20	98	0	0	0	0	0	0	22	0	23	0	241
8:45 AM	0	45	18	0	11	85	0	0	0	0	0	0	19	0	17	0	195
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	505	149	0	88	817	0	0	0	0	0	0	221	0	206	0	1986
APPROACH %'s :	0.00%	77.22%	22.78%	0.00%	9.72%	90.28%	0.00%	0.00%					51.76%	0.00%	48.24%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	292	85	0	44	431	0	0	0	0	0	0	133	0	130	0	1115
PEAK HR FACTOR :	0.000	0.760	0.850	0.000	0.786	0.862	0.000	0.000	0.000	0.000	0.000	0.000	0.693	0.000	0.756	0.000	0.835
	0.779				0.861								0.723				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	120	28	0	26	76	0	0	0	0	0	0	37	0	19	0	306
4:15 PM	0	132	42	0	39	77	0	0	0	0	0	0	31	0	22	0	343
4:30 PM	0	149	35	0	45	99	0	0	0	0	0	0	35	0	18	0	381
4:45 PM	0	161	44	0	34	74	0	0	0	0	0	0	24	0	15	0	352
5:00 PM	0	134	48	0	49	96	0	0	0	0	0	0	32	0	19	0	378
5:15 PM	0	130	60	0	44	76	0	0	0	0	0	0	24	0	20	0	354
5:30 PM	0	182	46	0	47	74	0	0	0	0	0	0	21	0	14	0	384
5:45 PM	0	145	31	0	27	69	0	0	0	0	0	0	21	0	15	0	308
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1153	334	0	311	641	0	0	0	0	0	0	225	0	142	0	2806
APPROACH %'s :	0.00%	77.54%	22.46%	0.00%	32.67%	67.33%	0.00%	0.00%					61.31%	0.00%	38.69%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	574	187	0	172	345	0	0	0	0	0	0	115	0	72	0	1465
PEAK HR FACTOR :	0.000	0.891	0.779	0.000	0.878	0.871	0.000	0.000	0.000	0.000	0.000	0.000	0.821	0.000	0.900	0.000	0.961
	0.928				0.891								0.882				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Whittram Ave
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-030
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	3	1	0	0	2	0	0	0	0	0	0	2	0	1	0	9
7:15 AM	0	2	1	0	0	3	0	0	0	0	0	0	3	0	0	0	9
7:30 AM	0	3	0	0	0	6	0	0	0	0	0	0	1	0	0	0	10
7:45 AM	0	2	0	0	0	2	0	0	0	0	0	0	1	0	0	0	5
8:00 AM	0	0	3	0	1	3	0	0	0	0	0	0	1	0	0	0	8
8:15 AM	0	2	1	0	0	1	0	0	0	0	0	0	1	0	1	0	6
8:30 AM	0	4	2	0	0	6	0	0	0	0	0	0	0	0	1	0	13
8:45 AM	0	2	1	0	1	6	0	0	0	0	0	0	3	0	0	0	13
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	18	9	0	2	29	0	0	0	0	0	0	12	0	3	0	73
APPROACH %'s :	0.00%	66.67%	33.33%	0.00%	6.45%	93.55%	0.00%	0.00%					80.00%	0.00%	20.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	7	4	0	1	14	0	0	0	0	0	0	6	0	0	0	32
PEAK HR FACTOR :	0.000	0.583	0.333	0.000	0.250	0.583	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.800
	0.917				0.625								0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	0	3	0	0	0	0	0	0	1	0	0	0	6
4:15 PM	0	1	3	0	0	3	0	0	0	0	0	0	0	0	0	0	7
4:30 PM	0	3	0	0	0	6	0	0	0	0	0	0	1	0	0	0	10
4:45 PM	0	1	0	0	0	2	0	0	0	0	0	0	1	0	1	0	5
5:00 PM	0	2	2	0	0	3	0	0	0	0	0	0	1	0	0	0	8
5:15 PM	0	2	2	0	0	2	0	0	0	0	0	0	1	0	0	0	7
5:30 PM	0	2	1	0	0	2	0	0	0	0	0	0	1	0	0	0	6
5:45 PM	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	13	10	0	0	23	0	0	0	0	0	0	7	0	1	0	54
APPROACH %'s :	0.00%	56.52%	43.48%	0.00%	0.00%	100.00%	0.00%	0.00%					87.50%	0.00%	12.50%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	8	4	0	0	13	0	0	0	0	0	0	4	0	1	0	30
PEAK HR FACTOR :	0.000	0.667	0.500	0.000	0.000	0.542	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.250	0.000	0.750
	0.750				0.542								0.625				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Whittram Ave
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-030
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	4	1	0	0	6	0	0	0	0	0	0	4	0	1	0	16
7:15 AM	0	8	5	0	1	5	0	0	0	0	0	0	4	0	1	0	24
7:30 AM	0	2	4	0	0	3	0	0	0	0	0	0	3	0	1	0	13
7:45 AM	0	7	2	0	0	4	0	0	0	0	0	0	5	0	0	0	18
8:00 AM	0	9	1	0	1	3	0	0	0	0	0	0	4	0	0	0	18
8:15 AM	0	5	2	0	0	1	0	0	0	0	0	0	5	0	0	0	13
8:30 AM	0	4	2	0	1	7	0	0	0	0	0	0	1	0	2	0	17
8:45 AM	0	4	5	0	0	10	0	0	0	0	0	0	4	0	1	0	24
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	43	22	0	3	39	0	0	0	0	0	0	30	0	6	0	143
APPROACH %'s :	0.00%	66.15%	33.85%	0.00%	7.14%	92.86%	0.00%	0.00%					83.33%	0.00%	16.67%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	26	12	0	2	15	0	0	0	0	0	0	16	0	2	0	73
PEAK HR FACTOR :	0.000	0.722	0.600	0.000	0.500	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.800	0.000	0.500	0.000	0.760
	0.731				0.708								0.900				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	5	3	0	0	7	0	0	0	0	0	0	3	0	0	0	18
4:15 PM	0	2	5	0	0	9	0	0	0	0	0	0	6	0	1	0	23
4:30 PM	0	2	1	0	0	9	0	0	0	0	0	0	11	0	3	0	26
4:45 PM	0	5	3	0	0	17	0	0	0	0	0	0	9	0	0	0	34
5:00 PM	0	1	6	0	2	10	0	0	0	0	0	0	5	0	0	0	24
5:15 PM	0	1	2	0	1	6	0	0	0	0	0	0	3	0	1	0	14
5:30 PM	0	1	9	0	0	4	0	0	0	0	0	0	1	0	1	0	16
5:45 PM	0	4	4	0	0	10	0	0	0	0	0	0	6	0	1	0	25
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	21	33	0	3	72	0	0	0	0	0	0	44	0	7	0	180
APPROACH %'s :	0.00%	38.89%	61.11%	0.00%	4.00%	96.00%	0.00%	0.00%					86.27%	0.00%	13.73%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	9	12	0	3	42	0	0	0	0	0	0	28	0	4	0	98
PEAK HR FACTOR :	0.000	0.450	0.500	0.000	0.375	0.618	0.000	0.000	0.000	0.000	0.000	0.000	0.636	0.000	0.333	0.000	0.721
	0.656				0.662								0.571				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Whittram Ave
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-030
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	11	6	0	0	4	0	0	0	0	0	0	6	0	0	0	27
7:15 AM	0	9	4	0	1	5	0	0	0	0	0	0	4	0	1	0	24
7:30 AM	0	3	3	0	0	9	0	0	0	0	0	0	5	0	0	0	20
7:45 AM	0	8	2	0	2	8	0	0	0	0	0	0	5	0	0	0	25
8:00 AM	0	1	3	0	2	8	0	0	0	0	0	0	6	0	0	0	20
8:15 AM	0	7	6	0	1	13	0	0	0	0	0	0	7	0	0	0	34
8:30 AM	0	3	1	0	0	12	0	0	0	0	0	0	9	0	1	0	26
8:45 AM	0	4	3	0	0	9	0	0	0	0	0	0	6	0	1	0	23
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	46	28	0	6	68	0	0	0	0	0	0	48	0	3	0	199
APPROACH %'s :	0.00%	62.16%	37.84%	0.00%	8.11%	91.89%	0.00%	0.00%					94.12%	0.00%	5.88%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	21	12	0	5	30	0	0	0	0	0	0	20	0	1	0	89
PEAK HR FACTOR :	0.000	0.583	0.750	0.000	0.625	0.833	0.000	0.000	0.000	0.000	0.000	0.000	0.833	0.000	0.250	0.000	0.890
	0.635				0.875								0.875				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	8	14	0	3	8	0	0	0	0	0	0	2	0	0	0	35
4:15 PM	0	7	9	0	4	2	0	0	0	0	0	0	3	0	0	0	25
4:30 PM	0	4	7	0	0	5	0	0	0	0	0	0	2	0	0	0	18
4:45 PM	0	4	2	0	3	5	0	0	0	0	0	0	5	0	1	0	20
5:00 PM	0	4	5	0	2	7	0	0	0	0	0	0	0	0	0	0	18
5:15 PM	0	8	8	0	1	5	0	0	0	0	0	0	1	0	1	0	24
5:30 PM	0	4	5	0	2	9	0	0	0	0	0	0	0	0	2	0	22
5:45 PM	0	8	4	0	2	8	0	0	0	0	0	0	3	0	0	0	25
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	47	54	0	17	49	0	0	0	0	0	0	16	0	4	0	187
APPROACH %'s :	0.00%	46.53%	53.47%	0.00%	25.76%	74.24%	0.00%	0.00%					80.00%	0.00%	20.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	20	22	0	6	22	0	0	0	0	0	0	8	0	2	0	80
PEAK HR FACTOR :	0.000	0.625	0.688	0.000	0.500	0.786	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.000	0.500	0.000	0.833
	0.656				0.778								0.417				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Whittram Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-031
Date: 9/8/2021

Data - Total

NS/EW Streets:	Cherry Ave				Cherry Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	32	143	22	0	7	204	11	4	8	8	27	0	32	16	9	0	523
7:15 AM	33	141	18	0	3	232	16	1	5	9	44	0	26	25	13	0	566
7:30 AM	46	161	25	0	7	230	27	3	6	7	43	0	28	26	6	0	615
7:45 AM	34	211	34	0	3	247	29	1	5	6	39	0	28	52	12	0	701
8:00 AM	38	216	39	0	7	233	10	5	4	8	29	0	38	31	32	0	690
8:15 AM	18	141	21	0	7	193	17	2	6	9	33	0	24	18	14	0	503
8:30 AM	31	160	22	0	8	171	10	5	7	15	27	0	17	21	11	0	505
8:45 AM	25	134	25	0	11	182	11	1	3	10	23	0	29	12	15	0	481
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	257	1307	206	0	53	1692	131	22	44	72	265	0	222	201	112	0	4584
APPROACH %'s :	14.52%	73.84%	11.64%	0.00%	2.79%	89.15%	6.90%	1.16%	11.55%	18.90%	69.55%	0.00%	41.50%	37.57%	20.93%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	151	729	116	0	20	942	82	10	20	30	155	0	120	134	63	0	2572
PEAK HR FACTOR :	0.821	0.844	0.744	0.000	0.714	0.953	0.707	0.500	0.833	0.833	0.881	0.000	0.789	0.644	0.492	0.000	0.917
	0.850				0.941				0.884				0.785				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	24	300	24	0	7	150	11	2	14	47	50	0	19	11	12	0	671
4:15 PM	26	298	26	0	9	175	16	1	23	30	66	0	21	15	13	0	719
4:30 PM	27	298	29	0	7	156	10	0	21	36	56	0	49	20	20	0	729
4:45 PM	22	351	19	0	9	144	6	1	15	32	54	0	13	10	11	0	687
5:00 PM	31	320	19	0	6	160	10	2	14	35	72	0	19	13	20	0	721
5:15 PM	30	272	22	0	9	153	6	2	23	36	56	0	20	12	9	0	650
5:30 PM	28	294	23	0	3	134	9	3	12	31	54	0	13	9	6	0	619
5:45 PM	20	263	28	0	6	131	7	0	13	29	49	0	10	10	8	0	574
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	208	2396	190	0	56	1203	75	11	135	276	457	0	164	100	99	0	5370
APPROACH %'s :	7.44%	85.76%	6.80%	0.00%	4.16%	89.44%	5.58%	0.82%	15.55%	31.80%	52.65%	0.00%	45.18%	27.55%	27.27%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	106	1267	93	0	31	635	42	4	73	133	248	0	102	58	64	0	2856
PEAK HR FACTOR :	0.855	0.902	0.802	0.000	0.861	0.907	0.656	0.500	0.793	0.924	0.861	0.000	0.520	0.725	0.800	0.000	0.979
	0.935				0.886				0.938				0.629				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Whittram Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-031
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Cherry Ave				Cherry Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	29	124	19	0	7	184	11	4	6	7	22	0	26	16	9	0	464
7:15 AM	27	130	17	0	2	214	15	1	2	9	35	0	19	25	12	0	508
7:30 AM	43	146	23	0	6	208	24	3	5	7	36	0	21	26	4	0	552
7:45 AM	28	196	28	0	3	229	27	1	3	6	31	0	23	51	12	0	638
8:00 AM	27	194	34	0	5	202	10	5	3	8	20	0	33	30	32	0	603
8:15 AM	17	122	17	0	6	170	12	1	5	8	27	0	22	16	13	0	436
8:30 AM	25	147	15	0	6	142	7	5	4	14	21	0	12	18	10	0	426
8:45 AM	19	107	22	0	7	159	9	1	2	9	17	0	16	11	12	0	391
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	215	1166	175	0	42	1508	115	21	30	68	209	0	172	193	104	0	4018
APPROACH %'s :	13.82%	74.94%	11.25%	0.00%	2.49%	89.44%	6.82%	1.25%	9.77%	22.15%	68.08%	0.00%	36.67%	41.15%	22.17%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	125	666	102	0	16	853	76	10	13	30	122	0	96	132	60	0	2301
PEAK HR FACTOR :	0.727	0.849	0.750	0.000	0.667	0.931	0.704	0.500	0.650	0.833	0.847	0.000	0.727	0.647	0.469	0.000	0.902
	0.875				0.918				0.859				0.758				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	15	281	20	0	6	124	7	2	12	43	48	0	16	10	9	0	593
4:15 PM	20	278	23	0	7	160	11	1	20	29	56	0	17	12	11	0	645
4:30 PM	21	272	20	0	6	153	9	0	17	34	47	0	39	19	18	0	655
4:45 PM	18	338	17	0	8	125	4	1	13	31	49	0	10	7	10	0	631
5:00 PM	25	299	18	0	5	151	7	2	13	34	64	0	18	13	20	0	669
5:15 PM	28	251	18	0	7	139	4	2	21	35	49	0	20	12	8	0	594
5:30 PM	22	283	19	0	3	126	8	3	10	31	49	0	13	8	4	0	579
5:45 PM	18	249	21	0	6	119	5	0	12	28	43	0	8	9	8	0	526
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	167	2251	156	0	48	1097	55	11	118	265	405	0	141	90	88	0	4892
APPROACH %'s :	6.49%	87.45%	6.06%	0.00%	3.96%	90.59%	4.54%	0.91%	14.97%	33.63%	51.40%	0.00%	44.20%	28.21%	27.59%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	84	1187	78	0	26	589	31	4	63	128	216	0	84	51	59	0	2600
PEAK HR FACTOR :	0.840	0.878	0.848	0.000	0.813	0.920	0.705	0.500	0.788	0.941	0.844	0.000	0.538	0.671	0.738	0.000	0.972
	0.904				0.908				0.917				0.638				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Whittram Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-031
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	7	0	0	0	5	0	0	0	0	1	0	2	0	0	0	16
7:15 AM	3	3	0	0	1	2	0	0	1	0	1	0	0	0	0	0	11
7:30 AM	0	8	0	0	1	4	0	0	1	0	2	0	1	0	1	0	18
7:45 AM	1	5	2	0	0	6	0	0	0	0	3	0	2	1	0	0	20
8:00 AM	1	8	4	0	0	9	0	0	1	0	0	0	2	0	0	0	25
8:15 AM	0	8	1	0	0	6	1	1	1	0	1	0	0	1	0	0	20
8:30 AM	0	4	1	0	1	11	0	0	0	0	2	0	2	1	1	0	23
8:45 AM	3	10	2	0	1	9	1	0	0	0	1	0	3	0	3	0	33
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	53	10	0	4	52	2	1	4	0	11	0	12	3	5	0	166
APPROACH %'s :	12.50%	73.61%	13.89%	0.00%	6.78%	88.14%	3.39%	1.69%	26.67%	0.00%	73.33%	0.00%	60.00%	15.00%	25.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	5	24	6	0	2	21	0	0	3	0	6	0	5	1	1	0	74
PEAK HR FACTOR :	0.417	0.750	0.375	0.000	0.500	0.583	0.000	0.000	0.750	0.000	0.500	0.000	0.625	0.250	0.250	0.000	0.740
	0.673				0.639				0.750				0.583				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	4	1	0	1	5	1	0	0	1	1	0	0	1	2	0	20
4:15 PM	0	10	1	0	1	6	0	0	0	0	3	0	2	0	1	0	24
4:30 PM	0	11	2	0	1	3	1	0	1	0	1	0	2	1	0	0	23
4:45 PM	0	3	2	0	1	6	1	0	0	0	0	0	1	0	0	0	14
5:00 PM	0	6	1	0	1	2	0	0	0	1	1	0	0	0	0	0	12
5:15 PM	0	4	1	0	1	0	0	0	0	0	0	0	0	0	1	0	7
5:30 PM	0	3	2	0	0	0	0	0	0	0	0	0	0	1	1	0	7
5:45 PM	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	42	11	0	6	23	3	0	1	2	6	0	5	3	5	0	111
APPROACH %'s :	7.02%	73.68%	19.30%	0.00%	18.75%	71.88%	9.38%	0.00%	11.11%	22.22%	66.67%	0.00%	38.46%	23.08%	38.46%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	30	6	0	4	17	2	0	1	1	5	0	5	1	1	0	73
PEAK HR FACTOR :	0.000	0.682	0.750	0.000	1.000	0.708	0.500	0.000	0.250	0.250	0.417	0.000	0.625	0.250	0.250	0.000	0.760
	0.692				0.719				0.583				0.583				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Whittram Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-031
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	7	2	0	0	3	0	0	0	1	2	0	1	0	0	0	18
7:15 AM	2	3	0	0	0	3	1	0	0	0	2	0	4	0	0	0	15
7:30 AM	2	2	1	0	0	7	2	0	0	0	2	0	4	0	0	0	20
7:45 AM	3	4	2	0	0	5	2	0	0	0	2	0	2	0	0	0	20
8:00 AM	3	4	0	0	0	6	0	0	0	0	6	0	1	1	0	0	21
8:15 AM	1	1	1	0	0	6	2	0	0	1	2	0	1	1	0	0	16
8:30 AM	2	0	2	0	1	6	0	0	2	1	3	0	1	1	0	0	19
8:45 AM	2	6	0	0	1	5	0	0	0	0	4	0	0	1	0	0	19
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	17	27	8	0	2	41	7	0	2	3	23	0	14	4	0	0	148
APPROACH %'s :	32.69%	51.92%	15.38%	0.00%	4.00%	82.00%	14.00%	0.00%	7.14%	10.71%	82.14%	0.00%	77.78%	22.22%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	10	13	3	0	0	21	5	0	0	0	12	0	11	1	0	0	76
PEAK HR FACTOR :	0.833	0.813	0.375	0.000	0.000	0.750	0.625	0.000	0.000	0.000	0.500	0.000	0.688	0.250	0.000	0.000	0.905
	0.722				0.722				0.500				0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	3	0	0	0	7	1	0	2	0	1	0	1	0	0	0	17
4:15 PM	1	5	0	0	1	4	3	0	0	0	5	0	1	2	0	0	22
4:30 PM	2	4	2	0	0	0	0	0	2	0	2	0	6	0	0	0	18
4:45 PM	2	3	0	0	0	8	1	0	2	1	2	0	2	2	0	0	23
5:00 PM	2	4	0	0	0	2	1	0	1	0	2	0	0	0	0	0	12
5:15 PM	0	6	1	0	0	11	2	0	2	0	6	0	0	0	0	0	28
5:30 PM	2	1	1	0	0	5	0	0	2	0	3	0	0	0	1	0	15
5:45 PM	0	3	1	0	0	4	2	0	0	0	2	0	0	1	0	0	13
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	11	29	5	0	1	41	10	0	11	1	23	0	10	5	1	0	148
APPROACH %'s :	24.44%	64.44%	11.11%	0.00%	1.92%	78.85%	19.23%	0.00%	31.43%	2.86%	65.71%	0.00%	62.50%	31.25%	6.25%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	7	16	2	0	1	14	5	0	5	1	11	0	9	4	0	0	75
PEAK HR FACTOR :	0.875	0.800	0.250	0.000	0.250	0.438	0.417	0.000	0.625	0.250	0.550	0.000	0.375	0.500	0.000	0.000	0.815
	0.781				0.556				0.850				0.542				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Whittram Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-031
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	5	1	0	0	12	0	0	2	0	2	0	3	0	0	0	25
7:15 AM	1	5	1	0	0	13	0	0	2	0	6	0	3	0	1	0	32
7:30 AM	1	5	1	0	0	11	1	0	0	0	3	0	2	0	1	0	25
7:45 AM	2	6	2	0	0	7	0	0	2	0	3	0	1	0	0	0	23
8:00 AM	7	10	1	0	2	16	0	0	0	0	3	0	2	0	0	0	41
8:15 AM	0	10	2	0	1	11	2	0	0	0	3	0	1	0	1	0	31
8:30 AM	4	9	4	0	0	12	3	0	1	0	1	0	2	1	0	0	37
8:45 AM	1	11	1	0	2	9	1	0	1	1	1	0	10	0	0	0	38
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	16	61	13	0	5	91	7	0	8	1	22	0	24	1	3	0	252
APPROACH %'s :	17.78%	67.78%	14.44%	0.00%	4.85%	88.35%	6.80%	0.00%	25.81%	3.23%	70.97%	0.00%	85.71%	3.57%	10.71%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	11	26	5	0	2	47	1	0	4	0	15	0	8	0	2	0	121
PEAK HR FACTOR :	0.393	0.650	0.625	0.000	0.250	0.734	0.250	0.000	0.500	0.000	0.625	0.000	0.667	0.000	0.500	0.000	0.738
	0.583				0.694				0.594				0.625				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	12	3	0	0	14	2	0	0	3	0	0	2	0	1	0	41
4:15 PM	5	5	2	0	0	5	2	0	3	1	2	0	1	1	1	0	28
4:30 PM	4	11	5	0	0	0	0	0	1	2	6	0	2	0	2	0	33
4:45 PM	2	7	0	0	0	5	0	0	0	0	3	0	0	1	1	0	19
5:00 PM	4	11	0	0	0	5	2	0	0	0	5	0	1	0	0	0	28
5:15 PM	2	11	2	0	1	3	0	0	0	1	1	0	0	0	0	0	21
5:30 PM	4	7	1	0	0	3	1	0	0	0	2	0	0	0	0	0	18
5:45 PM	1	10	5	0	0	7	0	0	1	1	4	0	2	0	0	0	31
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	26	74	18	0	1	42	7	0	5	8	23	0	8	2	5	0	219
APPROACH %'s :	22.03%	62.71%	15.25%	0.00%	2.00%	84.00%	14.00%	0.00%	13.89%	22.22%	63.89%	0.00%	53.33%	13.33%	33.33%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	15	34	7	0	0	15	4	0	4	3	16	0	4	2	4	0	108
PEAK HR FACTOR :	0.750	0.773	0.350	0.000	0.000	0.750	0.500	0.000	0.333	0.375	0.667	0.000	0.500	0.500	0.500	0.000	0.818
	0.700				0.679				0.639				0.625				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Whittram Ave
City: Fontana
Control: 1-Way Stop (EB)

Project ID: 21-030070-032
Date: 9/8/2021

Data - Total

NS/EW Streets:	Beech Ave				Beech Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	26	47	0	1	2	34	26	0	11	1	7	0	0	0	1	0	156
7:15 AM	25	52	0	0	0	55	20	0	7	0	9	0	0	2	0	0	170
7:30 AM	32	68	0	0	0	70	17	0	11	0	7	0	0	1	0	0	206
7:45 AM	36	87	2	0	0	65	24	0	11	1	15	0	0	0	0	0	241
8:00 AM	36	71	1	0	0	55	35	0	14	1	23	0	0	0	0	0	236
8:15 AM	20	61	0	0	0	60	22	0	13	1	19	0	0	0	1	0	197
8:30 AM	19	56	1	0	1	49	16	0	9	0	19	0	0	0	0	0	170
8:45 AM	21	60	1	0	1	50	17	0	6	0	12	0	0	4	2	0	174
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	215	502	5	1	4	438	177	0	82	4	111	0	0	7	4	0	1550
APPROACH %'s :	29.74%	69.43%	0.69%	0.14%	0.65%	70.76%	28.59%	0.00%	41.62%	2.03%	56.35%	0.00%	0.00%	63.64%	36.36%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	124	287	3	0	0	250	98	0	49	3	64	0	0	1	1	0	880
PEAK HR FACTOR :	0.861	0.825	0.375	0.000	0.000	0.893	0.700	0.000	0.875	0.750	0.696	0.000	0.000	0.250	0.250	0.000	0.913
	0.828				0.967				0.763				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	15	101	0	1	0	74	14	0	21	1	47	0	0	1	0	0	275
4:15 PM	19	109	1	0	1	81	9	0	21	0	43	0	1	1	0	0	286
4:30 PM	26	105	0	0	0	67	9	0	17	0	37	0	2	1	2	0	266
4:45 PM	17	76	0	1	0	77	3	0	19	0	32	0	1	0	1	0	227
5:00 PM	24	114	2	0	0	64	6	0	14	0	44	0	0	1	1	0	270
5:15 PM	15	89	0	0	0	78	9	0	24	0	40	0	1	0	0	0	256
5:30 PM	14	102	1	0	1	68	10	0	18	0	35	0	0	0	1	0	250
5:45 PM	18	96	0	0	0	70	7	0	25	0	29	0	0	0	3	0	248
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	148	792	4	2	2	579	67	0	159	1	307	0	5	4	8	0	2078
APPROACH %'s :	15.64%	83.72%	0.42%	0.21%	0.31%	89.35%	10.34%	0.00%	34.05%	0.21%	65.74%	0.00%	29.41%	23.53%	47.06%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	77	391	1	2	1	299	35	0	78	1	159	0	4	3	3	0	1054
PEAK HR FACTOR :	0.740	0.897	0.250	0.500	0.250	0.923	0.625	0.000	0.929	0.250	0.846	0.000	0.500	0.750	0.375	0.000	0.921
	0.899				0.920				0.862				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Whittram Ave
City: Fontana
Control: 1-Way Stop (EB)

Project ID: 21-030070-032
Date: 9/8/2021

Data - Cars

NS/EW Streets:	Beech Ave				Beech Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	24	46	0	1	2	33	23	0	9	1	6	0	0	0	1	0	146
7:15 AM	24	46	0	0	0	55	18	0	5	0	8	0	0	0	0	0	156
7:30 AM	32	67	0	0	0	67	13	0	10	0	7	0	0	0	0	0	196
7:45 AM	36	85	1	0	0	62	20	0	5	1	15	0	0	0	0	0	225
8:00 AM	35	70	0	0	0	53	31	0	13	1	21	0	0	0	0	0	224
8:15 AM	20	60	0	0	0	58	20	0	11	0	17	0	0	0	1	0	187
8:30 AM	19	54	1	0	1	47	12	0	7	0	17	0	0	0	0	0	158
8:45 AM	18	57	1	0	0	49	14	0	5	0	12	0	0	0	2	0	158
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	208	485	3	1	3	424	151	0	65	3	103	0	0	0	4	0	1450
APPROACH %'s :	29.84%	69.58%	0.43%	0.14%	0.52%	73.36%	26.12%	0.00%	38.01%	1.75%	60.23%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	123	282	1	0	0	240	84	0	39	2	60	0	0	0	1	0	832
PEAK HR FACTOR :	0.854	0.829	0.250	0.000	0.000	0.896	0.677	0.000	0.750	0.500	0.714	0.000	0.000	0.000	0.250	0.000	0.924
	0.832				0.964				0.721				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	13	97	0	1	0	72	12	0	21	0	45	0	0	0	0	0	261
4:15 PM	16	107	0	0	1	76	9	0	21	0	41	0	0	1	0	0	272
4:30 PM	22	103	0	0	0	62	7	0	16	0	34	0	2	0	2	0	248
4:45 PM	15	76	0	1	0	77	3	0	19	0	29	0	1	0	1	0	222
5:00 PM	23	111	2	0	0	64	5	0	14	0	43	0	0	1	1	0	264
5:15 PM	15	88	0	0	0	76	8	0	23	0	39	0	1	0	0	0	250
5:30 PM	13	101	0	0	1	64	9	0	16	0	33	0	0	0	1	0	238
5:45 PM	18	96	0	0	0	70	7	0	23	0	29	0	0	0	3	0	246
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	135	779	2	2	2	561	60	0	153	0	293	0	4	2	8	0	2001
APPROACH %'s :	14.71%	84.86%	0.22%	0.22%	0.32%	90.05%	9.63%	0.00%	34.30%	0.00%	65.70%	0.00%	28.57%	14.29%	57.14%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	66	383	0	2	1	287	31	0	77	0	149	0	3	1	3	0	1003
PEAK HR FACTOR :	0.750	0.895	0.000	0.500	0.250	0.932	0.646	0.000	0.917	0.000	0.828	0.000	0.375	0.250	0.375	0.000	0.922
	0.902				0.927				0.856				0.438				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Whittram Ave
City: Fontana
Control: 1-Way Stop (EB)

Project ID: 21-030070-032
Date: 9/8/2021

Data - 2axle

NS/EW Streets:	Beech Ave				Beech Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	4
7:15 AM	0	5	0	0	0	0	2	0	2	0	1	0	0	0	0	0	10
7:30 AM	0	1	0	0	0	1	2	0	1	0	0	0	0	0	0	0	5
7:45 AM	0	2	0	0	0	2	2	0	4	0	0	0	0	0	0	0	10
8:00 AM	1	0	0	0	0	1	2	0	0	0	2	0	0	0	0	0	6
8:15 AM	0	1	0	0	0	2	0	0	1	0	2	0	0	0	0	0	6
8:30 AM	0	2	0	0	0	2	1	0	1	0	1	0	0	0	0	0	7
8:45 AM	2	1	0	0	1	1	1	0	1	0	0	0	0	2	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	12	0	0	1	10	11	0	10	0	6	0	0	2	0	0	57
APPROACH %'s :	29.41%	70.59%	0.00%	0.00%	4.55%	45.45%	50.00%	0.00%	62.50%	0.00%	37.50%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	4	0	0	0	6	6	0	6	0	4	0	0	0	0	0	27
PEAK HR FACTOR :	0.250	0.500	0.000	0.000	0.000	0.750	0.750	0.000	0.375	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.675
	0.625				0.750				0.625								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	1	0	0	0	0	0	0	0	0	2	0	0	1	0	0	6
4:15 PM	3	1	0	0	0	2	0	0	0	0	1	0	0	0	0	0	7
4:30 PM	2	1	0	0	0	3	1	0	0	0	3	0	0	0	0	0	10
4:45 PM	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3
5:00 PM	1	2	0	0	0	0	1	0	0	0	1	0	0	0	0	0	5
5:15 PM	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	4
5:30 PM	0	1	0	0	0	0	1	0	0	0	2	0	0	0	0	0	4
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	7	0	0	0	6	3	0	1	0	12	0	0	1	0	0	39
APPROACH %'s :	56.25%	43.75%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	7.69%	0.00%	92.31%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	8	3	0	0	0	5	1	0	0	0	8	0	0	1	0	0	26
PEAK HR FACTOR :	0.667	0.750	0.000	0.000	0.000	0.417	0.250	0.000	0.000	0.000	0.667	0.000	0.000	0.250	0.000	0.000	0.650
	0.688				0.375				0.667				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Whittram Ave
City: Fontana
Control: 1-Way Stop (EB)

Project ID: 21-030070-032
Date: 9/8/2021

Data - 3axle

NS/EW Streets:	Beech Ave				Beech Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	0	1	0	2	0	0	0	0	0	0	0	4
7:15 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	4
7:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	3
8:00 AM	0	1	0	0	0	0	2	0	1	0	0	0	0	0	0	0	4
8:15 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	3	0	0	0	0	8	0	5	0	1	0	0	2	0	0	20
APPROACH %'s :	25.00%	75.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	83.33%	0.00%	16.67%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	6	0	3	0	0	0	0	0	0	0	10
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.750	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625
	0.250				0.750				0.750								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	4
4:15 PM	0	1	1	0	0	2	0	0	0	0	1	0	0	0	0	0	5
4:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:45 PM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
5:30 PM	1	0	0	0	0	3	0	0	1	0	0	0	0	0	0	0	5
5:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	4	1	0	0	6	4	0	2	0	2	0	0	0	0	0	21
APPROACH %'s :	28.57%	57.14%	14.29%	0.00%	0.00%	60.00%	40.00%	0.00%	50.00%	0.00%	50.00%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	1	3	1	0	0	2	3	0	0	0	2	0	0	0	0	0	12
PEAK HR FACTOR :	0.250	0.375	0.250	0.000	0.000	0.250	0.375	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.600
	0.625				0.625				0.500								

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Whittram Ave
City: Fontana
Control: 1-Way Stop (EB)

Project ID: 21-030070-032
Date: 9/8/2021

Data - 4axle

NS/EW Streets:	Beech Ave				Beech Ave				Whittram Ave				Whittram Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	0	4
7:45 AM	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	3
8:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	3
8:45 AM	1	2	0	0	0	0	2	0	0	0	0	0	0	2	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	2	2	0	0	4	7	0	2	1	1	0	0	3	0	0	23
APPROACH %'s :	20.00%	40.00%	40.00%	0.00%	0.00%	36.36%	63.64%	0.00%	50.00%	25.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	2	0	0	4	2	0	1	1	0	0	0	1	0	0	11
PEAK HR FACTOR :	0.000	0.000	0.500	0.000	0.000	0.500	0.500	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.688
	0.500				0.500				0.500				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	2	0	0	0	1	0	0	0	0	0	0	4
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
4:30 PM	2	1	0	0	0	2	0	0	1	0	0	0	0	1	0	0	7
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	2	1	0	0	6	0	0	3	1	0	0	1	1	0	0	17
APPROACH %'s :	40.00%	40.00%	20.00%	0.00%	0.00%	100.00%	0.00%	0.00%	75.00%	25.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	2	2	0	0	0	5	0	0	1	1	0	0	1	1	0	0	13
PEAK HR FACTOR :	0.250	0.500	0.000	0.000	0.000	0.625	0.000	0.000	0.250	0.250	0.000	0.000	0.250	0.250	0.000	0.000	0.464
	0.333				0.625				0.500				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Napa St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-033
Date: 9/9/2021

Data - Total

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Napa St				Napa St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	73	21	0	11	146	0	0	0	0	0	0	17	0	0	0	268
7:15 AM	1	97	27	0	8	120	0	0	0	0	1	0	14	0	8	0	276
7:30 AM	0	111	24	0	4	166	0	0	0	0	0	0	26	0	7	0	338
7:45 AM	0	124	22	0	14	161	0	0	0	0	1	0	16	0	3	0	341
8:00 AM	0	101	19	0	6	137	0	0	0	0	0	0	16	0	5	0	284
8:15 AM	1	106	35	0	5	148	1	0	0	0	1	0	20	0	10	0	327
8:30 AM	2	87	23	0	10	103	0	0	0	0	0	0	14	0	5	0	244
8:45 AM	1	112	28	0	4	88	0	0	0	0	0	0	21	0	6	0	260
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	811	199	0	62	1069	1	0	0	0	3	0	144	0	44	0	2338
APPROACH %'s :	0.49%	79.90%	19.61%	0.00%	5.48%	94.43%	0.09%	0.00%	0.00%	0.00%	100.00%	0.00%	76.60%	0.00%	23.40%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	442	100	0	29	612	1	0	0	0	2	0	78	0	25	0	1290
PEAK HR FACTOR :	0.250	0.891	0.714	0.000	0.518	0.922	0.250	0.000	0.000	0.000	0.500	0.000	0.750	0.000	0.625	0.000	0.946
	0.930				0.917				0.500				0.780				

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Napa St				Napa St				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	182	8	0	12	149	1	0	0	0	0	0	33	0	9	0	394
4:15 PM	0	186	14	0	13	99	0	0	0	0	0	0	17	0	19	0	348
4:30 PM	0	194	13	0	10	105	0	0	3	0	14	0	23	0	11	0	373
4:45 PM	0	183	9	0	17	112	0	0	0	0	4	0	30	0	12	0	367
5:00 PM	0	207	4	0	17	155	0	0	1	0	12	0	24	0	8	0	428
5:15 PM	0	190	4	0	7	122	0	0	0	0	0	0	28	0	5	0	356
5:30 PM	0	189	4	0	4	109	0	0	0	0	0	0	23	0	5	0	334
5:45 PM	0	178	5	0	12	120	0	0	2	0	1	0	9	0	3	0	330
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1509	61	0	92	971	1	0	6	0	31	0	187	0	72	0	2930
APPROACH %'s :	0.00%	96.11%	3.89%	0.00%	8.65%	91.26%	0.09%	0.00%	16.22%	0.00%	83.78%	0.00%	72.20%	0.00%	27.80%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	774	30	0	51	494	0	0	4	0	30	0	105	0	36	0	1524
PEAK HR FACTOR :	0.000	0.935	0.577	0.000	0.750	0.797	0.000	0.000	0.333	0.000	0.536	0.000	0.875	0.000	0.750	0.000	0.890
	0.953				0.792				0.500				0.839				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Napa St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-033
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Napa St				Napa St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	63	2	0	5	123	0	0	0	0	0	0	2	0	0	0	195
7:15 AM	1	77	7	0	6	99	0	0	0	0	0	0	1	0	2	0	193
7:30 AM	0	92	7	0	2	139	0	0	0	0	0	0	5	0	2	0	247
7:45 AM	0	108	9	0	7	143	0	0	0	0	1	0	0	0	1	0	269
8:00 AM	0	81	6	0	3	118	0	0	0	0	0	0	2	0	3	0	213
8:15 AM	1	84	8	0	2	117	1	0	0	0	1	0	3	0	6	0	223
8:30 AM	1	71	1	0	3	82	0	0	0	0	0	0	5	0	1	0	164
8:45 AM	0	86	7	0	2	71	0	0	0	0	0	0	1	0	3	0	170
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	662	47	0	30	892	1	0	0	0	2	0	19	0	18	0	1674
APPROACH %'s :	0.42%	92.98%	6.60%	0.00%	3.25%	96.64%	0.11%	0.00%	0.00%	0.00%	100.00%	0.00%	51.35%	0.00%	48.65%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	365	30	0	14	517	1	0	0	0	2	0	10	0	12	0	952
PEAK HR FACTOR :	0.250	0.845	0.833	0.000	0.500	0.904	0.250	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.500	0.000	0.885
	0.846				0.887				0.500				0.611				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	164	2	0	3	130	0	0	0	0	0	0	13	0	8	0	320
4:15 PM	0	166	3	0	0	85	0	0	0	0	0	0	8	0	15	0	277
4:30 PM	0	176	3	0	3	88	0	0	2	0	14	0	5	0	7	0	298
4:45 PM	0	166	1	0	4	100	0	0	0	0	4	0	10	0	10	0	295
5:00 PM	0	182	1	0	1	146	0	0	1	0	12	0	9	0	7	0	359
5:15 PM	0	166	1	0	2	109	0	0	0	0	0	0	5	0	2	0	285
5:30 PM	0	170	3	0	0	98	0	0	0	0	0	0	7	0	4	0	282
5:45 PM	0	152	3	0	0	103	0	0	2	0	1	0	3	0	2	0	266
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1342	17	0	13	859	0	0	5	0	31	0	60	0	55	0	2382
APPROACH %'s :	0.00%	98.75%	1.25%	0.00%	1.49%	98.51%	0.00%	0.00%	13.89%	0.00%	86.11%	0.00%	52.17%	0.00%	47.83%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	690	6	0	10	443	0	0	3	0	30	0	29	0	26	0	1237
PEAK HR FACTOR :	0.000	0.948	0.500	0.000	0.625	0.759	0.000	0.000	0.375	0.000	0.536	0.000	0.725	0.000	0.650	0.000	0.861
	0.951				0.770				0.516				0.688				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Napa St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-033
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Napa St				Napa St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	1	0	1	5	0	0	0	0	0	0	2	0	0	0	10
7:15 AM	0	8	1	0	0	2	0	0	0	0	1	0	1	0	0	0	13
7:30 AM	0	6	3	0	0	6	0	0	0	0	0	0	0	0	2	0	17
7:45 AM	0	2	2	0	1	1	0	0	0	0	0	0	0	0	1	0	7
8:00 AM	0	5	1	0	1	5	0	0	0	0	0	0	2	0	0	0	14
8:15 AM	0	4	1	0	0	6	0	0	0	0	0	0	1	0	1	0	13
8:30 AM	0	3	0	0	1	5	0	0	0	0	0	0	0	0	2	0	11
8:45 AM	0	4	1	0	0	2	0	0	0	0	0	0	1	0	2	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	33	10	0	4	32	0	0	0	0	1	0	7	0	8	0	95
APPROACH %'s :	0.00%	76.74%	23.26%	0.00%	11.11%	88.89%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	46.67%	0.00%	53.33%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	17	7	0	2	18	0	0	0	0	0	0	3	0	4	0	51
PEAK HR FACTOR :	0.000	0.708	0.583	0.000	0.500	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.500	0.000	0.750
	0.667				0.833								0.875				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	4	0	0	0	5	1	0	0	0	0	0	1	0	1	0	12
4:15 PM	0	4	1	0	1	4	0	0	0	0	0	0	0	0	0	0	10
4:30 PM	0	3	0	0	1	3	0	0	1	0	0	0	1	0	0	0	9
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2
5:15 PM	0	1	0	0	0	3	0	0	0	0	0	0	0	0	1	0	5
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	15	1	0	2	18	1	0	1	0	0	0	2	0	4	0	44
APPROACH %'s :	0.00%	93.75%	6.25%	0.00%	9.52%	85.71%	4.76%	0.00%	100.00%	0.00%	0.00%	0.00%	33.33%	0.00%	66.67%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	4	0	0	1	8	0	0	1	0	0	0	1	0	3	0	18
PEAK HR FACTOR :	0.000	0.333	0.000	0.000	0.250	0.667	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.750	0.000	0.500
	0.333				0.563				0.250				1.000				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Napa St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-033
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Napa St				Napa St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	3	14	0	2	4	0	0	0	0	0	0	5	0	0	0	28
7:15 AM	0	3	8	0	2	8	0	0	0	0	0	0	7	0	3	0	31
7:30 AM	0	6	5	0	2	4	0	0	0	0	0	0	14	0	2	0	33
7:45 AM	0	5	6	0	3	8	0	0	0	0	0	0	9	0	0	0	31
8:00 AM	0	3	3	0	1	4	0	0	0	0	0	0	4	0	2	0	17
8:15 AM	0	6	15	0	1	6	0	0	0	0	0	0	9	0	1	0	38
8:30 AM	0	3	14	0	0	4	0	0	0	0	0	0	6	0	1	0	28
8:45 AM	1	9	12	0	1	3	0	0	0	0	0	0	13	0	0	0	39
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	38	77	0	12	41	0	0	0	0	0	0	67	0	9	0	245
APPROACH %'s :	0.86%	32.76%	66.38%	0.00%	22.64%	77.36%	0.00%	0.00%					88.16%	0.00%	11.84%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	20	29	0	7	22	0	0	0	0	0	0	36	0	5	0	119
PEAK HR FACTOR :	0.000	0.833	0.483	0.000	0.583	0.688	0.000	0.000	0.000	0.000	0.000	0.000	0.643	0.000	0.625	0.000	0.783
	0.583				0.659								0.641				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	5	4	0	6	5	0	0	0	0	0	0	12	0	0	0	32
4:15 PM	0	4	8	0	12	3	0	0	0	0	0	0	8	0	2	0	37
4:30 PM	0	3	7	0	5	5	0	0	0	0	0	0	14	0	1	0	35
4:45 PM	0	7	7	0	13	3	0	0	0	0	0	0	19	0	1	0	50
5:00 PM	0	9	3	0	15	2	0	0	0	0	0	0	12	0	0	0	41
5:15 PM	0	10	1	0	4	3	0	0	0	0	0	0	20	0	1	0	39
5:30 PM	0	2	0	0	3	2	0	0	0	0	0	0	14	0	0	0	21
5:45 PM	0	5	0	0	11	7	0	0	0	0	0	0	6	0	0	0	29
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	45	30	0	69	30	0	0	0	0	0	0	105	0	5	0	284
APPROACH %'s :	0.00%	60.00%	40.00%	0.00%	69.70%	30.30%	0.00%	0.00%					95.45%	0.00%	4.55%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	29	18	0	37	13	0	0	0	0	0	0	65	0	3	0	165
PEAK HR FACTOR :	0.000	0.725	0.643	0.000	0.617	0.650	0.000	0.000	0.000	0.000	0.000	0.000	0.813	0.000	0.750	0.000	0.825
	0.839				0.735								0.810				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Napa St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-033
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Napa St				Napa St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	6	4	0	3	14	0	0	0	0	0	0	8	0	0	0	35
7:15 AM	0	9	11	0	0	11	0	0	0	0	0	0	5	0	3	0	39
7:30 AM	0	7	9	0	0	17	0	0	0	0	0	0	7	0	1	0	41
7:45 AM	0	9	5	0	3	9	0	0	0	0	0	0	7	0	1	0	34
8:00 AM	0	12	9	0	1	10	0	0	0	0	0	0	8	0	0	0	40
8:15 AM	0	12	11	0	2	19	0	0	0	0	0	0	7	0	2	0	53
8:30 AM	1	10	8	0	6	12	0	0	0	0	0	0	3	0	1	0	41
8:45 AM	0	13	8	0	1	12	0	0	0	0	0	0	6	0	1	0	41
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	78	65	0	16	104	0	0	0	0	0	0	51	0	9	0	324
APPROACH %'s :	0.69%	54.17%	45.14%	0.00%	13.33%	86.67%	0.00%	0.00%					85.00%	0.00%	15.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	40	34	0	6	55	0	0	0	0	0	0	29	0	4	0	168
PEAK HR FACTOR :	0.000	0.833	0.773	0.000	0.500	0.724	0.000	0.000	0.000	0.000	0.000	0.000	0.906	0.000	0.500	0.000	0.792
		0.804				0.726								0.917			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	9	2	0	3	9	0	0	0	0	0	0	7	0	0	0	30
4:15 PM	0	12	2	0	0	7	0	0	0	0	0	0	1	0	2	0	24
4:30 PM	0	12	3	0	1	9	0	0	0	0	0	0	3	0	3	0	31
4:45 PM	0	10	1	0	0	8	0	0	0	0	0	0	1	0	0	0	20
5:00 PM	0	16	0	0	1	6	0	0	0	0	0	0	3	0	0	0	26
5:15 PM	0	13	2	0	1	7	0	0	0	0	0	0	3	0	1	0	27
5:30 PM	0	16	1	0	1	9	0	0	0	0	0	0	2	0	1	0	30
5:45 PM	0	19	2	0	1	9	0	0	0	0	0	0	0	0	1	0	32
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	107	13	0	8	64	0	0	0	0	0	0	20	0	8	0	220
APPROACH %'s :	0.00%	89.17%	10.83%	0.00%	11.11%	88.89%	0.00%	0.00%					71.43%	0.00%	28.57%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	51	6	0	3	30	0	0	0	0	0	0	10	0	4	0	104
PEAK HR FACTOR :	0.000	0.797	0.500	0.000	0.750	0.833	0.000	0.000	0.000	0.000	0.000	0.000	0.833	0.000	0.333	0.000	0.839
		0.891				0.825								0.583			

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-034
Date: 9/9/2021

Data - Total

NS/EW Streets:	Cherry Ave				Cherry Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	134	24	0	27	223	0	0	0	0	0	0	17	0	42	0	467
7:15 AM	0	146	21	0	33	259	0	0	0	0	0	0	25	0	59	0	543
7:30 AM	0	191	21	0	33	254	0	0	0	0	0	0	39	0	50	0	588
7:45 AM	0	189	27	1	30	314	0	0	0	0	0	0	33	0	63	0	657
8:00 AM	0	179	31	0	29	262	0	0	0	0	0	0	36	0	74	0	611
8:15 AM	0	126	27	0	32	216	0	0	0	0	0	0	29	0	40	0	470
8:30 AM	0	156	31	0	27	205	0	0	0	0	0	0	20	0	33	0	472
8:45 AM	0	136	20	1	21	173	0	0	0	0	0	0	20	0	36	0	407
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1257	202	2	232	1906	0	0	0	0	0	0	219	0	397	0	4215
APPROACH %'s :	0.00%	86.04%	13.83%	0.14%	10.85%	89.15%	0.00%	0.00%					35.55%	0.00%	64.45%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	705	100	1	125	1089	0	0	0	0	0	0	133	0	246	0	2399
PEAK HR FACTOR :	0.000	0.923	0.806	0.250	0.947	0.867	0.000	0.000	0.000	0.000	0.000	0.000	0.853	0.000	0.831	0.000	0.913
	0.929				0.882								0.861				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	274	48	2	49	190	0	0	0	0	0	0	27	0	52	0	642
4:15 PM	0	280	53	0	42	190	0	0	0	0	0	0	16	0	52	0	633
4:30 PM	0	338	37	0	43	172	0	0	0	0	0	0	27	0	53	0	670
4:45 PM	0	332	50	0	51	197	0	0	0	0	0	0	12	0	72	0	714
5:00 PM	0	299	49	1	48	189	1	0	0	1	0	0	27	0	40	0	655
5:15 PM	0	340	45	0	45	173	0	0	0	0	0	0	22	0	39	0	664
5:30 PM	0	297	29	0	50	173	0	0	0	0	0	0	18	0	48	0	615
5:45 PM	0	280	35	2	40	141	0	0	0	0	0	0	16	0	28	0	542
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2440	346	5	368	1425	1	0	0	1	0	0	165	0	384	0	5135
APPROACH %'s :	0.00%	87.42%	12.40%	0.18%	20.51%	79.43%	0.06%	0.00%	0.00%	100.00%	0.00%	0.00%	30.05%	0.00%	69.95%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	1309	181	1	187	731	1	0	0	1	0	0	88	0	204	0	2703
PEAK HR FACTOR :	0.000	0.963	0.905	0.250	0.917	0.928	0.250	0.000	0.000	0.250	0.000	0.000	0.815	0.000	0.708	0.000	0.946
	0.968				0.926				0.250				0.869				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-034
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Cherry Ave				Cherry Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	117	19	0	27	198	0	0	0	0	0	0	15	0	41	0	417
7:15 AM	0	121	19	0	32	234	0	0	0	0	0	0	24	0	59	0	489
7:30 AM	0	166	20	0	31	227	0	0	0	0	0	0	36	0	47	0	527
7:45 AM	0	174	23	0	27	281	0	0	0	0	0	0	31	0	60	0	596
8:00 AM	0	156	28	0	28	230	0	0	0	0	0	0	33	0	72	0	547
8:15 AM	0	110	23	0	30	187	0	0	0	0	0	0	24	0	39	0	413
8:30 AM	0	129	27	0	26	162	0	0	0	0	0	0	15	0	32	0	391
8:45 AM	0	112	17	1	20	139	0	0	0	0	0	0	17	0	35	0	341
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1085	176	1	221	1658	0	0	0	0	0	0	195	0	385	0	3721
APPROACH %'s :	0.00%	85.97%	13.95%	0.08%	11.76%	88.24%	0.00%	0.00%					33.62%	0.00%	66.38%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	617	90	0	118	972	0	0	0	0	0	0	124	0	238	0	2159
PEAK HR FACTOR :	0.000	0.886	0.804	0.000	0.922	0.865	0.000	0.000	0.000	0.000	0.000	0.000	0.861	0.000	0.826	0.000	0.906
	0.897				0.885								0.862				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	248	47	2	47	167	0	0	0	0	0	0	24	0	51	0	586
4:15 PM	0	255	41	0	38	171	0	0	0	0	0	0	15	0	50	0	570
4:30 PM	0	310	37	0	42	157	0	0	0	0	0	0	26	0	52	0	624
4:45 PM	0	303	46	0	49	176	0	0	0	0	0	0	11	0	71	0	656
5:00 PM	0	276	46	1	47	162	1	0	0	1	0	0	24	0	40	0	598
5:15 PM	0	310	39	0	43	150	0	0	0	0	0	0	16	0	38	0	596
5:30 PM	0	275	27	0	49	151	0	0	0	0	0	0	15	0	48	0	565
5:45 PM	0	253	28	2	39	123	0	0	0	0	0	0	14	0	27	0	486
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2230	311	5	354	1257	1	0	0	1	0	0	145	0	377	0	4681
APPROACH %'s :	0.00%	87.59%	12.22%	0.20%	21.96%	77.98%	0.06%	0.00%	0.00%	100.00%	0.00%	0.00%	27.78%	0.00%	72.22%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	1199	168	1	181	645	1	0	0	1	0	0	77	0	201	0	2474
PEAK HR FACTOR :	0.000	0.967	0.913	0.250	0.923	0.916	0.250	0.000	0.000	0.250	0.000	0.000	0.740	0.000	0.708	0.000	0.943
	0.980				0.919				0.250				0.848				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-034
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	6	4	0	0	3	0	0	0	0	0	0	1	0	0	0	14
7:15 AM	0	7	0	0	1	5	0	0	0	0	0	0	0	0	0	0	13
7:30 AM	0	7	0	0	2	6	0	0	0	0	0	0	1	0	2	0	18
7:45 AM	0	2	0	0	1	8	0	0	0	0	0	0	1	0	2	0	14
8:00 AM	0	9	0	0	1	12	0	0	0	0	0	0	1	0	2	0	25
8:15 AM	0	9	1	0	0	9	0	0	0	0	0	0	1	0	0	0	20
8:30 AM	0	10	2	0	1	14	0	0	0	0	0	0	1	0	0	0	28
8:45 AM	0	9	2	0	0	5	0	0	0	0	0	0	3	0	0	0	19
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	59	9	0	6	62	0	0	0	0	0	0	9	0	6	0	151
APPROACH %'s :	0.00%	86.76%	13.24%	0.00%	8.82%	91.18%	0.00%	0.00%					60.00%	0.00%	40.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	25	0	0	5	31	0	0	0	0	0	0	3	0	6	0	70
PEAK HR FACTOR :	0.000	0.694	0.000	0.000	0.625	0.646	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.750	0.000	0.700
	0.694				0.692								0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	6	0	0	2	4	0	0	0	0	0	0	1	0	1	0	14
4:15 PM	0	6	3	0	2	2	0	0	0	0	0	0	0	0	0	0	13
4:30 PM	0	8	0	0	0	3	0	0	0	0	0	0	0	0	1	0	12
4:45 PM	0	10	0	0	0	4	0	0	0	0	0	0	1	0	1	0	16
5:00 PM	0	5	1	0	0	4	0	0	0	0	0	0	0	0	0	0	10
5:15 PM	0	4	1	0	0	6	0	0	0	0	0	0	0	0	1	0	12
5:30 PM	0	7	0	0	0	4	0	0	0	0	0	0	0	0	0	0	11
5:45 PM	0	6	0	0	0	3	0	0	0	0	0	0	0	0	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	52	5	0	4	30	0	0	0	0	0	0	2	0	4	0	97
APPROACH %'s :	0.00%	91.23%	8.77%	0.00%	11.76%	88.24%	0.00%	0.00%					33.33%	0.00%	66.67%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	27	2	0	0	17	0	0	0	0	0	0	1	0	3	0	50
PEAK HR FACTOR :	0.000	0.675	0.500	0.000	0.000	0.708	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.750	0.000	0.781
	0.725				0.708								0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-034
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	6	1	0	0	8	0	0	0	0	0	0	0	0	0	0	15
7:15 AM	0	9	0	0	0	12	0	0	0	0	0	0	0	0	0	0	21
7:30 AM	0	8	1	0	0	7	0	0	0	0	0	0	1	0	0	0	17
7:45 AM	0	7	1	0	2	12	0	0	0	0	0	0	1	0	0	0	23
8:00 AM	0	7	1	0	0	9	0	0	0	0	0	0	0	0	0	0	17
8:15 AM	0	4	1	0	1	4	0	0	0	0	0	0	1	0	0	0	11
8:30 AM	0	4	1	0	0	12	0	0	0	0	0	0	0	0	0	0	17
8:45 AM	0	6	0	0	1	11	0	0	0	0	0	0	0	0	1	0	19
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	51	6	0	4	75	0	0	0	0	0	0	3	0	1	0	140
APPROACH %'s :	0.00%	89.47%	10.53%	0.00%	5.06%	94.94%	0.00%	0.00%					75.00%	0.00%	25.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	31	3	0	2	40	0	0	0	0	0	0	2	0	0	0	78
PEAK HR FACTOR :	0.000	0.861	0.750	0.000	0.250	0.833	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.848
	0.944				0.750								0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	5	0	0	0	6	0	0	0	0	0	0	1	0	0	0	12
4:15 PM	0	9	3	0	0	6	0	0	0	0	0	0	1	0	1	0	20
4:30 PM	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	12
4:45 PM	0	10	1	0	0	9	0	0	0	0	0	0	0	0	0	0	20
5:00 PM	0	8	0	0	0	14	0	0	0	0	0	0	1	0	0	0	23
5:15 PM	0	7	3	0	0	8	0	0	0	0	0	0	1	0	0	0	19
5:30 PM	0	5	0	0	1	11	0	0	0	0	0	0	0	0	0	0	17
5:45 PM	0	5	0	0	0	9	0	0	0	0	0	0	0	0	0	0	14
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	55	7	0	1	69	0	0	0	0	0	0	4	0	1	0	137
APPROACH %'s :	0.00%	88.71%	11.29%	0.00%	1.43%	98.57%	0.00%	0.00%					80.00%	0.00%	20.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	31	4	0	0	37	0	0	0	0	0	0	2	0	0	0	74
PEAK HR FACTOR :	0.000	0.775	0.333	0.000	0.000	0.661	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.804
	0.795				0.661								0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-034
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	5	0	0	0	14	0	0	0	0	0	0	1	0	1	0	21
7:15 AM	0	9	2	0	0	8	0	0	0	0	0	0	1	0	0	0	20
7:30 AM	0	10	0	0	0	14	0	0	0	0	0	0	1	0	1	0	26
7:45 AM	0	6	3	1	0	13	0	0	0	0	0	0	0	0	1	0	24
8:00 AM	0	7	2	0	0	11	0	0	0	0	0	0	2	0	0	0	22
8:15 AM	0	3	2	0	1	16	0	0	0	0	0	0	3	0	1	0	26
8:30 AM	0	13	1	0	0	17	0	0	0	0	0	0	4	0	1	0	36
8:45 AM	0	9	1	0	0	18	0	0	0	0	0	0	0	0	0	0	28
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	62	11	1	1	111	0	0	0	0	0	0	12	0	5	0	203
APPROACH %'s :	0.00%	83.78%	14.86%	1.35%	0.89%	99.11%	0.00%	0.00%					70.59%	0.00%	29.41%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	32	7	1	0	46	0	0	0	0	0	0	4	0	2	0	92
PEAK HR FACTOR :	0.000	0.800	0.583	0.250	0.000	0.821	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.885
	0.909				0.821								0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	15	1	0	0	13	0	0	0	0	0	0	1	0	0	0	30
4:15 PM	0	10	6	0	2	11	0	0	0	0	0	0	0	0	1	0	30
4:30 PM	0	14	0	0	1	6	0	0	0	0	0	0	1	0	0	0	22
4:45 PM	0	9	3	0	2	8	0	0	0	0	0	0	0	0	0	0	22
5:00 PM	0	10	2	0	1	9	0	0	0	0	0	0	2	0	0	0	24
5:15 PM	0	19	2	0	2	9	0	0	0	0	0	0	5	0	0	0	37
5:30 PM	0	10	2	0	0	7	0	0	0	0	0	0	3	0	0	0	22
5:45 PM	0	16	7	0	1	6	0	0	0	0	0	0	2	0	1	0	33
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	103	23	0	9	69	0	0	0	0	0	0	14	0	2	0	220
APPROACH %'s :	0.00%	81.75%	18.25%	0.00%	11.54%	88.46%	0.00%	0.00%					87.50%	0.00%	12.50%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	52	7	0	6	32	0	0	0	0	0	0	8	0	0	0	105
PEAK HR FACTOR :	0.000	0.684	0.583	0.000	0.750	0.889	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.000	0.000	0.000	0.709
	0.702				0.864								0.400				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Merrill Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-035
Date: 9/9/2021

Data - Total

NS/EW Streets:	Beech Ave				Beech Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	4	38	2	0	16	31	3	0	18	15	3	0	10	46	22	0	208
7:15 AM	10	27	13	0	12	37	17	0	20	33	17	0	23	49	35	0	293
7:30 AM	10	48	18	0	12	35	18	0	20	23	24	0	22	61	37	0	328
7:45 AM	18	51	19	0	16	33	20	0	27	35	6	0	15	63	47	0	350
8:00 AM	13	26	7	0	13	30	16	0	31	35	8	0	7	54	30	0	270
8:15 AM	5	23	4	0	10	24	15	0	19	30	4	0	7	26	12	0	179
8:30 AM	3	28	7	0	13	31	9	0	18	30	3	0	4	33	24	0	203
8:45 AM	6	27	3	0	9	24	17	0	4	23	5	0	8	31	25	0	182
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	69	268	73	0	101	245	115	0	157	224	70	0	96	363	232	0	2013
APPROACH %'s :	16.83%	65.37%	17.80%	0.00%	21.91%	53.15%	24.95%	0.00%	34.81%	49.67%	15.52%	0.00%	13.89%	52.53%	33.57%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	51	152	57	0	53	135	71	0	98	126	55	0	67	227	149	0	1241
PEAK HR FACTOR :	0.708	0.745	0.750	0.000	0.828	0.912	0.888	0.000	0.790	0.900	0.573	0.000	0.728	0.901	0.793	0.000	0.886
	0.739				0.938				0.943				0.886				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	11	55	17	0	20	41	14	0	33	54	6	0	8	24	28	0	311
4:15 PM	4	64	11	0	32	40	13	1	30	57	8	0	8	38	44	0	350
4:30 PM	7	57	9	0	31	45	10	0	29	63	10	0	9	30	25	0	325
4:45 PM	10	35	18	0	15	29	6	0	37	52	8	0	3	29	24	0	266
5:00 PM	7	55	10	0	37	49	9	0	33	49	7	0	12	47	31	0	346
5:15 PM	9	52	18	0	24	43	19	0	29	51	7	0	8	32	24	0	316
5:30 PM	9	51	8	0	39	35	15	0	39	58	4	0	8	32	26	0	324
5:45 PM	6	48	3	0	28	48	14	0	27	51	4	0	14	31	19	0	293
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	63	417	94	0	226	330	100	1	257	435	54	0	70	263	221	0	2531
APPROACH %'s :	10.98%	72.65%	16.38%	0.00%	34.40%	50.23%	15.22%	0.15%	34.45%	58.31%	7.24%	0.00%	12.64%	47.47%	39.89%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	28	211	48	0	115	163	38	1	129	221	33	0	32	144	124	0	1287
PEAK HR FACTOR :	0.700	0.824	0.667	0.000	0.777	0.832	0.731	0.250	0.872	0.877	0.825	0.000	0.667	0.766	0.705	0.000	0.919
	0.908				0.834				0.939				0.833				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Merrill Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-035
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Beech Ave				Beech Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	4	37	2	0	15	30	3	0	13	13	3	0	10	46	21	0	197
7:15 AM	10	26	13	0	10	37	16	0	18	32	17	0	23	46	33	0	281
7:30 AM	10	46	18	0	12	32	16	0	20	21	24	0	22	60	37	0	318
7:45 AM	18	49	18	0	16	30	19	0	26	35	6	0	15	63	46	0	341
8:00 AM	13	24	7	0	11	27	15	0	30	33	7	0	7	53	28	0	255
8:15 AM	5	21	4	0	10	21	13	0	19	30	4	0	7	26	10	0	170
8:30 AM	3	27	6	0	12	27	7	0	15	30	2	0	3	32	23	0	187
8:45 AM	6	27	3	0	8	21	16	0	4	21	5	0	8	31	21	0	171
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	69	257	71	0	94	225	105	0	145	215	68	0	95	357	219	0	1920
APPROACH %'s :	17.38%	64.74%	17.88%	0.00%	22.17%	53.07%	24.76%	0.00%	33.88%	50.23%	15.89%	0.00%	14.16%	53.20%	32.64%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	51	145	56	0	49	126	66	0	94	121	54	0	67	222	144	0	1195
PEAK HR FACTOR :	0.708	0.740	0.778	0.000	0.766	0.851	0.868	0.000	0.783	0.864	0.563	0.000	0.728	0.881	0.783	0.000	0.876
	0.741				0.927				0.961				0.873				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	11	54	17	0	18	39	14	0	32	50	5	0	7	23	27	0	297
4:15 PM	4	61	11	0	30	35	12	1	30	55	8	0	8	37	43	0	335
4:30 PM	6	57	9	0	31	43	10	0	29	63	10	0	9	29	24	0	320
4:45 PM	9	35	18	0	15	29	5	0	37	51	8	0	3	28	22	0	260
5:00 PM	7	54	10	0	36	47	9	0	33	49	7	0	12	46	30	0	340
5:15 PM	9	50	18	0	23	41	18	0	28	50	7	0	8	31	24	0	307
5:30 PM	9	50	8	0	39	34	15	0	38	58	4	0	8	32	25	0	320
5:45 PM	6	47	3	0	27	48	13	0	26	51	3	0	13	31	17	0	285
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	61	408	94	0	219	316	96	1	253	427	52	0	68	257	212	0	2464
APPROACH %'s :	10.83%	72.47%	16.70%	0.00%	34.65%	50.00%	15.19%	0.16%	34.56%	58.33%	7.10%	0.00%	12.66%	47.86%	39.48%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	26	207	48	0	112	154	36	1	129	218	33	0	32	140	119	0	1255
PEAK HR FACTOR :	0.722	0.848	0.667	0.000	0.778	0.819	0.750	0.250	0.872	0.865	0.825	0.000	0.667	0.761	0.692	0.000	0.923
	0.924				0.823				0.931				0.827				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Merrill Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-035
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Beech Ave				Beech Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	1	1	0	0	4	1	0	0	0	0	0	0	8
7:15 AM	0	1	0	0	2	0	0	0	1	1	0	0	0	2	1	0	8
7:30 AM	0	2	0	0	0	2	1	0	0	2	0	0	0	1	0	0	8
7:45 AM	0	0	1	0	0	2	1	0	1	0	0	0	0	0	0	0	5
8:00 AM	0	0	0	0	1	1	1	0	0	2	1	0	0	1	2	0	9
8:15 AM	0	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	4
8:30 AM	0	0	0	0	1	0	2	0	2	0	1	0	1	1	1	0	9
8:45 AM	0	0	0	0	1	1	1	0	0	1	0	0	0	0	4	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	5	1	0	6	8	7	0	8	7	2	0	1	5	9	0	59
APPROACH %'s :	0.00%	83.33%	16.67%	0.00%	28.57%	38.10%	33.33%	0.00%	47.06%	41.18%	11.76%	0.00%	6.67%	33.33%	60.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	3	1	0	3	5	3	0	2	5	1	0	0	4	3	0	30
PEAK HR FACTOR :	0.000	0.375	0.250	0.000	0.375	0.625	0.750	0.000	0.500	0.625	0.250	0.000	0.000	0.500	0.375	0.000	0.833
	0.500				0.917				0.667				0.583				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	2	2	0	0	1	4	1	0	0	0	1	0	12
4:15 PM	0	2	0	0	2	2	0	0	0	1	0	0	0	0	1	0	8
4:30 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	4
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	1	2	0	0	0	0	0	0	0	0	1	0	4
5:15 PM	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	3
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	3
5:45 PM	0	0	0	0	1	0	1	0	1	0	0	0	0	0	1	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	5	0	0	7	8	2	0	2	7	1	0	0	1	6	0	40
APPROACH %'s :	16.67%	83.33%	0.00%	0.00%	41.18%	47.06%	11.76%	0.00%	20.00%	70.00%	10.00%	0.00%	0.00%	14.29%	85.71%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	1	2	0	0	3	5	1	0	0	2	0	0	0	1	3	0	18
PEAK HR FACTOR :	0.250	0.250	0.000	0.000	0.375	0.625	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.250	0.750	0.000	0.563
	0.375				0.563				0.500				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Merrill Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-035
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Beech Ave				Beech Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
8:00 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2
8:30 AM	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
8:45 AM	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	1	6	1	0	1	2	0	0	0	1	3	0	16
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	12.50%	75.00%	12.50%	0.00%	33.33%	66.67%	0.00%	0.00%	0.00%	25.00%	75.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	1	1	1	0	0	0	0	0	0	1	2	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.500	0.000	0.500
					0.375								0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:15 PM	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	4
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	0	0	0	3	2	0	1	0	0	0	0	5	1	0	14
APPROACH %'s :	50.00%	50.00%	0.00%	0.00%	0.00%	60.00%	40.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	83.33%	16.67%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	1	1	0	0	0	2	1	0	0	0	0	0	0	3	1	0	9
PEAK HR FACTOR :	0.250	0.250	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.250	0.000	0.563
	0.500				0.375								0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Merrill Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-035
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Beech Ave				Beech Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	4
8:15 AM	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3
8:30 AM	0	1	0	0	0	2	0	0	1	0	0	0	0	0	0	0	4
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	6	0	0	0	6	2	0	3	0	0	0	0	0	1	0	18
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	4	0	0	0	3	1	0	2	0	0	0	0	0	0	0	10
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.750	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625
	0.500				0.500				0.500								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
4:15 PM	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	3	0	0	1	1	1	0	2	0	2	0	13
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	33.33%	33.33%	33.33%	0.00%	50.00%	0.00%	50.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	2	0	0	0	1	0	0	0	0	1	0	5
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.417
	0.250				0.250				0.250				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-036
Date: 9/9/2021

Data - Total

NS/EW Streets:	Citrus Ave				Citrus Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	10	101	2	0	6	199	21	0	25	23	6	0	6	41	11	0	451
7:15 AM	16	137	4	0	11	231	24	0	33	24	20	0	12	44	18	0	574
7:30 AM	9	158	8	0	9	204	33	0	48	29	10	0	9	63	25	0	605
7:45 AM	12	152	5	0	20	218	24	0	37	39	14	0	10	64	29	0	624
8:00 AM	15	180	8	0	13	171	13	0	33	56	11	0	11	47	23	0	581
8:15 AM	13	152	5	0	18	247	21	0	27	30	10	0	12	30	21	0	586
8:30 AM	6	141	5	0	21	171	17	0	35	31	9	0	4	32	13	0	485
8:45 AM	6	138	6	0	7	121	19	0	27	28	10	0	8	37	15	0	422
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	87	1159	43	0	105	1562	172	0	265	260	90	0	72	358	155	0	4328
APPROACH %'s :	6.75%	89.91%	3.34%	0.00%	5.71%	84.94%	9.35%	0.00%	43.09%	42.28%	14.63%	0.00%	12.31%	61.20%	26.50%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	49	642	26	0	60	840	91	0	145	154	45	0	42	204	98	0	2396
PEAK HR FACTOR :	0.817	0.892	0.813	0.000	0.750	0.850	0.689	0.000	0.755	0.688	0.804	0.000	0.875	0.797	0.845	0.000	0.960
	0.883				0.866				0.860				0.835				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	15	235	6	0	17	177	26	0	40	47	11	0	11	49	33	0	667
4:15 PM	10	179	5	0	22	163	20	0	37	69	7	0	7	50	23	0	592
4:30 PM	10	213	6	0	19	192	22	0	46	62	14	0	6	32	34	0	656
4:45 PM	19	205	8	0	27	188	27	0	41	66	8	0	3	37	23	0	652
5:00 PM	7	183	7	0	24	182	26	0	43	49	12	0	8	56	27	0	624
5:15 PM	7	253	12	0	13	162	24	0	29	61	11	0	7	56	30	0	665
5:30 PM	8	238	5	0	23	193	26	0	39	72	19	0	6	34	44	0	707
5:45 PM	18	228	10	0	18	168	22	0	27	68	11	0	7	48	32	0	657
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	94	1734	59	0	163	1425	193	0	302	494	93	0	55	362	246	0	5220
APPROACH %'s :	4.98%	91.89%	3.13%	0.00%	9.15%	80.01%	10.84%	0.00%	33.97%	55.57%	10.46%	0.00%	8.30%	54.60%	37.10%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	40	902	34	0	78	705	98	0	138	250	53	0	28	194	133	0	2653
PEAK HR FACTOR :	0.556	0.891	0.708	0.000	0.813	0.913	0.942	0.000	0.802	0.868	0.697	0.000	0.875	0.866	0.756	0.000	0.938
	0.897				0.910				0.848				0.954				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-036
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Citrus Ave				Citrus Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	9	90	1	0	6	191	21	0	25	19	6	0	5	40	9	0	422
7:15 AM	15	127	4	0	11	223	24	0	32	22	17	0	12	43	17	0	547
7:30 AM	8	148	7	0	8	191	32	0	47	29	10	0	9	62	23	0	574
7:45 AM	11	143	5	0	20	205	24	0	36	38	13	0	10	62	27	0	594
8:00 AM	14	171	8	0	13	161	13	0	33	53	10	0	10	46	23	0	555
8:15 AM	12	148	5	0	17	236	21	0	25	30	9	0	12	30	21	0	566
8:30 AM	6	135	4	0	21	160	17	0	35	30	8	0	4	31	13	0	464
8:45 AM	6	125	6	0	7	112	17	0	27	28	10	0	8	35	15	0	396
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	81	1087	40	0	103	1479	169	0	260	249	83	0	70	349	148	0	4118
APPROACH %'s :	6.71%	89.98%	3.31%	0.00%	5.88%	84.47%	9.65%	0.00%	43.92%	42.06%	14.02%	0.00%	12.35%	61.55%	26.10%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	45	610	25	0	58	793	90	0	141	150	42	0	41	200	94	0	2289
PEAK HR FACTOR :	0.804	0.892	0.781	0.000	0.725	0.840	0.703	0.000	0.750	0.708	0.808	0.000	0.854	0.806	0.870	0.000	0.963
	0.881				0.859				0.867				0.846				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	15	232	6	0	17	169	25	0	39	47	9	0	11	47	33	0	650
4:15 PM	10	176	4	0	22	155	20	0	37	69	6	0	6	48	23	0	576
4:30 PM	10	209	6	0	19	186	22	0	46	61	14	0	6	32	34	0	645
4:45 PM	16	199	7	0	27	184	26	0	41	66	8	0	3	36	23	0	636
5:00 PM	7	179	7	0	24	175	26	0	43	49	12	0	7	56	26	0	611
5:15 PM	7	249	12	0	13	155	23	0	29	61	11	0	7	56	30	0	653
5:30 PM	6	232	5	0	23	186	26	0	38	72	19	0	6	34	43	0	690
5:45 PM	17	227	10	0	18	164	21	0	27	68	11	0	6	46	32	0	647
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	88	1703	57	0	163	1374	189	0	300	493	90	0	52	355	244	0	5108
APPROACH %'s :	4.76%	92.15%	3.08%	0.00%	9.44%	79.61%	10.95%	0.00%	33.98%	55.83%	10.19%	0.00%	7.99%	54.53%	37.48%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	37	887	34	0	78	680	96	0	137	250	53	0	26	192	131	0	2601
PEAK HR FACTOR :	0.544	0.891	0.708	0.000	0.813	0.914	0.923	0.000	0.797	0.868	0.697	0.000	0.929	0.857	0.762	0.000	0.942
	0.894				0.909				0.853				0.938				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-036
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	6	1	0	0	3	0	0	0	2	0	0	1	0	2	0	15
7:15 AM	1	6	0	0	0	6	0	0	0	2	3	0	0	1	0	0	19
7:30 AM	1	4	1	0	1	3	0	0	1	0	0	0	0	1	0	0	12
7:45 AM	1	5	0	0	0	4	0	0	1	1	1	0	0	2	1	0	16
8:00 AM	1	5	0	0	0	6	0	0	0	3	0	0	1	1	0	0	17
8:15 AM	1	2	0	0	1	5	0	0	2	0	0	0	0	0	0	0	11
8:30 AM	0	4	1	0	0	5	0	0	0	0	1	0	0	1	0	0	12
8:45 AM	0	6	0	0	0	4	1	0	0	0	0	0	0	2	0	0	13
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	38	3	0	2	36	1	0	4	8	5	0	2	8	3	0	115
APPROACH %'s :	10.87%	82.61%	6.52%	0.00%	5.13%	92.31%	2.56%	0.00%	23.53%	47.06%	29.41%	0.00%	15.38%	61.54%	23.08%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	4	16	1	0	2	18	0	0	4	4	1	0	1	4	1	0	56
PEAK HR FACTOR :	1.000	0.800	0.250	0.000	0.500	0.750	0.000	0.000	0.500	0.333	0.250	0.000	0.250	0.500	0.250	0.000	0.824
	0.875				0.833				0.750				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	4	0	0	1	0	1	0	0	2	0	0	9
4:15 PM	0	1	1	0	0	5	0	0	0	0	1	0	1	2	0	0	11
4:30 PM	0	2	0	0	0	4	0	0	0	1	0	0	0	0	0	0	7
4:45 PM	1	2	1	0	0	2	0	0	0	0	0	0	0	1	0	0	7
5:00 PM	0	1	0	0	0	3	0	0	0	0	0	0	1	0	0	0	5
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	1	4	0	0	0	4	0	0	1	0	0	0	0	0	1	0	11
5:45 PM	0	0	0	0	0	1	1	0	0	0	0	0	1	2	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	11	2	0	0	24	1	0	2	1	2	0	3	7	1	0	56
APPROACH %'s :	13.33%	73.33%	13.33%	0.00%	0.00%	96.00%	4.00%	0.00%	40.00%	20.00%	40.00%	0.00%	27.27%	63.64%	9.09%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	1	5	0	0	0	9	1	0	1	0	0	0	2	2	1	0	22
PEAK HR FACTOR :	0.250	0.313	0.000	0.000	0.000	0.563	0.250	0.000	0.250	0.000	0.000	0.000	0.500	0.250	0.250	0.000	0.500
	0.300				0.625				0.250				0.417				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-036
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	2	0	0	0	2	0	0	0	0	0	0	5
7:15 AM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	4
7:30 AM	0	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	4
7:45 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	1	0	5
8:00 AM	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
8:15 AM	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	0	4
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	7	0	0	0	1	1	0	0	0	0	0	0	0	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	15	0	0	0	10	2	0	1	2	2	0	0	0	3	0	35
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	83.33%	16.67%	0.00%	20.00%	40.00%	40.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	6	0	0	0	5	1	0	0	0	2	0	0	0	2	0	16
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.000	0.625	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.800
	0.750				0.750				0.500				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	0	0	0	2	1	0	0	0	0	0	0	0	0	0	5
4:15 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	1	3	0	0	0	2	1	0	0	0	0	0	0	0	0	0	7
5:00 PM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
5:15 PM	0	1	0	0	0	3	1	0	0	0	0	0	0	0	0	0	5
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	10	0	0	0	14	3	0	0	0	0	0	0	0	0	0	28
APPROACH %'s :	9.09%	90.91%	0.00%	0.00%	0.00%	82.35%	17.65%	0.00%									
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	3	0	0	0	7	1	0	0	0	0	0	0	0	0	0	11
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.000	0.583	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.550
	0.375				0.500												

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-036
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	4	0	0	0	3	0	0	0	0	0	0	0	1	0	0	9
7:15 AM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
7:30 AM	0	5	0	0	0	9	0	0	0	0	0	0	0	0	1	0	15
7:45 AM	0	2	0	0	0	7	0	0	0	0	0	0	0	0	0	0	9
8:00 AM	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0	6
8:15 AM	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	5
8:30 AM	0	2	0	0	0	5	0	0	0	1	0	0	0	0	0	0	8
8:45 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	19	0	0	0	37	0	0	0	1	0	0	0	1	1	0	60
APPROACH %'s :	5.00%	95.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	10	0	0	0	24	0	0	0	0	0	0	0	0	1	0	35
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.583
	0.500				0.667								0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	3
5:15 PM	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	6
5:30 PM	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
5:45 PM	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	10	0	0	0	13	0	0	0	0	1	0	0	0	1	0	28
APPROACH %'s :	23.08%	76.92%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	2	7	0	0	0	9	0	0	0	0	0	0	0	0	1	0	19
PEAK HR FACTOR :	0.500	0.583	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.792
	0.750				0.750								0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-037
Date: 9/9/2021

Data - Total

NS/EW Streets:	Sierra Ave				Sierra Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	18	86	11	0	6	135	3	0	6	30	14	0	22	59	5	0	395
7:15 AM	14	122	18	0	9	154	6	0	6	56	19	0	32	90	8	0	534
7:30 AM	11	166	23	0	2	197	13	0	4	84	17	0	36	100	15	0	668
7:45 AM	19	131	20	0	10	192	11	0	12	92	23	0	35	107	12	0	664
8:00 AM	13	142	26	0	11	281	10	0	12	75	24	0	31	97	10	0	732
8:15 AM	12	120	21	0	9	195	7	0	20	86	27	0	31	61	4	0	593
8:30 AM	15	137	21	0	10	220	16	0	9	63	22	0	22	53	6	0	594
8:45 AM	13	117	21	0	10	174	9	0	14	45	37	0	31	61	16	0	548
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	115	1021	161	0	67	1548	75	0	83	531	183	0	240	628	76	0	4728
APPROACH %'s :	8.87%	78.72%	12.41%	0.00%	3.96%	91.60%	4.44%	0.00%	10.41%	66.62%	22.96%	0.00%	25.42%	66.53%	8.05%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	55	559	90	0	32	865	41	0	48	337	91	0	133	365	41	0	2657
PEAK HR FACTOR :	0.724	0.842	0.865	0.000	0.727	0.770	0.788	0.000	0.600	0.916	0.843	0.000	0.924	0.853	0.683	0.000	0.907
	0.880				0.776				0.895				0.875				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	36	204	48	0	13	173	11	0	12	112	15	0	26	74	11	0	735
4:15 PM	23	201	44	0	16	177	13	0	24	109	30	0	28	71	9	0	745
4:30 PM	29	227	34	0	16	148	14	0	18	117	25	0	26	51	14	0	719
4:45 PM	23	195	36	0	18	184	18	0	21	109	28	0	29	69	10	0	740
5:00 PM	32	179	39	0	17	196	15	0	20	89	21	0	32	72	12	2	726
5:15 PM	29	154	27	0	11	141	15	0	20	100	18	0	34	77	11	0	637
5:30 PM	23	166	33	0	17	155	12	0	8	105	27	0	24	89	12	0	671
5:45 PM	34	157	29	0	14	161	9	0	18	105	23	0	21	72	13	0	656
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	229	1483	290	0	122	1335	107	0	141	846	187	0	220	575	92	2	5629
APPROACH %'s :	11.44%	74.08%	14.49%	0.00%	7.80%	85.36%	6.84%	0.00%	12.01%	72.06%	15.93%	0.00%	24.75%	64.68%	10.35%	0.22%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	111	827	162	0	63	682	56	0	75	447	98	0	109	265	44	0	2939
PEAK HR FACTOR :	0.771	0.911	0.844	0.000	0.875	0.927	0.778	0.000	0.781	0.955	0.817	0.000	0.940	0.895	0.786	0.000	0.986
	0.948				0.910				0.951				0.941				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-037
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Sierra Ave				Sierra Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	14	84	11	0	6	133	3	0	6	28	13	0	21	58	5	0	382
7:15 AM	13	112	16	0	8	150	5	0	6	54	18	0	32	87	8	0	509
7:30 AM	10	163	23	0	2	194	13	0	3	82	17	0	35	97	13	0	652
7:45 AM	19	125	20	0	9	187	9	0	12	91	22	0	35	106	12	0	647
8:00 AM	12	139	25	0	11	278	10	0	12	74	23	0	31	96	9	0	720
8:15 AM	11	118	21	0	9	189	7	0	18	85	27	0	31	60	4	0	580
8:30 AM	14	133	18	0	10	215	15	0	9	62	21	0	22	50	6	0	575
8:45 AM	13	114	21	0	10	170	9	0	14	45	36	0	29	59	15	0	535
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	106	988	155	0	65	1516	71	0	80	521	177	0	236	613	72	0	4600
APPROACH %'s :	8.49%	79.10%	12.41%	0.00%	3.93%	91.77%	4.30%	0.00%	10.28%	66.97%	22.75%	0.00%	25.62%	66.56%	7.82%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	52	545	89	0	31	848	39	0	45	332	89	0	132	359	38	0	2599
PEAK HR FACTOR :	0.684	0.836	0.890	0.000	0.705	0.763	0.750	0.000	0.625	0.912	0.824	0.000	0.943	0.847	0.731	0.000	0.902
	0.875				0.768				0.896				0.864				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	35	202	48	0	13	170	11	0	12	109	15	0	26	72	8	0	721
4:15 PM	23	199	41	0	15	172	13	0	24	108	30	0	27	71	9	0	732
4:30 PM	28	225	34	0	16	146	14	0	18	116	23	0	25	50	14	0	709
4:45 PM	22	193	36	0	18	179	18	0	21	109	28	0	28	66	9	0	727
5:00 PM	32	174	38	0	14	194	14	0	20	88	21	0	31	72	12	2	712
5:15 PM	29	151	27	0	11	137	15	0	20	98	18	0	34	76	11	0	627
5:30 PM	23	165	33	0	17	155	12	0	8	105	27	0	24	89	12	0	670
5:45 PM	33	154	29	0	14	158	8	0	18	104	23	0	21	72	13	0	647
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	225	1463	286	0	118	1311	105	0	141	837	185	0	216	568	88	2	5545
APPROACH %'s :	11.40%	74.11%	14.49%	0.00%	7.69%	85.46%	6.84%	0.00%	12.12%	71.97%	15.91%	0.00%	24.71%	64.99%	10.07%	0.23%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	108	819	159	0	62	667	56	0	75	442	96	0	106	259	40	0	2889
PEAK HR FACTOR :	0.771	0.910	0.828	0.000	0.861	0.932	0.778	0.000	0.781	0.953	0.800	0.000	0.946	0.899	0.714	0.000	0.987
	0.946				0.913				0.946				0.946				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-037
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	2	0	0	0	1	0	0	0	1	0	0	1	1	0	0	8
7:15 AM	1	8	2	0	0	3	0	0	0	2	1	0	0	2	0	0	19
7:30 AM	1	3	0	0	0	2	0	0	1	2	0	0	1	1	2	0	13
7:45 AM	0	6	0	0	1	5	2	0	0	1	0	0	0	1	0	0	16
8:00 AM	0	2	1	0	0	3	0	0	0	1	1	0	0	1	1	0	10
8:15 AM	1	2	0	0	0	5	0	0	2	1	0	0	0	0	0	0	11
8:30 AM	1	4	3	0	0	3	1	0	0	0	0	0	0	3	0	0	15
8:45 AM	0	3	0	0	0	3	0	0	0	0	1	0	2	2	1	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	30	6	0	1	25	3	0	3	8	3	0	4	11	4	0	104
APPROACH %'s :	14.29%	71.43%	14.29%	0.00%	3.45%	86.21%	10.34%	0.00%	21.43%	57.14%	21.43%	0.00%	21.05%	57.89%	21.05%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	13	1	0	1	15	2	0	3	5	1	0	1	3	3	0	50
PEAK HR FACTOR :	0.500	0.542	0.250	0.000	0.250	0.750	0.250	0.000	0.375	0.625	0.250	0.000	0.250	0.750	0.375	0.000	0.781
	0.667				0.563				0.750				0.438				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	2	0	0	0	3	0	0	0	2	0	0	0	2	3	0	13
4:15 PM	0	1	3	0	1	3	0	0	0	0	0	0	1	0	0	0	9
4:30 PM	1	2	0	0	0	1	0	0	0	0	1	0	1	1	0	0	7
4:45 PM	1	2	0	0	0	4	0	0	0	0	0	0	1	2	1	0	11
5:00 PM	0	5	1	0	3	2	1	0	0	1	0	0	1	0	0	0	14
5:15 PM	0	2	0	0	0	2	0	0	0	2	0	0	0	1	0	0	7
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	1	2	0	0	0	2	1	0	0	1	0	0	0	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	17	4	0	4	17	2	0	0	6	1	0	4	6	4	0	69
APPROACH %'s :	16.00%	68.00%	16.00%	0.00%	17.39%	73.91%	8.70%	0.00%	0.00%	85.71%	14.29%	0.00%	28.57%	42.86%	28.57%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	3	7	3	0	1	11	0	0	0	2	1	0	3	5	4	0	40
PEAK HR FACTOR :	0.750	0.875	0.250	0.000	0.250	0.688	0.000	0.000	0.000	0.250	0.250	0.000	0.750	0.625	0.333	0.000	0.769
	0.813				0.750				0.375				0.600				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-037
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
7:15 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
8:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:30 AM	0	0	0	0	0	2	0	0	0	1	1	0	0	0	0	0	4
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	0	0	0	1	3	0	0	0	2	2	0	0	4	0	0	15
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	25.00%	75.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0	5
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.375	0.000	0.000	0.625
	0.250								0.250				0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	3
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
									0.250								

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Merrill Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-037
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Merrill Ave				Merrill Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
7:15 AM	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	4	1	0	0	0	1	0	0	0	0	0	9
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	0.00%	0.00%	100.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
	0.250				0.500												

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	0	2	0	0	0	1	0	0	0	0	0	0	4
4:30 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	5	0	0	0	2	1	0	0	1	0	0	12
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	4	0	0	0	2	1	0	0	1	0	0	9
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.250	0.000	0.000	0.563
	0.250				0.500				0.750				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Fontana Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-038
Date: 9/9/2021

Data - Total

NS/EW Streets:	Citrus Ave				Citrus Ave				Fontana Ave				Fontana Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	101	9	0	2	183	19	0	16	9	3	0	9	18	4	0	375
7:15 AM	4	131	12	0	2	224	32	0	21	11	1	0	7	13	3	0	461
7:30 AM	8	161	10	0	3	195	29	0	15	16	2	0	12	24	3	0	478
7:45 AM	4	137	20	0	5	200	30	0	27	18	4	0	12	24	8	0	489
8:00 AM	6	189	21	0	6	208	22	0	24	22	3	0	24	17	9	0	551
8:15 AM	2	129	22	0	8	214	33	0	34	33	2	0	24	12	7	0	520
8:30 AM	3	147	26	0	2	161	34	0	12	22	1	0	9	15	2	0	434
8:45 AM	3	116	12	0	5	113	6	0	25	25	2	0	11	11	2	0	331
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	32	1111	132	0	33	1498	205	0	174	156	18	0	108	134	38	0	3639
APPROACH %'s :	2.51%	87.14%	10.35%	0.00%	1.90%	86.29%	11.81%	0.00%	50.00%	44.83%	5.17%	0.00%	38.57%	47.86%	13.57%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	20	616	73	0	22	817	114	0	100	89	11	0	72	77	27	0	2038
PEAK HR FACTOR :	0.625	0.815	0.830	0.000	0.688	0.954	0.864	0.000	0.735	0.674	0.688	0.000	0.750	0.802	0.750	0.000	0.925
	0.821				0.934				0.725				0.880				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	218	24	0	11	158	20	0	30	42	0	0	11	22	4	0	543
4:15 PM	3	167	25	0	7	143	29	0	32	50	3	0	16	26	4	0	505
4:30 PM	6	196	34	0	12	169	19	0	40	63	0	0	13	18	3	0	573
4:45 PM	6	193	13	0	13	152	26	0	32	41	2	0	12	20	4	0	514
5:00 PM	6	172	17	0	7	171	21	0	38	40	1	0	9	16	3	0	501
5:15 PM	5	229	15	1	8	143	28	0	38	49	0	0	16	23	5	0	560
5:30 PM	4	229	20	0	8	189	25	0	31	52	1	0	11	22	6	0	598
5:45 PM	2	216	17	0	10	151	29	0	26	34	6	0	6	21	6	0	524
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	35	1620	165	1	76	1276	197	0	267	371	13	0	94	168	35	0	4318
APPROACH %'s :	1.92%	88.96%	9.06%	0.05%	4.91%	82.38%	12.72%	0.00%	41.01%	56.99%	2.00%	0.00%	31.65%	56.57%	11.78%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	17	846	69	1	33	654	103	0	133	175	8	0	42	82	20	0	2183
PEAK HR FACTOR :	0.708	0.924	0.863	0.250	0.825	0.865	0.888	0.000	0.875	0.841	0.333	0.000	0.656	0.891	0.833	0.000	0.913
	0.922				0.890				0.908				0.818				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Fontana Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-038
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Citrus Ave				Citrus Ave				Fontana Ave				Fontana Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	93	9	0	2	174	18	0	12	9	3	0	9	17	3	0	351
7:15 AM	4	121	12	0	1	216	32	0	19	10	1	0	7	13	3	0	439
7:30 AM	8	151	10	0	2	184	28	0	14	15	2	0	12	24	3	0	453
7:45 AM	4	131	19	0	5	189	30	0	26	18	4	0	12	24	6	0	468
8:00 AM	6	184	19	0	5	197	20	0	22	22	3	0	22	17	7	0	524
8:15 AM	2	126	22	0	8	206	29	0	34	33	2	0	23	11	5	0	501
8:30 AM	3	140	26	0	2	153	29	0	11	22	1	0	9	14	2	0	412
8:45 AM	2	108	12	0	5	104	6	0	20	25	2	0	11	11	2	0	308
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	31	1054	129	0	30	1423	192	0	158	154	18	0	105	131	31	0	3456
APPROACH %'s :	2.55%	86.82%	10.63%	0.00%	1.82%	86.50%	11.67%	0.00%	47.88%	46.67%	5.45%	0.00%	39.33%	49.06%	11.61%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	20	592	70	0	20	776	107	0	96	88	11	0	69	76	21	0	1946
PEAK HR FACTOR :	0.625	0.804	0.795	0.000	0.625	0.942	0.892	0.000	0.706	0.667	0.688	0.000	0.750	0.792	0.750	0.000	0.928
	0.816				0.929				0.707				0.902				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	216	23	0	11	149	20	0	29	41	0	0	10	22	4	0	528
4:15 PM	3	163	25	0	6	135	26	0	32	50	3	0	16	25	4	0	488
4:30 PM	6	192	34	0	12	164	19	0	40	63	0	0	13	18	3	0	564
4:45 PM	6	183	13	0	13	150	25	0	32	41	2	0	11	20	4	0	500
5:00 PM	6	169	17	0	6	163	21	0	37	40	1	0	9	16	3	0	488
5:15 PM	5	225	15	1	8	137	27	0	37	49	0	0	16	22	5	0	547
5:30 PM	4	222	20	0	8	185	23	0	30	50	1	0	11	21	6	0	581
5:45 PM	2	214	17	0	10	147	29	0	25	32	5	0	6	21	6	0	514
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	35	1584	164	1	74	1230	190	0	262	366	12	0	92	165	35	0	4210
APPROACH %'s :	1.96%	88.79%	9.19%	0.06%	4.95%	82.33%	12.72%	0.00%	40.94%	57.19%	1.88%	0.00%	31.51%	56.51%	11.99%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	17	830	69	1	32	632	100	0	129	171	7	0	42	80	20	0	2130
PEAK HR FACTOR :	0.708	0.922	0.863	0.250	0.800	0.854	0.862	0.000	0.872	0.855	0.350	0.000	0.656	0.909	0.833	0.000	0.917
	0.932				0.884				0.892				0.826				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Fontana Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-038
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Fontana Ave				Fontana Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	3	0	0	0	4	0	0	3	0	0	0	0	1	1	0	12
7:15 AM	0	6	0	0	0	7	0	0	1	1	0	0	0	0	0	0	15
7:30 AM	0	4	0	0	1	3	0	0	1	1	0	0	0	0	0	0	10
7:45 AM	0	3	1	0	0	4	0	0	1	0	0	0	0	0	2	0	11
8:00 AM	0	2	2	0	1	5	1	0	1	0	0	0	2	0	2	0	16
8:15 AM	0	2	0	0	0	2	3	0	0	0	0	0	1	0	1	0	9
8:30 AM	0	5	0	0	0	2	5	0	1	0	0	0	0	1	0	0	14
8:45 AM	0	4	0	0	0	3	0	0	2	0	0	0	0	0	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	29	3	0	2	30	9	0	10	2	0	0	3	2	6	0	96
APPROACH %'s :	0.00%	90.63%	9.38%	0.00%	4.88%	73.17%	21.95%	0.00%	83.33%	16.67%	0.00%	0.00%	27.27%	18.18%	54.55%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	11	3	0	2	14	4	0	3	1	0	0	3	0	5	0	46
PEAK HR FACTOR :	0.000	0.688	0.375	0.000	0.500	0.700	0.333	0.000	0.750	0.250	0.000	0.000	0.375	0.000	0.625	0.000	0.719
	0.875				0.714				0.500				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	1	0	0	5	0	0	0	1	0	0	0	0	0	0	8
4:15 PM	0	2	0	0	1	5	3	0	0	0	0	0	0	1	0	0	12
4:30 PM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
4:45 PM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
5:00 PM	0	1	0	0	1	5	0	0	0	0	0	0	0	0	0	0	7
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
5:30 PM	0	4	0	0	0	1	2	0	1	2	0	0	0	1	0	0	11
5:45 PM	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	15	1	0	2	21	5	0	2	4	1	0	0	3	0	0	54
APPROACH %'s :	0.00%	93.75%	6.25%	0.00%	7.14%	75.00%	17.86%	0.00%	28.57%	57.14%	14.29%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	6	0	0	1	7	2	0	2	3	1	0	0	2	0	0	24
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.250	0.350	0.250	0.000	0.500	0.375	0.250	0.000	0.000	0.500	0.000	0.000	0.545
	0.375				0.417				0.500				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Fontana Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-038
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Fontana Ave				Fontana Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
7:15 AM	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	3
7:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
8:15 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	1	0	5
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	4	0	0	0	2	0	0	3	0	0	0	0	0	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	9	0	0	1	12	0	0	5	0	0	0	0	1	1	0	29
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	7.69%	92.31%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	3	0	0	0	7	0	0	1	0	0	0	0	1	1	0	13
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.000	0.583	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.650
	0.750				0.583				0.250				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	1	0	0	1	0	0	0	1	0	0	0	4
4:15 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	4	0	0	0	1	1	0	0	0	0	0	0	0	0	0	6
5:00 PM	0	1	0	0	0	3	0	0	1	0	0	0	0	0	0	0	5
5:15 PM	0	0	0	0	0	3	0	0	1	0	0	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	8	0	0	0	12	1	0	3	1	0	0	1	0	0	0	26
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	92.31%	7.69%	0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	7	0	0	2	1	0	0	0	0	0	0	11
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.583	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.550
	0.250				0.583				0.750								

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Fontana Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-038
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Fontana Ave				Fontana Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	4	0	0	0	3	1	0	1	0	0	0	0	0	0	0	9
7:15 AM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
7:30 AM	0	5	0	0	0	7	1	0	0	0	0	0	0	0	0	0	13
7:45 AM	0	2	0	0	0	5	0	0	0	0	0	0	0	0	0	0	7
8:00 AM	0	2	0	0	0	5	1	0	0	0	0	0	0	0	0	0	8
8:15 AM	0	1	0	0	0	3	1	0	0	0	0	0	0	0	0	0	5
8:30 AM	0	2	0	0	0	5	0	0	0	0	0	0	0	0	0	0	7
8:45 AM	1	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	19	0	0	0	33	4	0	1	0	0	0	0	0	0	0	58
APPROACH %'s :	5.00%	95.00%	0.00%	0.00%	0.00%	89.19%	10.81%	0.00%	100.00%	0.00%	0.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	10	0	0	0	20	3	0	0	0	0	0	0	0	0	0	33
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.714	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.635
	0.500				0.719												

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	3	0	0	0	3	1	0	0	0	0	0	0	0	0	0	7
5:30 PM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
5:45 PM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	13	0	0	0	13	1	0	0	0	0	0	1	0	0	0	28
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	92.86%	7.14%	0.00%					100.00%	0.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	9	0	0	0	8	1	0	0	0	0	0	0	0	0	0	18
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.000	0.667	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.643
	0.750				0.563												

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-039
Date: 9/15/2021

Data - Total

NS/EW Streets:	Cherry Ave				Cherry Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	0	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	114	21	4	22	192	0	0	0	0	0	0	41	0	17	0	412
7:15 AM	0	164	21	3	23	201	2	0	0	0	1	0	49	0	28	0	492
7:30 AM	0	184	18	2	51	265	3	0	0	0	0	0	40	0	19	0	582
7:45 AM	1	175	33	1	60	273	3	0	0	0	0	0	53	0	32	0	631
8:00 AM	0	200	23	2	20	280	1	0	0	0	0	0	53	0	26	0	605
8:15 AM	1	144	27	2	20	211	2	0	0	0	0	0	36	0	10	0	453
8:30 AM	2	178	15	2	13	182	2	0	0	0	0	0	35	0	14	0	443
8:45 AM	1	139	26	3	16	163	0	0	0	0	2	0	29	0	21	0	400
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	1298	184	19	225	1767	13	0	0	0	3	0	336	0	167	0	4018
APPROACH %'s :	0.40%	86.13%	12.21%	1.26%	11.22%	88.13%	0.65%	0.00%	0.00%	0.00%	100.00%	0.00%	66.80%	0.00%	33.20%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	723	95	8	154	1019	9	0	0	0	1	0	195	0	105	0	2310
PEAK HR FACTOR :	0.250	0.904	0.720	0.667	0.642	0.910	0.750	0.000	0.000	0.000	0.250	0.000	0.920	0.000	0.820	0.000	0.915
	0.919				0.879				0.250				0.882				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	0	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	335	47	5	46	183	0	0	1	0	3	1	38	0	26	0	686
4:15 PM	1	364	30	2	38	181	1	0	1	1	1	0	30	0	35	0	685
4:30 PM	0	291	31	3	42	194	0	0	1	0	1	0	45	0	30	0	638
4:45 PM	0	324	43	2	24	201	0	0	1	0	0	0	33	0	29	0	657
5:00 PM	1	321	38	3	30	200	0	0	0	0	2	1	31	0	24	0	651
5:15 PM	0	313	24	0	30	162	1	0	3	0	0	0	24	0	31	0	588
5:30 PM	0	299	19	2	30	159	0	0	2	0	0	1	24	0	27	0	563
5:45 PM	0	354	30	1	24	169	0	0	1	0	1	1	28	0	24	0	633
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	2601	262	18	264	1449	2	0	10	1	8	4	253	0	226	0	5101
APPROACH %'s :	0.10%	90.19%	9.08%	0.62%	15.39%	84.49%	0.12%	0.00%	43.48%	4.35%	34.78%	17.39%	52.82%	0.00%	47.18%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	2	1314	151	12	150	759	1	0	4	1	5	1	146	0	120	0	2666
PEAK HR FACTOR :	0.500	0.902	0.803	0.600	0.815	0.944	0.250	0.000	1.000	0.250	0.417	0.250	0.811	0.000	0.857	0.000	0.972
	0.931				0.964				0.550				0.887				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-039
Date: 9/15/2021

Data - Cars

NS/EW Streets:	Cherry Ave				Cherry Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	0	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	96	18	4	20	174	0	0	0	0	0	0	37	0	16	0	366
7:15 AM	0	134	19	3	23	169	2	0	0	0	1	0	45	0	27	0	423
7:30 AM	0	161	17	2	49	233	3	0	0	0	0	0	37	0	19	0	521
7:45 AM	1	159	28	0	59	234	3	0	0	0	0	0	48	0	31	0	563
8:00 AM	0	172	23	2	20	252	1	0	0	0	0	0	50	0	26	0	546
8:15 AM	1	118	24	2	19	185	2	0	0	0	0	0	33	0	10	0	394
8:30 AM	2	140	15	1	12	156	2	0	0	0	0	0	31	0	13	0	372
8:45 AM	1	119	22	3	16	133	0	0	0	0	2	0	22	0	21	0	339
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	1099	166	17	218	1536	13	0	0	0	3	0	303	0	163	0	3524
APPROACH %'s :	0.47%	85.33%	12.89%	1.32%	12.34%	86.93%	0.74%	0.00%	0.00%	0.00%	100.00%	0.00%	65.02%	0.00%	34.98%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	626	87	7	151	888	9	0	0	0	1	0	180	0	103	0	2053
PEAK HR FACTOR :	0.250	0.910	0.777	0.583	0.640	0.881	0.750	0.000	0.000	0.000	0.250	0.000	0.900	0.000	0.831	0.000	0.912
	0.915				0.885				0.250				0.896				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	0	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	311	46	4	43	156	0	0	1	0	3	1	33	0	24	0	623
4:15 PM	1	342	27	2	35	156	0	0	1	0	1	0	25	0	32	0	622
4:30 PM	0	254	29	3	42	172	0	0	1	0	1	0	43	0	30	0	575
4:45 PM	0	302	38	2	21	182	0	0	1	0	0	0	30	0	29	0	605
5:00 PM	1	299	37	2	28	179	0	0	0	0	2	1	29	0	22	0	600
5:15 PM	0	294	24	0	29	140	1	0	3	0	0	0	22	0	31	0	544
5:30 PM	0	280	18	0	29	147	0	0	2	0	0	1	23	0	24	0	524
5:45 PM	0	324	30	1	24	151	0	0	1	0	1	1	23	0	24	0	580
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	2406	249	14	251	1283	1	0	10	0	8	4	228	0	216	0	4673
APPROACH %'s :	0.11%	90.04%	9.32%	0.52%	16.35%	83.58%	0.07%	0.00%	45.45%	0.00%	36.36%	18.18%	51.35%	0.00%	48.65%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	2	1209	140	11	141	666	0	0	4	0	5	1	131	0	115	0	2425
PEAK HR FACTOR :	0.500	0.884	0.761	0.688	0.820	0.915	0.000	0.000	1.000	0.000	0.417	0.250	0.762	0.000	0.898	0.000	0.973
	0.915				0.943				0.500				0.842				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-039
Date: 9/15/2021

Data - 2axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	0	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	6	1	0	1	4	0	0	0	0	0	0	2	0	1	0	15
7:15 AM	0	8	0	0	0	9	0	0	0	0	0	0	2	0	0	0	19
7:30 AM	0	8	1	0	2	7	0	0	0	0	0	0	2	0	0	0	20
7:45 AM	0	4	0	0	1	8	0	0	0	0	0	0	2	0	0	0	15
8:00 AM	0	12	0	0	0	6	0	0	0	0	0	0	0	0	0	0	18
8:15 AM	0	7	1	0	0	4	0	0	0	0	0	0	1	0	0	0	13
8:30 AM	0	7	0	0	0	5	0	0	0	0	0	0	2	0	1	0	15
8:45 AM	0	4	2	0	0	7	0	0	0	0	0	0	1	0	0	0	14
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	56	5	0	4	50	0	0	0	0	0	0	12	0	2	0	129
APPROACH %'s :	0.00%	91.80%	8.20%	0.00%	7.41%	92.59%	0.00%	0.00%					85.71%	0.00%	14.29%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	32	1	0	3	30	0	0	0	0	0	0	6	0	0	0	72
PEAK HR FACTOR :	0.000	0.667	0.250	0.000	0.375	0.833	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.900
	0.688				0.917								0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	0	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	7	0	0	3	7	0	0	0	0	0	0	0	0	1	0	18
4:15 PM	0	4	1	0	1	6	1	0	0	1	0	0	1	0	3	0	18
4:30 PM	0	6	1	0	0	7	0	0	0	0	0	0	0	0	0	0	14
4:45 PM	0	7	1	0	1	8	0	0	0	0	0	0	0	0	0	0	17
5:00 PM	0	6	0	0	1	3	0	0	0	0	0	0	1	0	1	0	12
5:15 PM	0	6	0	0	0	4	0	0	0	0	0	0	0	0	0	0	10
5:30 PM	0	8	0	0	1	0	0	0	0	0	0	0	0	0	3	0	12
5:45 PM	0	4	0	0	0	4	0	0	0	0	0	0	1	0	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	48	3	0	7	39	1	0	0	1	0	0	3	0	8	0	110
APPROACH %'s :	0.00%	94.12%	5.88%	0.00%	14.89%	82.98%	2.13%	0.00%	0.00%	100.00%	0.00%	0.00%	27.27%	0.00%	72.73%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	24	3	0	5	28	1	0	0	1	0	0	1	0	4	0	67
PEAK HR FACTOR :	0.000	0.857	0.750	0.000	0.417	0.875	0.250	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.333	0.000	0.931
	0.844				0.850				0.250				0.313				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-039
Date: 9/15/2021

Data - 3axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	0	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	4	0	0	1	5	0	0	0	0	0	0	1	0	0	0	11
7:15 AM	0	11	2	0	0	9	0	0	0	0	0	0	0	0	0	0	22
7:30 AM	0	7	0	0	0	5	0	0	0	0	0	0	1	0	0	0	13
7:45 AM	0	6	4	1	0	8	0	0	0	0	0	0	1	0	0	0	20
8:00 AM	0	7	0	0	0	7	0	0	0	0	0	0	0	0	0	0	14
8:15 AM	0	9	2	0	1	6	0	0	0	0	0	0	2	0	0	0	20
8:30 AM	0	11	0	1	1	4	0	0	0	0	0	0	1	0	0	0	18
8:45 AM	0	5	0	0	0	4	0	0	0	0	0	0	4	0	0	0	13
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	60	8	2	3	48	0	0	0	0	0	0	10	0	0	0	131
APPROACH %'s :	0.00%	85.71%	11.43%	2.86%	5.88%	94.12%	0.00%	0.00%					100.00%	0.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	31	6	1	0	29	0	0	0	0	0	0	2	0	0	0	69
PEAK HR FACTOR :	0.000	0.705	0.375	0.250	0.000	0.806	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.784
	0.731				0.806								0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	0	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	7	1	0	0	8	0	0	0	0	0	0	3	0	0	0	19
4:15 PM	0	10	2	0	0	6	0	0	0	0	0	0	4	0	0	0	22
4:30 PM	0	4	1	0	0	5	0	0	0	0	0	0	2	0	0	0	12
4:45 PM	0	6	2	0	1	2	0	0	0	0	0	0	1	0	0	0	12
5:00 PM	0	5	1	1	1	9	0	0	0	0	0	0	1	0	1	0	19
5:15 PM	0	5	0	0	0	9	0	0	0	0	0	0	1	0	0	0	15
5:30 PM	0	5	1	1	0	4	0	0	0	0	0	0	1	0	0	0	12
5:45 PM	0	8	0	0	0	7	0	0	0	0	0	0	2	0	0	0	17
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	50	8	2	2	50	0	0	0	0	0	0	15	0	1	0	128
APPROACH %'s :	0.00%	83.33%	13.33%	3.33%	3.85%	96.15%	0.00%	0.00%					93.75%	0.00%	6.25%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	27	6	0	1	21	0	0	0	0	0	0	10	0	0	0	65
PEAK HR FACTOR :	0.000	0.675	0.750	0.000	0.250	0.656	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.739
	0.688				0.688								0.625				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-039
Date: 9/15/2021

Data - 4axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	0	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	8	2	0	0	9	0	0	0	0	0	0	1	0	0	0	20
7:15 AM	0	11	0	0	0	14	0	0	0	0	0	0	2	0	1	0	28
7:30 AM	0	8	0	0	0	20	0	0	0	0	0	0	0	0	0	0	28
7:45 AM	0	6	1	0	0	23	0	0	0	0	0	0	2	0	1	0	33
8:00 AM	0	9	0	0	0	15	0	0	0	0	0	0	3	0	0	0	27
8:15 AM	0	10	0	0	0	16	0	0	0	0	0	0	0	0	0	0	26
8:30 AM	0	20	0	0	0	17	0	0	0	0	0	0	1	0	0	0	38
8:45 AM	0	11	2	0	0	19	0	0	0	0	0	0	2	0	0	0	34
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	83	5	0	0	133	0	0	0	0	0	0	11	0	2	0	234
APPROACH %'s :	0.00%	94.32%	5.68%	0.00%	0.00%	100.00%	0.00%	0.00%					84.62%	0.00%	15.38%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	34	1	0	0	72	0	0	0	0	0	0	7	0	2	0	116
PEAK HR FACTOR :	0.000	0.773	0.250	0.000	0.000	0.783	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.000	0.500	0.000	0.879
	0.795				0.783								0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	0	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	10	0	1	0	12	0	0	0	0	0	0	2	0	1	0	26
4:15 PM	0	8	0	0	2	13	0	0	0	0	0	0	0	0	0	0	23
4:30 PM	0	27	0	0	0	10	0	0	0	0	0	0	0	0	0	0	37
4:45 PM	0	9	2	0	1	9	0	0	0	0	0	0	2	0	0	0	23
5:00 PM	0	11	0	0	0	9	0	0	0	0	0	0	0	0	0	0	20
5:15 PM	0	8	0	0	1	9	0	0	0	0	0	0	1	0	0	0	19
5:30 PM	0	6	0	1	0	8	0	0	0	0	0	0	0	0	0	0	15
5:45 PM	0	18	0	0	0	7	0	0	0	0	0	0	2	0	0	0	27
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	97	2	2	4	77	0	0	0	0	0	0	7	0	1	0	190
APPROACH %'s :	0.00%	96.04%	1.98%	1.98%	4.94%	95.06%	0.00%	0.00%					87.50%	0.00%	12.50%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	54	2	1	3	44	0	0	0	0	0	0	4	0	1	0	109
PEAK HR FACTOR :	0.000	0.500	0.250	0.250	0.375	0.846	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.736
	0.528				0.783								0.417				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Randall Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-040
Date: 9/9/2021

Data - Total

NS/EW Streets:	Beech Ave				Beech Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	4	36	5	0	1	30	5	0	5	15	2	0	1	33	11	0	148
7:15 AM	5	45	6	0	9	49	29	0	18	21	5	0	4	43	8	0	242
7:30 AM	6	66	7	0	12	47	30	0	21	19	6	0	10	48	18	0	290
7:45 AM	4	44	20	0	13	55	14	0	7	40	6	0	13	53	6	0	275
8:00 AM	2	29	8	0	7	35	9	0	6	33	1	0	4	26	7	0	167
8:15 AM	3	22	8	0	4	32	6	0	5	29	4	0	11	30	3	0	157
8:30 AM	2	26	4	0	7	27	5	0	7	18	5	0	4	32	5	0	142
8:45 AM	4	20	2	0	3	31	4	0	3	16	1	0	4	20	7	0	115
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	30	288	60	0	56	306	102	0	72	191	30	0	51	285	65	0	1536
APPROACH %'s :	7.94%	76.19%	15.87%	0.00%	12.07%	65.95%	21.98%	0.00%	24.57%	65.19%	10.24%	0.00%	12.72%	71.07%	16.21%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	17	184	41	0	41	186	82	0	52	113	18	0	31	170	39	0	974
PEAK HR FACTOR :	0.708	0.697	0.513	0.000	0.788	0.845	0.683	0.000	0.619	0.706	0.750	0.000	0.596	0.802	0.542	0.000	0.840
	0.766				0.868				0.863				0.789				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	54	10	0	13	29	9	0	15	40	3	0	2	27	20	0	226
4:15 PM	2	51	2	0	7	34	9	0	9	35	4	0	4	24	9	0	190
4:30 PM	6	60	3	0	5	45	9	0	13	36	6	0	1	29	9	0	222
4:45 PM	2	46	2	0	11	34	3	0	20	41	6	0	3	28	8	0	204
5:00 PM	1	53	5	0	10	38	11	0	15	55	4	0	4	28	10	0	234
5:15 PM	6	50	2	0	8	39	7	0	14	38	5	0	2	26	13	0	210
5:30 PM	5	54	5	0	12	28	9	0	16	38	4	0	2	28	9	0	210
5:45 PM	2	41	3	0	15	31	15	0	11	28	4	0	4	21	12	0	187
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	28	409	32	0	81	278	72	0	113	311	36	0	22	211	90	0	1683
APPROACH %'s :	5.97%	87.21%	6.82%	0.00%	18.79%	64.50%	16.71%	0.00%	24.57%	67.61%	7.83%	0.00%	6.81%	65.33%	27.86%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	15	209	12	0	34	156	30	0	62	170	21	0	10	111	40	0	870
PEAK HR FACTOR :	0.625	0.871	0.600	0.000	0.773	0.867	0.682	0.000	0.775	0.773	0.875	0.000	0.625	0.957	0.769	0.000	0.929
	0.855				0.932				0.855				0.958				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Randall Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-040
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Beech Ave				Beech Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	36	5	0	1	29	5	0	5	15	2	0	1	32	10	0	144
7:15 AM	5	45	6	0	9	49	29	0	18	19	5	0	4	43	8	0	240
7:30 AM	6	64	7	0	12	45	30	0	20	19	6	0	10	48	18	0	285
7:45 AM	4	43	19	0	13	53	14	0	7	39	6	0	13	52	6	0	269
8:00 AM	2	27	8	0	6	33	9	0	5	32	1	0	4	23	7	0	157
8:15 AM	3	21	8	0	4	30	6	0	5	28	4	0	11	29	3	0	152
8:30 AM	2	25	4	0	6	23	5	0	7	17	5	0	4	28	5	0	131
8:45 AM	4	20	2	0	3	27	4	0	3	16	1	0	3	20	7	0	110
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	29	281	59	0	54	289	102	0	70	185	30	0	50	275	64	0	1488
APPROACH %'s :	7.86%	76.15%	15.99%	0.00%	12.13%	64.94%	22.92%	0.00%	24.56%	64.91%	10.53%	0.00%	12.85%	70.69%	16.45%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	17	179	40	0	40	180	82	0	50	109	18	0	31	166	39	0	951
PEAK HR FACTOR :	0.708	0.699	0.526	0.000	0.769	0.849	0.683	0.000	0.625	0.699	0.750	0.000	0.596	0.798	0.542	0.000	0.834
	0.766				0.868				0.851				0.776				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	52	10	0	11	26	9	0	15	38	3	0	2	27	20	0	217
4:15 PM	2	49	2	0	7	29	9	0	9	35	4	0	4	24	9	0	183
4:30 PM	6	60	3	0	5	44	9	0	13	36	5	0	1	28	8	0	218
4:45 PM	2	46	2	0	11	34	3	0	20	40	6	0	3	28	8	0	203
5:00 PM	1	52	5	0	10	35	11	0	15	55	4	0	4	28	9	0	229
5:15 PM	6	49	2	0	8	37	6	0	14	38	5	0	2	25	13	0	205
5:30 PM	5	53	5	0	12	27	9	0	16	38	4	0	2	28	8	0	207
5:45 PM	2	39	3	0	15	31	15	0	11	28	4	0	4	20	12	0	184
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	28	400	32	0	79	263	71	0	113	308	35	0	22	208	87	0	1646
APPROACH %'s :	6.09%	86.96%	6.96%	0.00%	19.13%	63.68%	17.19%	0.00%	24.78%	67.54%	7.68%	0.00%	6.94%	65.62%	27.44%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	15	207	12	0	34	150	29	0	62	169	20	0	10	109	38	0	855
PEAK HR FACTOR :	0.625	0.863	0.600	0.000	0.773	0.852	0.659	0.000	0.775	0.768	0.833	0.000	0.625	0.973	0.731	0.000	0.933
	0.848				0.918				0.848				0.957				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Randall Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-040
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Beech Ave				Beech Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	4
7:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
7:30 AM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
7:45 AM	0	0	1	0	0	1	0	0	0	1	0	0	0	1	0	0	4
8:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0	0	4
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
8:30 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	4	0	0	6
8:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	1	0	1	6	0	0	1	6	0	0	1	9	1	0	28
APPROACH %'s :	33.33%	33.33%	33.33%	0.00%	14.29%	85.71%	0.00%	0.00%	14.29%	85.71%	0.00%	0.00%	9.09%	81.82%	9.09%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	1	1	0	0	3	0	0	1	4	0	0	0	3	0	0	13
PEAK HR FACTOR :	0.000	0.250	0.250	0.000	0.000	0.750	0.000	0.000	0.250	0.500	0.000	0.000	0.000	0.375	0.000	0.000	0.813
	0.500				0.750				0.625				0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	2	2	0	0	0	2	0	0	0	0	0	0	7
4:15 PM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	3
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	3
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	5	0	0	2	8	0	0	0	2	1	0	0	2	2	0	22
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	20.00%	80.00%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	50.00%	50.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	3	0	0	0	0	1	0	0	1	1	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.250	0.000	0.500
					0.375				0.250				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Randall Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-040
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Beech Ave				Beech Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	5	0	0	0	0	0	0	0	1	0	0	7
APPROACH %'s :					16.67%	83.33%	0.00%	0.00%					0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
					0.250								0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	3	1	0	0	1	0	0	0	1	1	0	8
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	2	1	0	0	1	0	0	0	1	1	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.250	0.000	0.500
					0.375				0.250				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Randall Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-040
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Beech Ave				Beech Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	4
8:15 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	6	0	0	0	6	0	0	1	0	0	0	0	0	0	0	13
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	4	0	0	0	3	0	0	1	0	0	0	0	0	0	0	8
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.750	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
	0.500				0.750				0.250								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	4	0	0	0	0	0	0	0	0	0	0	7
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375
	0.500				0.250												

National Data & Surveying Services Intersection Turning Movement Count

Location: Fontana Ave/Catawba Ave & Randall Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-041
Date: 9/9/2021

Data - Total

NS/EW Streets:	Fontana Ave/Catawba Ave						Fontana Ave/Catawba Ave						Randall Ave						Randall Ave																
AM	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND						NORTHBOUND2						SOUTHBOUND2					
	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0											
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	5	3	17	0	9	0	9	11	3	0	6	0	0	19	7	0	7	0	0	18	1	0	5	2	13	0	1	1	0	18	8	6	8	0	177
7:15 AM	7	12	29	0	10	0	20	11	1	0	4	0	0	24	6	0	4	0	5	29	5	0	13	1	18	1	4	10	2	26	10	5	6	0	263
7:30 AM	6	11	33	0	6	1	26	19	3	0	1	0	0	26	10	0	7	0	4	39	4	0	13	2	15	0	4	7	1	28	8	13	6	3	296
7:45 AM	6	13	8	0	10	0	5	29	4	0	6	0	2	16	18	0	10	0	4	40	6	0	8	0	13	1	4	6	0	35	2	9	5	1	261
8:00 AM	11	19	11	0	25	0	6	25	0	0	4	0	3	29	9	0	14	0	5	30	3	0	17	1	17	0	4	4	0	23	2	6	6	2	276
8:15 AM	19	16	8	0	27	2	3	12	2	0	2	1	1	23	19	0	14	0	13	34	1	0	17	1	18	1	1	5	0	31	1	13	9	0	294
8:30 AM	4	11	5	0	7	0	4	4	1	0	4	0	1	17	4	0	6	0	5	29	0	0	13	0	27	0	0	4	0	31	1	6	5	0	189
8:45 AM	1	3	1	0	7	1	3	6	2	0	1	1	0	19	3	0	7	0	2	15	2	0	4	1	22	1	3	6	1	13	0	4	1	3	133
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	59	88	112	0	101	4	76	117	16	0	28	2	7	173	76	0	69	0	38	234	22	0	90	8	143	4	21	43	4	205	32	62	46	9	1889
APPROACH %'s :	16.21%	24.18%	30.77%	0.00%	27.75%	1.10%	31.80%	48.95%	6.69%	0.00%	11.72%	0.84%	2.15%	53.23%	23.38%	0.00%	21.23%	0.00%	9.69%	59.69%	5.61%	0.00%	22.96%	2.04%	66.51%	1.86%	9.77%	20.00%	1.86%	57.91%	9.04%	17.51%	12.99%	2.54%	
PEAK HR :	07:30 AM - 08:30 AM																																		TOTAL
PEAK HR VOL :	42	59	60	0	68	3	40	85	9	0	13	1	6	94	56	0	45	0	26	143	14	0	55	4	63	2	13	22	1	117	13	41	26	6	1127
PEAK HR FACTOR :	0.553	0.776	0.455	0.000	0.630	0.375	0.385	0.733	0.563	0.000	0.542	0.250	0.500	0.810	0.737	0.000	0.804	0.000	0.500	0.894	0.583	0.000	0.809	0.500	0.875	0.500	0.813	0.786	0.250	0.836	0.406	0.788	0.722	0.500	0.952
	0.806						0.755						0.882						0.917																

PM	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND																
	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	15	12	5	0	9	0	2	10	2	0	0	1	1	40	9	0	14	0	4	30	3	0	8	2	46	1	4	10	0	24	0	6	8	1	267
4:15 PM	6	22	2	0	14	0	4	12	2	0	4	0	0	30	4	0	10	0	2	19	5	0	4	0	60	3	3	11	0	22	1	13	15	0	268
4:30 PM	6	15	3	0	21	0	5	11	1	0	1	0	0	33	5	0	8	1	0	43	1	0	9	0	63	0	7	11	0	22	1	13	10	2	292
4:45 PM	10	10	6	0	8	0	2	9	0	0	2	1	0	34	5	0	8	1	3	30	1	0	13	2	62	1	2	12	0	21	1	5	5	2	256
5:00 PM	11	15	6	0	10	0	3	10	0	0	3	0	2	41	5	0	14	1	4	37	2	0	5	0	50	1	5	5	0	24	2	8	6	3	273
5:15 PM	6	10	5	0	9	0	2	12	0	0	1	3	0	32	7	0	9	1	5	29	3	0	9	3	63	1	2	11	0	24	1	13	10	0	271
5:30 PM	6	11	3	0	8	0	5	10	1	0	3	1	1	26	8	0	7	3	7	29	5	0	7	1	56	1	3	8	0	24	0	6	14	2	256
5:45 PM	4	14	11	0	7	0	1	9	1	0	2	0	1	30	4	0	10	0	4	17	3	0	6	1	39	1	5	10	0	27	1	14	9	1	232
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	64	109	41	0	86	0	24	83	7	0	16	6	5	266	47	0	80	7	29	234	23	0	61	9	439	9	31	78	0	188	7	78	77	11	2115
APPROACH %'s :	21.33%	36.33%	13.67%	0.00%	28.67%	0.00%	17.65%	61.03%	5.15%	0.00%	11.76%	4.41%	1.23%	65.68%	11.60%	0.00%	19.75%	1.73%	8.15%	65.73%	6.46%	0.00%	17.13%	2.53%	78.82%	1.62%	5.57%	14.00%	0.00%	52.08%	1.94%	21.61%	21.33%	3.05%	
PEAK HR :	04:30 PM - 05:30 PM																																		TOTAL
PEAK HR VOL :	33	50	20	0	48	0	12	42	1	0	7	4	2	140	22	0	39	4	12	139	7	0	36	5	238	3	16	39	0	91	5	39	31	7	1092
PEAK HR FACTOR :	0.750	0.833	0.833	0.000	0.571	0.000	0.600	0.875	0.250	0.000	0.583	0.333	0.250	0.854	0.786	0.000	0.696	1.000	0.600	0.808	0.583	0.000	0.692	0.417	0.944	0.750	0.571	0.813	0.000	0.948	0.625	0.750	0.775	0.583	0.935
	0.839						0.917						0.821						0.939																

	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2
AM Peak	43	60	61	0	69	4	41	86	9	0	14	1	6	95	57	0	46	0	27	146	14	0	55	4	66	2	13	23	1	123	13	45	26	6
PM Peak	33	51	20	0	48	0	12	42	1	0	7	4	2	143	22	0	39	4	12	142	7	0	39	5	240	3	16	40	0	95	5	39	31	7

National Data & Surveying Services Intersection Turning Movement Count

Location: Fontana Ave/Catawba Ave & Randall Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-041
Date: 9/9/2021

Data - Cars

NS/EW Streets: Fontana Ave/Catawba Ave | Fontana Ave/Catawba Ave | Randall Ave | Randall Ave

AM

	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND						NORTHBOUND2					SOUTHBOUND2					
	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	5	3	17	0	8	0	9	11	3	0	6	0	0	19	7	0	7	0	0	18	1	0	5	2	12	0	1	1	0	18	8	5	7	0	173
7:15 AM	7	10	29	0	8	0	20	11	1	0	4	0	0	24	6	0	4	0	4	29	5	0	13	1	16	1	4	10	2	26	10	5	6	0	256
7:30 AM	6	11	33	0	5	1	26	18	3	0	1	0	0	26	10	0	6	0	4	39	4	0	13	2	15	0	4	7	1	28	8	12	6	3	292
7:45 AM	5	13	8	0	10	0	5	29	4	0	6	0	2	16	17	0	10	0	4	40	6	0	8	0	12	1	4	5	0	35	2	9	5	1	257
8:00 AM	11	19	10	0	25	0	6	25	0	0	3	0	3	27	9	0	14	0	5	29	3	0	17	1	15	0	4	3	0	21	2	6	6	2	266
8:15 AM	19	14	8	0	26	1	2	12	2	0	2	1	1	23	19	0	14	0	11	32	1	0	17	1	17	1	1	5	0	28	1	10	9	0	278
8:30 AM	4	11	5	0	7	0	4	4	1	0	4	0	1	15	4	0	5	0	4	28	0	0	13	0	25	0	0	4	0	29	1	2	5	0	176
8:45 AM	1	3	1	0	7	1	3	5	2	0	1	1	0	19	3	0	7	0	2	15	2	0	3	1	19	1	3	6	1	13	0	4	1	3	128
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	58	84	111	0	96	3	75	115	16	0	27	2	7	169	75	0	67	0	34	230	22	0	89	8	131	4	21	41	4	198	32	53	45	9	1826
APPROACH %'s :	16.48%	23.86%	31.53%	0.00%	27.27%	0.85%	31.91%	48.94%	6.81%	0.00%	11.49%	0.85%	2.20%	53.14%	23.58%	0.00%	21.07%	0.00%	8.88%	60.05%	5.74%	0.00%	23.24%	2.09%	65.17%	1.99%	10.45%	20.40%	1.99%	58.75%	9.50%	15.73%	13.35%	2.67%	
PEAK HR :	07:30 AM - 08:30 AM																																		TOTAL
PEAK HR VOL :	41	57	59	0	66	2	39	84	9	0	12	1	6	92	55	0	44	0	24	140	14	0	55	4	59	2	13	20	1	112	13	37	26	6	1093
PEAK HR FACTOR :	0.539	0.750	0.447	0.000	0.635	0.500	0.375	0.724	0.563	0.000	0.500	0.250	0.500	0.852	0.724	0.000	0.786	0.000	0.545	0.875	0.583	0.000	0.809	0.500	0.868	0.500	0.813	0.714	0.250	0.800	0.406	0.771	0.722	0.500	0.936
	0.827						0.755						0.864						0.956																

PM

	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND																
	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	15	12	5	0	9	0	2	9	2	0	0	1	1	40	7	0	14	0	2	30	3	0	8	2	45	1	3	10	0	24	0	6	8	1	260
4:15 PM	6	22	2	0	14	0	4	11	2	0	4	0	0	30	3	0	10	0	2	19	5	0	4	0	60	3	3	11	0	21	1	10	15	0	262
4:30 PM	6	15	3	0	21	0	5	11	1	0	1	0	0	33	5	0	8	1	0	41	1	0	8	0	63	0	7	11	0	22	1	13	10	2	289
4:45 PM	10	9	6	0	8	0	2	9	0	0	2	1	0	34	5	0	8	1	3	29	1	0	13	2	62	1	2	11	0	20	1	5	5	2	252
5:00 PM	11	15	6	0	10	0	3	10	0	0	3	0	2	38	5	0	14	1	4	36	2	0	5	0	48	1	5	5	0	24	2	8	6	3	267
5:15 PM	6	10	5	0	9	0	2	12	0	0	1	3	0	32	7	0	9	1	5	29	3	0	8	3	63	1	2	11	0	22	1	13	10	0	268
5:30 PM	6	11	3	0	8	0	5	10	1	0	3	1	1	26	8	0	7	3	7	29	5	0	6	1	51	1	3	8	0	22	0	6	13	2	247
5:45 PM	4	14	11	0	7	0	1	9	1	0	2	0	1	30	4	0	10	0	4	17	3	0	6	1	38	1	5	10	0	27	1	14	9	1	231
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	64	108	41	0	86	0	24	81	7	0	16	6	5	263	44	0	80	7	27	230	23	0	58	9	430	9	30	77	0	182	7	75	76	11	2076
APPROACH %'s :	21.40%	36.12%	13.71%	0.00%	28.76%	0.00%	17.91%	60.45%	5.22%	0.00%	11.94%	4.48%	1.25%	65.91%	11.03%	0.00%	20.05%	1.75%	7.78%	66.28%	6.63%	0.00%	16.71%	2.59%	78.75%	1.65%	5.49%	14.10%	0.00%	51.85%	1.99%	21.37%	21.65%	3.13%	
PEAK HR :	04:30 PM - 05:30 PM																																		TOTAL
PEAK HR VOL :	33	49	20	0	48	0	12	42	1	0	7	4	2	137	22	0	39	4	12	135	7	0	34	5	236	3	16	38	0	88	5	39	31	7	1076
PEAK HR FACTOR :	0.750	0.817	0.833	0.000	0.571	0.000	0.600	0.875	0.250	0.000	0.583	0.333	0.250	0.901	0.786	0.000	0.696	1.000	0.600	0.823	0.583	0.000	0.654	0.417	0.937	0.750	0.571	0.864	0.000	0.917	0.625	0.750	0.775	0.583	0.931
	0.833						0.917						0.850						0.965																

AM Peak	41	57	59	0	66	2	39	84	9	0	12	1	6	92	55	0	44	0	24	140	14	0	55	4	59	2	13	20	1	112	13	37	26	6
PM Peak	33	49	20	0	48	0	12	42	1	0	7	4	2	137	22	0	39	4	12	135	7	0	34	5	236	3	16	38	0	88	5	39	31	7

National Data & Surveying Services

Intersection Turning Movement Count

Location: Fontana Ave/Catawba Ave & Randall Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-041
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Fontana Ave/Catawba Ave						Fontana Ave/Catawba Ave						Randall Ave						Randall Ave																
AM	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND						NORTHBOUND2					SOUTHBOUND2					
	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
7:15 AM	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	6
7:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
7:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4
8:00 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	1	0	0	0	0	8
8:15 AM	0	2	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	10
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	1	1	0	0	0	0	2	0	0	0	0	2	0	4	0	0	13
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	1	4	1	0	4	1	1	1	0	0	1	0	0	4	1	0	2	0	4	2	0	0	0	0	6	0	0	2	0	4	0	6	1	0	46
APPROACH %'s :	9.09%	36.36%	9.09%	0.00%	36.36%	9.09%	33.33%	33.33%	0.00%	0.00%	33.33%	0.00%	0.00%	57.14%	14.29%	0.00%	28.57%	0.00%	66.67%	33.33%	0.00%	0.00%	0.00%	0.00%	75.00%	0.00%	0.00%	25.00%	0.00%	36.36%	0.00%	54.55%	9.09%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																																		TOTAL
PEAK HR VOL :	1	2	1	0	2	1	1	1	0	0	1	0	0	2	1	0	1	0	2	1	0	0	0	0	2	0	0	2	0	2	0	2	0	0	25
PEAK HR FACTOR :	0.250	0.250	0.250	0.000	0.500	0.250	0.250	0.250	0.000	0.000	0.250	0.000	0.000	0.250	0.250	0.000	0.250	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.500	0.000	0.250	0.000	0.000	0.625
	0.438						0.750						0.500						0.375																

PM	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND																
	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	7
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	6
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	2	0	0	1	0	8
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	0	2	0	0	0	0	0	1	3	0	0	0	2	2	0	0	1	0	7	0	1	1	0	4	0	3	1	0	29
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	75.00%	0.00%	0.00%	0.00%	40.00%	40.00%	0.00%	0.00%	20.00%	0.00%	77.78%	0.00%	11.11%	11.11%	0.00%	50.00%	0.00%	37.50%	12.50%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																																		TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	1	0	0	0	0	1	0	1	0	0	0	0	7
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.875
	0.250						0.000						0.250						0.750																

1.5																																		
AM Peak	2	3	2	0	3	2	2	2	0	0	2	0	0	3	2	0	2	0	3	2	0	0	0	0	3	0	0	3	0	3	0	3	0	0	
PM Peak	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3	0	0	2	0	0	0	0	2	0	2	0	0	0	0	

National Data & Surveying Services

Intersection Turning Movement Count

Location: Fontana Ave/Catawba Ave & Randall Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-041
Date: 9/9/2021

Data - 3axle

NS/EW Streets: Fontana Ave/Catawba Ave | Fontana Ave/Catawba Ave | Randall Ave | Randall Ave

AM

	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND						NORTHBOUND2					SOUTHBOUND2					
	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	1	0	1	0	0	5
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	5	0	0	0	0	1	0	1	0	0	11
APPROACH %'s :	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%							0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																																		TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	1	0	1	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.300
																				0.250															

PM

	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND																	
	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	1	0	2	0	0	0	0	1	0	0	0	0	8
APPROACH %'s :													0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	66.67%	0.00%	0.00%	33.33%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																																		TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	1	0	0	0	0	7
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.438
														0.250						0.500															

2																																			
AM Peak	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	2	0	2	0	0	
PM Peak	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	2	0	0	0	0	

National Data & Surveying Services

Intersection Turning Movement Count

Location: Fontana Ave/Catawba Ave & Randall Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-041
Date: 9/9/2021

Data - 4axle

NS/EW Streets: Fontana Ave/Catawba Ave | Fontana Ave/Catawba Ave | Randall Ave | Randall Ave

AM

	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND						NORTHBOUND2					SOUTHBOUND2					
	0 NL	1 NT	0 NR	0 NU	0 NT2	0 NU2	0 SL	1 ST	0 SR	0 SU	0 ST2	0 SU2	0 EL	1 ET	0 ER	0 EU	0 EL2	0 ER2	0 WL	1 WT	0 WR	0 WU	0 WL2	0 WR2	0 N2T	0 N2L2	0 N2T2	0 N2R2	0 N2U2	0 S2T	0 S2L2	0 S2T2	0 S2R2	0 S2U2	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	0	2	0	0	6
APPROACH %'s :																			0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																																		TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	3
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.000	0.750

PM

	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND																
	0 NL	1 NT	0 NR	0 NU	0 NT2	0 NU2	0 SL	1 ST	0 SR	0 SU	0 ST2	0 SU2	0 EL	1 ET	0 ER	0 EU	0 EL2	0 ER2	0 WL	1 WT	0 WR	0 WU	0 WL2	0 WR2	0 N2T	0 N2L2	0 N2T2	0 N2R2	0 N2U2	0 S2T	0 S2L2	0 S2T2	0 S2R2	0 S2U2	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	2
APPROACH %'s :																			0.00%	0.00%	0.00%	0.00%	100.00%	0.00%						100.00%	0.00%	0.00%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																																		TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.500

3																																			
AM Peak	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	3	0	0	
PM Peak	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	0	0	0	0	

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-042
Date: 9/9/2021

Data - Total

NS/EW Streets:	Citrus Ave				Citrus Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	7	74	19	0	10	180	9	0	4	13	7	0	20	27	15	0	385
7:15 AM	18	110	26	0	15	191	30	0	33	24	29	0	25	32	11	0	544
7:30 AM	25	127	27	0	20	189	25	0	32	27	64	0	29	31	13	0	609
7:45 AM	22	129	50	0	31	181	7	0	32	33	35	0	36	31	17	0	604
8:00 AM	32	161	54	0	28	200	10	0	8	25	18	0	30	23	23	0	612
8:15 AM	33	145	64	0	23	222	7	0	7	24	17	0	27	21	13	0	603
8:30 AM	29	161	34	0	15	154	5	0	1	20	18	0	16	22	11	0	486
8:45 AM	8	116	21	0	5	127	2	0	6	17	9	0	11	17	3	0	342
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	174	1023	295	0	147	1444	95	0	123	183	197	0	194	204	106	0	4185
APPROACH %'s :	11.66%	68.57%	19.77%	0.00%	8.72%	85.65%	5.63%	0.00%	24.45%	36.38%	39.17%	0.00%	38.49%	40.48%	21.03%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	112	562	195	0	102	792	49	0	79	109	134	0	122	106	66	0	2428
PEAK HR FACTOR :	0.848	0.873	0.762	0.000	0.823	0.892	0.490	0.000	0.617	0.826	0.523	0.000	0.847	0.855	0.717	0.000	0.992
	0.880				0.936				0.654				0.875				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	13	221	36	0	12	133	6	0	8	33	14	0	12	29	20	0	537
4:15 PM	9	187	30	0	22	150	3	0	6	47	7	0	8	23	13	0	505
4:30 PM	22	200	32	0	13	149	3	0	6	31	9	0	26	29	15	0	535
4:45 PM	13	207	21	0	15	170	7	0	7	39	9	0	9	38	16	0	551
5:00 PM	15	182	20	0	19	145	0	0	5	43	11	0	16	38	16	0	510
5:15 PM	10	227	23	0	19	141	5	0	5	41	9	0	14	36	14	0	544
5:30 PM	11	230	18	0	12	155	1	0	3	40	7	0	18	33	17	0	545
5:45 PM	13	226	22	0	21	155	2	0	1	27	9	0	16	26	14	0	532
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	106	1680	202	0	133	1198	27	0	41	301	75	0	119	252	125	0	4259
APPROACH %'s :	5.33%	84.51%	10.16%	0.00%	9.79%	88.22%	1.99%	0.00%	9.83%	72.18%	17.99%	0.00%	23.99%	50.81%	25.20%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	49	846	82	0	65	611	13	0	20	163	36	0	57	145	63	0	2150
PEAK HR FACTOR :	0.817	0.920	0.891	0.000	0.855	0.899	0.464	0.000	0.714	0.948	0.818	0.000	0.792	0.954	0.926	0.000	0.975
	0.939				0.897				0.928				0.946				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-042
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Citrus Ave				Citrus Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	7	68	19	0	9	173	9	0	4	13	7	0	20	26	14	0	369
7:15 AM	18	100	25	0	14	187	29	0	32	24	29	0	24	31	11	0	524
7:30 AM	25	118	26	0	20	177	25	0	31	27	64	0	29	31	13	0	586
7:45 AM	22	122	50	0	31	172	7	0	32	32	35	0	36	31	17	0	587
8:00 AM	32	155	54	0	26	189	10	0	8	25	17	0	29	22	22	0	589
8:15 AM	32	142	64	0	23	209	6	0	7	23	17	0	27	19	13	0	582
8:30 AM	29	154	34	0	15	150	5	0	1	20	17	0	16	22	11	0	474
8:45 AM	7	108	19	0	5	117	2	0	5	16	9	0	11	16	3	0	318
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	172	967	291	0	143	1374	93	0	120	180	195	0	192	198	104	0	4029
APPROACH %'s :	12.03%	67.62%	20.35%	0.00%	8.88%	85.34%	5.78%	0.00%	24.24%	36.36%	39.39%	0.00%	38.87%	40.08%	21.05%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	111	537	194	0	100	747	48	0	78	107	133	0	121	103	65	0	2344
PEAK HR FACTOR :	0.867	0.866	0.758	0.000	0.806	0.894	0.480	0.000	0.609	0.836	0.520	0.000	0.840	0.831	0.739	0.000	0.995
	0.873				0.940				0.652				0.860				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	13	220	36	0	12	124	6	0	8	33	14	0	12	29	20	0	527
4:15 PM	9	182	30	0	22	141	3	0	6	47	7	0	8	21	13	0	489
4:30 PM	21	197	31	0	13	144	3	0	6	31	9	0	26	28	15	0	524
4:45 PM	12	196	21	0	15	165	7	0	7	37	9	0	9	37	16	0	531
5:00 PM	15	179	20	0	18	141	0	0	5	43	10	0	16	37	16	0	500
5:15 PM	10	224	23	0	19	134	5	0	5	40	8	0	14	35	14	0	531
5:30 PM	11	223	18	0	12	152	1	0	3	40	6	0	18	32	17	0	533
5:45 PM	13	224	22	0	21	152	2	0	1	27	9	0	16	26	14	0	527
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	104	1645	201	0	132	1153	27	0	41	298	72	0	119	245	125	0	4162
APPROACH %'s :	5.33%	84.36%	10.31%	0.00%	10.06%	87.88%	2.06%	0.00%	9.98%	72.51%	17.52%	0.00%	24.34%	50.10%	25.56%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	48	822	82	0	64	592	13	0	20	160	33	0	57	141	63	0	2095
PEAK HR FACTOR :	0.800	0.917	0.891	0.000	0.842	0.897	0.464	0.000	0.714	0.930	0.825	0.000	0.792	0.953	0.926	0.000	0.983
	0.926				0.894				0.918				0.946				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-042
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	3	0	0	0	0	0	0	0	1	1	0	6
7:15 AM	0	5	0	0	1	4	1	0	1	0	0	0	1	1	0	0	14
7:30 AM	0	3	1	0	0	4	0	0	1	0	0	0	0	0	0	0	9
7:45 AM	0	4	0	0	0	3	0	0	0	1	0	0	0	0	0	0	8
8:00 AM	0	2	0	0	2	4	0	0	0	0	1	0	1	1	1	0	12
8:15 AM	0	3	0	0	0	5	1	0	0	1	0	0	0	1	0	0	11
8:30 AM	0	5	0	0	0	1	0	0	0	0	1	0	0	0	0	0	7
8:45 AM	0	3	1	0	0	2	0	0	1	1	0	0	0	1	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	26	2	0	3	26	2	0	3	3	2	0	2	5	2	0	76
APPROACH %'s :	0.00%	92.86%	7.14%	0.00%	9.68%	83.87%	6.45%	0.00%	37.50%	37.50%	25.00%	0.00%	22.22%	55.56%	22.22%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	12	1	0	2	16	1	0	1	2	1	0	1	2	1	0	40
PEAK HR FACTOR :	0.000	0.750	0.250	0.000	0.250	0.800	0.250	0.000	0.250	0.500	0.250	0.000	0.250	0.500	0.250	0.000	0.833
	0.813				0.792				1.000				0.333				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5
4:15 PM	0	3	0	0	0	6	0	0	0	0	0	0	0	2	0	0	11
4:30 PM	0	1	0	0	0	3	0	0	0	0	0	0	0	1	0	0	5
4:45 PM	0	4	0	0	0	3	0	0	0	2	0	0	0	0	0	0	9
5:00 PM	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	4
5:15 PM	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	4
5:30 PM	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	14	0	0	1	19	0	0	0	3	1	0	0	5	0	0	43
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	5.00%	95.00%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	10	0	0	1	5	0	0	0	3	1	0	0	2	0	0	22
PEAK HR FACTOR :	0.000	0.625	0.000	0.000	0.250	0.417	0.000	0.000	0.000	0.375	0.250	0.000	0.000	0.500	0.000	0.000	0.611
	0.625				0.500				0.500				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-042
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4
8:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	1	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	6
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	4	1	0	0	2	0	0	0	0	0	0	0	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	9	1	0	0	12	0	0	0	0	0	0	0	1	0	0	24
APPROACH %'s :	9.09%	81.82%	9.09%	0.00%	0.00%	100.00%	0.00%	0.00%					0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	3	0	0	0	9	0	0	0	0	0	0	0	1	0	0	14
PEAK HR FACTOR :	0.250	0.750	0.000	0.000	0.000	0.563	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.583
	1.000				0.563								0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	1	4	0	0	0	1	0	0	0	0	0	0	0	1	0	0	7
5:00 PM	0	1	0	0	0	3	0	0	0	0	1	0	0	0	0	0	5
5:15 PM	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	8	0	0	0	12	0	0	0	0	2	0	0	2	0	0	25
APPROACH %'s :	11.11%	88.89%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	1	5	0	0	0	8	0	0	0	0	2	0	0	2	0	0	18
PEAK HR FACTOR :	0.250	0.313	0.000	0.000	0.000	0.667	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.643
	0.300				0.667				0.500				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-042
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	4	0	0	1	3	0	0	0	0	0	0	0	0	0	0	8
7:15 AM	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
7:30 AM	0	5	0	0	0	7	0	0	0	0	0	0	0	0	0	0	12
7:45 AM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
8:00 AM	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0	0	9
8:15 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
8:30 AM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
8:45 AM	1	1	0	0	0	6	0	0	0	0	0	0	0	0	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	21	1	0	1	32	0	0	0	0	0	0	0	0	0	0	56
APPROACH %'s :	4.35%	91.30%	4.35%	0.00%	3.03%	96.97%	0.00%	0.00%									
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	10	0	0	0	20	0	0	0	0	0	0	0	0	0	0	30
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.714	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625
	0.500				0.714												

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
4:45 PM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
5:30 PM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
5:45 PM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	13	1	0	0	14	0	0	0	0	0	0	0	0	0	0	29
APPROACH %'s :	6.67%	86.67%	6.67%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	9	0	0	0	6	0	0	0	0	0	0	0	0	0	0	15
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
	0.750				0.500												

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-043
Date: 9/15/2021

Data - Total

NS/EW Streets:	Sierra Ave				Sierra Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	9	110	6	0	4	140	7	0	1	19	6	0	29	36	4	0	371
7:15 AM	9	168	10	0	5	182	7	0	5	32	16	0	24	57	7	0	522
7:30 AM	11	206	12	0	9	224	8	0	7	41	21	0	32	58	18	0	647
7:45 AM	6	181	13	0	3	289	8	0	10	40	24	0	33	57	9	0	673
8:00 AM	8	169	14	0	7	269	9	0	23	50	20	0	33	40	7	0	649
8:15 AM	6	155	9	0	3	239	11	0	16	66	28	0	33	46	13	0	625
8:30 AM	10	180	11	0	8	257	10	0	17	32	24	0	23	32	10	0	614
8:45 AM	5	168	10	0	3	187	5	0	9	24	10	0	28	32	12	0	493
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	64	1337	85	0	42	1787	65	0	88	304	149	0	235	358	80	0	4594
APPROACH %'s :	4.31%	89.97%	5.72%	0.00%	2.22%	94.35%	3.43%	0.00%	16.27%	56.19%	27.54%	0.00%	34.92%	53.19%	11.89%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	31	711	48	0	22	1021	36	0	56	197	93	0	131	201	47	0	2594
PEAK HR FACTOR :	0.705	0.863	0.857	0.000	0.611	0.883	0.818	0.000	0.609	0.746	0.830	0.000	0.992	0.866	0.653	0.000	0.964
	0.862				0.899				0.786				0.877				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	19	271	24	0	25	197	12	0	20	63	19	0	30	44	15	0	739
4:15 PM	20	251	29	0	13	191	12	0	19	48	23	0	37	32	13	0	688
4:30 PM	12	271	26	0	11	190	21	0	19	66	11	0	22	45	15	0	709
4:45 PM	17	224	33	0	15	188	15	0	17	53	12	0	28	35	14	0	651
5:00 PM	14	258	38	0	10	212	17	0	13	53	21	0	23	26	11	0	696
5:15 PM	21	222	22	0	14	223	8	0	24	45	11	0	22	31	8	0	651
5:30 PM	12	242	20	0	12	178	11	0	24	49	8	0	25	47	15	0	643
5:45 PM	12	247	31	0	7	166	15	0	22	37	17	0	24	41	15	0	634
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	127	1986	223	0	107	1545	111	0	158	414	122	0	211	301	106	0	5411
APPROACH %'s :	5.44%	85.02%	9.55%	0.00%	6.07%	87.63%	6.30%	0.00%	22.77%	59.65%	17.58%	0.00%	34.14%	48.71%	17.15%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	68	1017	112	0	64	766	60	0	75	230	65	0	117	156	57	0	2787
PEAK HR FACTOR :	0.850	0.938	0.848	0.000	0.640	0.972	0.714	0.000	0.938	0.871	0.707	0.000	0.791	0.867	0.950	0.000	0.943
	0.953				0.951				0.907				0.927				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-043
Date: 9/15/2021

Data - Cars

NS/EW Streets:	Sierra Ave				Sierra Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	8	100	6	0	4	136	7	0	1	17	6	0	28	36	4	0	353
7:15 AM	8	161	9	0	5	177	7	0	5	31	16	0	23	57	7	0	506
7:30 AM	11	203	12	0	9	219	8	0	7	41	21	0	29	57	17	0	634
7:45 AM	6	175	12	0	3	283	8	0	10	39	24	0	31	57	8	0	656
8:00 AM	8	162	14	0	7	261	9	0	22	49	20	0	33	39	7	0	631
8:15 AM	6	149	9	0	3	230	11	0	16	63	28	0	33	45	12	0	605
8:30 AM	9	174	11	0	8	245	9	0	17	32	24	0	23	31	10	0	593
8:45 AM	5	164	10	0	3	183	5	0	9	22	10	0	28	31	12	0	482
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	61	1288	83	0	42	1734	64	0	87	294	149	0	228	353	77	0	4460
APPROACH %'s :	4.26%	89.94%	5.80%	0.00%	2.28%	94.24%	3.48%	0.00%	16.42%	55.47%	28.11%	0.00%	34.65%	53.65%	11.70%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	31	689	47	0	22	993	36	0	55	192	93	0	126	198	44	0	2526
PEAK HR FACTOR :	0.705	0.849	0.839	0.000	0.611	0.877	0.818	0.000	0.625	0.762	0.830	0.000	0.955	0.868	0.647	0.000	0.963
	0.848				0.894				0.794				0.893				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	19	268	24	0	25	192	11	0	20	62	19	0	30	37	14	0	721
4:15 PM	20	247	29	0	13	186	12	0	18	48	22	0	37	31	13	0	676
4:30 PM	12	268	26	0	11	186	19	0	19	66	11	0	22	45	14	0	699
4:45 PM	17	222	33	0	15	184	15	0	17	53	12	0	28	35	14	0	645
5:00 PM	14	254	38	0	10	205	17	0	11	49	21	0	23	26	11	0	679
5:15 PM	21	220	22	0	14	220	8	0	24	44	11	0	22	31	7	0	644
5:30 PM	11	238	20	0	12	173	11	0	24	49	8	0	25	47	15	0	633
5:45 PM	12	244	31	0	7	165	15	0	22	37	17	0	24	40	15	0	629
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	126	1961	223	0	107	1511	108	0	155	408	121	0	211	292	103	0	5326
APPROACH %'s :	5.45%	84.89%	9.65%	0.00%	6.20%	87.54%	6.26%	0.00%	22.66%	59.65%	17.69%	0.00%	34.82%	48.18%	17.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	68	1005	112	0	64	748	57	0	74	229	64	0	117	148	55	0	2741
PEAK HR FACTOR :	0.850	0.938	0.848	0.000	0.640	0.974	0.750	0.000	0.925	0.867	0.727	0.000	0.791	0.822	0.982	0.000	0.950
	0.953				0.953				0.908				0.988				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-043
Date: 9/15/2021

Data - 2axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	9	0	0	0	2	0	0	0	2	0	0	1	0	0	0	14
7:15 AM	1	7	0	0	0	3	0	0	0	1	0	0	1	0	0	0	13
7:30 AM	0	3	0	0	0	4	0	0	0	0	0	0	3	1	0	0	11
7:45 AM	0	6	1	0	0	3	0	0	0	1	0	0	2	0	1	0	14
8:00 AM	0	5	0	0	0	6	0	0	1	1	0	0	0	1	0	0	14
8:15 AM	0	5	0	0	0	7	0	0	0	3	0	0	0	1	1	0	17
8:30 AM	1	6	0	0	0	11	1	0	0	0	0	0	0	1	0	0	20
8:45 AM	0	3	0	0	0	4	0	0	0	0	0	0	0	1	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	44	1	0	0	40	1	0	1	8	0	0	7	5	2	0	111
APPROACH %'s :	4.26%	93.62%	2.13%	0.00%	0.00%	97.56%	2.44%	0.00%	11.11%	88.89%	0.00%	0.00%	50.00%	35.71%	14.29%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	19	1	0	0	20	0	0	1	5	0	0	5	3	2	0	56
PEAK HR FACTOR :	0.000	0.792	0.250	0.000	0.000	0.714	0.000	0.000	0.250	0.417	0.000	0.000	0.417	0.750	0.500	0.000	0.824
	0.714				0.714				0.500				0.625				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	3	0	0	0	4	1	0	0	0	0	0	0	2	1	0	11
4:15 PM	0	3	0	0	0	3	0	0	1	0	1	0	0	1	0	0	9
4:30 PM	0	3	0	0	0	2	2	0	0	0	0	0	0	0	1	0	8
4:45 PM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
5:00 PM	0	3	0	0	0	6	0	0	1	4	0	0	0	0	0	0	14
5:15 PM	0	2	0	0	0	2	0	0	0	1	0	0	0	0	1	0	6
5:30 PM	1	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	9
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	21	0	0	0	24	3	0	2	5	1	0	0	4	3	0	64
APPROACH %'s :	4.55%	95.45%	0.00%	0.00%	0.00%	88.89%	11.11%	0.00%	25.00%	62.50%	12.50%	0.00%	0.00%	57.14%	42.86%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	11	0	0	0	11	3	0	1	0	1	0	0	3	2	0	32
PEAK HR FACTOR :	0.000	0.917	0.000	0.000	0.000	0.688	0.375	0.000	0.250	0.000	0.250	0.000	0.000	0.375	0.500	0.000	0.727
	0.917				0.700				0.250				0.417				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-043
Date: 9/15/2021

Data - 3axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	2	0	0	0	6	0	0	0	2	0	0	0	0	0	0	11
APPROACH %'s :	33.33%	66.67%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0	6
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
	0.500				0.500												

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	5
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	3	0	0	1	1	0	0	0	4	0	0	9
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	1	0	0	0	4	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.300
					0.250				0.250				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Randall Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-043
Date: 9/15/2021

Data - 4axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Randall Ave				Randall Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2
7:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	1	0	0	7	0	0	0	0	0	0	0	0	1	0	12
APPROACH %'s :	0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%					0.00%	0.00%	100.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1	0	0	0	4	0	0	0	0	0	0	0	0	1	0	6
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.500
	0.250				0.500								0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
4:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	0	0	0	7	0	0	0	0	0	0	0	1	0	0	12
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	6	0	0	0	0	0	0	0	1	0	0	8
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	1.000
	0.250				0.750								0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 SB Ramps/Ontario Mills Dr & 4th St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-044
Date: 9/9/2021

Data - Total

NS/EW Streets:	I-15 SB Ramps/Ontario Mills Dr				I-15 SB Ramps/Ontario Mills Dr				4th St				4th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	12	9	16	0	17	70	199	0	61	71	14	0	30	221	25	0	745
7:15 AM	21	5	14	0	22	55	211	0	45	77	8	0	20	229	24	0	731
7:30 AM	16	10	20	0	26	58	202	0	63	111	10	1	25	253	36	0	831
7:45 AM	29	8	17	0	25	73	268	0	47	86	10	1	38	306	29	1	938
8:00 AM	17	10	18	0	27	61	208	0	58	86	20	1	23	280	45	0	854
8:15 AM	23	15	16	0	24	53	182	0	55	78	18	2	40	249	26	0	781
8:30 AM	16	6	26	0	23	56	171	0	43	87	14	1	40	208	35	0	726
8:45 AM	23	13	29	0	21	45	165	0	50	101	23	2	28	231	49	0	780
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	157	76	156	0	185	471	1606	0	422	697	117	8	244	1977	269	1	6386
APPROACH %'s :	40.36%	19.54%	40.10%	0.00%	8.18%	20.82%	71.00%	0.00%	33.92%	56.03%	9.41%	0.64%	9.80%	79.37%	10.80%	0.04%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	85	43	71	0	102	245	860	0	223	361	58	5	126	1088	136	1	3404
PEAK HR FACTOR :	0.733	0.717	0.888	0.000	0.944	0.839	0.802	0.000	0.885	0.813	0.725	0.625	0.788	0.889	0.756	0.250	0.907
	0.921				0.824				0.874				0.903				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	17	58	111	0	20	69	124	0	169	224	28	2	34	111	84	0	1051
4:15 PM	26	52	82	0	18	58	113	0	159	232	20	2	24	126	72	0	984
4:30 PM	34	43	97	1	21	57	134	0	179	230	19	0	35	141	76	2	1069
4:45 PM	36	47	88	0	13	73	112	0	211	233	24	1	25	143	56	0	1062
5:00 PM	22	75	96	0	13	83	129	0	207	256	22	1	34	142	93	0	1173
5:15 PM	26	40	78	0	25	61	129	0	180	237	26	4	54	124	58	0	1042
5:30 PM	28	41	73	0	17	62	137	0	167	217	19	4	30	134	69	0	998
5:45 PM	36	52	92	0	27	89	158	0	137	217	27	6	58	146	49	0	1094
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	225	408	717	1	154	552	1036	0	1409	1846	185	20	294	1067	557	2	8473
APPROACH %'s :	16.65%	30.20%	53.07%	0.07%	8.84%	31.69%	59.47%	0.00%	40.72%	53.35%	5.35%	0.58%	15.31%	55.57%	29.01%	0.10%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	118	205	359	1	72	274	504	0	777	956	91	6	148	550	283	2	4346
PEAK HR FACTOR :	0.819	0.683	0.925	0.250	0.720	0.825	0.940	0.000	0.921	0.934	0.875	0.375	0.685	0.962	0.761	0.250	0.926
	0.885				0.944				0.941				0.914				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 SB Ramps/Ontario Mills Dr & 4th St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-044
Date: 9/9/2021

Data - Cars

NS/EW Streets:	I-15 SB Ramps/Ontario Mills Dr				I-15 SB Ramps/Ontario Mills Dr				4th St				4th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	12	9	15	0	16	70	193	0	57	65	14	0	25	211	19	0	706
7:15 AM	18	4	14	0	18	54	205	0	34	70	8	0	20	210	11	0	666
7:30 AM	16	8	18	0	20	58	198	0	53	99	9	1	24	232	22	0	758
7:45 AM	29	6	15	0	19	73	264	0	37	81	10	1	35	284	16	1	871
8:00 AM	17	9	17	0	23	60	203	0	54	75	19	1	22	255	29	0	784
8:15 AM	21	13	13	0	20	52	176	0	48	71	18	2	37	232	16	0	719
8:30 AM	16	5	23	0	13	55	167	0	30	73	14	1	40	182	22	0	641
8:45 AM	22	11	27	0	13	42	157	0	44	86	22	2	27	206	37	0	696
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	151	65	142	0	142	464	1563	0	357	620	114	8	230	1812	172	1	5841
APPROACH %'s :	42.18%	18.16%	39.66%	0.00%	6.55%	21.39%	72.06%	0.00%	32.48%	56.41%	10.37%	0.73%	10.38%	81.81%	7.77%	0.05%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	83	36	63	0	82	243	841	0	192	326	56	5	118	1003	83	1	3132
PEAK HR FACTOR :	0.716	0.692	0.875	0.000	0.891	0.832	0.796	0.000	0.889	0.823	0.737	0.625	0.797	0.883	0.716	0.250	0.899
	0.910				0.819				0.894				0.897				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	17	55	108	0	11	69	121	0	165	210	28	2	33	107	78	0	1004
4:15 PM	25	52	82	0	12	58	109	0	150	218	19	2	24	111	65	0	927
4:30 PM	34	43	97	1	18	57	128	0	174	213	19	0	35	129	71	1	1020
4:45 PM	36	46	87	0	9	69	108	0	205	223	23	1	24	131	53	0	1015
5:00 PM	22	74	96	0	9	79	124	0	202	243	21	1	34	130	89	0	1124
5:15 PM	26	39	78	0	17	61	125	0	172	224	26	4	53	119	54	0	998
5:30 PM	28	41	72	0	13	59	134	0	160	209	19	4	30	132	64	0	965
5:45 PM	35	50	89	0	20	89	151	0	132	205	27	6	58	135	45	0	1042
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	223	400	709	1	109	541	1000	0	1360	1745	182	20	291	994	519	1	8095
APPROACH %'s :	16.73%	30.01%	53.19%	0.08%	6.61%	32.79%	60.61%	0.00%	41.12%	52.77%	5.50%	0.60%	16.12%	55.07%	28.75%	0.06%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	118	202	358	1	53	266	485	0	753	903	89	6	146	509	267	1	4157
PEAK HR FACTOR :	0.819	0.682	0.923	0.250	0.736	0.842	0.947	0.000	0.918	0.929	0.856	0.375	0.689	0.971	0.750	0.250	0.925
	0.884				0.948				0.937				0.912				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 SB Ramps/Ontario Mills Dr & 4th St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-044
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	I-15 SB Ramps/Ontario Mills Dr				I-15 SB Ramps/Ontario Mills Dr				4th St				4th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	0	0	3	0	2	3	0	0	4	5	1	0	19
7:15 AM	2	1	0	0	1	1	1	0	6	3	0	0	0	4	5	0	24
7:30 AM	0	2	2	0	0	0	2	0	5	4	1	0	1	8	3	0	28
7:45 AM	0	2	1	0	0	0	1	0	3	3	0	0	1	10	2	0	23
8:00 AM	0	1	0	0	2	1	3	0	1	4	1	0	1	11	3	0	28
8:15 AM	2	1	2	0	2	1	3	0	3	4	0	0	2	5	2	0	27
8:30 AM	0	1	1	0	1	1	1	0	3	5	0	0	0	9	3	0	25
8:45 AM	0	1	1	0	0	0	4	0	1	5	1	0	0	16	3	0	32
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	9	8	0	6	4	18	0	24	31	3	0	9	68	22	0	206
APPROACH %'s :	19.05%	42.86%	38.10%	0.00%	21.43%	14.29%	64.29%	0.00%	41.38%	53.45%	5.17%	0.00%	9.09%	68.69%	22.22%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	6	5	0	4	2	9	0	12	15	2	0	5	34	10	0	106
PEAK HR FACTOR :	0.250	0.750	0.625	0.000	0.500	0.500	0.750	0.000	0.600	0.938	0.500	0.000	0.625	0.773	0.833	0.000	0.946
	0.650				0.625				0.725				0.817				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	1	0	1	0	2	0	2	7	0	0	1	1	0	0	17
4:15 PM	1	0	0	0	1	0	1	0	4	6	1	0	0	7	3	0	24
4:30 PM	0	0	0	0	0	0	2	0	2	5	0	0	0	3	2	1	15
4:45 PM	0	1	1	0	0	3	2	0	3	3	1	0	0	5	1	0	20
5:00 PM	0	1	0	0	0	2	1	0	0	3	0	0	0	3	1	0	11
5:15 PM	0	0	0	0	1	0	0	0	3	5	0	0	1	2	0	0	12
5:30 PM	0	0	0	0	1	0	0	0	2	1	0	0	0	0	1	0	5
5:45 PM	1	1	1	0	1	0	1	0	1	5	0	0	0	4	0	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	5	3	0	5	5	9	0	17	35	2	0	2	25	8	1	119
APPROACH %'s :	20.00%	50.00%	30.00%	0.00%	26.32%	26.32%	47.37%	0.00%	31.48%	64.81%	3.70%	0.00%	5.56%	69.44%	22.22%	2.78%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	2	1	0	1	5	5	0	8	16	1	0	1	13	4	1	58
PEAK HR FACTOR :	0.000	0.500	0.250	0.000	0.250	0.417	0.625	0.000	0.667	0.800	0.250	0.000	0.250	0.650	0.500	0.250	0.725
	0.375				0.550				0.781				0.792				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 SB Ramps/Ontario Mills Dr & 4th St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-044
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	I-15 SB Ramps/Ontario Mills Dr				I-15 SB Ramps/Ontario Mills Dr				4th St				4th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	1	0	0	2	0	0	1	1	2	0	7
7:15 AM	1	0	0	0	0	0	0	0	2	3	0	0	0	1	3	0	10
7:30 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	6	1	0	11
7:45 AM	0	0	1	0	0	0	0	0	3	1	0	0	2	4	3	0	14
8:00 AM	0	0	1	0	0	0	0	0	0	4	0	0	0	6	1	0	12
8:15 AM	0	0	1	0	0	0	0	0	2	0	0	0	0	1	2	0	6
8:30 AM	0	0	2	0	1	0	2	0	2	3	0	0	0	3	1	0	14
8:45 AM	0	1	0	0	1	1	2	0	0	3	0	0	1	3	3	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	5	0	2	1	5	0	9	20	0	0	4	25	16	0	89
APPROACH %'s :	14.29%	14.29%	71.43%	0.00%	25.00%	12.50%	62.50%	0.00%	31.03%	68.97%	0.00%	0.00%	8.89%	55.56%	35.56%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	3	0	0	0	0	0	5	9	0	0	2	17	7	0	43
PEAK HR FACTOR :	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.417	0.563	0.000	0.000	0.250	0.708	0.583	0.000	0.768
	0.750				0.875								0.722				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	2	0	2	0	0	0	0	3	0	0	0	1	0	0	8
4:15 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4
4:30 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	1	1	0	7
4:45 PM	0	0	0	0	0	1	0	0	1	5	0	0	1	1	1	0	10
5:00 PM	0	0	0	0	0	0	1	0	0	5	0	0	0	4	0	0	10
5:15 PM	0	0	0	0	2	0	0	0	1	3	0	0	0	2	1	0	9
5:30 PM	0	0	0	0	0	1	0	0	0	2	0	0	0	0	1	0	4
5:45 PM	0	0	1	0	2	0	0	0	1	2	0	0	0	1	2	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	3	0	6	2	1	0	3	28	0	0	1	11	6	0	61
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	66.67%	22.22%	11.11%	0.00%	9.68%	90.32%	0.00%	0.00%	5.56%	61.11%	33.33%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	2	1	1	0	2	18	0	0	1	8	3	0	36
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.500	0.900	0.000	0.000	0.250	0.500	0.750	0.000	0.900
					0.500				0.833				0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 SB Ramps/Ontario Mills Dr & 4th St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-044
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	I-15 SB Ramps/Ontario Mills Dr				I-15 SB Ramps/Ontario Mills Dr				4th St				4th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	1	0	2	0	2	1	0	0	0	4	3	0	13
7:15 AM	0	0	0	0	3	0	5	0	3	1	0	0	0	14	5	0	31
7:30 AM	0	0	0	0	6	0	2	0	5	4	0	0	0	7	10	0	34
7:45 AM	0	0	0	0	6	0	3	0	4	1	0	0	0	8	8	0	30
8:00 AM	0	0	0	0	2	0	2	0	3	3	0	0	0	8	12	0	30
8:15 AM	0	1	0	0	2	0	3	0	2	3	0	0	1	11	6	0	29
8:30 AM	0	0	0	0	8	0	1	0	8	6	0	0	0	14	9	0	46
8:45 AM	1	0	1	0	7	2	2	0	5	7	0	0	0	6	6	0	37
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	1	0	35	2	20	0	32	26	0	0	1	72	59	0	250
APPROACH %'s :	33.33%	33.33%	33.33%	0.00%	61.40%	3.51%	35.09%	0.00%	55.17%	44.83%	0.00%	0.00%	0.76%	54.55%	44.70%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1	0	0	16	0	10	0	14	11	0	0	1	34	36	0	123
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.667	0.000	0.833	0.000	0.700	0.688	0.000	0.000	0.250	0.773	0.750	0.000	0.904
	0.250				0.722				0.694				0.888				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	6	0	1	0	2	4	0	0	0	2	6	0	22
4:15 PM	0	0	0	0	5	0	3	0	5	5	0	0	0	7	4	0	29
4:30 PM	0	0	0	0	3	0	4	0	3	7	0	0	0	8	2	0	27
4:45 PM	0	0	0	0	4	0	2	0	2	2	0	0	0	6	1	0	17
5:00 PM	0	0	0	0	4	2	3	0	5	5	1	0	0	5	3	0	28
5:15 PM	0	1	0	0	5	0	4	0	4	5	0	0	0	1	3	0	23
5:30 PM	0	0	1	0	3	2	3	0	5	5	0	0	0	2	3	0	24
5:45 PM	0	1	1	0	4	0	6	0	3	5	0	0	0	6	2	0	28
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	2	0	34	4	26	0	29	38	1	0	0	37	24	0	198
APPROACH %'s :	0.00%	60.00%	40.00%	0.00%	53.13%	6.25%	40.63%	0.00%	42.65%	55.88%	1.47%	0.00%	0.00%	60.66%	39.34%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	1	0	0	16	2	13	0	14	19	1	0	0	20	9	0	95
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.800	0.250	0.813	0.000	0.700	0.679	0.250	0.000	0.000	0.625	0.750	0.000	0.848
	0.250				0.861				0.773				0.725				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 NB Ramps & 4th St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-045
Date: 9/9/2021

Data - Total

NS/EW Streets:	I-15 NB Ramps				I-15 NB Ramps				4th St				4th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	1	0	1	2.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	12	6	5	0	83	19	211	0	37	52	7	0	13	78	13	0	536
7:15 AM	11	7	14	0	55	11	168	0	51	59	9	0	3	71	13	0	472
7:30 AM	7	3	9	0	62	12	220	0	58	70	6	0	6	102	11	2	568
7:45 AM	12	5	10	0	68	13	224	0	70	66	10	0	5	126	19	0	628
8:00 AM	10	4	5	0	64	11	239	0	62	73	2	0	11	114	11	0	606
8:15 AM	7	10	9	0	73	8	201	0	49	60	6	0	4	95	16	0	538
8:30 AM	11	3	6	0	69	11	189	0	43	80	11	0	11	91	12	0	537
8:45 AM	14	4	13	0	52	8	181	0	58	81	13	0	10	104	19	0	557
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	84	42	71	0	526	93	1633	0	428	541	64	0	63	781	114	2	4442
APPROACH %'s :	42.64%	21.32%	36.04%	0.00%	23.36%	4.13%	72.51%	0.00%	41.43%	52.37%	6.20%	0.00%	6.56%	81.35%	11.88%	0.21%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	36	22	33	0	267	44	884	0	239	269	24	0	26	437	57	2	2340
PEAK HR FACTOR :	0.750	0.550	0.825	0.000	0.914	0.846	0.925	0.000	0.854	0.921	0.600	0.000	0.591	0.867	0.750	0.250	0.932
	0.843				0.951				0.911				0.870				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	1	0	1	2.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	21	12	15	0	19	15	72	0	171	162	13	2	4	136	21	0	663
4:15 PM	18	10	9	0	16	12	67	0	155	148	24	1	11	144	31	0	646
4:30 PM	22	12	11	0	24	7	78	0	179	164	17	0	7	149	34	0	704
4:45 PM	13	15	8	0	20	8	84	0	154	161	8	0	12	140	36	0	659
5:00 PM	17	11	10	0	23	10	93	0	173	180	21	0	8	143	30	0	719
5:15 PM	22	6	13	0	15	15	74	0	158	154	16	2	10	146	18	0	649
5:30 PM	10	26	7	0	18	12	92	0	155	147	15	0	7	124	18	0	631
5:45 PM	13	11	4	0	17	8	98	0	174	150	10	1	8	146	19	0	659
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	136	103	77	0	152	87	658	0	1319	1266	124	6	67	1128	207	0	5330
APPROACH %'s :	43.04%	32.59%	24.37%	0.00%	16.95%	9.70%	73.36%	0.00%	48.58%	46.63%	4.57%	0.22%	4.78%	80.46%	14.76%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	74	44	42	0	82	40	329	0	664	659	62	2	37	578	118	0	2731
PEAK HR FACTOR :	0.841	0.733	0.808	0.000	0.854	0.667	0.884	0.000	0.927	0.915	0.738	0.250	0.771	0.970	0.819	0.000	0.950
	0.889				0.895				0.927				0.964				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 NB Ramps & 4th St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-045
Date: 9/9/2021

Data - Cars

NS/EW Streets:	I-15 NB Ramps				I-15 NB Ramps				4th St				4th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	1	0	1	2.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	9	5	5	0	72	16	202	0	35	46	6	0	12	63	5	0	476
7:15 AM	9	6	14	0	46	11	157	0	49	50	9	0	3	57	6	0	417
7:30 AM	7	3	9	0	52	10	204	0	55	59	6	0	6	82	7	2	502
7:45 AM	9	5	10	0	56	11	212	0	66	52	10	0	4	101	10	0	546
8:00 AM	8	3	3	0	53	11	218	0	58	62	1	0	10	96	6	0	529
8:15 AM	7	9	9	0	62	8	194	0	47	47	6	0	4	73	12	0	478
8:30 AM	10	3	5	0	49	11	166	0	41	64	8	0	9	73	5	0	444
8:45 AM	12	4	12	0	39	7	167	0	53	57	12	0	10	84	14	0	471
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	71	38	67	0	429	85	1520	0	404	437	58	0	58	629	65	2	3863
APPROACH %'s :	40.34%	21.59%	38.07%	0.00%	21.09%	4.18%	74.73%	0.00%	44.94%	48.61%	6.45%	0.00%	7.69%	83.42%	8.62%	0.27%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	31	20	31	0	223	40	828	0	226	220	23	0	24	352	35	2	2055
PEAK HR FACTOR :	0.861	0.556	0.775	0.000	0.899	0.909	0.950	0.000	0.856	0.887	0.575	0.000	0.600	0.871	0.729	0.250	0.941
	0.820				0.967				0.916				0.898				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	1	0	1	2.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	21	12	15	0	12	15	66	0	168	141	13	2	4	127	18	0	614
4:15 PM	18	10	8	0	10	11	62	0	153	129	23	1	11	129	26	0	591
4:30 PM	22	10	10	0	16	7	70	0	175	147	16	0	7	135	29	0	644
4:45 PM	13	13	8	0	16	7	80	0	153	149	8	0	12	134	34	0	627
5:00 PM	17	11	10	0	20	10	85	0	173	162	21	0	8	133	28	0	678
5:15 PM	22	6	13	0	10	15	72	0	157	135	16	2	10	138	13	0	609
5:30 PM	10	26	7	0	11	12	90	0	152	135	15	0	7	116	16	0	597
5:45 PM	13	11	4	0	13	8	94	0	171	134	10	1	8	138	18	0	623
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	136	99	75	0	108	85	619	0	1302	1132	122	6	67	1050	182	0	4983
APPROACH %'s :	43.87%	31.94%	24.19%	0.00%	13.30%	10.47%	76.23%	0.00%	50.82%	44.18%	4.76%	0.23%	5.16%	80.83%	14.01%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	74	40	41	0	62	39	307	0	658	593	61	2	37	540	104	0	2558
PEAK HR FACTOR :	0.841	0.769	0.788	0.000	0.775	0.650	0.903	0.000	0.940	0.915	0.726	0.250	0.771	0.978	0.765	0.000	0.943
	0.923				0.887				0.923				0.946				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 NB Ramps & 4th St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-045
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	I-15 NB Ramps				I-15 NB Ramps				4th St				4th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	1	0	1	2.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	1	0	0	1	0	3	0	1	1	1	0	0	7	2	0	18
7:15 AM	1	0	0	0	0	0	3	0	0	5	0	0	0	4	0	0	13
7:30 AM	0	0	0	0	1	1	8	0	2	2	0	0	0	5	0	0	19
7:45 AM	1	0	0	0	2	1	3	0	3	3	0	0	0	8	0	0	21
8:00 AM	0	0	2	0	3	0	9	0	1	4	1	0	1	7	0	0	28
8:15 AM	0	1	0	0	3	0	1	0	0	8	0	0	0	7	0	0	20
8:30 AM	1	0	0	0	3	0	10	0	2	2	2	0	1	4	0	0	25
8:45 AM	1	0	0	0	3	1	7	0	2	5	0	0	0	9	2	0	30
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	2	2	0	16	3	44	0	11	30	4	0	2	51	4	0	174
APPROACH %'s :	55.56%	22.22%	22.22%	0.00%	25.40%	4.76%	69.84%	0.00%	24.44%	66.67%	8.89%	0.00%	3.51%	89.47%	7.02%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	1	2	0	9	2	21	0	6	17	1	0	1	27	0	0	88
PEAK HR FACTOR :	0.250	0.250	0.250	0.000	0.750	0.500	0.583	0.000	0.500	0.531	0.250	0.000	0.250	0.844	0.000	0.000	0.786
	0.500				0.667				0.750				0.875				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	1	0	1	2.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	1	0	4	0	1	6	0	0	0	2	1	0	15
4:15 PM	0	0	0	0	2	1	1	0	1	8	0	0	0	6	1	0	20
4:30 PM	0	2	0	0	0	0	3	0	2	3	1	0	0	5	2	0	18
4:45 PM	0	1	0	0	0	0	2	0	1	2	0	0	0	1	0	0	7
5:00 PM	0	0	0	0	2	0	2	0	0	4	0	0	0	3	0	0	11
5:15 PM	0	0	0	0	2	0	0	0	0	4	0	0	0	2	0	0	8
5:30 PM	0	0	0	0	2	0	1	0	0	4	0	0	0	2	0	0	9
5:45 PM	0	0	0	0	0	0	1	0	0	5	0	0	0	2	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	9	1	14	0	5	36	1	0	0	23	4	0	96
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	37.50%	4.17%	58.33%	0.00%	11.90%	85.71%	2.38%	0.00%	0.00%	85.19%	14.81%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	3	0	0	4	0	7	0	3	13	1	0	0	11	2	0	44
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.500	0.000	0.583	0.000	0.375	0.813	0.250	0.000	0.000	0.550	0.250	0.000	0.611
	0.375				0.688				0.708				0.464				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 NB Ramps & 4th St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-045
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	I-15 NB Ramps				I-15 NB Ramps				4th St				4th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	1	0	1	2.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	0	0	1	2	1	0	0	3	0	0	1	3	0	0	12
7:15 AM	0	1	0	0	5	0	0	0	1	1	0	0	0	3	1	0	12
7:30 AM	0	0	0	0	2	0	2	0	0	3	0	0	0	5	2	0	14
7:45 AM	0	0	0	0	2	0	3	0	0	3	0	0	1	6	2	0	17
8:00 AM	1	0	0	0	0	0	4	0	0	4	0	0	0	3	1	0	13
8:15 AM	0	0	0	0	0	0	1	0	1	1	0	0	0	1	1	0	5
8:30 AM	0	0	1	0	2	0	2	0	0	4	0	0	1	3	1	0	14
8:45 AM	0	0	1	0	1	0	3	0	0	4	1	0	0	3	1	0	14
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	1	2	0	13	2	16	0	2	23	1	0	3	27	9	0	101
APPROACH %'s :	40.00%	20.00%	40.00%	0.00%	41.94%	6.45%	51.61%	0.00%	7.69%	88.46%	3.85%	0.00%	7.69%	69.23%	23.08%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	0	0	0	4	0	10	0	1	11	0	0	1	15	6	0	49
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.500	0.000	0.625	0.000	0.250	0.688	0.000	0.000	0.250	0.625	0.750	0.000	0.721
	0.250				0.700				0.750				0.611				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	1	0	1	2.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	1	0	1	0	0	6	0	0	0	0	0	0	8
4:15 PM	0	0	0	0	0	0	1	0	0	4	0	0	0	1	0	0	6
4:30 PM	0	0	1	0	1	0	0	0	0	5	0	0	0	3	1	0	11
4:45 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	5
5:00 PM	0	0	0	0	0	0	3	0	0	6	0	0	0	2	0	0	11
5:15 PM	0	0	0	0	1	0	1	0	0	5	0	0	0	1	2	0	10
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	1	0	6
5:45 PM	0	0	0	0	0	0	0	0	1	3	0	0	0	2	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	3	0	6	0	1	35	0	0	0	13	4	0	63
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	33.33%	0.00%	66.67%	0.00%	2.78%	97.22%	0.00%	0.00%	0.00%	76.47%	23.53%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	1	0	2	0	4	0	0	20	0	0	0	7	3	0	37
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.500	0.000	0.333	0.000	0.000	0.833	0.000	0.000	0.000	0.583	0.375	0.000	0.841
	0.250				0.500				0.833				0.625				

National Data & Surveying Services Intersection Turning Movement Count

Location: I-15 NB Ramps & 4th St
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-045
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	I-15 NB Ramps				I-15 NB Ramps				4th St				4th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	1	0	1	2.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	0	0	9	1	5	0	1	2	0	0	0	5	6	0	30
7:15 AM	1	0	0	0	4	0	8	0	1	3	0	0	0	7	6	0	30
7:30 AM	0	0	0	0	7	1	6	0	1	6	0	0	0	10	2	0	33
7:45 AM	2	0	0	0	8	1	6	0	1	8	0	0	0	11	7	0	44
8:00 AM	1	1	0	0	8	0	8	0	3	3	0	0	0	8	4	0	36
8:15 AM	0	0	0	0	8	0	5	0	1	4	0	0	0	14	3	0	35
8:30 AM	0	0	0	0	15	0	11	0	0	10	1	0	0	11	6	0	54
8:45 AM	1	0	0	0	9	0	4	0	3	15	0	0	0	8	2	0	42
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	1	0	0	68	3	53	0	11	51	1	0	0	74	36	0	304
APPROACH %'s :	85.71%	14.29%	0.00%	0.00%	54.84%	2.42%	42.74%	0.00%	17.46%	80.95%	1.59%	0.00%	0.00%	67.27%	32.73%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	3	1	0	0	31	2	25	0	6	21	0	0	0	43	16	0	148
PEAK HR FACTOR :	0.375	0.250	0.000	0.000	0.969	0.500	0.781	0.000	0.500	0.656	0.000	0.000	0.000	0.768	0.571	0.000	0.841
	0.500				0.906				0.750				0.819				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	1	0	1	2.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	5	0	1	0	2	9	0	0	0	7	2	0	26
4:15 PM	0	0	1	0	4	0	3	0	1	7	1	0	0	8	4	0	29
4:30 PM	0	0	0	0	7	0	5	0	2	9	0	0	0	6	2	0	31
4:45 PM	0	1	0	0	4	1	2	0	0	6	0	0	0	4	2	0	20
5:00 PM	0	0	0	0	1	0	3	0	0	8	0	0	0	5	2	0	19
5:15 PM	0	0	0	0	2	0	1	0	1	10	0	0	0	5	3	0	22
5:30 PM	0	0	0	0	5	0	1	0	3	6	0	0	0	3	1	0	19
5:45 PM	0	0	0	0	4	0	3	0	2	8	0	0	0	4	1	0	22
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	1	0	32	1	19	0	11	63	1	0	0	42	17	0	188
APPROACH %'s :	0.00%	50.00%	50.00%	0.00%	61.54%	1.92%	36.54%	0.00%	14.67%	84.00%	1.33%	0.00%	0.00%	71.19%	28.81%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	1	0	0	14	1	11	0	3	33	0	0	0	20	9	0	92
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.500	0.250	0.550	0.000	0.375	0.825	0.000	0.000	0.000	0.833	0.750	0.000	0.742
	0.250				0.542				0.818				0.906				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & 4th St/San Bernardino Ave
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-046
Date: 9/9/2021

Data - Total

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				4th St/San Bernardino Ave				4th St/San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1.5	0.5	0	2	2	1	0	2	2	1	0	2	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	37	98	9	0	5	115	20	0	45	27	3	0	11	55	5	0	430
7:15 AM	31	135	9	0	6	97	19	0	30	41	13	0	13	54	10	0	458
7:30 AM	44	122	13	0	4	140	29	0	42	32	10	0	22	75	11	0	544
7:45 AM	57	131	19	0	15	135	34	0	20	28	17	0	26	67	16	0	565
8:00 AM	34	107	12	0	13	129	26	0	28	40	16	0	22	74	4	0	505
8:15 AM	44	124	13	0	14	137	21	0	25	25	15	0	17	41	5	0	481
8:30 AM	23	102	10	0	6	92	14	0	25	29	21	0	20	63	8	0	413
8:45 AM	47	103	9	0	7	96	17	0	22	42	21	0	11	42	7	0	424
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	317	922	94	0	70	941	180	0	237	264	116	0	142	471	66	0	3820
APPROACH %'s :	23.78%	69.17%	7.05%	0.00%	5.88%	79.01%	15.11%	0.00%	38.41%	42.79%	18.80%	0.00%	20.91%	69.37%	9.72%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	179	484	57	0	46	541	110	0	115	125	58	0	87	257	36	0	2095
PEAK HR FACTOR :	0.785	0.924	0.750	0.000	0.767	0.966	0.809	0.000	0.685	0.781	0.853	0.000	0.837	0.857	0.563	0.000	0.927
	0.870				0.947				0.887				0.872				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1.5	0.5	0	2	2	1	0	2	2	1	0	2	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	41	135	16	0	22	158	44	0	34	122	47	0	10	44	9	0	682
4:15 PM	35	139	18	0	17	104	18	0	39	129	25	0	23	52	12	0	611
4:30 PM	40	135	17	0	21	116	37	0	43	141	40	0	38	87	18	0	733
4:45 PM	32	154	12	0	31	110	50	0	39	132	45	0	16	51	14	0	686
5:00 PM	23	181	11	0	24	166	46	0	51	126	47	0	18	43	8	0	744
5:15 PM	43	131	15	0	24	111	25	0	32	131	30	0	14	56	10	0	622
5:30 PM	39	145	14	0	27	114	22	0	32	104	40	0	29	65	9	0	640
5:45 PM	40	139	9	0	16	96	18	0	31	121	48	0	13	64	4	0	599
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	293	1159	112	0	182	975	260	0	301	1006	322	0	161	462	84	0	5317
APPROACH %'s :	18.73%	74.10%	7.16%	0.00%	12.84%	68.81%	18.35%	0.00%	18.48%	61.76%	19.77%	0.00%	22.77%	65.35%	11.88%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	138	601	55	0	100	503	158	0	165	530	162	0	86	237	50	0	2785
PEAK HR FACTOR :	0.802	0.830	0.809	0.000	0.806	0.758	0.790	0.000	0.809	0.940	0.862	0.000	0.566	0.681	0.694	0.000	0.936
	0.923				0.806				0.956				0.652				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & 4th St/San Bernardino Ave
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-046
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				4th St/San Bernardino Ave				4th St/San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1.5	0.5	0	2	2	1	0	2	2	1	0	2	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	34	69	9	0	3	79	15	0	40	21	3	0	4	46	3	0	326
7:15 AM	23	97	5	0	4	69	16	0	26	36	6	0	9	49	8	0	348
7:30 AM	31	96	10	0	3	97	21	0	36	23	8	0	13	63	10	0	411
7:45 AM	50	107	15	0	13	99	27	0	14	23	10	0	18	60	15	0	451
8:00 AM	28	84	10	0	11	104	22	0	22	36	10	0	15	63	3	0	408
8:15 AM	36	89	7	0	10	92	19	0	17	21	10	0	9	36	4	0	350
8:30 AM	18	71	9	0	5	69	13	0	19	21	11	0	9	52	6	0	303
8:45 AM	36	65	7	0	4	65	12	0	15	36	8	0	4	36	5	0	293
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	256	678	72	0	53	674	145	0	189	217	66	0	81	405	54	0	2890
APPROACH %'s :	25.45%	67.40%	7.16%	0.00%	6.08%	77.29%	16.63%	0.00%	40.04%	45.97%	13.98%	0.00%	15.00%	75.00%	10.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	145	376	42	0	37	392	89	0	89	103	38	0	55	222	32	0	1620
PEAK HR FACTOR :	0.725	0.879	0.700	0.000	0.712	0.942	0.824	0.000	0.618	0.715	0.950	0.000	0.764	0.881	0.533	0.000	0.898
	0.818				0.932				0.846				0.831				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1.5	0.5	0	2	2	1	0	2	2	1	0	2	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	36	111	9	0	12	128	41	0	31	109	35	0	7	39	8	0	566
4:15 PM	26	116	13	0	11	85	18	0	32	121	17	0	18	49	7	0	513
4:30 PM	35	112	12	0	13	96	34	0	40	134	30	0	33	82	14	0	635
4:45 PM	26	131	6	0	17	98	45	0	34	126	32	0	12	46	12	0	585
5:00 PM	22	152	7	0	13	147	43	0	48	115	36	0	11	37	7	0	638
5:15 PM	40	107	10	0	10	91	25	0	31	123	21	0	13	51	4	0	526
5:30 PM	33	128	12	0	8	106	20	0	30	96	31	0	22	62	9	0	557
5:45 PM	35	116	7	0	9	82	17	0	27	114	44	0	11	61	4	0	527
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	253	973	76	0	93	833	243	0	273	938	246	0	127	427	65	0	4547
APPROACH %'s :	19.43%	74.73%	5.84%	0.00%	7.96%	71.26%	20.79%	0.00%	18.74%	64.38%	16.88%	0.00%	20.52%	68.98%	10.50%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	123	502	35	0	53	432	147	0	153	498	119	0	69	216	37	0	2384
PEAK HR FACTOR :	0.769	0.826	0.729	0.000	0.779	0.735	0.817	0.000	0.797	0.929	0.826	0.000	0.523	0.659	0.661	0.000	0.934
	0.912				0.778				0.944				0.624				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & 4th St/San Bernardino Ave
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-046
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				4th St/San Bernardino Ave				4th St/San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1.5	0.5	0	2	2	1	0	2	2	1	0	2	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	0	0	0	3	2	0	0	1	0	0	0	1	0	0	9
7:15 AM	3	2	0	0	0	2	0	0	0	1	0	0	0	3	0	0	11
7:30 AM	5	5	0	0	0	4	4	0	1	1	0	0	0	4	0	0	24
7:45 AM	2	4	0	0	0	3	1	0	0	0	1	0	0	0	0	0	11
8:00 AM	0	4	0	0	0	5	1	0	2	2	0	0	1	4	0	0	19
8:15 AM	1	1	0	0	0	6	0	0	2	2	0	0	0	2	0	0	14
8:30 AM	2	1	0	0	0	1	0	0	0	1	2	0	2	2	0	0	11
8:45 AM	6	3	0	0	0	2	0	0	1	1	1	0	2	3	0	0	19
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	19	22	0	0	0	26	8	0	6	9	4	0	5	19	0	0	118
APPROACH %'s :	46.34%	53.66%	0.00%	0.00%	0.00%	76.47%	23.53%	0.00%	31.58%	47.37%	21.05%	0.00%	20.83%	79.17%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	8	14	0	0	0	18	6	0	5	5	1	0	1	10	0	0	68
PEAK HR FACTOR :	0.400	0.700	0.000	0.000	0.000	0.750	0.375	0.000	0.625	0.625	0.250	0.000	0.250	0.625	0.000	0.000	0.708
	0.550				0.750				0.688				0.550				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1.5	0.5	0	2	2	1	0	2	2	1	0	2	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	6	1	0	2	5	1	0	0	1	5	0	0	3	1	0	27
4:15 PM	3	4	0	0	0	5	0	0	1	4	2	0	0	0	2	0	21
4:30 PM	1	3	0	0	1	2	2	0	0	0	0	0	1	1	0	0	11
4:45 PM	3	1	1	0	0	0	1	0	0	3	4	0	0	2	0	0	15
5:00 PM	0	0	0	0	0	3	0	0	0	1	3	0	2	1	0	0	10
5:15 PM	1	1	0	0	0	3	0	0	0	3	1	0	0	1	2	0	12
5:30 PM	2	2	0	0	1	0	0	0	0	5	1	0	1	1	0	0	13
5:45 PM	1	3	0	0	0	1	1	0	1	3	1	0	0	1	0	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	13	20	2	0	4	19	5	0	2	20	17	0	4	10	5	0	121
APPROACH %'s :	37.14%	57.14%	5.71%	0.00%	14.29%	67.86%	17.86%	0.00%	5.13%	51.28%	43.59%	0.00%	21.05%	52.63%	26.32%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	5	5	1	0	1	8	3	0	0	7	8	0	3	5	2	0	48
PEAK HR FACTOR :	0.417	0.417	0.250	0.000	0.250	0.667	0.375	0.000	0.000	0.583	0.500	0.000	0.375	0.625	0.250	0.000	0.800
	0.550				0.600				0.536				0.833				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & 4th St/San Bernardino Ave
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-046
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				4th St/San Bernardino Ave				4th St/San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1.5	0.5	0	2	2	1	0	2	2	1	0	2	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	12	0	0	0	12	1	0	3	2	0	0	1	1	1	0	33
7:15 AM	1	13	2	0	2	9	1	0	1	1	3	0	0	1	0	0	34
7:30 AM	4	6	0	0	1	18	0	0	4	4	0	0	3	1	1	0	42
7:45 AM	1	8	0	0	1	12	2	0	4	2	2	0	1	0	0	0	33
8:00 AM	1	4	0	0	0	5	1	0	1	0	1	0	1	1	1	0	16
8:15 AM	1	18	2	0	3	11	1	0	2	1	2	0	2	1	0	0	44
8:30 AM	1	14	0	0	0	6	1	0	3	1	3	0	1	2	1	0	33
8:45 AM	1	17	0	0	2	12	4	0	1	2	5	0	2	1	2	0	49
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	10	92	4	0	9	85	11	0	19	13	16	0	11	8	6	0	284
APPROACH %'s :	9.43%	86.79%	3.77%	0.00%	8.57%	80.95%	10.48%	0.00%	39.58%	27.08%	33.33%	0.00%	44.00%	32.00%	24.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	7	36	2	0	5	46	4	0	11	7	5	0	7	3	2	0	135
PEAK HR FACTOR :	0.438	0.500	0.250	0.000	0.417	0.639	0.500	0.000	0.688	0.438	0.625	0.000	0.583	0.750	0.500	0.000	0.767
	0.536				0.724				0.719				0.600				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1.5	0.5	0	2	2	1	0	2	2	1	0	2	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	11	1	0	4	13	1	0	0	5	1	0	0	0	0	0	37
4:15 PM	2	7	0	0	5	6	0	0	3	0	2	0	1	0	2	0	28
4:30 PM	1	9	2	0	7	7	1	0	1	3	2	0	1	1	2	0	37
4:45 PM	0	9	0	0	13	5	2	0	3	1	2	0	2	0	2	0	39
5:00 PM	0	14	1	0	11	6	2	0	2	4	2	0	2	1	1	0	46
5:15 PM	2	6	1	0	14	7	0	0	1	1	1	0	0	2	3	0	38
5:30 PM	1	1	0	0	16	3	0	0	0	1	1	0	3	1	0	0	27
5:45 PM	0	7	0	0	6	5	0	0	0	2	0	0	0	0	0	0	20
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	64	5	0	76	52	6	0	10	17	11	0	9	5	10	0	272
APPROACH %'s :	9.21%	84.21%	6.58%	0.00%	56.72%	38.81%	4.48%	0.00%	26.32%	44.74%	28.95%	0.00%	37.50%	20.83%	41.67%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	3	38	4	0	45	25	5	0	7	9	7	0	5	4	8	0	160
PEAK HR FACTOR :	0.375	0.679	0.500	0.000	0.804	0.893	0.625	0.000	0.583	0.563	0.875	0.000	0.625	0.500	0.667	0.000	0.870
	0.750				0.893				0.719				0.850				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & 4th St/San Bernardino Ave
City: Rancho Cucamonga
Control: Signalized

Project ID: 21-030070-046
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				4th St/San Bernardino Ave				4th St/San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1.5	0.5	0	2	2	1	0	2	2	1	0	2	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	15	0	0	2	21	2	0	2	3	0	0	6	7	1	0	62
7:15 AM	4	23	2	0	0	17	2	0	3	3	4	0	4	1	2	0	65
7:30 AM	4	15	3	0	0	21	4	0	1	4	2	0	6	7	0	0	67
7:45 AM	4	12	4	0	1	21	4	0	2	3	4	0	7	7	1	0	70
8:00 AM	5	15	2	0	2	15	2	0	3	2	5	0	5	6	0	0	62
8:15 AM	6	16	4	0	1	28	1	0	4	1	3	0	6	2	1	0	73
8:30 AM	2	16	1	0	1	16	0	0	3	6	5	0	8	7	1	0	66
8:45 AM	4	18	2	0	1	17	1	0	5	3	7	0	3	2	0	0	63
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	32	130	18	0	8	156	16	0	23	25	30	0	45	39	6	0	528
APPROACH %'s :	17.78%	72.22%	10.00%	0.00%	4.44%	86.67%	8.89%	0.00%	29.49%	32.05%	38.46%	0.00%	50.00%	43.33%	6.67%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	19	58	13	0	4	85	11	0	10	10	14	0	24	22	2	0	272
PEAK HR FACTOR :	0.792	0.906	0.813	0.000	0.500	0.759	0.688	0.000	0.625	0.625	0.700	0.000	0.857	0.786	0.500	0.000	0.932
	0.865				0.833				0.850				0.800				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1.5	0.5	0	2	2	1	0	2	2	1	0	2	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	7	5	0	4	12	1	0	3	7	6	0	3	2	0	0	52
4:15 PM	4	12	5	0	1	8	0	0	3	4	4	0	4	3	1	0	49
4:30 PM	3	11	3	0	0	11	0	0	2	4	8	0	3	3	2	0	50
4:45 PM	3	13	5	0	1	7	2	0	2	2	7	0	2	3	0	0	47
5:00 PM	1	15	3	0	0	10	1	0	1	6	6	0	3	4	0	0	50
5:15 PM	0	17	4	0	0	10	0	0	0	4	7	0	1	2	1	0	46
5:30 PM	3	14	2	0	2	5	2	0	2	2	7	0	3	1	0	0	43
5:45 PM	4	13	2	0	1	8	0	0	3	2	3	0	2	2	0	0	40
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	20	102	29	0	9	71	6	0	16	31	48	0	21	20	4	0	377
APPROACH %'s :	13.25%	67.55%	19.21%	0.00%	10.47%	82.56%	6.98%	0.00%	16.84%	32.63%	50.53%	0.00%	46.67%	44.44%	8.89%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	7	56	15	0	1	38	3	0	5	16	28	0	9	12	3	0	193
PEAK HR FACTOR :	0.583	0.824	0.750	0.000	0.250	0.864	0.375	0.000	0.625	0.667	0.875	0.000	0.750	0.750	0.375	0.000	0.965
	0.929				0.955				0.875				0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Commerce Dr & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-047
Date: 9/9/2021

Data - Total

NS/EW Streets:	Commerce Dr				Commerce Dr				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	4	1	41	0	1	3	0	0	0	34	5	0	45	75	2	0	211
7:15 AM	12	0	38	0	1	1	0	0	0	33	5	0	75	106	0	0	271
7:30 AM	12	1	49	0	0	0	0	0	1	34	4	0	49	122	0	0	272
7:45 AM	7	1	38	0	0	0	0	0	0	44	2	0	37	91	0	0	220
8:00 AM	7	1	32	0	1	0	1	0	0	37	1	0	43	68	0	0	191
8:15 AM	6	1	33	0	1	0	0	0	0	25	2	0	41	69	1	0	179
8:30 AM	9	1	40	0	1	1	0	0	0	49	3	0	44	53	0	0	201
8:45 AM	6	0	33	0	2	2	0	0	0	47	4	0	29	51	3	0	177
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	63	6	304	0	7	7	1	0	1	303	26	0	363	635	6	0	1722
APPROACH %'s :	16.89%	1.61%	81.50%	0.00%	46.67%	46.67%	6.67%	0.00%	0.30%	91.82%	7.88%	0.00%	36.16%	63.25%	0.60%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	35	3	166	0	2	4	0	0	1	145	16	0	206	394	2	0	974
PEAK HR FACTOR :	0.729	0.750	0.847	0.000	0.500	0.333	0.000	0.000	0.250	0.824	0.800	0.000	0.687	0.807	0.250	0.000	0.895
	0.823				0.375				0.880				0.831				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	9	0	84	0	1	0	0	0	0	166	10	0	29	60	0	0	359
4:15 PM	5	0	93	0	0	0	1	0	0	193	9	0	55	83	0	0	439
4:30 PM	9	0	106	0	0	0	0	0	0	163	3	0	25	60	0	0	366
4:45 PM	9	0	92	0	3	0	0	0	0	174	11	0	22	43	1	0	355
5:00 PM	7	1	110	0	0	0	0	0	0	162	5	0	28	47	1	0	361
5:15 PM	9	0	78	0	1	2	1	0	0	178	1	0	19	64	3	0	356
5:30 PM	4	0	59	0	0	0	0	0	0	130	1	0	24	60	0	0	278
5:45 PM	4	0	51	0	5	0	2	0	0	127	6	0	14	48	0	0	257
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	56	1	673	0	10	2	4	0	0	1293	46	0	216	465	5	0	2771
APPROACH %'s :	7.67%	0.14%	92.19%	0.00%	62.50%	12.50%	25.00%	0.00%	0.00%	96.56%	3.44%	0.00%	31.49%	67.78%	0.73%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	30	1	401	0	3	0	1	0	0	692	28	0	130	233	2	0	1521
PEAK HR FACTOR :	0.833	0.250	0.911	0.000	0.250	0.000	0.250	0.000	0.000	0.896	0.636	0.000	0.591	0.702	0.500	0.000	0.866
	0.915				0.333				0.891				0.661				

National Data & Surveying Services Intersection Turning Movement Count

Location: Commerce Dr & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-047
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Commerce Dr				Commerce Dr				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	1	38	0	1	1	0	0	0	28	2	0	41	65	2	0	182
7:15 AM	10	0	30	0	0	1	0	0	0	26	1	0	65	89	0	0	222
7:30 AM	10	1	32	0	0	0	0	0	1	27	3	0	41	111	0	0	226
7:45 AM	6	1	34	0	0	0	0	0	0	37	1	0	27	76	0	0	182
8:00 AM	4	0	25	0	0	0	1	0	0	25	0	0	27	56	0	0	138
8:15 AM	2	0	24	0	0	0	0	0	0	21	2	0	26	57	0	0	132
8:30 AM	6	0	30	0	1	0	0	0	0	35	0	0	24	39	0	0	135
8:45 AM	3	0	24	0	2	0	0	0	0	37	2	0	20	37	3	0	128
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	44	3	237	0	4	2	1	0	1	236	11	0	271	530	5	0	1345
APPROACH %'s :	15.49%	1.06%	83.45%	0.00%	57.14%	28.57%	14.29%	0.00%	0.40%	95.16%	4.44%	0.00%	33.62%	65.76%	0.62%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	29	3	134	0	1	2	0	0	1	118	7	0	174	341	2	0	812
PEAK HR FACTOR :	0.725	0.750	0.882	0.000	0.250	0.500	0.000	0.000	0.250	0.797	0.583	0.000	0.669	0.768	0.250	0.000	0.898
	0.965				0.375				0.829				0.839				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	0	71	0	1	0	0	0	0	145	9	0	27	52	0	0	309
4:15 PM	3	0	86	0	0	0	1	0	0	176	9	0	53	74	0	0	402
4:30 PM	7	0	92	0	0	0	0	0	0	142	2	0	23	53	0	0	319
4:45 PM	7	0	76	0	3	0	0	0	0	148	6	0	21	38	1	0	300
5:00 PM	5	0	88	0	0	0	0	0	0	146	2	0	26	40	1	0	308
5:15 PM	6	0	68	0	0	2	1	0	0	145	1	0	17	59	3	0	302
5:30 PM	1	0	55	0	0	0	0	0	0	110	0	0	23	57	0	0	246
5:45 PM	2	0	40	0	5	0	2	0	0	115	5	0	10	44	0	0	223
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	35	0	576	0	9	2	4	0	0	1127	34	0	200	417	5	0	2409
APPROACH %'s :	5.73%	0.00%	94.27%	0.00%	60.00%	13.33%	26.67%	0.00%	0.00%	97.07%	2.93%	0.00%	32.15%	67.04%	0.80%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	22	0	342	0	3	0	1	0	0	612	19	0	123	205	2	0	1329
PEAK HR FACTOR :	0.786	0.000	0.929	0.000	0.250	0.000	0.250	0.000	0.000	0.869	0.528	0.000	0.580	0.693	0.500	0.000	0.826
	0.919				0.333				0.853				0.650				

National Data & Surveying Services Intersection Turning Movement Count

Location: Commerce Dr & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-047
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Commerce Dr				Commerce Dr				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	6
7:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3
7:30 AM	0	0	3	0	0	0	0	0	0	2	0	0	1	1	0	0	7
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	6	0	0	8
8:00 AM	1	0	0	0	0	0	0	0	0	4	0	0	2	2	0	0	9
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	4	2	1	0	8
8:30 AM	0	0	2	0	0	0	0	0	0	2	0	0	4	5	0	0	13
8:45 AM	0	0	2	0	0	0	0	0	0	5	0	0	5	3	0	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	0	7	0	1	0	0	0	0	16	0	0	17	25	1	0	69
APPROACH %'s :	22.22%	0.00%	77.78%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	39.53%	58.14%	2.33%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	1	0	3	0	0	0	0	0	0	5	0	0	2	13	0	0	24
PEAK HR FACTOR :	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.500	0.542	0.000	0.000	0.750
	0.333								0.625				0.536				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	4	0	0	0	0	0	0	7	0	0	0	2	0	0	14
4:15 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	0	4
4:30 PM	0	0	2	0	0	0	0	0	0	3	1	0	1	3	0	0	10
4:45 PM	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	4
5:00 PM	0	0	4	0	0	0	0	0	0	3	0	0	0	3	0	0	10
5:15 PM	0	0	1	0	0	0	0	0	0	5	0	0	0	1	0	0	7
5:30 PM	0	0	1	0	0	0	0	0	0	4	0	0	1	2	0	0	8
5:45 PM	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	16	0	0	0	0	0	0	25	1	0	4	15	0	0	62
APPROACH %'s :	5.88%	0.00%	94.12%	0.00%					0.00%	96.15%	3.85%	0.00%	21.05%	78.95%	0.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	0	8	0	0	0	0	0	0	8	1	0	2	9	0	0	28
PEAK HR FACTOR :	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.250	0.000	0.500	0.750	0.000	0.000	0.700
	0.500								0.563				0.688				

National Data & Surveying Services Intersection Turning Movement Count

Location: Commerce Dr & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-047
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Commerce Dr				Commerce Dr				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
7:15 AM	0	0	2	0	0	0	0	0	0	3	0	0	3	4	0	0	12
7:30 AM	0	0	3	0	0	0	0	0	0	2	1	0	0	1	0	0	7
7:45 AM	0	0	1	0	0	0	0	0	0	3	0	0	1	2	0	0	7
8:00 AM	1	1	2	0	1	0	0	0	0	4	0	0	1	2	0	0	12
8:15 AM	1	0	4	0	0	0	0	0	0	0	0	0	1	4	0	0	10
8:30 AM	1	0	1	0	0	0	0	0	0	4	0	0	4	5	0	0	15
8:45 AM	1	0	1	0	0	1	0	0	0	2	1	0	2	3	0	0	11
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	1	14	0	1	1	0	0	0	20	2	0	12	22	0	0	77
APPROACH %'s :	21.05%	5.26%	73.68%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	90.91%	9.09%	0.00%	35.29%	64.71%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	6	0	0	0	0	0	0	10	1	0	4	8	0	0	29
PEAK HR FACTOR :	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.833	0.250	0.000	0.333	0.500	0.000	0.000	0.604
	0.500								0.917				0.429				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	2	0	0	0	0	0	0	6	1	0	0	3	0	0	12
4:15 PM	0	0	3	0	0	0	0	0	0	9	0	0	1	6	0	0	19
4:30 PM	0	0	4	0	0	0	0	0	0	14	0	0	0	3	0	0	21
4:45 PM	0	0	4	0	0	0	0	0	0	15	0	0	0	3	0	0	22
5:00 PM	0	0	4	0	0	0	0	0	0	11	0	0	0	3	0	0	18
5:15 PM	0	0	4	0	1	0	0	0	0	20	0	0	0	3	0	0	28
5:30 PM	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	12
5:45 PM	0	0	3	0	0	0	0	0	0	5	0	0	0	2	0	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	24	0	1	0	0	0	0	92	1	0	1	23	0	0	142
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	98.92%	1.08%	0.00%	4.17%	95.83%	0.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	0	15	0	0	0	0	0	0	49	0	0	1	15	0	0	80
PEAK HR FACTOR :	0.000	0.000	0.938	0.000	0.000	0.000	0.000	0.000	0.000	0.817	0.000	0.000	0.250	0.625	0.000	0.000	0.909
	0.938								0.817				0.571				

National Data & Surveying Services Intersection Turning Movement Count

Location: Commerce Dr & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-047
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Commerce Dr				Commerce Dr				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	3	0	0	2	0	0	0	2	3	0	4	5	0	0	20
7:15 AM	1	0	6	0	1	0	0	0	0	4	4	0	7	11	0	0	34
7:30 AM	2	0	11	0	0	0	0	0	0	3	0	0	7	9	0	0	32
7:45 AM	1	0	3	0	0	0	0	0	0	3	1	0	8	7	0	0	23
8:00 AM	1	0	5	0	0	0	0	0	0	4	1	0	13	8	0	0	32
8:15 AM	3	1	5	0	0	0	0	0	0	4	0	0	10	6	0	0	29
8:30 AM	2	1	7	0	0	1	0	0	0	8	3	0	12	4	0	0	38
8:45 AM	2	0	6	0	0	1	0	0	0	3	1	0	2	8	0	0	23
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	13	2	46	0	1	4	0	0	0	31	13	0	63	58	0	0	231
APPROACH %'s :	21.31%	3.28%	75.41%	0.00%	20.00%	80.00%	0.00%	0.00%	0.00%	70.45%	29.55%	0.00%	52.07%	47.93%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	5	0	23	0	1	2	0	0	0	12	8	0	26	32	0	0	109
PEAK HR FACTOR :	0.625	0.000	0.523	0.000	0.250	0.250	0.000	0.000	0.000	0.750	0.500	0.000	0.813	0.727	0.000	0.000	0.801
	0.538				0.375				0.625				0.806				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	0	7	0	0	0	0	0	0	8	0	0	2	3	0	0	24
4:15 PM	2	0	3	0	0	0	0	0	0	7	0	0	1	1	0	0	14
4:30 PM	2	0	8	0	0	0	0	0	0	4	0	0	1	1	0	0	16
4:45 PM	2	0	11	0	0	0	0	0	0	10	5	0	0	1	0	0	29
5:00 PM	2	1	14	0	0	0	0	0	0	2	3	0	2	1	0	0	25
5:15 PM	3	0	5	0	0	0	0	0	0	8	0	0	2	1	0	0	19
5:30 PM	3	0	3	0	0	0	0	0	0	4	1	0	0	1	0	0	12
5:45 PM	2	0	6	0	0	0	0	0	0	6	1	0	3	1	0	0	19
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	20	1	57	0	0	0	0	0	0	49	10	0	11	10	0	0	158
APPROACH %'s :	25.64%	1.28%	73.08%	0.00%					0.00%	83.05%	16.95%	0.00%	52.38%	47.62%	0.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	8	1	36	0	0	0	0	0	0	23	8	0	4	4	0	0	84
PEAK HR FACTOR :	1.000	0.250	0.643	0.000	0.000	0.000	0.000	0.000	0.000	0.575	0.400	0.000	0.500	1.000	0.000	0.000	0.724
	0.662								0.517				0.667				

National Data & Surveying Services Intersection Turning Movement Count

Location: Vip Rd & San Bernardino Ave
City: Fontana
Control: 1-Way Stop (SB)

Project ID: 21-030070-048
Date: 9/15/2021

Data - Total

NS/EW Streets:	Vip Rd				Vip Rd				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	78	0	0	0	120	0	0	198
7:15 AM	0	0	0	0	0	0	0	0	0	74	0	0	0	127	1	0	202
7:30 AM	0	0	0	0	0	0	1	0	0	67	0	0	0	174	0	0	242
7:45 AM	0	0	0	0	0	0	0	0	0	82	0	0	0	171	0	1	254
8:00 AM	0	0	0	0	0	0	0	0	0	82	0	0	0	140	0	0	222
8:15 AM	0	0	0	0	0	0	0	0	0	74	0	0	0	114	0	0	188
8:30 AM	0	0	0	0	0	0	0	0	0	57	0	0	0	114	0	0	171
8:45 AM	0	0	0	0	0	0	0	0	0	84	0	0	0	97	0	0	181
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	1	0	0	598	0	0	0	1057	1	1	1658
APPROACH %'s :					0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	99.81%	0.09%	0.09%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	0	0	305	0	0	0	612	1	1	920
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.930	0.000	0.000	0.000	0.879	0.250	0.250	0.906
					0.250				0.930				0.882				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	224	0	0	0	91	0	0	315
4:15 PM	0	0	0	0	0	0	0	0	0	238	0	0	0	100	0	0	338
4:30 PM	0	0	0	0	0	0	0	0	0	245	0	0	0	96	0	0	341
4:45 PM	0	0	0	0	0	0	0	0	0	285	0	0	0	92	0	0	377
5:00 PM	0	0	0	0	0	0	0	0	0	272	0	0	0	92	0	0	364
5:15 PM	0	0	0	0	0	0	0	0	0	258	0	0	0	84	0	0	342
5:30 PM	0	0	0	0	0	0	0	0	0	285	0	0	0	67	0	0	352
5:45 PM	0	0	0	0	0	0	0	0	0	256	0	0	0	67	0	0	323
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	2063	0	0	0	689	0	0	2752
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1100	0	0	0	335	0	0	1435
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.965	0.000	0.000	0.000	0.910	0.000	0.000	0.952
									0.965				0.910				

National Data & Surveying Services Intersection Turning Movement Count

Location: Vip Rd & San Bernardino Ave
City: Fontana
Control: 1-Way Stop (SB)

Project ID: 21-030070-048
Date: 9/15/2021

Data - Cars

NS/EW Streets:	Vip Rd				Vip Rd				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	61	0	0	0	100	0	0	161
7:15 AM	0	0	0	0	0	0	0	0	0	66	0	0	0	112	1	0	179
7:30 AM	0	0	0	0	0	0	0	0	0	52	0	0	0	147	0	0	199
7:45 AM	0	0	0	0	0	0	0	0	0	59	0	0	0	154	0	1	214
8:00 AM	0	0	0	0	0	0	0	0	0	68	0	0	0	114	0	0	182
8:15 AM	0	0	0	0	0	0	0	0	0	57	0	0	0	87	0	0	144
8:30 AM	0	0	0	0	0	0	0	0	0	43	0	0	0	86	0	0	129
8:45 AM	0	0	0	0	0	0	0	0	0	61	0	0	0	65	0	0	126
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	467	0	0	0	865	1	1	1334
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	99.77%	0.12%	0.12%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	245	0	0	0	527	1	1	774
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.901	0.000	0.000	0.000	0.856	0.250	0.250	0.904
										0.901				0.853			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	191	0	0	0	83	0	0	274
4:15 PM	0	0	0	0	0	0	0	0	0	208	0	0	0	86	0	0	294
4:30 PM	0	0	0	0	0	0	0	0	0	216	0	0	0	80	0	0	296
4:45 PM	0	0	0	0	0	0	0	0	0	244	0	0	0	80	0	0	324
5:00 PM	0	0	0	0	0	0	0	0	0	238	0	0	0	85	0	0	323
5:15 PM	0	0	0	0	0	0	0	0	0	219	0	0	0	71	0	0	290
5:30 PM	0	0	0	0	0	0	0	0	0	241	0	0	0	55	0	0	296
5:45 PM	0	0	0	0	0	0	0	0	0	221	0	0	0	61	0	0	282
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1778	0	0	0	601	0	0	2379
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	942	0	0	0	291	0	0	1233
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.965	0.000	0.000	0.000	0.856	0.000	0.000	0.951
										0.965				0.856			

National Data & Surveying Services Intersection Turning Movement Count

Location: Vip Rd & San Bernardino Ave
City: Fontana
Control: 1-Way Stop (SB)

Project ID: 21-030070-048
Date: 9/15/2021

Data - 2axle

NS/EW Streets:	Vip Rd				Vip Rd				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	6
7:15 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	0	7
7:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	4
7:45 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0	6
8:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	7	0	0	9
8:15 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	0	10
8:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	7	0	0	8
8:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	7	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	21	0	0	0	38	0	0	59
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	10	0	0	0	16	0	0	26
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.571	0.000	0.000	0.722
										0.625				0.571			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	0	7
4:15 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	4	0	0	10
4:30 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	2	0	0	8
4:45 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	3	0	0	10
5:00 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	3	0	0	10
5:15 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	1	0	0	7
5:30 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	1	0	0	8
5:45 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	49	0	0	0	17	0	0	66
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	27	0	0	0	8	0	0	35
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.964	0.000	0.000	0.000	0.667	0.000	0.000	0.875
										0.964				0.667			

National Data & Surveying Services Intersection Turning Movement Count

Location: Vip Rd & San Bernardino Ave
City: Fontana
Control: 1-Way Stop (SB)

Project ID: 21-030070-048
Date: 9/15/2021

Data - 3axle

NS/EW Streets:	Vip Rd				Vip Rd				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	0	7
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	7	0	0	10
7:45 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	5
8:00 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0	0	8
8:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0	6
8:30 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	0	10
8:45 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	7	0	0	14
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	32	0	0	0	30	0	0	62
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	13	0	0	0	12	0	0	25
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.650	0.000	0.000	0.000	0.429	0.000	0.000	0.625
										0.650				0.429			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	11
4:15 PM	0	0	0	0	0	0	0	0	0	8	0	0	0	5	0	0	13
4:30 PM	0	0	0	0	0	0	0	0	0	19	0	0	0	6	0	0	25
4:45 PM	0	0	0	0	0	0	0	0	0	20	0	0	0	3	0	0	23
5:00 PM	0	0	0	0	0	0	0	0	0	16	0	0	0	2	0	0	18
5:15 PM	0	0	0	0	0	0	0	0	0	19	0	0	0	4	0	0	23
5:30 PM	0	0	0	0	0	0	0	0	0	26	0	0	0	2	0	0	28
5:45 PM	0	0	0	0	0	0	0	0	0	16	0	0	0	1	0	0	17
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	135	0	0	0	23	0	0	158
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	81	0	0	0	11	0	0	92
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.779	0.000	0.000	0.000	0.688	0.000	0.000	0.821
										0.779				0.688			

National Data & Surveying Services Intersection Turning Movement Count

Location: Vip Rd & San Bernardino Ave
City: Fontana
Control: 1-Way Stop (SB)

Project ID: 21-030070-048
Date: 9/15/2021

Data - 4axle

NS/EW Streets:	Vip Rd				Vip Rd				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	11	0	0	0	13	0	0	24
7:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	10	0	0	14
7:30 AM	0	0	0	0	0	0	1	0	0	11	0	0	0	17	0	0	29
7:45 AM	0	0	0	0	0	0	0	0	0	15	0	0	0	14	0	0	29
8:00 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	16	0	0	23
8:15 AM	0	0	0	0	0	0	0	0	0	8	0	0	0	20	0	0	28
8:30 AM	0	0	0	0	0	0	0	0	0	8	0	0	0	16	0	0	24
8:45 AM	0	0	0	0	0	0	0	0	0	14	0	0	0	18	0	0	32
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	1	0	0	78	0	0	0	124	0	0	203
APPROACH %'s :					0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	0	0	37	0	0	0	57	0	0	95
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.617	0.000	0.000	0.000	0.838	0.000	0.000	0.819
					0.250				0.617				0.838				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	17	0	0	0	6	0	0	23
4:15 PM	0	0	0	0	0	0	0	0	0	16	0	0	0	5	0	0	21
4:30 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	8	0	0	12
4:45 PM	0	0	0	0	0	0	0	0	0	14	0	0	0	6	0	0	20
5:00 PM	0	0	0	0	0	0	0	0	0	11	0	0	0	2	0	0	13
5:15 PM	0	0	0	0	0	0	0	0	0	14	0	0	0	8	0	0	22
5:30 PM	0	0	0	0	0	0	0	0	0	11	0	0	0	9	0	0	20
5:45 PM	0	0	0	0	0	0	0	0	0	14	0	0	0	4	0	0	18
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	101	0	0	0	48	0	0	149
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	50	0	0	0	25	0	0	75
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.893	0.000	0.000	0.000	0.694	0.000	0.000	0.852
									0.893				0.694				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-049
Date: 9/9/2021

Data - Total

NS/EW Streets:	Cherry Ave				Cherry Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	21	137	15	0	14	163	70	6	26	16	20	0	11	81	10	0	590
7:15 AM	18	166	17	0	18	154	69	2	39	21	15	0	22	77	11	0	629
7:30 AM	21	179	19	1	11	228	85	8	31	16	19	0	26	84	15	0	743
7:45 AM	17	209	12	0	12	212	96	3	39	17	11	0	34	91	28	0	781
8:00 AM	18	177	13	1	22	208	79	1	41	17	21	0	38	52	18	0	706
8:15 AM	18	129	13	0	10	199	65	2	36	13	20	0	26	63	17	0	611
8:30 AM	23	185	9	1	13	171	63	6	31	15	22	0	17	42	7	0	605
8:45 AM	18	153	15	0	12	166	49	4	34	32	23	0	12	34	19	0	571
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	154	1335	113	3	112	1501	576	32	277	147	151	0	186	524	125	0	5236
APPROACH %'s :	9.60%	83.18%	7.04%	0.19%	5.04%	67.58%	25.93%	1.44%	48.17%	25.57%	26.26%	0.00%	22.28%	62.75%	14.97%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	74	731	61	2	63	802	329	14	150	71	66	0	120	304	72	0	2859
PEAK HR FACTOR :	0.881	0.874	0.803	0.500	0.716	0.879	0.857	0.438	0.915	0.845	0.786	0.000	0.789	0.835	0.643	0.000	0.915
	0.912				0.910				0.908				0.810				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	6	234	25	0	15	181	54	2	76	102	48	0	8	34	10	0	795
4:15 PM	12	200	37	1	18	173	52	6	106	184	53	0	18	46	12	0	918
4:30 PM	10	285	20	1	13	177	66	2	104	156	53	0	12	56	15	0	970
4:45 PM	10	217	27	0	21	154	32	0	96	156	55	0	19	42	18	0	847
5:00 PM	11	217	26	0	10	172	51	0	108	142	52	0	11	26	10	0	836
5:15 PM	10	216	23	0	14	143	32	1	114	143	43	0	16	36	25	0	816
5:30 PM	10	200	32	0	21	160	37	0	99	112	60	0	11	47	14	0	803
5:45 PM	7	209	24	1	15	140	41	0	72	108	43	0	11	39	10	0	720
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	76	1778	214	3	127	1300	365	11	775	1103	407	0	106	326	114	0	6705
APPROACH %'s :	3.67%	85.85%	10.33%	0.14%	7.04%	72.10%	20.24%	0.61%	33.92%	48.27%	17.81%	0.00%	19.41%	59.71%	20.88%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	43	919	110	2	62	676	201	8	414	638	213	0	60	170	55	0	3571
PEAK HR FACTOR :	0.896	0.806	0.743	0.500	0.738	0.955	0.761	0.333	0.958	0.867	0.968	0.000	0.789	0.759	0.764	0.000	0.920
	0.850				0.918				0.922				0.858				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-049
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Cherry Ave				Cherry Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	12	121	10	0	13	144	61	6	24	15	14	0	8	66	10	0	504
7:15 AM	12	137	11	0	17	138	64	1	33	19	8	0	20	70	10	0	540
7:30 AM	14	159	11	1	8	206	77	7	25	14	10	0	22	80	12	0	646
7:45 AM	11	188	6	0	11	188	85	3	33	13	6	0	30	87	26	0	687
8:00 AM	11	147	12	0	21	185	65	0	37	16	10	0	34	47	17	0	602
8:15 AM	6	110	11	0	10	173	57	2	32	11	9	0	19	55	16	0	511
8:30 AM	15	153	8	1	8	141	48	5	23	14	14	0	10	38	6	0	484
8:45 AM	6	131	10	0	9	140	37	4	28	24	10	0	8	28	12	0	447
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	87	1146	79	2	97	1315	494	28	235	126	81	0	151	471	109	0	4421
APPROACH %'s :	6.62%	87.21%	6.01%	0.15%	5.02%	67.99%	25.54%	1.45%	53.17%	28.51%	18.33%	0.00%	20.66%	64.43%	14.91%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	48	631	40	1	57	717	291	11	128	62	34	0	106	284	65	0	2475
PEAK HR FACTOR :	0.857	0.839	0.833	0.250	0.679	0.870	0.856	0.393	0.865	0.816	0.850	0.000	0.779	0.816	0.625	0.000	0.901
	0.878				0.903				0.889				0.795				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	6	208	22	0	15	163	46	2	67	92	33	0	8	33	10	0	705
4:15 PM	8	181	32	1	17	151	48	6	88	174	38	0	14	41	11	0	810
4:30 PM	7	257	20	1	11	161	61	2	101	152	35	0	10	52	14	0	884
4:45 PM	7	205	19	0	20	141	28	0	87	152	36	0	18	41	17	0	771
5:00 PM	8	193	23	0	10	156	45	0	101	138	29	0	8	23	10	0	744
5:15 PM	6	197	21	0	13	126	27	1	106	138	26	0	14	34	22	0	731
5:30 PM	8	185	29	0	21	134	29	0	83	111	25	0	9	46	12	0	692
5:45 PM	3	185	22	1	14	118	37	0	64	103	28	0	9	38	9	0	631
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	53	1611	188	3	121	1150	321	11	697	1060	250	0	90	308	105	0	5968
APPROACH %'s :	2.86%	86.85%	10.13%	0.16%	7.55%	71.74%	20.02%	0.69%	34.73%	52.82%	12.46%	0.00%	17.89%	61.23%	20.87%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	30	836	94	2	58	609	182	8	377	616	138	0	50	157	52	0	3209
PEAK HR FACTOR :	0.938	0.813	0.734	0.500	0.725	0.946	0.746	0.333	0.933	0.885	0.908	0.000	0.694	0.755	0.765	0.000	0.908
	0.844				0.912				0.943				0.852				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-049
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Cherry Ave				Cherry Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	6	4	0	0	5	1	0	2	1	0	0	0	6	0	0	26
7:15 AM	0	5	0	0	0	1	3	1	2	1	1	0	0	2	1	0	17
7:30 AM	0	8	1	0	2	6	1	1	0	1	1	0	1	1	2	0	25
7:45 AM	1	10	0	0	0	9	1	0	0	1	2	0	0	1	1	0	26
8:00 AM	1	13	0	1	0	8	3	1	1	1	1	0	0	2	0	0	32
8:15 AM	1	11	0	0	0	7	4	0	1	1	3	0	1	1	0	0	30
8:30 AM	2	12	1	0	1	12	3	1	2	0	0	0	2	2	1	0	39
8:45 AM	2	12	1	0	0	8	3	0	3	2	0	0	1	2	3	0	37
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	8	77	7	1	3	56	19	4	11	8	8	0	5	17	8	0	232
APPROACH %'s :	8.60%	82.80%	7.53%	1.08%	3.66%	68.29%	23.17%	4.88%	40.74%	29.63%	29.63%	0.00%	16.67%	56.67%	26.67%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	2	36	1	1	2	24	8	3	3	4	5	0	1	6	4	0	100
PEAK HR FACTOR :	0.500	0.692	0.250	0.250	0.250	0.667	0.667	0.750	0.375	1.000	0.625	0.000	0.250	0.750	0.500	0.000	0.781
	0.667				0.771				0.750				0.688				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	8	1	0	0	4	2	0	5	3	2	0	0	1	0	0	26
4:15 PM	0	5	0	0	0	2	1	0	5	3	2	0	0	1	0	0	19
4:30 PM	0	11	0	0	1	4	0	0	0	2	3	0	1	2	1	0	25
4:45 PM	0	1	0	0	0	2	0	0	1	1	1	0	1	0	0	0	7
5:00 PM	0	6	0	0	0	0	2	0	1	1	7	0	0	2	0	0	19
5:15 PM	0	2	0	0	0	5	1	0	2	2	5	0	0	0	1	0	18
5:30 PM	0	3	0	0	0	7	0	0	7	0	7	0	1	1	0	0	26
5:45 PM	2	5	0	0	1	6	0	0	3	3	0	0	0	1	0	0	21
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	41	1	0	2	30	6	0	24	15	27	0	3	8	2	0	161
APPROACH %'s :	4.55%	93.18%	2.27%	0.00%	5.26%	78.95%	15.79%	0.00%	36.36%	22.73%	40.91%	0.00%	23.08%	61.54%	15.38%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	23	0	0	1	8	3	0	7	7	13	0	2	5	1	0	70
PEAK HR FACTOR :	0.000	0.523	0.000	0.000	0.250	0.500	0.375	0.000	0.350	0.583	0.464	0.000	0.500	0.625	0.250	0.000	0.700
	0.523				0.600				0.675				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-049
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Cherry Ave				Cherry Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	7	0	0	0	4	3	0	0	0	0	0	0	0	0	0	17
7:15 AM	3	6	2	0	0	11	1	0	3	1	1	0	0	1	0	0	29
7:30 AM	2	6	2	0	0	6	3	0	3	0	1	0	1	1	1	0	26
7:45 AM	4	3	2	0	0	6	2	0	1	2	0	0	1	1	0	0	22
8:00 AM	6	8	1	0	0	9	4	0	2	0	3	0	2	0	0	0	35
8:15 AM	4	3	0	0	0	4	0	0	1	0	5	0	1	1	1	0	20
8:30 AM	5	7	0	0	3	6	5	0	3	0	3	0	2	1	0	0	35
8:45 AM	7	6	1	0	3	11	6	0	1	2	5	0	1	2	1	0	46
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	34	46	8	0	6	57	24	0	14	5	18	0	8	7	3	0	230
APPROACH %'s :	38.64%	52.27%	9.09%	0.00%	6.90%	65.52%	27.59%	0.00%	37.84%	13.51%	48.65%	0.00%	44.44%	38.89%	16.67%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	15	23	7	0	0	32	10	0	9	3	5	0	4	3	1	0	112
PEAK HR FACTOR :	0.625	0.719	0.875	0.000	0.000	0.727	0.625	0.000	0.750	0.375	0.417	0.000	0.500	0.750	0.250	0.000	0.800
	0.750				0.808				0.850				0.667				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	4	0	0	0	5	1	0	3	0	9	0	0	0	0	0	22
4:15 PM	1	7	2	0	0	6	2	0	5	1	8	0	0	1	1	0	34
4:30 PM	2	6	0	0	0	3	3	0	2	2	10	0	0	2	0	0	30
4:45 PM	2	6	0	0	1	3	3	0	1	1	15	0	0	1	1	0	34
5:00 PM	1	11	0	0	0	11	2	0	2	1	9	0	2	1	0	0	40
5:15 PM	2	3	2	0	0	5	2	0	1	1	11	0	1	1	1	0	30
5:30 PM	1	5	0	0	0	10	5	0	4	0	17	0	0	0	1	0	43
5:45 PM	1	5	1	0	0	8	1	0	1	1	11	0	1	0	0	0	30
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	10	47	5	0	1	51	19	0	19	7	90	0	4	6	4	0	263
APPROACH %'s :	16.13%	75.81%	8.06%	0.00%	1.41%	71.83%	26.76%	0.00%	16.38%	6.03%	77.59%	0.00%	28.57%	42.86%	28.57%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	6	30	2	0	1	23	10	0	10	5	42	0	2	5	2	0	138
PEAK HR FACTOR :	0.750	0.682	0.250	0.000	0.250	0.523	0.833	0.000	0.500	0.625	0.700	0.000	0.250	0.625	0.500	0.000	0.863
	0.792				0.654				0.838				0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-049
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Cherry Ave				Cherry Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	5	3	1	0	1	10	5	0	0	0	6	0	3	9	0	0	43
7:15 AM	3	18	4	0	1	4	1	0	1	0	5	0	2	4	0	0	43
7:30 AM	5	6	5	0	1	10	4	0	3	1	7	0	2	2	0	0	46
7:45 AM	1	8	4	0	1	9	8	0	5	1	3	0	3	2	1	0	46
8:00 AM	0	9	0	0	1	6	7	0	1	0	7	0	2	3	1	0	37
8:15 AM	7	5	2	0	0	15	4	0	2	1	3	0	5	6	0	0	50
8:30 AM	1	13	0	0	1	12	7	0	3	1	5	0	3	1	0	0	47
8:45 AM	3	4	3	0	0	7	3	0	2	4	8	0	2	2	3	0	41
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	25	66	19	0	6	73	39	0	17	8	44	0	22	29	5	0	353
APPROACH %'s :	22.73%	60.00%	17.27%	0.00%	5.08%	61.86%	33.05%	0.00%	24.64%	11.59%	63.77%	0.00%	39.29%	51.79%	8.93%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	9	41	13	0	4	29	20	0	10	2	22	0	9	11	2	0	172
PEAK HR FACTOR :	0.450	0.569	0.650	0.000	1.000	0.725	0.625	0.000	0.500	0.500	0.786	0.000	0.750	0.688	0.500	0.000	0.935
	0.630				0.736				0.773				0.917				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	3	0	0	1	3	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	14	2	0	0	9	5	0	1	7	4	0	0	0	0	0	42
4:15 PM	3	7	3	0	1	14	1	0	8	6	5	0	4	3	0	0	55
4:30 PM	1	11	0	0	1	9	2	0	1	0	5	0	1	0	0	0	31
4:45 PM	1	5	8	0	0	8	1	0	7	2	3	0	0	0	0	0	35
5:00 PM	2	7	3	0	0	5	2	0	4	2	7	0	1	0	0	0	33
5:15 PM	2	14	0	0	1	7	2	0	5	2	1	0	1	1	1	0	37
5:30 PM	1	7	3	0	0	9	3	0	5	1	11	0	1	0	1	0	42
5:45 PM	1	14	1	0	0	8	3	0	4	1	4	0	1	0	1	0	38
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	11	79	20	0	3	69	19	0	35	21	40	0	9	4	3	0	313
APPROACH %'s :	10.00%	71.82%	18.18%	0.00%	3.30%	75.82%	20.88%	0.00%	36.46%	21.88%	41.67%	0.00%	56.25%	25.00%	18.75%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	7	30	14	0	2	36	6	0	20	10	20	0	6	3	0	0	154
PEAK HR FACTOR :	0.583	0.682	0.438	0.000	0.500	0.643	0.750	0.000	0.625	0.417	0.714	0.000	0.375	0.250	0.000	0.000	0.700
	0.911				0.688				0.658				0.321				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-050
Date: 9/9/2021

Data - Total

NS/EW Streets:	Beech Ave				Beech Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	20	2	0	5	27	8	0	5	20	0	0	1	51	3	0	143
7:15 AM	4	33	2	0	7	22	19	0	7	47	4	0	2	65	10	0	222
7:30 AM	8	36	0	0	15	25	15	0	12	50	6	0	0	97	27	0	291
7:45 AM	8	29	0	0	12	46	30	0	4	69	2	0	3	114	21	0	338
8:00 AM	5	17	3	0	9	31	8	0	7	43	4	0	2	51	8	0	188
8:15 AM	2	18	3	0	16	25	10	0	3	32	4	0	4	53	8	0	178
8:30 AM	1	24	3	0	8	25	3	0	4	19	1	0	0	43	5	0	136
8:45 AM	2	13	2	0	3	23	7	0	8	38	5	0	0	33	5	0	139
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	31	190	15	0	75	224	100	0	50	318	26	0	12	507	87	0	1635
APPROACH %'s :	13.14%	80.51%	6.36%	0.00%	18.80%	56.14%	25.06%	0.00%	12.69%	80.71%	6.60%	0.00%	1.98%	83.66%	14.36%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	25	115	5	0	43	124	72	0	30	209	16	0	7	327	66	0	1039
PEAK HR FACTOR :	0.781	0.799	0.417	0.000	0.717	0.674	0.600	0.000	0.625	0.757	0.667	0.000	0.583	0.717	0.611	0.000	0.768
	0.824				0.679				0.850				0.725				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	46	3	0	4	28	4	0	22	94	5	0	2	48	4	0	264
4:15 PM	5	27	6	0	8	17	10	0	23	146	3	0	2	52	11	0	310
4:30 PM	2	48	6	0	13	25	7	0	21	142	1	0	3	58	11	0	337
4:45 PM	3	32	6	0	6	19	11	0	13	146	4	0	4	57	9	0	310
5:00 PM	7	34	2	0	11	25	6	0	17	108	2	0	3	44	9	0	268
5:15 PM	2	39	10	0	9	22	8	0	17	141	5	0	2	57	6	0	318
5:30 PM	4	37	4	0	5	25	8	0	12	114	2	0	3	50	12	0	276
5:45 PM	5	35	8	0	5	35	7	0	7	102	7	0	0	46	12	0	269
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	32	298	45	0	61	196	61	0	132	993	29	0	19	412	74	0	2352
APPROACH %'s :	8.53%	79.47%	12.00%	0.00%	19.18%	61.64%	19.18%	0.00%	11.44%	86.05%	2.51%	0.00%	3.76%	81.58%	14.65%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	14	153	24	0	39	91	32	0	68	537	12	0	12	216	35	0	1233
PEAK HR FACTOR :	0.500	0.797	0.600	0.000	0.750	0.910	0.727	0.000	0.810	0.920	0.600	0.000	0.750	0.931	0.795	0.000	0.915
	0.853				0.900				0.941				0.913				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-050
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Beech Ave				Beech Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	19	2	0	5	27	7	0	5	16	0	0	1	49	3	0	135
7:15 AM	4	32	1	0	7	22	18	0	7	45	4	0	2	59	10	0	211
7:30 AM	8	34	0	0	15	24	15	0	12	48	6	0	0	93	27	0	282
7:45 AM	7	27	0	0	12	44	30	0	4	67	2	0	3	109	21	0	326
8:00 AM	4	15	3	0	9	30	6	0	7	41	4	0	2	48	8	0	177
8:15 AM	2	18	3	0	16	23	10	0	2	29	4	0	4	51	8	0	170
8:30 AM	1	22	3	0	8	21	3	0	4	18	1	0	0	40	5	0	126
8:45 AM	2	13	2	0	3	21	7	0	8	36	5	0	0	30	5	0	132
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	29	180	14	0	75	212	96	0	49	300	26	0	12	479	87	0	1559
APPROACH %'s :	13.00%	80.72%	6.28%	0.00%	19.58%	55.35%	25.07%	0.00%	13.07%	80.00%	6.93%	0.00%	2.08%	82.87%	15.05%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	23	108	4	0	43	120	69	0	30	201	16	0	7	309	66	0	996
PEAK HR FACTOR :	0.719	0.794	0.333	0.000	0.717	0.682	0.575	0.000	0.625	0.750	0.667	0.000	0.583	0.709	0.611	0.000	0.764
	0.804				0.674				0.846				0.718				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	44	2	0	4	24	4	0	22	89	5	0	2	47	4	0	251
4:15 PM	5	25	6	0	8	15	10	0	23	145	3	0	2	48	11	0	301
4:30 PM	0	48	6	0	13	22	7	0	21	140	1	0	3	56	11	0	328
4:45 PM	3	32	6	0	6	18	10	0	13	141	4	0	4	55	9	0	301
5:00 PM	6	33	2	0	11	23	6	0	17	106	2	0	2	38	9	0	255
5:15 PM	1	37	9	0	9	20	7	0	17	138	5	0	2	54	6	0	305
5:30 PM	4	36	4	0	5	25	8	0	12	114	2	0	3	48	12	0	273
5:45 PM	4	32	8	0	5	35	6	0	7	98	7	0	0	44	12	0	258
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	27	287	43	0	61	182	58	0	132	971	29	0	18	390	74	0	2272
APPROACH %'s :	7.56%	80.39%	12.04%	0.00%	20.27%	60.47%	19.27%	0.00%	11.66%	85.78%	2.56%	0.00%	3.73%	80.91%	15.35%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	10	150	23	0	39	83	30	0	68	525	12	0	11	203	35	0	1189
PEAK HR FACTOR :	0.417	0.781	0.639	0.000	0.750	0.902	0.750	0.000	0.810	0.931	0.600	0.000	0.688	0.906	0.795	0.000	0.906
	0.847				0.905				0.934				0.889				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-050
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Beech Ave				Beech Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	0	0	0	0	0	2	0	0	0	1	0	0	4
7:15 AM	0	0	1	0	0	0	1	0	0	2	0	0	0	4	0	0	8
7:30 AM	0	2	0	0	0	0	0	0	0	1	0	0	0	4	0	0	7
7:45 AM	0	0	0	0	0	2	0	0	0	1	0	0	0	3	0	0	6
8:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	3	0	0	5
8:15 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
8:30 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	2	0	0	4
8:45 AM	0	0	0	0	0	2	0	0	0	1	0	0	0	2	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	1	0	0	4	2	0	0	12	0	0	0	21	0	0	44
APPROACH %'s :	0.00%	80.00%	20.00%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	2	1	0	0	2	2	0	0	5	0	0	0	14	0	0	26
PEAK HR FACTOR :	0.000	0.250	0.250	0.000	0.000	0.250	0.500	0.000	0.000	0.625	0.000	0.000	0.000	0.875	0.000	0.000	0.813
	0.375				0.500				0.625				0.875				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	1	0	0	3	0	0	0	4	0	0	0	1	0	0	10
4:15 PM	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0	6
4:30 PM	2	0	0	0	0	1	0	0	0	2	0	0	0	2	0	0	7
4:45 PM	0	0	0	0	0	1	0	0	0	4	0	0	0	1	0	0	6
5:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	1	4	0	0	7
5:15 PM	0	0	1	0	0	0	0	0	0	2	0	0	0	2	0	0	5
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
5:45 PM	0	2	0	0	0	0	1	0	0	3	0	0	0	2	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	6	2	0	0	9	1	0	0	16	0	0	1	14	0	0	51
APPROACH %'s :	20.00%	60.00%	20.00%	0.00%	0.00%	90.00%	10.00%	0.00%	0.00%	100.00%	0.00%	0.00%	6.67%	93.33%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	2	0	1	0	0	4	0	0	0	8	0	0	1	9	0	0	25
PEAK HR FACTOR :	0.250	0.000	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.563	0.000	0.000	0.893
	0.375				0.500				0.500				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-050
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Beech Ave				Beech Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	3	0	0	0	5	0	0	0	2	0	0	10
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.250	0.000	0.000	0.375
									0.500				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:00 PM	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3
5:15 PM	1	1	0	0	0	1	1	0	0	1	0	0	0	0	0	0	5
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	2	0	0	0	1	1	0	0	4	0	0	0	4	0	0	15
APPROACH %'s :	60.00%	40.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	2	1	0	0	0	1	1	0	0	3	0	0	0	2	0	0	10
PEAK HR FACTOR :	0.500	0.250	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.750	0.000	0.000	0.000	0.500	0.000	0.000	0.500
	0.375				0.250				0.750				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-050
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Beech Ave				Beech Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3
7:30 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
7:45 AM	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4
8:00 AM	1	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	5
8:15 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
8:30 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	1	0	0	4
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	6	0	0	0	5	2	0	1	1	0	0	0	5	0	0	22
APPROACH %'s :	25.00%	75.00%	0.00%	0.00%	0.00%	71.43%	28.57%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	2	5	0	0	0	2	1	0	0	1	0	0	0	3	0	0	14
PEAK HR FACTOR :	0.500	0.625	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.375	0.000	0.000	0.700
	0.583				0.375				0.250				0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3
5:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:45 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	4	1	0	0	2	0	0	0	4	0	0	14
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	2	0	0	0	3	1	0	0	1	0	0	0	2	0	0	9
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.375	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.750
	0.500				0.500				0.250				0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Fontana Ave/Elm Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-051
Date: 9/9/2021

Data - Total

NS/EW Streets:	Fontana Ave/Elm Ave						Fontana Ave/Elm Ave						San Bernardino Ave						San Bernardino Ave																		
AM	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND						NORTHBOUND2						SOUTHBOUND2						
	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0													
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	8	3	2	0	1	0	7	6	5	0	6	0	5	61	5	0	13	1	0	63	2	0	2	3	3	0	3	5	1	29	1	4	17	0	256
7:15 AM	4	4	2	0	2	1	16	10	6	0	8	0	0	52	2	0	8	0	1	34	2	0	2	0	12	0	2	6	0	17	0	2	24	1	218
7:30 AM	4	3	1	0	3	0	8	4	2	0	5	0	1	28	3	0	6	0	0	37	6	0	1	1	3	0	1	0	0	26	0	3	18	0	164
7:45 AM	2	4	2	0	3	0	9	11	2	0	2	0	2	15	1	0	12	3	0	28	1	0	4	2	16	0	4	1	0	18	2	3	18	1	166
8:00 AM	0	5	0	0	2	0	4	6	0	0	3	0	1	28	0	0	9	3	0	16	3	0	2	0	8	1	2	0	0	12	2	1	6	0	114
8:15 AM	3	1	0	0	2	0	4	7	0	0	2	0	1	36	2	0	13	0	0	20	0	0	0	1	8	0	0	3	0	6	1	4	5	0	119
8:30 AM	0	4	0	0	0	0	0	2	1	0	2	0	1	26	3	0	5	0	0	23	1	0	2	3	10	0	0	2	0	11	0	3	5	3	107
8:45 AM	1	2	0	0	4	0	0	3	0	0	4	0	0	25	1	0	4	1	0	33	1	0	0	1	6	0	1	0	2	13	0	3	6	1	112
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	22	26	7	0	17	1	48	49	16	0	32	0	11	271	17	0	70	8	1	254	16	0	13	11	66	1	13	17	3	132	6	23	99	6	1256
APPROACH %'s :	30.14%	35.62%	9.59%	0.00%	23.29%	1.37%	33.10%	33.79%	11.03%	0.00%	22.07%	0.00%	2.92%	71.88%	4.51%	0.00%	18.57%	2.12%	0.34%	86.10%	5.42%	0.00%	4.41%	3.73%	66.00%	1.00%	13.00%	17.00%	3.00%	49.62%	2.26%	8.65%	37.22%	2.26%	
PEAK HR :	07:00 AM - 08:00 AM																																				TOTAL
PEAK HR VOL :	18	14	7	0	9	1	40	31	15	0	21	0	8	156	11	0	39	4	1	162	11	0	9	6	34	0	10	12	1	90	3	12	77	2	804
PEAK HR FACTOR :	0.563	0.875	0.875	0.000	0.750	0.250	0.625	0.705	0.625	0.000	0.656	0.000	0.400	0.639	0.550	0.000	0.750	0.333	0.250	0.643	0.458	0.000	0.563	0.500	0.531	0.000	0.625	0.500	0.250	0.776	0.375	0.750	0.802	0.500	0.785
	0.875						0.669						0.641						0.675																		

PM	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND																		
	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	3	18	0	0	4	1	3	4	2	0	2	0	1	112	5	0	33	0	2	51	4	0	5	3	35	1	3	4	2	9	3	2	15	0	327
4:15 PM	4	11	2	0	9	0	5	4	3	0	3	0	1	94	5	0	29	0	4	36	5	0	2	3	43	1	4	2	0	15	1	1	19	1	307
4:30 PM	4	10	0	0	4	1	3	5	1	0	1	0	1	99	6	0	32	0	0	49	5	0	2	1	40	0	3	4	1	16	0	1	13	0	302
4:45 PM	6	14	1	0	8	0	3	9	6	0	2	0	5	93	2	0	31	1	0	42	2	0	3	1	31	3	6	2	0	11	0	3	11	1	297
5:00 PM	2	9	2	0	7	0	2	5	2	0	2	0	4	73	4	0	16	2	1	33	2	0	1	2	32	2	3	6	0	12	0	2	11	0	237
5:15 PM	6	13	1	0	3	0	2	5	2	0	2	0	4	65	3	0	21	0	0	34	3	0	1	0	25	0	7	1	0	10	2	3	9	0	222
5:30 PM	5	7	0	0	5	0	6	10	0	0	1	1	3	67	5	0	23	1	0	23	2	0	1	0	17	1	2	4	0	14	1	2	7	1	209
5:45 PM	5	7	1	0	3	0	8	6	0	0	3	1	0	48	6	0	17	1	0	29	6	0	2	1	22	1	0	4	1	13	1	2	9	1	198
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	35	89	7	0	43	2	32	48	16	0	16	2	19	651	36	0	202	5	7	297	29	0	17	11	245	9	28	27	4	100	8	16	94	4	2099
APPROACH %'s :	19.89%	50.57%	3.98%	0.00%	24.43%	1.14%	28.07%	42.11%	14.04%	0.00%	14.04%	1.75%	2.08%	71.30%	3.94%	0.00%	22.12%	0.55%	1.94%	82.27%	8.03%	0.00%	4.71%	3.05%	78.27%	2.88%	8.95%	8.63%	1.28%	45.05%	3.60%	7.21%	42.34%	1.80%	
PEAK HR :	04:00 PM - 05:00 PM																																				TOTAL
PEAK HR VOL :	17	53	3	0	25	2	14	22	12	0	8	0	8	398	18	0	125	1	6	178	16	0	12	8	149	5	16	12	3	51	4	7	58	2	1233
PEAK HR FACTOR :	0.708	0.736	0.375	0.000	0.694	0.500	0.700	0.611	0.500	0.000	0.667	0.000	0.400	0.888	0.750	0.000	0.947	0.250	0.375	0.873	0.800	0.000	0.600	0.667	0.866	0.417	0.667	0.750	0.375	0.797	0.333	0.583	0.763	0.500	0.943
	0.862						0.700						0.911						0.846																		

	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2
AM Peak	21	14	8	0	9	1	42	34	15	0	21	0	9	159	11	0	42	5	1	169	11	0	9	6	36	0	10	12	1	94	3	14	78	2
PM Peak	19	54	3	0	26	5	14	23	12	0	8	0	8	402	18	0	128	1	6	184	18	0	12	9	152	7	16	12	4	52	4	7	62	2

National Data & Surveying Services

Intersection Turning Movement Count

Location: Fontana Ave/Elm Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-051
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Fontana Ave/Elm Ave						Fontana Ave/Elm Ave						San Bernardino Ave						San Bernardino Ave															
AM	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND						NORTHBOUND2						SOUTHBOUND2					
	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	7	3	1	0	1	0	7	6	5	0	6	0	4	60	5	0	12	0	0	60	2	0	2	3	3	0	3	5	1	28	1	4	17	0	246
7:15 AM	4	4	2	0	2	1	16	9	6	0	8	0	0	49	2	0	7	0	1	33	2	0	2	0	11	0	2	6	0	16	0	2	24	1	210
7:30 AM	3	3	1	0	3	0	7	3	2	0	5	0	1	27	3	0	6	0	0	36	6	0	1	1	3	0	1	0	0	25	0	2	16	0	155
7:45 AM	2	4	2	0	3	0	9	11	2	0	2	0	2	15	1	0	10	3	0	24	1	0	4	2	15	0	4	1	0	17	2	3	18	1	158
8:00 AM	0	5	0	0	2	0	4	6	0	0	3	0	1	27	0	0	8	3	0	16	3	0	2	0	6	1	2	0	0	12	2	1	6	0	110
8:15 AM	3	1	0	0	2	0	4	7	0	0	2	0	1	35	2	0	11	0	0	19	0	0	0	1	8	0	0	3	0	6	1	4	5	0	115
8:30 AM	0	4	0	0	0	0	0	2	0	0	2	0	1	22	2	0	5	0	0	22	1	0	2	3	9	0	0	2	0	11	0	3	5	3	99
8:45 AM	1	2	0	0	4	0	0	3	0	0	4	0	0	24	1	0	3	1	0	31	1	0	0	1	4	0	1	0	2	13	0	3	6	1	106
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	20	26	6	0	17	1	47	47	15	0	32	0	10	259	16	0	62	7	1	241	16	0	13	11	59	1	13	17	3	128	6	22	97	6	1199
APPROACH %'s :	28.57%	37.14%	8.57%	0.00%	24.29%	1.43%	33.33%	33.33%	10.64%	0.00%	22.70%	0.00%	2.82%	73.16%	4.52%	0.00%	17.51%	1.98%	0.35%	85.46%	5.67%	0.00%	4.61%	3.90%	63.44%	1.08%	13.98%	18.28%	3.23%	49.42%	2.32%	8.49%	37.45%	2.32%	
PEAK HR :	07:00 AM - 08:00 AM																																		TOTAL
PEAK HR VOL :	16	14	6	0	9	1	39	29	15	0	21	0	7	151	11	0	35	3	1	153	11	0	9	6	32	0	10	12	1	86	3	11	75	2	769
PEAK HR FACTOR :	0.571	0.875	0.750	0.000	0.750	0.250	0.609	0.659	0.625	0.000	0.656	0.000	0.438	0.629	0.550	0.000	0.729	0.250	0.250	0.638	0.458	0.000	0.563	0.500	0.533	0.000	0.625	0.500	0.250	0.768	0.375	0.688	0.781	0.500	0.782
	0.885						0.667						0.639						0.672																

PM	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND																	
	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	3	18	0	0	4	0	3	4	2	0	2	0	1	110	5	0	32	0	2	50	3	0	5	2	34	0	3	4	1	9	3	2	14	0	316
4:15 PM	3	11	2	0	9	0	5	3	3	0	3	0	1	92	5	0	28	0	4	33	4	0	2	3	42	1	4	2	0	15	1	1	18	1	296
4:30 PM	4	10	0	0	4	0	3	5	1	0	1	0	1	98	6	0	31	0	0	48	5	0	2	1	40	0	3	4	0	14	0	1	11	0	293
4:45 PM	6	13	1	0	7	0	3	9	6	0	2	0	5	93	2	0	30	1	0	41	2	0	3	1	28	3	6	2	0	11	0	3	11	1	290
5:00 PM	2	9	2	0	7	0	2	5	2	0	2	0	4	71	4	0	14	2	1	32	2	0	1	2	32	2	3	6	0	12	0	2	11	0	232
5:15 PM	6	13	1	0	3	0	2	5	2	0	2	0	4	63	3	0	21	0	0	33	3	0	1	0	24	0	7	1	0	10	2	2	9	0	217
5:30 PM	5	7	0	0	5	0	6	10	0	0	1	1	3	65	5	0	23	1	0	22	2	0	1	0	17	1	1	4	0	14	1	2	5	1	203
5:45 PM	5	7	1	0	3	0	8	6	0	0	2	1	0	48	6	0	15	1	0	27	6	0	2	1	20	1	0	4	1	13	1	2	9	1	191
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	34	88	7	0	42	0	32	47	16	0	15	2	19	640	36	0	194	5	7	286	27	0	17	10	237	8	27	27	2	98	8	15	88	4	2038
APPROACH %'s :	19.88%	51.46%	4.09%	0.00%	24.56%	0.00%	28.57%	41.96%	14.29%	0.00%	13.39%	1.79%	2.13%	71.59%	4.03%	0.00%	21.70%	0.56%	2.02%	82.42%	7.78%	0.00%	4.90%	2.88%	78.74%	2.66%	8.97%	8.97%	0.66%	46.01%	3.76%	7.04%	41.31%	1.88%	
PEAK HR :	04:00 PM - 05:00 PM																																		TOTAL
PEAK HR VOL :	16	52	3	0	24	0	14	21	12	0	8	0	8	393	18	0	121	1	6	172	14	0	12	7	144	4	16	12	1	49	4	7	54	2	1195
PEAK HR FACTOR :	0.667	0.722	0.375	0.000	0.667	0.000	0.700	0.583	0.500	0.000	0.667	0.000	0.400	0.893	0.750	0.000	0.945	0.250	0.375	0.860	0.700	0.000	0.600	0.583	0.857	0.333	0.667	0.750	0.250	0.817	0.333	0.583	0.750	0.500	0.945
	0.880						0.688						0.914						0.851																

AM Peak	16	14	6	0	9	1	39	29	15	0	21	0	7	151	11	0	35	3	1	153	11	0	9	6	32	0	10	12	1	86	3	11	75	2
PM Peak	16	52	3	0	24	0	14	21	12	0	8	0	8	393	18	0	121	1	6	172	14	0	12	7	144	4	16	12	1	49	4	7	54	2

National Data & Surveying Services

Intersection Turning Movement Count

Location: Fontana Ave/Elm Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-051
Date: 9/9/2021

Data - 2axle

NS/EW Streets: Fontana Ave/Elm Ave | Fontana Ave/Elm Ave | San Bernardino Ave | San Bernardino Ave

AM

	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND						NORTHBOUND2					SOUTHBOUND2					
	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	6
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	7
7:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	5
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	3	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	5
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	1	0	1	0	0	0	0	1	1	0	0	0	0	11	1	0	4	0	0	10	0	0	0	0	3	0	0	0	0	2	0	0	2	0	37
APPROACH %'s :	50.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	0.00%	68.75%	6.25%	0.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	50.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																																		TOTAL
PEAK HR VOL :	1	0	1	0	0	0	0	1	0	0	0	0	0	5	0	0	3	0	0	7	0	0	0	0	1	0	0	0	0	2	0	0	2	0	23
PEAK HR FACTOR :	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.417	0.000	0.000	0.375	0.000	0.000	0.583	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.821
	0.500						0.250						0.500						0.583																	

PM

	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND																	
	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	1	0	0	1	1	0	0	0	1	0	0	0	0	0	8
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	2	0	0	1	0	8
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	6
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	1	0	1	0	0	0	0	0	9	0	0	6	0	0	7	1	0	0	1	7	0	0	0	2	2	0	0	3	0	41
APPROACH %'s :	0.00%	50.00%	0.00%	0.00%	0.00%	50.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	60.00%	0.00%	0.00%	40.00%	0.00%	0.00%	77.78%	11.11%	0.00%	0.00%	11.11%	77.78%	0.00%	0.00%	0.00%	22.22%	40.00%	0.00%	0.00%	60.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																																		TOTAL
PEAK HR VOL :	0	1	0	0	0	1	0	1	0	0	0	0	0	4	0	0	3	0	0	4	1	0	0	1	4	0	0	0	2	2	0	0	2	0	26
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.750	0.000	0.000	1.000	0.250	0.000	0.000	0.250	0.333	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.500	0.000	0.813
	0.500						0.250						0.583						0.500																	

1.5																																			
AM Peak	2	0	2	0	0	0	0	2	0	0	0	0	0	8	0	0	5	0	0	11	0	0	0	0	2	0	0	0	0	3	0	0	3	0	
PM Peak	0	2	0	0	0	2	0	2	0	0	0	0	0	6	0	0	5	0	0	6	2	0	0	2	6	0	0	0	3	3	0	0	3	0	

National Data & Surveying Services

Intersection Turning Movement Count

Location: Fontana Ave/Elm Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-051
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Fontana Ave/Elm Ave						Fontana Ave/Elm Ave						San Bernardino Ave						San Bernardino Ave																
AM	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND						NORTHBOUND2						SOUTHBOUND2					
	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	1	0	2	0	0	0	0	4	0	0	0	0	1	0	0	0	0	12
APPROACH %'s :													20.00%	0.00%	0.00%	0.00%	60.00%	20.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																																		TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.500
			0.250										0.250						0.250																

PM	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND																
	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	2	0	7
APPROACH %'s :	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%							0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																																		TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0	5
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.417
			0.250										0.250						0.250																

2																																			
AM Peak	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	2	0	0	0	0	2	0	0	0	0	2	0	0	0	0	
PM Peak	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	2	0	

National Data & Surveying Services

Intersection Turning Movement Count

Location: Fontana Ave/Elm Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-051
Date: 9/9/2021

Data - 4axle

NS/EW Streets: Fontana Ave/Elm Ave | Fontana Ave/Elm Ave | San Bernardino Ave | San Bernardino Ave

AM

	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND						NORTHBOUND2					SOUTHBOUND2					
	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	8
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	50.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%						50.00%	0.00%	50.00%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																																		TOTAL
PEAK HR VOL :	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	6
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.500
	0.250						0.250						0.000						0.250																

PM

	NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND																
	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
4:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	NT2	NU2	SL	ST	SR	SU	ST2	SU2	EL	ET	ER	EU	EL2	ER2	WL	WT	WR	WU	WL2	WR2	N2T	N2L2	N2T2	N2R2	N2U2	S2T	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0	1	0	0	3	0	0	0	0	0	1	1	0	0	0	0	1	1	0	13
APPROACH %'s :	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	66.67%	0.00%	0.00%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																																		TOTAL
PEAK HR VOL :	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	1	0	0	7
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.438
	0.500						0.000						0.250						0.250																

3																																		
AM Peak	3	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	3	0	0
PM Peak	3	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	6	0	0	0	0	0	3	0	0	0	0	0	0	3	0

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-052
Date: 9/15/2021

Data - Total

NS/EW Streets:	Citrus Ave				Citrus Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	19	130	12	0	7	171	5	0	7	22	6	0	20	27	16	0	442
7:15 AM	39	151	24	0	19	184	14	0	18	24	16	0	30	35	20	0	574
7:30 AM	45	150	63	0	21	197	15	0	11	25	20	0	39	35	32	0	653
7:45 AM	38	150	61	0	18	183	17	0	27	37	19	0	33	42	55	0	680
8:00 AM	12	137	23	0	29	161	10	0	52	29	14	0	19	25	84	0	595
8:15 AM	20	125	11	0	32	191	21	0	44	24	11	0	16	25	88	0	608
8:30 AM	15	117	7	0	21	159	5	0	16	23	13	0	13	26	31	0	446
8:45 AM	9	124	9	0	14	120	4	0	8	29	9	0	7	20	15	0	368
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	197	1084	210	0	161	1366	91	0	183	213	108	0	177	235	341	0	4366
APPROACH %'s :	13.21%	72.70%	14.08%	0.00%	9.95%	84.43%	5.62%	0.00%	36.31%	42.26%	21.43%	0.00%	23.51%	31.21%	45.29%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	115	562	158	0	100	732	63	0	134	115	64	0	107	127	259	0	2536
PEAK HR FACTOR :	0.639	0.937	0.627	0.000	0.781	0.929	0.750	0.000	0.644	0.777	0.800	0.000	0.686	0.756	0.736	0.000	0.932
	0.809				0.917				0.824				0.948				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	17	205	12	0	32	180	6	0	20	79	12	0	18	41	17	0	639
4:15 PM	14	223	13	0	11	156	8	0	15	76	11	0	8	33	18	0	586
4:30 PM	17	205	15	0	18	136	10	0	18	65	17	0	15	39	18	0	573
4:45 PM	42	206	12	0	11	130	6	0	7	90	12	0	26	44	21	0	607
5:00 PM	33	195	15	0	10	137	6	0	18	72	19	0	8	37	14	0	564
5:15 PM	47	242	12	0	11	120	7	0	9	81	19	0	13	63	25	0	649
5:30 PM	40	247	8	0	11	152	5	0	14	82	16	0	13	51	14	0	653
5:45 PM	48	254	12	0	16	148	7	0	12	67	9	0	10	58	17	0	658
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	258	1777	99	0	120	1159	55	0	113	612	115	0	111	366	144	0	4929
APPROACH %'s :	12.09%	83.27%	4.64%	0.00%	9.00%	86.88%	4.12%	0.00%	13.45%	72.86%	13.69%	0.00%	17.87%	58.94%	23.19%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	168	938	47	0	48	557	25	0	53	302	63	0	44	209	70	0	2524
PEAK HR FACTOR :	0.875	0.923	0.783	0.000	0.750	0.916	0.893	0.000	0.736	0.921	0.829	0.000	0.846	0.829	0.700	0.000	0.959
	0.918				0.921				0.933				0.800				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-052
Date: 9/15/2021

Data - Cars

NS/EW Streets:	Citrus Ave				Citrus Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	18	122	12	0	7	163	5	0	7	19	4	0	20	24	16	0	417
7:15 AM	36	142	24	0	18	179	13	0	18	24	16	0	30	34	19	0	553
7:30 AM	44	141	63	0	21	188	15	0	11	23	18	0	39	34	32	0	629
7:45 AM	37	145	61	0	18	172	17	0	27	36	19	0	33	40	55	0	660
8:00 AM	12	133	22	0	29	148	10	0	52	28	14	0	19	24	84	0	575
8:15 AM	20	119	11	0	32	183	21	0	43	23	10	0	16	24	86	0	588
8:30 AM	12	107	7	0	21	151	5	0	14	23	11	0	13	24	31	0	419
8:45 AM	8	117	9	0	14	111	4	0	8	28	9	0	7	20	15	0	350
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	187	1026	209	0	160	1295	90	0	180	204	101	0	177	224	338	0	4191
APPROACH %'s :	13.15%	72.15%	14.70%	0.00%	10.36%	83.82%	5.83%	0.00%	37.11%	42.06%	20.82%	0.00%	23.95%	30.31%	45.74%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	113	538	157	0	100	691	63	0	133	110	61	0	107	122	257	0	2452
PEAK HR FACTOR :	0.642	0.928	0.623	0.000	0.781	0.919	0.750	0.000	0.639	0.764	0.803	0.000	0.686	0.763	0.747	0.000	0.929
	0.815				0.905				0.809				0.949				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	17	202	12	0	32	169	6	0	19	78	12	0	17	37	17	0	618
4:15 PM	14	215	12	0	10	146	7	0	15	74	10	0	8	30	17	0	558
4:30 PM	17	198	15	0	18	130	9	0	18	63	17	0	15	36	18	0	554
4:45 PM	42	200	12	0	11	124	6	0	7	89	11	0	26	43	21	0	592
5:00 PM	30	192	15	0	10	135	6	0	18	71	18	0	8	37	14	0	554
5:15 PM	47	239	12	0	11	117	7	0	9	80	19	0	13	62	24	0	640
5:30 PM	40	242	8	0	11	147	5	0	14	78	16	0	13	51	14	0	639
5:45 PM	46	251	12	0	16	143	7	0	12	67	9	0	10	56	17	0	646
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	253	1739	98	0	119	1111	53	0	112	600	112	0	110	352	142	0	4801
APPROACH %'s :	12.11%	83.21%	4.69%	0.00%	9.28%	86.59%	4.13%	0.00%	13.59%	72.82%	13.59%	0.00%	18.21%	58.28%	23.51%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	163	924	47	0	48	542	25	0	53	296	62	0	44	206	69	0	2479
PEAK HR FACTOR :	0.867	0.920	0.783	0.000	0.750	0.922	0.893	0.000	0.736	0.925	0.816	0.000	0.846	0.831	0.719	0.000	0.959
	0.917				0.926				0.951				0.806				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-052
Date: 9/15/2021

Data - 2axle

NS/EW Streets:	Citrus Ave				Citrus Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	4	0	0	0	2	0	0	0	3	1	0	0	2	0	0	12
7:15 AM	3	4	0	0	1	4	1	0	0	0	0	0	0	1	1	0	15
7:30 AM	1	2	0	0	0	2	0	0	0	2	1	0	0	1	0	0	9
7:45 AM	1	4	0	0	0	3	0	0	0	1	0	0	0	1	0	0	10
8:00 AM	0	2	1	0	0	7	0	0	0	1	0	0	0	1	0	0	12
8:15 AM	0	2	0	0	0	2	0	0	1	1	1	0	0	1	1	0	9
8:30 AM	2	7	0	0	0	4	0	0	1	0	1	0	0	1	0	0	16
8:45 AM	1	1	0	0	0	3	0	0	0	1	0	0	0	0	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	8	26	1	0	1	27	1	0	2	9	4	0	0	8	2	0	89
APPROACH %'s :	22.86%	74.29%	2.86%	0.00%	3.45%	93.10%	3.45%	0.00%	13.33%	60.00%	26.67%	0.00%	0.00%	80.00%	20.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	10	1	0	0	14	0	0	1	5	2	0	0	4	1	0	40
PEAK HR FACTOR :	0.500	0.625	0.250	0.000	0.000	0.500	0.000	0.000	0.250	0.625	0.500	0.000	0.000	1.000	0.250	0.000	0.833
	0.650				0.500				0.667				0.625				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	5	0	0	1	1	0	0	1	3	0	0	11
4:15 PM	0	5	1	0	1	6	0	0	0	2	1	0	0	2	0	0	18
4:30 PM	0	5	0	0	0	3	1	0	0	1	0	0	0	3	0	0	13
4:45 PM	0	5	0	0	0	2	0	0	0	1	1	0	0	1	0	0	10
5:00 PM	1	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	4
5:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	3
5:30 PM	0	2	0	0	0	2	0	0	0	4	0	0	0	0	0	0	8
5:45 PM	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	18	1	0	1	21	1	0	1	11	3	0	1	11	0	0	71
APPROACH %'s :	9.52%	85.71%	4.76%	0.00%	4.35%	91.30%	4.35%	0.00%	6.67%	73.33%	20.00%	0.00%	8.33%	91.67%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	2	3	0	0	0	5	0	0	0	6	1	0	0	2	0	0	19
PEAK HR FACTOR :	0.500	0.375	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.375	0.250	0.000	0.000	0.500	0.000	0.000	0.594
	0.625				0.625				0.438				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-052
Date: 9/15/2021

Data - 3axle

NS/EW Streets:	Citrus Ave				Citrus Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	4
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
7:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	3
8:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	3	0	0	0	4	0	0	0	0	0	0	0	0	1	0	8
8:30 AM	0	2	0	0	0	0	0	0	1	0	0	0	0	1	0	0	4
8:45 AM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	12	0	0	0	12	0	0	1	0	1	0	0	2	1	0	29
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	66.67%	33.33%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	6	0	0	0	8	0	0	0	0	0	0	0	1	1	0	16
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.500
	0.500				0.500								0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
4:15 PM	0	1	0	0	0	1	1	0	0	0	0	0	0	1	1	0	5
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	1	0	4
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	8	0	0	0	9	1	0	0	0	0	0	0	2	2	0	24
APPROACH %'s :	20.00%	80.00%	0.00%	0.00%	0.00%	90.00%	10.00%	0.00%					0.00%	50.00%	50.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	2	6	0	0	0	5	0	0	0	0	0	0	0	0	1	0	14
PEAK HR FACTOR :	0.500	0.750	0.000	0.000	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.700
	0.667				0.417								0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-052
Date: 9/15/2021

Data - 4axle

NS/EW Streets:	Citrus Ave				Citrus Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	4	0	0	0	3	0	0	0	0	0	0	0	1	0	0	9
7:15 AM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
7:30 AM	0	5	0	0	0	6	0	0	0	0	1	0	0	0	0	0	12
7:45 AM	0	1	0	0	0	6	0	0	0	0	0	0	0	0	0	0	7
8:00 AM	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0	0	6
8:15 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	1	1	0	0	0	4	0	0	0	0	1	0	0	0	0	0	7
8:45 AM	0	3	0	0	0	5	0	0	0	0	0	0	0	0	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	20	0	0	0	32	0	0	0	0	2	0	0	1	0	0	57
APPROACH %'s :	9.09%	90.91%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	8	0	0	0	19	0	0	0	0	1	0	0	0	0	0	28
PEAK HR FACTOR :	0.000	0.400	0.000	0.000	0.000	0.792	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.583
	0.400				0.792				0.250								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	3	0	0	0	5	0	0	0	0	0	0	0	0	0	0	8
4:15 PM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
4:30 PM	0	2	0	0	0	2	0	0	0	1	0	0	0	0	0	0	5
4:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	12	0	0	0	18	0	0	0	1	0	0	0	1	0	0	33
APPROACH %'s :	7.69%	92.31%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	1	5	0	0	0	5	0	0	0	0	0	0	0	1	0	0	12
PEAK HR FACTOR :	0.250	0.625	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.750
	0.750				0.625								0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-053
Date: 9/9/2021

Data - Total

NS/EW Streets:	Sierra Ave				Sierra Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	5	140	31	2	3	184	7	0	8	21	21	0	63	79	9	0	573
7:15 AM	15	198	37	2	9	274	11	0	9	42	19	0	80	94	10	0	800
7:30 AM	8	192	30	1	7	276	18	0	6	39	17	0	62	77	8	0	741
7:45 AM	6	172	42	3	10	286	15	0	5	45	21	0	59	67	7	0	738
8:00 AM	10	155	50	4	14	301	22	0	7	50	25	0	53	65	13	0	769
8:15 AM	9	173	49	7	6	258	11	0	10	36	16	0	58	46	6	0	685
8:30 AM	4	209	36	9	12	241	14	0	10	18	25	0	62	27	20	0	687
8:45 AM	14	203	43	9	8	207	12	0	13	24	25	0	43	24	16	0	641
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	71	1442	318	37	69	2027	110	0	68	275	169	0	480	479	89	0	5634
APPROACH %'s :	3.80%	77.19%	17.02%	1.98%	3.13%	91.89%	4.99%	0.00%	13.28%	53.71%	33.01%	0.00%	45.80%	45.71%	8.49%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	39	717	159	10	40	1137	66	0	27	176	82	0	254	303	38	0	3048
PEAK HR FACTOR :	0.650	0.905	0.795	0.625	0.714	0.944	0.750	0.000	0.750	0.880	0.820	0.000	0.794	0.806	0.731	0.000	0.953
	0.918				0.922				0.869				0.808				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	21	261	85	22	14	215	15	0	25	64	24	0	60	76	23	0	905
4:15 PM	31	271	85	29	18	201	8	0	13	86	38	0	49	48	20	0	897
4:30 PM	18	235	76	25	23	218	13	0	30	88	33	0	68	73	17	0	917
4:45 PM	18	182	121	17	12	225	18	0	24	98	40	0	53	75	14	0	897
5:00 PM	15	223	114	9	16	248	17	0	18	75	22	0	49	73	19	0	898
5:15 PM	19	185	113	17	11	207	17	0	15	74	25	0	58	90	13	0	844
5:30 PM	24	202	104	16	13	201	17	0	22	64	26	0	53	73	20	0	835
5:45 PM	24	304	135	30	12	198	12	0	24	56	21	0	56	51	11	0	934
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	170	1863	833	165	119	1713	117	0	171	605	229	0	446	559	137	0	7127
APPROACH %'s :	5.61%	61.46%	27.48%	5.44%	6.11%	87.89%	6.00%	0.00%	17.01%	60.20%	22.79%	0.00%	39.05%	48.95%	12.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	88	949	367	93	67	859	54	0	92	336	135	0	230	272	74	0	3616
PEAK HR FACTOR :	0.710	0.875	0.758	0.802	0.728	0.954	0.750	0.000	0.767	0.857	0.844	0.000	0.846	0.895	0.804	0.000	0.986
	0.900				0.961				0.869				0.906				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-053
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Sierra Ave				Sierra Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	5	124	30	2	3	179	7	0	8	21	21	0	62	79	9	0	550
7:15 AM	15	194	36	2	9	268	11	0	9	41	18	0	78	91	10	0	782
7:30 AM	8	185	30	1	7	270	18	0	6	39	17	0	61	77	8	0	727
7:45 AM	6	165	42	3	10	278	15	0	5	44	21	0	59	66	7	0	721
8:00 AM	10	151	49	4	14	293	21	0	7	50	25	0	51	63	13	0	751
8:15 AM	7	165	49	7	6	250	11	0	10	36	16	0	57	45	6	0	665
8:30 AM	3	204	34	9	12	234	14	0	10	18	25	0	62	27	20	0	672
8:45 AM	14	197	42	9	8	201	12	0	13	23	25	0	43	24	15	0	626
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	68	1385	312	37	69	1973	109	0	68	272	168	0	473	472	88	0	5494
APPROACH %'s :	3.77%	76.86%	17.31%	2.05%	3.21%	91.72%	5.07%	0.00%	13.39%	53.54%	33.07%	0.00%	45.79%	45.69%	8.52%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	39	695	157	10	40	1109	65	0	27	174	81	0	249	297	38	0	2981
PEAK HR FACTOR :	0.650	0.896	0.801	0.625	0.714	0.946	0.774	0.000	0.750	0.870	0.810	0.000	0.798	0.816	0.731	0.000	0.953
	0.912				0.925				0.860				0.816				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	20	256	85	22	14	206	15	0	25	61	24	0	59	74	22	0	883
4:15 PM	30	269	84	29	18	198	8	0	13	86	38	0	48	47	20	0	888
4:30 PM	18	233	76	25	23	210	13	0	30	85	33	0	67	70	17	0	900
4:45 PM	18	177	121	17	12	223	18	0	24	98	40	0	53	70	14	0	885
5:00 PM	15	218	113	9	16	241	17	0	18	74	22	0	47	72	19	0	881
5:15 PM	18	184	113	16	11	205	16	0	15	73	25	0	58	89	13	0	836
5:30 PM	23	197	104	16	13	196	17	0	22	64	26	0	51	73	20	0	822
5:45 PM	24	299	135	30	12	197	12	0	24	54	21	0	56	51	11	0	926
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	166	1833	831	164	119	1676	116	0	171	595	229	0	439	546	136	0	7021
APPROACH %'s :	5.54%	61.22%	27.76%	5.48%	6.23%	87.70%	6.07%	0.00%	17.19%	59.80%	23.02%	0.00%	39.16%	48.71%	12.13%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	86	935	366	93	67	837	54	0	92	330	135	0	227	261	73	0	3556
PEAK HR FACTOR :	0.717	0.869	0.756	0.802	0.728	0.938	0.750	0.000	0.767	0.842	0.844	0.000	0.847	0.882	0.830	0.000	0.988
	0.898				0.947				0.860				0.905				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-053
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Sierra Ave				Sierra Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	14	0	0	0	3	0	0	0	0	0	0	1	0	0	0	18
7:15 AM	0	4	0	0	0	5	0	0	0	1	1	0	1	3	0	0	15
7:30 AM	0	6	0	0	0	4	0	0	0	0	0	0	1	0	0	0	11
7:45 AM	0	5	0	0	0	6	0	0	0	1	0	0	0	1	0	0	13
8:00 AM	0	4	1	0	0	7	0	0	0	0	0	0	2	2	0	0	16
8:15 AM	1	8	0	0	0	6	0	0	0	0	0	0	1	1	0	0	17
8:30 AM	1	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	11
8:45 AM	0	4	1	0	0	5	0	0	0	1	0	0	0	0	1	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	50	2	0	0	41	0	0	0	3	1	0	6	7	1	0	113
APPROACH %'s :	3.70%	92.59%	3.70%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%	42.86%	50.00%	7.14%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	19	1	0	0	22	0	0	0	2	1	0	4	6	0	0	55
PEAK HR FACTOR :	0.000	0.792	0.250	0.000	0.000	0.786	0.000	0.000	0.000	0.500	0.250	0.000	0.500	0.500	0.000	0.000	0.859
	0.833				0.786				0.375				0.625				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	4	0	0	0	6	0	0	0	3	0	0	1	2	1	0	18
4:15 PM	1	2	1	0	0	2	0	0	0	0	0	0	1	1	0	0	8
4:30 PM	0	2	0	0	0	6	0	0	0	2	0	0	1	3	0	0	14
4:45 PM	0	5	0	0	0	0	0	0	0	0	0	0	0	2	0	0	7
5:00 PM	0	4	0	0	0	7	0	0	0	1	0	0	1	1	0	0	14
5:15 PM	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	5
5:30 PM	1	3	0	0	0	5	0	0	0	0	0	0	2	0	0	0	11
5:45 PM	0	4	0	0	0	0	0	0	0	2	0	0	0	0	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	25	1	0	0	27	0	0	0	9	0	0	6	10	1	0	83
APPROACH %'s :	13.33%	83.33%	3.33%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	35.29%	58.82%	5.88%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	2	13	1	0	0	14	0	0	0	5	0	0	3	8	1	0	47
PEAK HR FACTOR :	0.500	0.650	0.250	0.000	0.000	0.583	0.000	0.000	0.000	0.417	0.000	0.000	0.750	0.667	0.250	0.000	0.653
	0.800				0.583				0.417				0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-053
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Sierra Ave				Sierra Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
8:15 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	3	2	0	0	6	1	0	0	0	0	0	0	0	0	0	13
APPROACH %'s :	16.67%	50.00%	33.33%	0.00%	0.00%	85.71%	14.29%	0.00%									
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	2	0	0	0	2	1	0	0	0	0	0	0	0	0	0	5
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625
	0.500				0.750												

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	1	0	4	0	0	0	1	0	0	0	1	0	0	8
APPROACH %'s :	0.00%	50.00%	0.00%	50.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	2	0	0	0	1	0	0	0	1	0	0	4
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.500
					0.250				0.250				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & San Bernardino Ave
City: Fontana
Control: Signalized

Project ID: 21-030070-053
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Sierra Ave				Sierra Ave				San Bernardino Ave				San Bernardino Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
7:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	2	0	0	7	0	0	0	0	0	0	1	0	0	0	14
APPROACH %'s :	0.00%	66.67%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%					100.00%	0.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	1	1	0	0	4	0	0	0	0	0	0	1	0	0	0	7
PEAK HR FACTOR :	0.000	0.250	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.875
	0.500				0.500								0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	4
5:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	3
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	1	0	0	6	1	0	0	0	0	0	1	2	0	0	15
APPROACH %'s :	0.00%	80.00%	20.00%	0.00%	0.00%	85.71%	14.29%	0.00%					33.33%	66.67%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	6	0	0	0	0	0	0	0	2	0	0	9
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.563
	0.250				0.750								0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Fontana Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-054
Date: 9/9/2021

Data - Total

NS/EW Streets:	Beech Ave				Beech Ave				Fontana Ave				Fontana Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	13	2	0	0	24	6	0	4	12	0	0	2	24	0	0	89
7:15 AM	0	24	1	0	1	15	12	0	10	7	5	0	2	23	2	0	102
7:30 AM	2	34	1	0	1	28	7	0	4	8	2	0	2	44	1	0	134
7:45 AM	3	32	3	0	2	34	9	1	5	12	0	0	7	36	3	0	147
8:00 AM	1	15	2	0	3	32	14	0	3	9	0	0	9	31	0	0	119
8:15 AM	0	13	2	0	1	23	10	0	5	13	0	0	2	30	3	0	102
8:30 AM	0	21	0	0	0	26	6	0	5	16	0	0	0	28	3	0	105
8:45 AM	1	12	4	0	0	17	7	0	4	13	0	0	0	17	0	0	75
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	164	15	0	8	199	71	1	40	90	7	0	24	233	12	0	873
APPROACH %'s :	4.79%	87.23%	7.98%	0.00%	2.87%	71.33%	25.45%	0.36%	29.20%	65.69%	5.11%	0.00%	8.92%	86.62%	4.46%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	6	94	8	0	7	117	40	1	17	42	2	0	20	141	7	0	502
PEAK HR FACTOR :	0.500	0.691	0.667	0.000	0.583	0.860	0.714	0.250	0.850	0.808	0.250	0.000	0.556	0.801	0.583	0.000	0.854
	0.711				0.842				0.847				0.894				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	50	11	0	2	15	9	0	3	36	1	0	4	19	1	0	151
4:15 PM	1	31	19	0	0	18	2	0	8	23	0	0	2	25	1	0	130
4:30 PM	0	42	19	0	2	21	12	0	8	36	0	0	1	11	1	0	153
4:45 PM	1	27	23	0	1	17	5	0	13	35	0	0	5	17	1	0	145
5:00 PM	0	38	21	0	0	26	6	0	4	23	0	0	1	15	4	0	138
5:15 PM	0	37	13	0	1	19	5	0	11	34	0	0	1	19	1	0	141
5:30 PM	0	38	15	0	1	23	6	0	10	37	1	0	1	23	4	0	159
5:45 PM	0	43	12	0	2	25	4	0	13	32	0	0	3	16	3	0	153
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	306	133	0	9	164	49	0	70	256	2	0	18	145	16	0	1170
APPROACH %'s :	0.45%	69.39%	30.16%	0.00%	4.05%	73.87%	22.07%	0.00%	21.34%	78.05%	0.61%	0.00%	10.06%	81.01%	8.94%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	156	61	0	4	93	21	0	38	126	1	0	6	73	12	0	591
PEAK HR FACTOR :	0.000	0.907	0.726	0.000	0.500	0.894	0.875	0.000	0.731	0.851	0.250	0.000	0.500	0.793	0.750	0.000	0.929
	0.919				0.922				0.859				0.813				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Fontana Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-054
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Beech Ave				Beech Ave				Fontana Ave				Fontana Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	13	2	0	0	24	6	0	4	10	0	0	1	24	0	0	86
7:15 AM	0	24	1	0	1	14	12	0	10	6	5	0	2	23	2	0	100
7:30 AM	2	33	1	0	1	27	7	0	4	8	2	0	2	44	1	0	132
7:45 AM	3	30	3	0	2	33	8	1	4	12	0	0	7	35	3	0	141
8:00 AM	1	13	2	0	3	31	12	0	2	8	0	0	8	29	0	0	109
8:15 AM	0	13	2	0	1	21	10	0	5	13	0	0	2	28	3	0	98
8:30 AM	0	19	0	0	0	22	3	0	5	16	0	0	0	27	3	0	95
8:45 AM	1	12	4	0	0	16	7	0	4	11	0	0	0	15	0	0	70
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	157	15	0	8	188	65	1	38	84	7	0	22	225	12	0	831
APPROACH %'s :	4.97%	86.74%	8.29%	0.00%	3.05%	71.76%	24.81%	0.38%	29.46%	65.12%	5.43%	0.00%	8.49%	86.87%	4.63%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	6	89	8	0	7	112	37	1	15	41	2	0	19	136	7	0	480
PEAK HR FACTOR :	0.500	0.674	0.667	0.000	0.583	0.848	0.771	0.250	0.750	0.788	0.250	0.000	0.594	0.773	0.583	0.000	0.851
	0.715				0.853				0.806				0.862				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	48	11	0	2	14	6	0	3	34	1	0	4	19	1	0	143
4:15 PM	0	28	19	0	0	15	2	0	7	23	0	0	2	24	1	0	121
4:30 PM	0	40	19	0	1	20	11	0	7	36	0	0	1	11	1	0	147
4:45 PM	1	27	22	0	1	15	5	0	13	33	0	0	5	17	1	0	140
5:00 PM	0	38	19	0	0	24	4	0	3	23	0	0	1	15	4	0	131
5:15 PM	0	34	13	0	1	18	5	0	9	33	0	0	1	18	1	0	133
5:30 PM	0	36	15	0	1	20	6	0	10	36	1	0	1	20	4	0	150
5:45 PM	0	40	11	0	2	23	4	0	12	30	0	0	2	16	3	0	143
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	291	129	0	8	149	43	0	64	248	2	0	17	140	16	0	1108
APPROACH %'s :	0.24%	69.12%	30.64%	0.00%	4.00%	74.50%	21.50%	0.00%	20.38%	78.98%	0.64%	0.00%	9.83%	80.92%	9.25%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	148	58	0	4	85	19	0	34	122	1	0	5	69	12	0	557
PEAK HR FACTOR :	0.000	0.925	0.763	0.000	0.500	0.885	0.792	0.000	0.708	0.847	0.250	0.000	0.625	0.863	0.750	0.000	0.928
	0.904				0.931				0.835				0.860				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Fontana Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-054
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Beech Ave				Beech Ave				Fontana Ave				Fontana Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	1 WR	0 WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	3
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
8:30 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	3	2	0	0	2	0	0	2	4	0	0	15
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	60.00%	40.00%	0.00%	0.00%	100.00%	0.00%	0.00%	33.33%	66.67%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1	0	0	0	2	1	0	0	1	0	0	1	2	0	0	8
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.250	0.000	0.000	0.250	0.500	0.000	0.000	0.667
	0.250				0.375				0.250				0.375				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	1 WR	0 WU	TOTAL
4:00 PM	0	2	0	0	0	0	2	0	0	1	0	0	0	0	0	0	5
4:15 PM	0	2	0	0	0	2	0	0	1	0	0	0	0	1	0	0	6
4:30 PM	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
4:45 PM	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	3
5:00 PM	0	0	1	0	0	2	1	0	0	0	0	0	0	0	0	0	4
5:15 PM	0	1	0	0	0	0	0	0	1	1	0	0	0	1	0	0	4
5:30 PM	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	4
5:45 PM	0	2	0	0	0	1	0	0	1	0	0	0	1	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	10	1	0	0	8	4	0	3	4	0	0	1	3	0	0	34
APPROACH %'s :	0.00%	90.91%	9.09%	0.00%	0.00%	66.67%	33.33%	0.00%	42.86%	57.14%	0.00%	0.00%	25.00%	75.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	4	1	0	0	4	1	0	2	2	0	0	1	2	0	0	17
PEAK HR FACTOR :	0.000	0.500	0.250	0.000	0.000	0.500	0.250	0.000	0.500	0.500	0.000	0.000	0.250	0.500	0.000	0.000	0.850
	0.625				0.417				0.500				0.750				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Fontana Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-054
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Beech Ave				Beech Ave				Fontana Ave				Fontana Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	0	4
8:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	3	1	0	0	3	0	0	0	2	0	0	10
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.750
	0.250				0.250								0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3
5:45 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	2	0	0	2	2	0	1	1	0	0	0	1	0	0	12
APPROACH %'s :	0.00%	60.00%	40.00%	0.00%	0.00%	50.00%	50.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	2	2	0	0	2	1	0	1	1	0	0	0	1	0	0	10
PEAK HR FACTOR :	0.000	0.500	0.500	0.000	0.000	0.500	0.250	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.833
	1.000				0.750				0.500				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Fontana Ave
City: Fontana
Control: 4-Way Stop

Project ID: 21-030070-054
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Beech Ave				Beech Ave				Fontana Ave				Fontana Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	3
8:00 AM	0	2	0	0	0	1	2	0	1	0	0	0	0	0	0	0	6
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:30 AM	0	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	4
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	0	0	0	5	3	0	2	1	0	0	0	2	0	0	17
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	62.50%	37.50%	0.00%	66.67%	33.33%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	3	0	0	0	2	2	0	2	0	0	0	0	2	0	0	11
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.000	0.500	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.458
	0.375				0.333				0.500				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
4:15 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	3
4:45 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
5:45 PM	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	2	1	0	1	5	0	0	2	3	0	0	0	1	0	0	16
APPROACH %'s :	25.00%	50.00%	25.00%	0.00%	16.67%	83.33%	0.00%	0.00%	40.00%	60.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	2	0	0	0	2	0	0	1	1	0	0	0	1	0	0	7
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.583
	0.500				0.500				0.500				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Valley Blvd/Ontario Mills Pkwy
City: Fontana
Control: Signalized

Project ID: 21-030070-055
Date: 9/9/2021

Data - Total

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Valley Blvd/Ontario Mills Pkwy				Valley Blvd/Ontario Mills Pkwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2.5	0.5	0	1	3	0	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	39	145	11	0	2	117	6	0	2	9	15	0	22	37	11	0	416
7:15 AM	59	151	12	2	4	118	7	0	2	10	17	0	23	27	15	0	447
7:30 AM	59	197	10	0	5	167	10	0	7	3	18	0	31	46	14	0	567
7:45 AM	79	184	11	0	9	161	10	0	4	9	23	0	23	46	17	0	576
8:00 AM	52	172	14	1	6	160	8	0	2	10	17	0	32	25	10	0	509
8:15 AM	56	152	7	0	5	150	6	0	4	12	21	0	14	12	7	0	446
8:30 AM	56	152	13	1	3	128	8	0	1	8	33	0	21	18	6	0	448
8:45 AM	65	149	9	2	6	136	6	0	1	11	26	0	20	21	10	0	462
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	465	1302	87	6	40	1137	61	0	23	72	170	0	186	232	90	0	3871
APPROACH %'s :	25.00%	70.00%	4.68%	0.32%	3.23%	91.84%	4.93%	0.00%	8.68%	27.17%	64.15%	0.00%	36.61%	45.67%	17.72%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	249	704	47	3	24	606	35	0	15	32	75	0	109	144	56	0	2099
PEAK HR FACTOR :	0.788	0.893	0.839	0.375	0.667	0.907	0.875	0.000	0.536	0.800	0.815	0.000	0.852	0.783	0.824	0.000	0.911
	0.915				0.913				0.847				0.849				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2.5	0.5	0	1	3	0	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	42	167	20	1	12	177	8	0	11	50	72	0	27	18	5	0	610
4:15 PM	38	165	14	0	11	149	7	0	17	57	58	0	16	31	14	0	577
4:30 PM	46	197	18	1	3	196	10	2	16	47	67	0	23	19	20	0	665
4:45 PM	43	179	23	2	9	194	5	0	16	55	79	0	29	21	16	0	671
5:00 PM	53	190	18	1	15	191	6	0	13	69	86	0	18	24	16	0	700
5:15 PM	67	178	11	1	15	181	4	0	14	53	70	0	26	22	15	0	657
5:30 PM	67	174	12	0	3	163	4	0	12	47	76	0	35	17	7	0	617
5:45 PM	56	185	15	1	8	172	7	0	12	44	77	0	25	30	13	0	645
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	412	1435	131	7	76	1423	51	2	111	422	585	0	199	182	106	0	5142
APPROACH %'s :	20.76%	72.29%	6.60%	0.35%	4.90%	91.69%	3.29%	0.13%	9.93%	37.75%	52.33%	0.00%	40.86%	37.37%	21.77%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	209	744	70	5	42	762	25	2	59	224	302	0	96	86	67	0	2693
PEAK HR FACTOR :	0.780	0.944	0.761	0.625	0.700	0.972	0.625	0.250	0.922	0.812	0.878	0.000	0.828	0.896	0.838	0.000	0.962
	0.981				0.980				0.871				0.943				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Valley Blvd/Ontario Mills Pkwy
City: Fontana
Control: Signalized

Project ID: 21-030070-055
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Valley Blvd/Ontario Mills Pkwy				Valley Blvd/Ontario Mills Pkwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2.5	0.5	0	1	3	0	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	35	110	8	0	2	79	6	0	2	8	9	0	13	33	7	0	312
7:15 AM	54	107	10	2	1	80	6	0	1	6	10	0	18	25	10	0	330
7:30 AM	53	153	6	0	4	115	8	0	2	2	10	0	24	45	11	0	433
7:45 AM	74	153	7	0	6	116	8	0	3	8	15	0	13	42	15	0	460
8:00 AM	44	128	7	1	3	126	7	0	2	7	8	0	21	21	10	0	385
8:15 AM	43	114	1	0	4	105	4	0	2	10	14	0	9	10	3	0	319
8:30 AM	45	105	10	1	2	94	6	0	1	7	17	0	13	16	4	0	321
8:45 AM	59	98	6	1	3	80	5	0	0	6	13	0	11	19	7	0	308
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	407	968	55	5	25	795	50	0	13	54	96	0	122	211	67	0	2868
APPROACH %'s :	28.36%	67.46%	3.83%	0.35%	2.87%	91.38%	5.75%	0.00%	7.98%	33.13%	58.90%	0.00%	30.50%	52.75%	16.75%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	225	541	30	3	14	437	29	0	8	23	43	0	76	133	46	0	1608
PEAK HR FACTOR :	0.760	0.884	0.750	0.375	0.583	0.867	0.906	0.000	0.667	0.719	0.717	0.000	0.792	0.739	0.767	0.000	0.874
	0.854				0.882				0.712				0.797				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2.5	0.5	0	1	3	0	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	38	134	11	1	10	135	8	0	10	48	66	0	20	17	5	0	503
4:15 PM	30	132	10	0	9	122	7	0	16	53	50	0	13	25	12	0	479
4:30 PM	43	168	13	1	0	164	8	2	12	45	61	0	18	19	18	0	572
4:45 PM	40	143	14	2	9	165	5	0	13	53	74	0	23	21	14	0	576
5:00 PM	45	158	9	1	12	162	5	0	13	63	79	0	11	23	13	0	594
5:15 PM	55	147	5	1	7	154	4	0	12	45	64	0	16	20	9	0	539
5:30 PM	54	149	7	0	3	142	4	0	11	45	67	0	22	16	6	0	526
5:45 PM	53	155	11	1	6	147	7	0	12	43	71	0	20	29	9	0	564
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	358	1186	80	7	56	1191	48	2	99	395	532	0	143	170	86	0	4353
APPROACH %'s :	21.95%	72.72%	4.90%	0.43%	4.32%	91.83%	3.70%	0.15%	9.65%	38.50%	51.85%	0.00%	35.84%	42.61%	21.55%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	183	616	41	5	28	645	22	2	50	206	278	0	68	83	54	0	2281
PEAK HR FACTOR :	0.832	0.917	0.732	0.625	0.583	0.977	0.688	0.250	0.962	0.817	0.880	0.000	0.739	0.902	0.750	0.000	0.960
	0.939				0.973				0.861				0.884				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Valley Blvd/Ontario Mills Pkwy
City: Fontana
Control: Signalized

Project ID: 21-030070-055
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Valley Blvd/Ontario Mills Pkwy				Valley Blvd/Ontario Mills Pkwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2.5	0.5	0	1	3	0	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	8	1	0	0	3	0	0	0	0	0	0	2	2	1	0	17
7:15 AM	2	8	0	0	1	4	0	0	0	0	2	0	1	0	3	0	21
7:30 AM	2	12	0	0	0	8	0	0	2	1	2	0	2	0	0	0	29
7:45 AM	0	4	0	0	1	5	0	0	0	0	1	0	2	0	1	0	14
8:00 AM	1	7	0	0	0	5	0	0	0	1	0	0	0	2	0	0	16
8:15 AM	3	2	3	0	0	5	0	0	0	1	3	0	1	1	2	0	21
8:30 AM	4	8	1	0	0	3	0	0	0	0	5	0	1	1	2	0	25
8:45 AM	1	11	0	0	1	9	0	0	0	1	3	0	2	0	0	0	28
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	13	60	5	0	3	42	0	0	2	4	16	0	11	6	9	0	171
APPROACH %'s :	16.67%	76.92%	6.41%	0.00%	6.67%	93.33%	0.00%	0.00%	9.09%	18.18%	72.73%	0.00%	42.31%	23.08%	34.62%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	5	31	0	0	2	22	0	0	2	2	5	0	5	2	4	0	80
PEAK HR FACTOR :	0.625	0.646	0.000	0.000	0.500	0.688	0.000	0.000	0.250	0.500	0.625	0.000	0.625	0.250	0.333	0.000	0.690
	0.643				0.750				0.450				0.688				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2.5	0.5	0	1	3	0	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	6	3	0	0	8	0	0	1	0	0	0	2	1	0	0	22
4:15 PM	1	8	0	0	0	7	0	0	0	0	2	0	0	0	0	0	18
4:30 PM	2	1	0	0	0	5	0	0	1	0	2	0	1	0	0	0	12
4:45 PM	1	8	1	0	0	4	0	0	0	0	1	0	1	0	0	0	16
5:00 PM	0	1	1	0	0	6	1	0	0	0	1	0	3	0	0	0	13
5:15 PM	2	3	0	0	2	1	0	0	0	1	1	0	0	0	1	0	11
5:30 PM	2	4	1	0	0	4	0	0	0	0	1	0	5	1	0	0	18
5:45 PM	0	5	0	0	0	3	0	0	0	0	0	0	0	0	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	36	6	0	2	38	1	0	2	1	8	0	12	2	1	0	118
APPROACH %'s :	17.65%	70.59%	11.76%	0.00%	4.88%	92.68%	2.44%	0.00%	18.18%	9.09%	72.73%	0.00%	80.00%	13.33%	6.67%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	5	13	2	0	2	16	1	0	1	1	5	0	5	0	1	0	52
PEAK HR FACTOR :	0.625	0.406	0.500	0.000	0.250	0.667	0.250	0.000	0.250	0.250	0.625	0.000	0.417	0.000	0.250	0.000	0.813
	0.500				0.679				0.583				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Valley Blvd/Ontario Mills Pkwy
City: Fontana
Control: Signalized

Project ID: 21-030070-055
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Valley Blvd/Ontario Mills Pkwy				Valley Blvd/Ontario Mills Pkwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2.5	0.5	0	1	3	0	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	13	0	0	0	9	0	0	0	0	0	0	1	1	1	0	25
7:15 AM	1	12	0	0	0	11	1	0	0	2	0	0	1	0	1	0	29
7:30 AM	0	9	1	0	0	19	2	0	1	0	2	0	0	0	0	0	34
7:45 AM	0	10	2	0	0	11	1	0	0	0	2	0	1	1	1	0	29
8:00 AM	0	12	0	0	0	13	0	0	0	0	0	0	1	1	0	0	27
8:15 AM	1	20	0	0	0	12	1	0	1	0	1	0	1	0	2	0	39
8:30 AM	0	18	0	0	0	9	0	0	0	0	0	0	0	0	0	0	27
8:45 AM	0	17	2	0	0	12	1	0	0	2	1	0	0	0	3	0	38
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	111	5	0	0	96	6	0	2	4	6	0	5	3	8	0	248
APPROACH %'s :	1.69%	94.07%	4.24%	0.00%	0.00%	94.12%	5.88%	0.00%	16.67%	33.33%	50.00%	0.00%	31.25%	18.75%	50.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	43	3	0	0	54	4	0	1	2	4	0	3	2	2	0	119
PEAK HR FACTOR :	0.250	0.896	0.375	0.000	0.000	0.711	0.500	0.000	0.250	0.250	0.500	0.000	0.750	0.500	0.500	0.000	0.875
	0.904				0.690				0.583				0.583				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2.5	0.5	0	1	3	0	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	15	1	0	0	19	0	0	0	0	3	0	1	0	0	0	39
4:15 PM	0	11	1	0	0	9	0	0	0	0	0	0	1	3	0	0	25
4:30 PM	0	12	1	0	1	7	0	0	0	0	0	0	2	0	1	0	24
4:45 PM	0	11	0	0	0	12	0	0	1	0	0	0	2	0	0	0	26
5:00 PM	1	10	2	0	1	5	0	0	0	1	1	0	1	0	2	0	24
5:15 PM	1	11	1	0	3	8	0	0	0	2	2	0	4	1	1	0	34
5:30 PM	0	1	0	0	0	9	0	0	0	0	2	0	2	0	1	0	15
5:45 PM	0	8	0	0	2	7	0	0	0	0	1	0	3	0	3	0	24
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	79	6	0	7	76	0	0	1	3	9	0	16	4	8	0	211
APPROACH %'s :	2.30%	90.80%	6.90%	0.00%	8.43%	91.57%	0.00%	0.00%	7.69%	23.08%	69.23%	0.00%	57.14%	14.29%	28.57%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	2	44	4	0	5	32	0	0	1	3	3	0	9	1	4	0	108
PEAK HR FACTOR :	0.500	0.917	0.500	0.000	0.417	0.667	0.000	0.000	0.250	0.375	0.375	0.000	0.563	0.250	0.500	0.000	0.794
	0.962				0.771				0.438				0.583				

National Data & Surveying Services Intersection Turning Movement Count

Location: Etiwanda Ave & Valley Blvd/Ontario Mills Pkwy
City: Fontana
Control: Signalized

Project ID: 21-030070-055
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Etiwanda Ave				Etiwanda Ave				Valley Blvd/Ontario Mills Pkwy				Valley Blvd/Ontario Mills Pkwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2.5	0.5	0	1	3	0	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	4	14	2	0	0	26	0	0	0	1	6	0	6	1	2	0	62
7:15 AM	2	24	2	0	2	23	0	0	1	2	5	0	3	2	1	0	67
7:30 AM	4	23	3	0	1	25	0	0	2	0	4	0	5	1	3	0	71
7:45 AM	5	17	2	0	2	29	1	0	1	1	5	0	7	3	0	0	73
8:00 AM	7	25	7	0	3	16	1	0	0	2	9	0	10	1	0	0	81
8:15 AM	9	16	3	0	1	28	1	0	1	1	3	0	3	1	0	0	67
8:30 AM	7	21	2	0	1	22	2	0	0	1	11	0	7	1	0	0	75
8:45 AM	5	23	1	1	2	35	0	0	1	2	9	0	7	2	0	0	88
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	43	163	22	1	12	204	5	0	6	10	52	0	48	12	6	0	584
APPROACH %'s :	18.78%	71.18%	9.61%	0.44%	5.43%	92.31%	2.26%	0.00%	8.82%	14.71%	76.47%	0.00%	72.73%	18.18%	9.09%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	18	89	14	0	8	93	2	0	4	5	23	0	25	7	4	0	292
PEAK HR FACTOR :	0.643	0.890	0.500	0.000	0.667	0.802	0.500	0.000	0.500	0.625	0.639	0.000	0.625	0.583	0.333	0.000	0.901
	0.776				0.805				0.727				0.818				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2.5	0.5	0	1	3	0	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	12	5	0	2	15	0	0	0	2	3	0	4	0	0	0	46
4:15 PM	7	14	3	0	2	11	0	0	1	4	6	0	2	3	2	0	55
4:30 PM	1	16	4	0	2	20	2	0	3	2	4	0	2	0	1	0	57
4:45 PM	2	17	8	0	0	13	0	0	2	2	4	0	3	0	2	0	53
5:00 PM	7	21	6	0	2	18	0	0	0	5	5	0	3	1	1	0	69
5:15 PM	9	17	5	0	3	18	0	0	2	5	3	0	6	1	4	0	73
5:30 PM	11	20	4	0	0	8	0	0	1	2	6	0	6	0	0	0	58
5:45 PM	3	17	4	0	0	15	0	0	0	1	5	0	2	1	1	0	49
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	43	134	39	0	11	118	2	0	9	23	36	0	28	6	11	0	460
APPROACH %'s :	19.91%	62.04%	18.06%	0.00%	8.40%	90.08%	1.53%	0.00%	13.24%	33.82%	52.94%	0.00%	62.22%	13.33%	24.44%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	19	71	23	0	7	69	2	0	7	14	16	0	14	2	8	0	252
PEAK HR FACTOR :	0.528	0.845	0.719	0.000	0.583	0.863	0.250	0.000	0.583	0.700	0.800	0.000	0.583	0.500	0.500	0.000	0.863
	0.831				0.813				0.925				0.545				

National Data & Surveying Services Intersection Turning Movement Count

Location: Commerce Dr/I-10 Ramps & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-056
Date: 9/15/2021

Data - Total

NS/EW Streets:	Commerce Dr/I-10 Ramps				Commerce Dr/I-10 Ramps				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1.5	0.5	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	4	37	71	1	2	57	10	0	1	14	1	2	56	70	4	0	330
7:15 AM	3	44	71	0	1	57	10	0	4	26	1	0	53	62	3	0	335
7:30 AM	13	39	74	1	1	41	12	0	1	15	1	1	58	66	6	0	329
7:45 AM	18	44	59	4	2	50	6	0	1	22	7	1	45	56	5	0	320
8:00 AM	7	52	67	0	3	43	10	0	2	22	2	0	43	52	7	0	310
8:15 AM	13	37	63	0	3	38	5	0	1	20	3	1	37	52	9	0	282
8:30 AM	15	51	69	1	2	47	4	0	1	29	3	1	43	33	6	0	305
8:45 AM	13	35	81	3	2	32	7	0	3	25	6	0	40	44	9	0	300
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	86	339	555	10	16	365	64	0	14	173	24	6	375	435	49	0	2511
APPROACH %'s :	8.69%	34.24%	56.06%	1.01%	3.60%	82.02%	14.38%	0.00%	6.45%	79.72%	11.06%	2.76%	43.66%	50.64%	5.70%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	38	164	275	6	6	205	38	0	7	77	10	4	212	254	18	0	1314
PEAK HR FACTOR :	0.528	0.932	0.929	0.375	0.750	0.899	0.792	0.000	0.438	0.740	0.357	0.500	0.914	0.907	0.750	0.000	0.981
	0.951				0.902				0.790				0.931				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1.5	0.5	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	73	118	0	5	29	8	0	8	65	4	1	60	47	3	0	424
4:15 PM	5	78	119	0	1	26	2	0	19	85	4	1	47	38	6	1	432
4:30 PM	5	83	117	0	2	43	5	0	6	85	4	0	77	74	7	0	508
4:45 PM	6	73	131	0	1	53	6	0	13	88	3	0	138	93	10	0	615
5:00 PM	2	88	127	0	2	61	1	0	8	102	6	2	142	101	15	0	657
5:15 PM	8	77	133	1	1	68	4	0	4	93	7	0	166	99	10	0	671
5:30 PM	5	78	120	0	4	44	8	0	9	88	3	0	149	92	21	0	621
5:45 PM	5	72	139	0	3	48	8	0	4	60	4	0	139	104	8	0	594
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	39	622	1004	1	19	372	42	0	71	666	35	4	918	648	80	1	4522
APPROACH %'s :	2.34%	37.33%	60.26%	0.06%	4.39%	85.91%	9.70%	0.00%	9.15%	85.82%	4.51%	0.52%	55.74%	39.34%	4.86%	0.06%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	21	316	511	1	8	226	19	0	34	371	19	2	595	385	56	0	2564
PEAK HR FACTOR :	0.656	0.898	0.961	0.250	0.500	0.831	0.594	0.000	0.654	0.909	0.679	0.250	0.896	0.953	0.667	0.000	0.955
	0.969				0.866				0.903				0.942				

National Data & Surveying Services Intersection Turning Movement Count

Location: Commerce Dr/I-10 Ramps & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-056
Date: 9/15/2021

Data - Cars

NS/EW Streets:	Commerce Dr/I-10 Ramps				Commerce Dr/I-10 Ramps				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1.5	0.5	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	4	29	43	1	1	42	9	0	1	10	0	1	25	56	1	0	223
7:15 AM	2	37	49	0	1	41	9	0	2	20	0	0	24	52	2	0	239
7:30 AM	12	33	61	1	1	32	11	0	1	12	0	0	32	54	4	0	254
7:45 AM	13	35	46	4	2	35	6	0	0	16	4	1	22	49	2	0	235
8:00 AM	5	47	42	0	1	34	9	0	2	13	1	0	25	37	3	0	219
8:15 AM	12	24	47	0	1	33	3	0	1	12	1	1	21	38	3	0	197
8:30 AM	8	38	35	1	1	30	3	0	0	22	1	0	29	24	3	0	195
8:45 AM	8	25	49	3	2	21	6	0	3	14	2	0	21	30	4	0	188
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	64	268	372	10	10	268	56	0	10	119	9	3	199	340	22	0	1750
APPROACH %'s :	8.96%	37.54%	52.10%	1.40%	2.99%	80.24%	16.77%	0.00%	7.09%	84.40%	6.38%	2.13%	35.47%	60.61%	3.92%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	31	134	199	6	5	150	35	0	4	58	4	2	103	211	9	0	951
PEAK HR FACTOR :	0.596	0.905	0.816	0.375	0.625	0.893	0.795	0.000	0.500	0.725	0.250	0.500	0.805	0.942	0.563	0.000	0.936
	0.864				0.913				0.773				0.897				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1.5	0.5	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	62	97	0	5	26	7	0	6	54	1	1	51	36	2	0	349
4:15 PM	3	57	85	0	1	21	2	0	19	73	3	0	25	30	6	1	326
4:30 PM	2	69	83	0	1	41	4	0	6	73	2	0	67	66	7	0	421
4:45 PM	4	66	103	0	1	50	5	0	12	79	1	0	119	82	8	0	530
5:00 PM	1	76	101	0	1	55	1	0	8	91	6	2	121	90	9	0	562
5:15 PM	6	68	101	1	0	61	4	0	3	78	6	0	148	85	8	0	569
5:30 PM	5	70	97	0	4	42	6	0	9	77	3	0	131	85	18	0	547
5:45 PM	4	61	108	0	3	44	8	0	3	49	2	0	122	95	6	0	505
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	26	529	775	1	16	340	37	0	66	574	24	3	784	569	64	1	3809
APPROACH %'s :	1.95%	39.74%	58.23%	0.08%	4.07%	86.51%	9.41%	0.00%	9.90%	86.06%	3.60%	0.45%	55.29%	40.13%	4.51%	0.07%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	16	280	402	1	6	208	16	0	32	325	16	2	519	342	43	0	2208
PEAK HR FACTOR :	0.667	0.921	0.976	0.250	0.375	0.852	0.667	0.000	0.667	0.893	0.667	0.250	0.877	0.950	0.597	0.000	0.970
	0.982				0.885				0.876				0.938				

National Data & Surveying Services Intersection Turning Movement Count

Location: Commerce Dr/I-10 Ramps & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-056
Date: 9/15/2021

Data - 2axle

NS/EW Streets:	Commerce Dr/I-10 Ramps				Commerce Dr/I-10 Ramps				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1.5	0.5	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	3	0	0	0	0	0	0	1	0	0	5	3	0	0	12
7:15 AM	0	1	3	0	0	0	1	0	0	0	0	0	5	1	1	0	12
7:30 AM	0	0	1	0	0	0	0	0	0	1	0	0	2	2	0	0	6
7:45 AM	1	1	3	0	0	2	0	0	0	1	1	0	3	2	0	0	14
8:00 AM	0	1	1	0	0	0	0	0	0	2	0	0	3	3	0	0	10
8:15 AM	0	1	3	0	0	2	0	0	0	1	0	0	4	1	1	0	13
8:30 AM	1	1	8	0	0	2	0	0	0	1	0	0	2	1	0	0	16
8:45 AM	1	1	3	0	0	0	0	0	0	3	0	0	5	4	1	0	18
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	6	25	0	0	6	1	0	0	10	1	0	29	17	3	0	101
APPROACH %'s :	8.82%	17.65%	73.53%	0.00%	0.00%	85.71%	14.29%	0.00%	0.00%	90.91%	9.09%	0.00%	59.18%	34.69%	6.12%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	1	2	10	0	0	2	1	0	0	3	1	0	15	8	1	0	44
PEAK HR FACTOR :	0.250	0.500	0.833	0.000	0.000	0.250	0.250	0.000	0.000	0.750	0.250	0.000	0.750	0.667	0.250	0.000	0.786
	0.650				0.375				0.500				0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1.5	0.5	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	4	0	0	1	0	0	0	2	0	0	2	0	0	0	9
4:15 PM	1	5	9	0	0	0	0	0	0	3	0	0	2	1	0	0	21
4:30 PM	0	1	6	0	0	0	0	0	0	1	0	0	1	2	0	0	11
4:45 PM	0	2	6	0	0	1	0	0	0	3	0	0	3	2	1	0	18
5:00 PM	0	4	4	0	1	1	0	0	0	1	0	0	2	2	0	0	15
5:15 PM	0	3	8	0	0	2	0	0	0	1	1	0	2	3	0	0	20
5:30 PM	0	2	3	0	0	0	0	0	0	3	0	0	1	0	1	0	10
5:45 PM	0	3	2	0	0	1	0	0	0	0	1	0	1	1	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	20	42	0	1	6	0	0	0	14	2	0	14	11	2	0	113
APPROACH %'s :	1.59%	31.75%	66.67%	0.00%	14.29%	85.71%	0.00%	0.00%	0.00%	87.50%	12.50%	0.00%	51.85%	40.74%	7.41%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	11	21	0	1	4	0	0	0	8	1	0	8	7	2	0	63
PEAK HR FACTOR :	0.000	0.688	0.656	0.000	0.250	0.500	0.000	0.000	0.000	0.667	0.250	0.000	0.667	0.583	0.500	0.000	0.788
	0.727				0.625				0.750				0.708				

National Data & Surveying Services Intersection Turning Movement Count

Location: Commerce Dr/I-10 Ramps & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-056
Date: 9/15/2021

Data - 3axle

NS/EW Streets:	Commerce Dr/I-10 Ramps				Commerce Dr/I-10 Ramps				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1.5	0.5	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	7	0	0	2	1	0	0	1	0	1	2	3	3	0	20
7:15 AM	0	2	2	0	0	1	0	0	1	1	0	0	5	1	0	0	13
7:30 AM	0	2	1	0	0	1	0	0	0	1	0	0	3	3	0	0	11
7:45 AM	1	2	4	0	0	1	0	0	1	1	0	0	4	1	2	0	17
8:00 AM	0	1	3	0	1	0	0	0	0	1	0	0	1	2	3	0	12
8:15 AM	1	1	4	0	1	0	0	0	0	1	0	0	0	5	2	0	15
8:30 AM	2	0	7	0	0	0	0	0	0	1	0	0	0	1	1	0	12
8:45 AM	0	2	3	0	0	1	0	0	0	3	0	0	2	3	1	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	10	31	0	2	6	1	0	2	10	0	1	17	19	12	0	115
APPROACH %'s :	8.89%	22.22%	68.89%	0.00%	22.22%	66.67%	11.11%	0.00%	15.38%	76.92%	0.00%	7.69%	35.42%	39.58%	25.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	1	6	14	0	0	5	1	0	2	4	0	1	14	8	5	0	61
PEAK HR FACTOR :	0.250	0.750	0.500	0.000	0.000	0.625	0.250	0.000	0.500	1.000	0.000	0.250	0.700	0.667	0.417	0.000	0.763
	0.750				0.500				0.875				0.844				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1.5	0.5	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	4	0	0	0	0	0	0	4	0	0	1	8	0	0	18
4:15 PM	0	3	2	0	0	0	0	0	0	3	0	0	6	4	0	0	18
4:30 PM	0	1	3	0	1	1	0	0	0	3	0	0	2	1	0	0	12
4:45 PM	0	1	9	0	0	0	0	0	0	1	1	0	4	4	1	0	21
5:00 PM	0	0	6	0	0	0	0	0	0	3	0	0	4	8	3	0	24
5:15 PM	0	0	6	0	0	2	0	0	0	3	0	0	6	4	2	0	23
5:30 PM	0	0	4	0	0	0	0	0	0	1	0	0	3	2	2	0	12
5:45 PM	0	3	2	0	0	1	0	0	0	3	0	0	5	3	1	0	18
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	9	36	0	1	4	0	0	0	21	1	0	31	34	9	0	146
APPROACH %'s :	0.00%	20.00%	80.00%	0.00%	20.00%	80.00%	0.00%	0.00%	0.00%	95.45%	4.55%	0.00%	41.89%	45.95%	12.16%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	1	25	0	0	2	0	0	0	8	1	0	17	18	8	0	80
PEAK HR FACTOR :	0.000	0.250	0.694	0.000	0.000	0.250	0.000	0.000	0.000	0.667	0.250	0.000	0.708	0.563	0.667	0.000	0.833
	0.650				0.250				0.750				0.717				

National Data & Surveying Services Intersection Turning Movement Count

Location: Commerce Dr/I-10 Ramps & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-056
Date: 9/15/2021

Data - 4axle

NS/EW Streets:	Commerce Dr/I-10 Ramps				Commerce Dr/I-10 Ramps				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1.5	0.5	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	8	18	0	1	13	0	0	0	2	1	0	24	8	0	0	75
7:15 AM	1	4	17	0	0	15	0	0	1	5	1	0	19	8	0	0	71
7:30 AM	1	4	11	0	0	8	1	0	0	1	1	1	21	7	2	0	58
7:45 AM	3	6	6	0	0	12	0	0	0	4	2	0	16	4	1	0	54
8:00 AM	2	3	21	0	1	9	1	0	0	6	1	0	14	10	1	0	69
8:15 AM	0	11	9	0	1	3	2	0	0	6	2	0	12	8	3	0	57
8:30 AM	4	12	19	0	1	15	1	0	1	5	2	1	12	7	2	0	82
8:45 AM	4	7	26	0	0	10	1	0	0	5	4	0	12	7	3	0	79
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	15	55	127	0	4	85	6	0	2	34	14	2	130	59	12	0	545
APPROACH %'s :	7.61%	27.92%	64.47%	0.00%	4.21%	89.47%	6.32%	0.00%	3.85%	65.38%	26.92%	3.85%	64.68%	29.35%	5.97%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	5	22	52	0	1	48	1	0	1	12	5	1	80	27	3	0	258
PEAK HR FACTOR :	0.417	0.688	0.722	0.000	0.250	0.800	0.250	0.000	0.250	0.600	0.625	0.250	0.833	0.844	0.375	0.000	0.860
	0.760				0.833				0.679				0.859				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	1	1.5	0.5	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	10	13	0	0	2	1	0	2	5	3	0	6	3	1	0	48
4:15 PM	1	13	23	0	0	5	0	0	0	6	1	1	14	3	0	0	67
4:30 PM	3	12	25	0	0	1	1	0	0	8	2	0	7	5	0	0	64
4:45 PM	2	4	13	0	0	2	1	0	1	5	1	0	12	5	0	0	46
5:00 PM	1	8	16	0	0	5	0	0	0	7	0	0	15	1	3	0	56
5:15 PM	2	6	18	0	1	3	0	0	1	11	0	0	10	7	0	0	59
5:30 PM	0	6	16	0	0	2	2	0	0	7	0	0	14	5	0	0	52
5:45 PM	1	5	27	0	0	2	0	0	1	8	1	0	11	5	1	0	62
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	12	64	151	0	1	22	5	0	5	57	8	1	89	34	5	0	454
APPROACH %'s :	5.29%	28.19%	66.52%	0.00%	3.57%	78.57%	17.86%	0.00%	7.04%	80.28%	11.27%	1.41%	69.53%	26.56%	3.91%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	5	24	63	0	1	12	3	0	2	30	1	0	51	18	3	0	213
PEAK HR FACTOR :	0.625	0.750	0.875	0.000	0.250	0.600	0.375	0.000	0.500	0.682	0.250	0.000	0.850	0.643	0.250	0.000	0.903
	0.885				0.800				0.688				0.947				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-057
Date: 9/9/2021

Data - Total

NS/EW Streets:	Cherry Ave				Cherry Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	81	165	48	0	15	166	10	0	12	26	21	0	79	101	14	0	738
7:15 AM	83	177	63	0	21	167	11	0	9	12	27	0	90	60	10	0	730
7:30 AM	81	173	67	0	27	186	15	0	12	16	33	0	98	52	13	0	773
7:45 AM	109	227	67	0	15	232	13	0	14	30	26	0	104	112	14	0	963
8:00 AM	100	233	78	0	27	243	8	0	18	20	36	0	118	68	11	0	960
8:15 AM	90	191	64	0	23	246	12	0	12	14	45	0	125	50	13	0	885
8:30 AM	87	193	105	1	21	202	16	0	15	26	50	0	83	38	19	0	856
8:45 AM	74	188	84	2	24	176	13	0	16	34	47	0	66	48	20	0	792
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	705	1547	576	3	173	1618	98	0	108	178	285	0	763	529	114	0	6697
APPROACH %'s :	24.90%	54.65%	20.35%	0.11%	9.16%	85.65%	5.19%	0.00%	18.91%	31.17%	49.91%	0.00%	54.27%	37.62%	8.11%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	386	844	314	1	86	923	49	0	59	90	157	0	430	268	57	0	3664
PEAK HR FACTOR :	0.885	0.906	0.748	0.250	0.796	0.938	0.766	0.000	0.819	0.750	0.785	0.000	0.860	0.598	0.750	0.000	0.951
	0.940				0.941				0.841				0.821				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	44	213	163	1	15	205	11	0	41	105	68	0	75	47	15	0	1003
4:15 PM	41	210	144	0	25	204	11	0	33	103	77	0	70	46	18	0	982
4:30 PM	52	197	172	0	29	179	12	0	40	100	54	0	94	50	15	0	994
4:45 PM	49	198	152	1	17	216	17	0	44	117	69	0	80	55	17	0	1032
5:00 PM	37	184	134	0	27	187	14	0	36	117	69	0	72	52	22	0	951
5:15 PM	46	180	134	0	27	185	11	0	48	116	51	0	96	53	18	0	965
5:30 PM	44	194	124	2	31	182	13	1	34	104	62	0	80	46	23	0	940
5:45 PM	57	185	127	0	24	196	13	0	26	99	45	0	61	55	12	0	900
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	370	1561	1150	4	195	1554	102	1	302	861	495	0	628	404	140	0	7767
APPROACH %'s :	11.99%	50.60%	37.28%	0.13%	10.53%	83.91%	5.51%	0.05%	18.21%	51.93%	29.86%	0.00%	53.58%	34.47%	11.95%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	186	818	631	2	86	804	51	0	158	425	268	0	319	198	65	0	4011
PEAK HR FACTOR :	0.894	0.960	0.917	0.500	0.741	0.931	0.750	0.000	0.898	0.908	0.870	0.000	0.848	0.900	0.903	0.000	0.972
	0.972				0.941				0.925				0.915				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-057
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Cherry Ave				Cherry Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	70	140	38	0	13	138	7	0	7	20	11	0	69	95	12	0	620
7:15 AM	68	156	56	0	20	134	8	0	4	10	13	0	81	53	8	0	611
7:30 AM	72	152	53	0	23	161	11	0	9	11	17	0	78	41	11	0	639
7:45 AM	97	198	55	0	14	194	10	0	9	23	14	0	93	105	13	0	825
8:00 AM	86	204	70	0	25	209	5	0	8	11	16	0	108	57	8	0	807
8:15 AM	72	156	57	0	20	212	11	0	10	13	25	0	111	44	9	0	740
8:30 AM	71	159	91	1	20	156	7	0	11	21	24	0	68	29	15	0	673
8:45 AM	56	156	71	2	19	138	9	0	11	28	23	0	52	42	17	0	624
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	592	1321	491	3	154	1342	68	0	69	137	143	0	660	466	93	0	5539
APPROACH %'s :	24.59%	54.88%	20.40%	0.12%	9.85%	85.81%	4.35%	0.00%	19.77%	39.26%	40.97%	0.00%	54.14%	38.23%	7.63%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	326	717	273	1	79	771	33	0	38	68	79	0	380	235	45	0	3045
PEAK HR FACTOR :	0.840	0.879	0.750	0.250	0.790	0.909	0.750	0.000	0.864	0.739	0.790	0.000	0.856	0.560	0.750	0.000	0.923
	0.915				0.908				0.826				0.782				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	36	186	153	1	13	181	8	0	36	95	53	0	62	41	12	0	877
4:15 PM	31	185	134	0	23	179	8	0	31	100	61	0	57	40	15	0	864
4:30 PM	43	177	157	0	26	149	8	0	37	96	39	0	83	37	13	0	865
4:45 PM	35	175	140	1	14	190	10	0	38	110	56	0	67	48	12	0	896
5:00 PM	25	161	120	0	21	165	8	0	33	108	58	0	55	43	19	0	816
5:15 PM	35	155	129	0	24	157	8	0	41	105	41	0	86	41	14	0	836
5:30 PM	27	173	116	2	27	153	9	1	30	96	50	0	69	35	20	0	808
5:45 PM	43	162	118	0	19	165	7	0	21	92	34	0	55	47	10	0	773
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	275	1374	1067	4	167	1339	66	1	267	802	392	0	534	332	115	0	6735
APPROACH %'s :	10.11%	50.51%	39.23%	0.15%	10.62%	85.12%	4.20%	0.06%	18.28%	54.89%	26.83%	0.00%	54.43%	33.84%	11.72%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	145	723	584	2	76	699	34	0	142	401	209	0	269	166	52	0	3502
PEAK HR FACTOR :	0.843	0.972	0.930	0.500	0.731	0.920	0.850	0.000	0.934	0.911	0.857	0.000	0.810	0.865	0.867	0.000	0.977
	0.964				0.945				0.922				0.915				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-057
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	2	3	1	0	2	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	7	2	0	1	5	2	0	1	2	2	0	0	2	0	0	26
7:15 AM	3	8	1	0	0	5	1	0	2	1	3	0	1	3	1	0	29
7:30 AM	3	5	2	0	1	6	0	0	1	1	3	0	2	5	1	0	30
7:45 AM	2	9	2	0	1	10	2	0	2	3	1	0	0	4	0	0	36
8:00 AM	4	6	1	0	1	5	1	0	3	2	3	0	3	3	1	0	33
8:15 AM	4	12	1	0	2	5	0	0	1	1	6	0	4	2	2	0	40
8:30 AM	3	10	3	0	1	14	3	0	1	2	6	0	5	2	1	0	51
8:45 AM	8	12	1	0	1	10	2	0	1	1	3	0	3	3	1	0	46
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	29	69	13	0	8	60	11	0	12	13	27	0	18	24	7	0	291
APPROACH %'s :	26.13%	62.16%	11.71%	0.00%	10.13%	75.95%	13.92%	0.00%	23.08%	25.00%	51.92%	0.00%	36.73%	48.98%	14.29%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	13	37	7	0	5	34	6	0	7	8	16	0	12	11	4	0	160
PEAK HR FACTOR :	0.813	0.771	0.583	0.000	0.625	0.607	0.500	0.000	0.583	0.667	0.667	0.000	0.600	0.688	0.500	0.000	0.784
	0.838				0.625				0.861				0.844				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	2	3	1	0	2	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	6	3	0	0	6	2	0	2	1	2	0	4	2	1	0	32
4:15 PM	2	5	2	0	1	4	1	0	1	1	2	0	4	1	2	0	26
4:30 PM	2	4	4	0	1	4	2	0	2	2	3	0	1	2	1	0	28
4:45 PM	1	6	3	0	1	4	3	0	1	2	1	0	1	2	1	0	26
5:00 PM	3	5	5	0	2	4	0	0	1	2	1	0	3	3	1	0	30
5:15 PM	2	4	1	0	1	3	1	0	3	3	2	0	1	2	1	0	24
5:30 PM	3	3	1	0	1	8	2	0	1	2	5	0	3	3	1	0	33
5:45 PM	1	6	1	0	1	6	1	0	0	1	2	0	2	2	1	0	24
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	17	39	20	0	8	39	12	0	11	14	18	0	19	17	9	0	223
APPROACH %'s :	22.37%	51.32%	26.32%	0.00%	13.56%	66.10%	20.34%	0.00%	25.58%	32.56%	41.86%	0.00%	42.22%	37.78%	20.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	8	21	12	0	3	18	8	0	6	6	8	0	10	7	5	0	112
PEAK HR FACTOR :	0.667	0.875	0.750	0.000	0.750	0.750	0.667	0.000	0.750	0.750	0.667	0.000	0.625	0.875	0.625	0.000	0.875
	0.854				0.906				0.714				0.786				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-057
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	3	7	4	0	0	10	1	0	1	1	1	0	1	1	1	0	31
7:15 AM	7	3	1	0	1	9	1	0	0	0	2	0	1	3	0	0	28
7:30 AM	2	4	4	0	2	6	3	0	1	1	5	0	7	1	0	0	36
7:45 AM	4	7	5	0	0	11	0	0	1	1	2	0	1	1	1	0	34
8:00 AM	5	9	4	0	1	9	1	0	2	4	8	0	2	7	1	0	53
8:15 AM	8	7	2	0	1	7	0	0	1	0	4	0	2	2	1	0	35
8:30 AM	5	8	5	0	0	11	2	0	1	1	8	0	1	3	1	0	46
8:45 AM	4	9	7	0	2	10	2	0	1	1	5	0	4	1	0	0	46
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	38	54	32	0	7	73	10	0	8	9	35	0	19	19	5	0	309
APPROACH %'s :	30.65%	43.55%	25.81%	0.00%	7.78%	81.11%	11.11%	0.00%	15.38%	17.31%	67.31%	0.00%	44.19%	44.19%	11.63%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	22	31	16	0	2	38	3	0	5	6	22	0	6	13	4	0	168
PEAK HR FACTOR :	0.688	0.861	0.800	0.000	0.500	0.864	0.375	0.000	0.625	0.375	0.688	0.000	0.750	0.464	1.000	0.000	0.792
	0.958				0.827				0.589				0.575				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	1	7	1	0	1	8	1	0	1	7	5	0	3	3	1	0	39
4:15 PM	2	8	3	0	1	9	1	0	0	1	7	0	1	4	0	0	37
4:30 PM	2	6	4	0	1	12	1	0	0	1	5	0	1	3	0	0	36
4:45 PM	6	5	3	0	1	10	3	0	2	3	3	0	4	2	1	0	43
5:00 PM	5	7	2	0	3	8	5	0	2	2	3	0	5	1	0	0	43
5:15 PM	4	8	3	0	1	11	1	0	1	1	2	0	2	4	1	0	39
5:30 PM	3	7	3	0	2	5	1	0	1	0	2	0	4	3	1	0	32
5:45 PM	4	5	2	0	2	12	4	0	0	2	4	0	1	2	0	0	38
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	27	53	21	0	12	75	17	0	7	17	31	0	21	22	4	0	307
APPROACH %'s :	26.73%	52.48%	20.79%	0.00%	11.54%	72.12%	16.35%	0.00%	12.73%	30.91%	56.36%	0.00%	44.68%	46.81%	8.51%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	11	26	11	0	4	39	6	0	3	12	20	0	9	12	2	0	155
PEAK HR FACTOR :	0.458	0.813	0.688	0.000	1.000	0.813	0.500	0.000	0.375	0.429	0.714	0.000	0.563	0.750	0.500	0.000	0.901
	0.857				0.875				0.673				0.821				

National Data & Surveying Services Intersection Turning Movement Count

Location: Cherry Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-057
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Cherry Ave				Cherry Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	6	11	4	0	1	13	0	0	3	3	7	0	9	3	1	0	61
7:15 AM	5	10	5	0	0	19	1	0	3	1	9	0	7	1	1	0	62
7:30 AM	4	12	8	0	1	13	1	0	1	3	8	0	11	5	1	0	68
7:45 AM	6	13	5	0	0	17	1	0	2	3	9	0	10	2	0	0	68
8:00 AM	5	14	3	0	0	20	1	0	5	3	9	0	5	1	1	0	67
8:15 AM	6	16	4	0	0	22	1	0	0	0	10	0	8	2	1	0	70
8:30 AM	8	16	6	0	0	21	4	0	2	2	12	0	9	4	2	0	86
8:45 AM	6	11	5	0	2	18	0	0	3	4	16	0	7	2	2	0	76
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	46	103	40	0	4	143	9	0	19	19	80	0	66	20	9	0	558
APPROACH %'s :	24.34%	54.50%	21.16%	0.00%	2.56%	91.67%	5.77%	0.00%	16.10%	16.10%	67.80%	0.00%	69.47%	21.05%	9.47%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	25	59	18	0	0	80	7	0	9	8	40	0	32	9	4	0	291
PEAK HR FACTOR :	0.781	0.922	0.750	0.000	0.000	0.909	0.438	0.000	0.450	0.667	0.833	0.000	0.800	0.563	0.500	0.000	0.846
	0.850				0.870				0.838				0.750				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	4	14	6	0	1	10	0	0	2	2	8	0	6	1	1	0	55
4:15 PM	6	12	5	0	0	12	1	0	1	1	7	0	8	1	1	0	55
4:30 PM	5	10	7	0	1	14	1	0	1	1	7	0	9	8	1	0	65
4:45 PM	7	12	6	0	1	12	1	0	3	2	9	0	8	3	3	0	67
5:00 PM	4	11	7	0	1	10	1	0	0	5	7	0	9	5	2	0	62
5:15 PM	5	13	1	0	1	14	1	0	3	7	6	0	7	6	2	0	66
5:30 PM	11	11	4	0	1	16	1	0	2	6	5	0	4	5	1	0	67
5:45 PM	9	12	6	0	2	13	1	0	5	4	5	0	3	4	1	0	65
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	51	95	42	0	8	101	7	0	17	28	54	0	54	33	12	0	502
APPROACH %'s :	27.13%	50.53%	22.34%	0.00%	6.90%	87.07%	6.03%	0.00%	17.17%	28.28%	54.55%	0.00%	54.55%	33.33%	12.12%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	22	48	24	0	3	48	3	0	7	6	31	0	31	13	6	0	242
PEAK HR FACTOR :	0.786	0.857	0.857	0.000	0.750	0.857	0.750	0.000	0.583	0.750	0.861	0.000	0.861	0.406	0.500	0.000	0.903
	0.940				0.844				0.786				0.694				

National Data & Surveying Services Intersection Turning Movement Count

Location: Fontana Ave/Hemlock Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-058
Date: 9/9/2021

Data - Total

NS/EW Streets:	Fontana Ave/Hemlock Ave					Fontana Ave/Hemlock Ave					Valley Blvd					Valley Blvd									
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2				
	0	1	0	0	0	0	1	0	0	0	1	2	0	0	0	1	2.5	0.5	0	0					
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	1	2	6	0	1	14	1	5	0	0	7	40	3	0	19	1	87	5	0	4	2	2	30	0	230
7:15 AM	4	0	8	0	3	22	0	9	0	0	7	69	5	0	14	4	106	12	0	5	1	0	40	0	309
7:30 AM	2	5	3	0	0	19	1	18	0	1	3	63	2	0	11	6	158	13	0	6	1	4	48	0	364
7:45 AM	1	1	4	0	0	15	2	14	0	0	13	78	1	0	13	0	115	11	0	4	2	3	52	0	329
8:00 AM	1	3	4	0	1	15	2	7	0	0	0	63	2	0	16	4	100	11	0	1	2	2	40	1	275
8:15 AM	1	1	1	0	2	15	1	6	0	0	5	74	6	0	9	3	73	4	0	5	4	1	37	0	248
8:30 AM	3	1	1	0	2	8	0	5	0	1	9	79	4	0	19	3	79	11	1	7	2	1	31	0	267
8:45 AM	1	0	1	0	5	6	0	2	0	0	0	105	2	0	8	0	88	6	0	3	3	0	29	0	259
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	14	13	28	0	14	114	7	66	0	2	44	571	25	0	109	21	806	73	1	35	17	13	307	1	2281
APPROACH %'s :	20.29%	18.84%	40.58%	0.00%	20.29%	60.32%	3.70%	34.92%	0.00%	1.06%	5.87%	76.23%	3.34%	0.00%	14.55%	2.24%	86.11%	7.80%	0.11%	3.74%	5.03%	3.85%	90.83%	0.30%	
PEAK HR :	07:15 AM - 08:15 AM																								TOTAL
PEAK HR VOL :	8	9	19	0	4	71	5	48	0	1	23	273	10	0	54	14	479	47	0	16	6	9	180	1	1277
PEAK HR FACTOR :	0.500	0.450	0.594	0.000	0.333	0.807	0.625	0.667	0.000	0.250	0.442	0.875	0.500	0.000	0.844	0.583	0.758	0.904	0.000	0.667	0.750	0.563	0.865	0.250	0.877
			0.667					0.801					0.857					0.760							

PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND									
	0	1	0	0	0	0	1	0	0	0	1	2	0	0	0	1	2.5	0.5	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	6	1	4	0	3	11	0	5	0	1	14	247	5	0	31	2	79	18	0	5	1	1	22	0	456
4:15 PM	1	2	2	0	1	11	2	4	0	1	3	235	0	0	43	2	100	10	0	6	1	4	23	2	453
4:30 PM	4	2	4	0	0	14	1	3	0	1	11	272	5	0	35	0	112	15	0	4	2	0	22	0	507
4:45 PM	0	0	6	0	0	9	0	3	0	0	8	237	3	0	36	5	111	8	0	6	0	1	22	0	455
5:00 PM	3	1	4	0	3	16	0	6	0	0	11	203	3	0	33	6	87	15	0	6	3	4	20	0	424
5:15 PM	5	0	3	0	4	14	1	7	0	0	8	201	5	0	39	6	86	19	0	8	1	2	19	2	430
5:30 PM	3	1	2	0	3	5	0	9	0	1	4	204	5	0	39	3	82	16	0	1	0	1	23	0	402
5:45 PM	3	2	0	0	3	17	0	5	0	0	3	146	5	0	43	0	87	15	0	9	2	2	17	0	359
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	25	9	25	0	17	97	4	42	0	4	62	1745	31	0	299	24	744	116	0	45	10	15	168	4	3486
APPROACH %'s :	32.89%	11.84%	32.89%	0.00%	22.37%	65.99%	2.72%	28.57%	0.00%	2.72%	2.90%	81.66%	1.45%	0.00%	13.99%	2.58%	80.09%	12.49%	0.00%	4.84%	5.08%	7.61%	85.28%	2.03%	
PEAK HR :	04:00 PM - 05:00 PM																								TOTAL
PEAK HR VOL :	11	5	16	0	4	45	3	15	0	3	36	991	13	0	145	9	402	51	0	21	4	6	89	2	1871
PEAK HR FACTOR :	0.458	0.625	0.667	0.000	0.333	0.804	0.375	0.750	0.000	0.750	0.643	0.911	0.650	0.000	0.843	0.450	0.897	0.708	0.000	0.875	0.500	0.375	0.967	0.250	0.923
			0.643					0.868					0.917					0.922							

	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	
AM Peak	8	9	23	0	4	73	5	50	0	1	26	314	11	0	56	16	545	49	0	18	10	9	194	1	
PM Peak	15	5	23	0	4	46	4	21	0	3	43	1081	15	0	157	10	487	53	0	23	5	6	94	2	

National Data & Surveying Services Intersection Turning Movement Count

Location: Fontana Ave/Hemlock Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-058
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Fontana Ave/Hemlock Ave					Fontana Ave/Hemlock Ave					Valley Blvd					Valley Blvd									
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2				
	0	1	0	0	0	0	1	0	0	0	1	2	0	0	0	1	2.5	0.5	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	1	2	5	0	1	12	1	5	0	0	6	34	2	0	17	1	75	5	0	4	2	2	28	0	203
7:15 AM	4	0	8	0	3	22	0	9	0	0	6	62	4	0	13	4	91	12	0	5	1	0	39	0	283
7:30 AM	2	5	3	0	0	19	1	18	0	1	3	58	2	0	11	5	144	12	0	5	0	4	46	0	339
7:45 AM	1	1	4	0	0	14	2	13	0	0	12	66	1	0	12	0	107	11	0	4	1	3	50	0	302
8:00 AM	1	3	2	0	1	13	2	7	0	0	0	52	2	0	16	4	83	11	0	1	1	2	37	1	239
8:15 AM	1	1	1	0	2	14	1	5	0	0	5	65	5	0	8	3	64	4	0	5	4	1	35	0	224
8:30 AM	2	1	1	0	2	7	0	5	0	1	9	69	4	0	19	3	69	10	1	6	2	1	23	0	235
8:45 AM	1	0	1	0	4	5	0	2	0	0	0	85	1	0	7	0	75	6	0	2	3	0	27	0	219
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	13	13	25	0	13	106	7	64	0	2	41	491	21	0	103	20	708	71	1	32	14	13	285	1	2044
APPROACH %'s :	20.31%	20.31%	39.06%	0.00%	20.31%	59.22%	3.91%	35.75%	0.00%	1.12%	6.25%	74.85%	3.20%	0.00%	15.70%	2.40%	85.10%	8.53%	0.12%	3.85%	4.47%	4.15%	91.05%	0.32%	
PEAK HR :	07:15 AM - 08:15 AM																								TOTAL
PEAK HR VOL :	8	9	17	0	4	68	5	47	0	1	21	238	9	0	52	13	425	46	0	15	3	9	172	1	1163
PEAK HR FACTOR :	0.500	0.450	0.531	0.000	0.333	0.773	0.625	0.653	0.000	0.250	0.438	0.902	0.563	0.000	0.813	0.650	0.738	0.958	0.000	0.750	0.750	0.563	0.860	0.250	0.858
			0.633					0.776					0.879					0.752							

PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND									
	0	1	0	0	0	0	1	0	0	0	1	2	0	0	0	1	2.5	0.5	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	5	1	3	0	3	10	0	3	0	1	12	229	5	0	29	2	63	17	0	5	1	1	19	0	409
4:15 PM	1	2	1	0	1	11	1	2	0	1	2	218	0	0	41	1	89	10	0	6	1	4	22	2	416
4:30 PM	2	2	3	0	0	14	1	3	0	1	9	253	4	0	33	0	95	15	0	4	1	0	21	0	461
4:45 PM	0	0	5	0	0	9	0	3	0	0	8	224	2	0	33	5	96	7	0	5	0	1	21	0	419
5:00 PM	2	1	3	0	3	16	0	4	0	0	8	185	3	0	32	6	74	15	0	5	3	4	17	0	381
5:15 PM	5	0	2	0	4	14	1	5	0	0	8	192	5	0	37	5	75	19	0	5	1	2	18	2	400
5:30 PM	3	1	2	0	3	5	0	9	0	1	4	196	5	0	37	3	74	16	0	1	0	1	19	0	380
5:45 PM	3	2	0	0	3	17	0	5	0	0	3	138	5	0	42	0	79	15	0	9	2	2	17	0	342
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	21	9	19	0	17	96	3	34	0	4	54	1635	29	0	284	22	645	114	0	40	9	15	154	4	3208
APPROACH %'s :	31.82%	13.64%	28.79%	0.00%	25.76%	70.07%	2.19%	24.82%	0.00%	2.92%	2.70%	81.67%	1.45%	0.00%	14.19%	2.68%	78.56%	13.89%	0.00%	4.87%	4.95%	8.24%	84.62%	2.20%	
PEAK HR :	04:00 PM - 05:00 PM																								TOTAL
PEAK HR VOL :	8	5	12	0	4	44	2	11	0	3	31	924	11	0	136	8	343	49	0	20	3	6	83	2	1705
PEAK HR FACTOR :	0.400	0.625	0.600	0.000	0.333	0.786	0.500	0.917	0.000	0.750	0.646	0.913	0.550	0.000	0.829	0.400	0.893	0.721	0.000	0.833	0.750	0.375	0.943	0.250	0.925
			0.604					0.789					0.921					0.921							

AM Peak	8	9	17	0	4	68	5	47	0	1	21	238	9	0	52	13	425	46	0	15	3	9	172	1	1163
PM Peak	8	5	12	0	4	44	2	11	0	3	31	924	11	0	136	8	343	49	0	20	3	6	83	2	1705

National Data & Surveying Services Intersection Turning Movement Count

Location: Fontana Ave/Hemlock Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-058
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Fontana Ave/Hemlock Ave					Fontana Ave/Hemlock Ave					Valley Blvd					Valley Blvd									
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2				
	0	1	0	0	0	0	1	0	0	0	1	2	0	0	0	1	2.5	0.5	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	0	0	1	0	0	2	0	0	0	0	1	1	0	0	0	0	4	0	0	0	0	0	0	0	9
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	1	0	4	0	0	0	0	0	0	0	10
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	3	0	0	0	1	0	0	0	6
7:45 AM	0	0	0	0	0	1	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	9
8:00 AM	0	0	0	0	0	2	0	0	0	0	0	4	0	0	0	0	5	0	0	0	0	0	1	0	12
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	4
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	4	0	0	0	0	0	2	0	7
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	2	0	6
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	5	0	0	0	0	1	23	0	0	1	0	26	0	0	0	1	0	5	0	63
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	4.00%	92.00%	0.00%	0.00%	4.00%	0.00%	100.00%	0.00%	0.00%	0.00%	16.67%	0.00%	83.33%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																								TOTAL
PEAK HR VOL :	0	0	0	0	0	3	0	0	0	0	0	15	0	0	1	0	16	0	0	0	1	0	1	0	37
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.250	0.000	0.800	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.771
								0.375					0.667					0.800							

PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND									
	0	1	0	0	0	0	1	0	0	0	1	2	0	0	0	1	2.5	0.5	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	6	0	0	1	0	3	0	0	0	0	0	2	0	13
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	3	0	0	0	0	0	1	0	7
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	3	0	0	0	1	0	0	0	10
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	1	0	5
5:00 PM	1	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	2	0	0	0	0	0	0	0	8
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	1	0	5
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	3	0	6
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	3	0	0	0	0	0	0	0	5
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	0	0	0	0	0	1	24	0	0	5	0	18	0	0	1	1	0	8	0	59
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%						3.33%	80.00%	0.00%	0.00%	16.67%	0.00%	94.74%	0.00%	0.00%	5.26%	11.11%	0.00%	88.89%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	1	16	0	0	2	0	11	0	0	0	1	0	4	0	35
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.667	0.000	0.000	0.500	0.000	0.917	0.000	0.000	0.000	0.250	0.000	0.500	0.000	0.673
													0.594					0.917							

1.5																									
AM Peak	0	0	0	0	0	5	0	0	0	0	0	23	0	0	2	0	24	0	0	0	2	0	2	0	56
PM Peak	0	0	0	0	0	0	0	0	0	0	2	24	0	0	3	0	17	0	0	0	2	0	6	0	53

National Data & Surveying Services Intersection Turning Movement Count

Location: Fontana Ave/Hemlock Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-058
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Fontana Ave/Hemlock Ave					Fontana Ave/Hemlock Ave					Valley Blvd					Valley Blvd									
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2				
	0	1	0	0	0	0	1	0	0	0	1	2	0	0	0	1	2.5	0.5	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	1	0	0	0	0	0	1	0	6
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	4
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	6	0	0	0	0	0	1	0	8
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	3	0	0	1	0	3	0	0	0	0	0	0	0	8
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	6	0	0	0	1	0	0	0	10
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	3	1	0	0	0	4	0	0	0	0	0	0	0	9
8:30 AM	1	0	0	0	0	1	0	0	0	0	0	5	0	0	0	0	2	1	0	1	0	0	2	0	13
8:45 AM	0	0	0	0	1	1	0	0	0	0	0	8	1	0	1	0	5	0	0	1	0	0	0	0	18
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	1	0	0	0	1	3	0	0	0	0	1	27	3	0	2	0	30	1	0	2	1	0	4	0	76
APPROACH %'s :	50.00%	0.00%	0.00%	0.00%	50.00%	100.00%	0.00%	0.00%	0.00%	0.00%	3.03%	81.82%	9.09%	0.00%	6.06%	0.00%	90.91%	3.03%	0.00%	6.06%	20.00%	0.00%	80.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	1	7	1	0	1	0	18	0	0	0	1	0	1	0	30
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.583	0.250	0.000	0.250	0.000	0.750	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.750
													0.500					0.750							

PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND									
	0	1	0	0	0	0	1	0	0	0	1	2	0	0	0	1	2.5	0.5	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	1	0	0	0	0	1	0	1	0	0	1	5	0	0	0	0	3	1	0	0	0	0	0	0	13
4:15 PM	0	0	0	0	0	0	1	1	0	0	0	5	0	0	0	1	5	0	0	0	0	0	0	0	13
4:30 PM	1	0	1	0	0	0	0	0	0	0	1	5	1	0	0	0	7	0	0	0	0	0	1	0	17
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	5	1	0	3	0	2	1	0	0	0	0	0	0	12
5:00 PM	0	0	0	0	0	0	0	1	0	0	1	3	0	0	1	0	5	0	0	0	0	0	1	0	12
5:15 PM	0	0	1	0	0	0	0	1	0	0	0	3	0	0	1	0	3	0	0	2	0	0	0	0	11
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	4	0	0	0	0	0	1	0	8
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	2	0	2	0	0	1	1	4	0	0	3	30	2	0	5	1	29	2	0	2	0	0	3	0	87
APPROACH %'s :	50.00%	0.00%	50.00%	0.00%	0.00%	16.67%	16.67%	66.67%	0.00%	0.00%	7.50%	75.00%	5.00%	0.00%	12.50%	2.94%	85.29%	5.88%	0.00%	5.88%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																								TOTAL
PEAK HR VOL :	2	0	1	0	0	1	1	2	0	0	2	20	2	0	3	1	17	2	0	0	0	0	1	0	55
PEAK HR FACTOR :	0.500	0.000	0.250	0.000	0.000	0.250	0.250	0.500	0.000	0.000	0.500	1.000	0.500	0.000	0.250	0.250	0.607	0.500	0.000	0.000	0.000	0.000	0.250	0.000	0.809
			0.375					0.500					0.750					0.714							

2																									
AM Peak	0	0	0	0	0	0	0	0	0	0	2	14	2	0	2	0	36	0	0	0	2	0	2	0	60
PM Peak	4	0	2	0	0	2	2	4	0	0	4	40	4	0	6	2	34	4	0	0	0	0	2	0	110

National Data & Surveying Services Intersection Turning Movement Count

Location: Fontana Ave/Hemlock Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-058
Date: 9/9/2021

Data - 4axle

AM

NS/EW Streets:	Fontana Ave/Hemlock Ave					Fontana Ave/Hemlock Ave					Valley Blvd					Valley Blvd									
	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2				
AM	0	1	0	0	0	0	1	0	0	0	1	2	0	0	0	1	2.5	0.5	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	7	0	0	0	0	0	1	0	12
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	8	0	0	0	0	0	1	0	12
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	5	1	0	1	0	0	1	0	11
7:45 AM	0	0	0	0	0	0	0	1	0	0	0	5	0	0	0	0	1	0	0	0	1	0	2	0	10
8:00 AM	0	0	2	0	0	0	0	0	0	0	0	4	0	0	0	0	6	0	0	0	0	0	2	0	14
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	3	0	0	1	0	4	0	0	0	0	0	2	0	11
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	4	0	12
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	7	0	0	0	0	0	0	0	16
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	0	0	2	0	0	0	0	2	0	0	1	30	1	0	3	1	42	1	0	1	1	0	13	0	98
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	2.86%	85.71%	2.86%	0.00%	8.57%	2.22%	93.33%	2.22%	0.00%	2.22%	7.14%	0.00%	92.86%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																								TOTAL
PEAK HR VOL :	0	0	2	0	0	0	0	1	0	0	1	13	0	0	0	1	20	1	0	1	1	0	6	0	47
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.650	0.000	0.000	0.000	0.250	0.625	0.250	0.000	0.250	0.250	0.000	0.750	0.000	0.839
			0.250					0.250					0.700					0.719							

PM

	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND									
PM	0	1	0	0	0	0	1	0	0	0	1	2	0	0	0	1	2.5	0.5	0	0	0	0	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
4:00 PM	0	0	1	0	0	0	0	1	0	0	0	7	0	0	1	0	10	0	0	0	0	0	1	0	21
4:15 PM	0	0	1	0	0	0	0	1	0	0	1	10	0	0	1	0	3	0	0	0	0	0	0	0	17
4:30 PM	1	0	0	0	0	0	0	0	0	0	1	8	0	0	2	0	7	0	0	0	0	0	0	0	19
4:45 PM	0	0	1	0	0	0	0	0	0	0	0	6	0	0	0	0	11	0	0	1	0	0	0	0	19
5:00 PM	0	0	1	0	0	0	0	1	0	0	2	10	0	0	0	0	6	0	0	1	0	0	2	0	23
5:15 PM	0	0	0	0	0	0	0	1	0	0	0	5	0	0	0	1	7	0	0	0	0	0	0	0	14
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	3	0	0	0	0	0	0	0	8
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	1	0	5	0	0	0	0	0	0	0	11
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2L2	S2T2	S2R2	S2U2	TOTAL
TOTAL VOLUMES :	1	0	4	0	0	0	0	4	0	0	4	56	0	0	5	1	52	0	0	2	0	0	3	0	132
APPROACH %'s :	20.00%	0.00%	80.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	6.15%	86.15%	0.00%	0.00%	7.69%	1.82%	94.55%	0.00%	0.00%	3.64%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																								TOTAL
PEAK HR VOL :	1	0	3	0	0	0	0	2	0	0	2	31	0	0	4	0	31	0	0	1	0	0	1	0	76
PEAK HR FACTOR :	0.250	0.000	0.750	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.775	0.000	0.000	0.500	0.000	0.705	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.905
			1.000					0.500					0.771					0.667							

3																									
AM Peak	0	0	6	0	0	0	0	3	0	0	3	39	0	0	0	3	60	3	0	3	3	0	18	0	141
PM Peak	3	0	9	0	0	0	0	6	0	0	6	93	0	0	12	0	93	0	0	3	0	0	3	0	228

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Valley Blvd
City: Fontana
Control: 2-Way Stop (NB/SB)

Project ID: 21-030070-059
Date: 9/9/2021

Data - Total

NS/EW Streets:	Beech Ave				Beech Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	1	0	20	1	2	0	3	56	0	0	1	93	14	0	192
7:15 AM	1	0	4	0	15	0	2	0	5	94	0	0	3	123	16	0	263
7:30 AM	0	0	7	0	18	1	10	0	4	79	0	0	4	181	14	0	318
7:45 AM	0	1	4	0	24	1	11	0	2	97	1	0	5	123	19	0	288
8:00 AM	2	0	3	0	28	1	6	0	3	82	5	0	2	108	17	0	257
8:15 AM	0	0	3	0	22	0	3	0	2	89	0	0	1	86	12	0	218
8:30 AM	1	0	2	0	23	0	2	0	4	83	0	0	5	87	17	0	224
8:45 AM	1	1	1	0	17	0	2	0	2	111	2	0	2	94	13	0	246
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	2	25	0	167	4	38	0	25	691	8	0	23	895	122	0	2006
APPROACH %'s :	18.18%	6.06%	75.76%	0.00%	79.90%	1.91%	18.18%	0.00%	3.45%	95.44%	1.10%	0.00%	2.21%	86.06%	11.73%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	3	1	18	0	85	3	29	0	14	352	6	0	14	535	66	0	1126
PEAK HR FACTOR :	0.375	0.250	0.643	0.000	0.759	0.750	0.659	0.000	0.700	0.907	0.300	0.000	0.700	0.739	0.868	0.000	0.885
	0.786				0.813				0.930				0.773				

NS/EW Streets:	Beech Ave				Beech Ave				Valley Blvd				Valley Blvd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	18	0	3	0	19	237	1	0	1	97	40	0	417
4:15 PM	0	0	1	0	12	0	5	0	24	222	0	1	3	110	24	0	402
4:30 PM	2	1	6	0	18	0	5	0	38	250	2	0	0	111	25	0	458
4:45 PM	0	0	10	0	19	0	4	0	30	213	0	0	2	115	30	0	423
5:00 PM	0	1	3	0	27	0	1	0	24	197	1	0	4	106	23	0	387
5:15 PM	0	0	6	0	16	0	2	0	28	200	2	0	2	117	21	0	394
5:30 PM	1	1	5	0	21	0	3	0	31	188	0	0	1	93	27	0	371
5:45 PM	0	0	5	0	14	0	4	0	20	149	1	0	3	111	28	0	335
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	4	36	0	145	0	27	0	214	1656	7	1	16	860	218	0	3187
APPROACH %'s :	6.98%	9.30%	83.72%	0.00%	84.30%	0.00%	15.70%	0.00%	11.40%	88.18%	0.37%	0.05%	1.46%	78.61%	19.93%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	2	2	17	0	67	0	17	0	111	922	3	1	6	433	119	0	1700
PEAK HR FACTOR :	0.250	0.500	0.425	0.000	0.882	0.000	0.850	0.000	0.730	0.922	0.375	0.250	0.500	0.941	0.744	0.000	0.928
	0.525				0.913				0.894				0.949				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Valley Blvd
City: Fontana
Control: 2-Way Stop (NB/SB)

Project ID: 21-030070-059
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Beech Ave				Beech Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	1	0	20	1	1	0	3	47	0	0	0	84	14	0	172
7:15 AM	0	0	4	0	14	0	2	0	5	87	0	0	3	107	16	0	238
7:30 AM	0	0	5	0	17	1	10	0	4	74	0	0	4	166	13	0	294
7:45 AM	0	1	4	0	22	1	11	0	2	84	0	0	5	111	18	0	259
8:00 AM	1	0	3	0	25	1	6	0	3	69	3	0	2	94	15	0	222
8:15 AM	0	0	2	0	21	0	2	0	2	76	0	0	1	78	12	0	194
8:30 AM	1	0	2	0	21	0	2	0	3	74	0	0	5	76	16	0	200
8:45 AM	0	1	1	0	16	0	2	0	2	92	1	0	2	80	11	0	208
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	2	22	0	156	4	36	0	24	603	4	0	22	796	115	0	1787
APPROACH %'s :	11.11%	7.41%	81.48%	0.00%	79.59%	2.04%	18.37%	0.00%	3.80%	95.56%	0.63%	0.00%	2.36%	85.32%	12.33%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	1	16	0	78	3	29	0	14	314	3	0	14	478	62	0	1013
PEAK HR FACTOR :	0.250	0.250	0.800	0.000	0.780	0.750	0.659	0.000	0.700	0.902	0.250	0.000	0.700	0.720	0.861	0.000	0.861
	0.900				0.809				0.899				0.757				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	17	0	2	0	18	220	0	0	0	80	38	0	376
4:15 PM	0	0	1	0	10	0	4	0	23	207	0	1	3	101	23	0	373
4:30 PM	1	1	6	0	15	0	5	0	36	234	0	0	0	96	25	0	419
4:45 PM	0	0	9	0	18	0	4	0	29	201	0	0	2	100	27	0	390
5:00 PM	0	1	3	0	24	0	1	0	23	184	0	0	4	93	23	0	356
5:15 PM	0	0	6	0	14	0	2	0	26	191	2	0	2	102	20	0	365
5:30 PM	1	1	5	0	20	0	3	0	31	180	0	0	1	86	25	0	353
5:45 PM	0	0	3	0	13	0	4	0	19	142	1	0	3	102	26	0	313
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	4	33	0	131	0	25	0	205	1559	3	1	15	760	207	0	2945
APPROACH %'s :	5.13%	10.26%	84.62%	0.00%	83.97%	0.00%	16.03%	0.00%	11.60%	88.18%	0.17%	0.06%	1.53%	77.39%	21.08%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	1	2	16	0	60	0	15	0	106	862	0	1	5	377	113	0	1558
PEAK HR FACTOR :	0.250	0.500	0.444	0.000	0.833	0.000	0.750	0.000	0.736	0.921	0.000	0.250	0.417	0.933	0.743	0.000	0.930
	0.528				0.852				0.897				0.959				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Valley Blvd
City: Fontana
Control: 2-Way Stop (NB/SB)

Project ID: 21-030070-059
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Beech Ave				Beech Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	1	0	0	3	0	0	0	2	0	0	6
7:15 AM	0	0	0	0	1	0	0	0	0	5	0	0	0	6	0	0	12
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	1	0	6
7:45 AM	0	0	0	0	1	0	0	0	0	3	1	0	0	3	0	0	8
8:00 AM	1	0	0	0	2	0	0	0	0	4	1	0	0	3	0	0	11
8:15 AM	0	0	1	0	0	0	0	0	0	6	0	0	0	2	0	0	9
8:30 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	5	0	0	7
8:45 AM	0	0	0	0	1	0	0	0	0	4	0	0	0	1	1	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	1	0	5	0	1	0	1	28	2	0	0	25	2	0	66
APPROACH %'s :	50.00%	0.00%	50.00%	0.00%	83.33%	0.00%	16.67%	0.00%	3.23%	90.32%	6.45%	0.00%	0.00%	92.59%	7.41%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	0	0	0	4	0	0	0	0	14	2	0	0	15	1	0	37
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.700	0.500	0.000	0.000	0.625	0.250	0.000	0.771
	0.250				0.500				0.800				0.667				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	1	0	0	0	1	4	0	0	1	6	1	0	14
4:15 PM	0	0	0	0	1	0	0	0	1	1	0	0	0	2	0	0	5
4:30 PM	0	0	0	0	2	0	0	0	1	6	0	0	0	5	0	0	14
4:45 PM	0	0	0	0	1	0	0	0	0	2	0	0	0	1	2	0	6
5:00 PM	0	0	0	0	3	0	0	0	0	4	0	0	0	3	0	0	10
5:15 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	3
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	3
5:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	4	2	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	10	0	0	0	4	18	0	0	1	23	6	0	63
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	18.18%	81.82%	0.00%	0.00%	3.33%	76.67%	20.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	5	0	0	0	3	13	0	0	1	14	3	0	39
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.750	0.542	0.000	0.000	0.250	0.583	0.375	0.000	0.696
					0.625				0.571				0.563				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Valley Blvd
City: Fontana
Control: 2-Way Stop (NB/SB)

Project ID: 21-030070-059
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Beech Ave				Beech Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	5	0	0	1	1	0	0	7
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
7:30 AM	0	0	1	0	0	0	0	0	0	1	0	0	0	8	0	0	10
7:45 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	0	7
8:00 AM	0	0	0	0	1	0	0	0	0	4	1	0	0	7	1	0	14
8:15 AM	0	0	0	0	0	0	1	0	0	5	0	0	0	1	0	0	7
8:30 AM	0	0	0	0	1	0	0	0	0	3	0	0	0	3	0	0	7
8:45 AM	0	0	0	0	0	0	0	0	0	7	1	0	0	7	1	0	16
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	2	0	1	0	0	28	2	0	1	34	2	0	71
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	66.67%	0.00%	33.33%	0.00%	0.00%	93.33%	6.67%	0.00%	2.70%	91.89%	5.41%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	1	0	1	0	0	0	0	8	1	0	0	22	1	0	34
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.688	0.250	0.000	0.607
	0.250				0.250				0.450				0.719				

NS/EW Streets:	Beech Ave				Beech Ave				Valley Blvd				Valley Blvd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	4	1	0	11
4:15 PM	0	0	0	0	0	0	1	0	0	5	0	0	0	4	0	0	10
4:30 PM	0	0	0	0	0	0	0	0	1	3	2	0	0	5	0	0	11
4:45 PM	0	0	1	0	0	0	0	0	0	6	0	0	0	2	1	0	10
5:00 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	4	0	0	6
5:15 PM	0	0	0	0	1	0	0	0	1	3	0	0	0	6	0	0	11
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	6
5:45 PM	0	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	2	0	1	0	1	0	3	29	2	0	0	29	2	0	69
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	50.00%	0.00%	50.00%	0.00%	8.82%	85.29%	5.88%	0.00%	0.00%	93.55%	6.45%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	1	0	0	0	1	0	1	20	2	0	0	15	2	0	42
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.250	0.833	0.250	0.000	0.000	0.750	0.500	0.000	0.955
	0.250				0.250				0.958				0.850				

National Data & Surveying Services Intersection Turning Movement Count

Location: Beech Ave & Valley Blvd
City: Fontana
Control: 2-Way Stop (NB/SB)

Project ID: 21-030070-059
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Beech Ave				Beech Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	6	0	0	7
7:15 AM	1	0	0	0	0	0	0	0	0	2	0	0	0	7	0	0	10
7:30 AM	0	0	1	0	1	0	0	0	0	2	0	0	0	4	0	0	8
7:45 AM	0	0	0	0	1	0	0	0	0	7	0	0	0	5	1	0	14
8:00 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	4	1	0	10
8:15 AM	0	0	0	0	1	0	0	0	0	2	0	0	0	5	0	0	8
8:30 AM	0	0	0	0	1	0	0	0	0	5	0	0	0	3	1	0	10
8:45 AM	1	0	0	0	0	0	0	0	0	8	0	0	0	6	0	0	15
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	0	1	0	4	0	0	0	0	32	0	0	0	40	3	0	82
APPROACH %'s :	66.67%	0.00%	33.33%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	93.02%	6.98%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	0	1	0	2	0	0	0	0	16	0	0	0	20	2	0	42
PEAK HR FACTOR :	0.250	0.000	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.571	0.000	0.000	0.000	0.714	0.500	0.000	0.750
	0.500				0.500				0.571				0.786				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	1	0	0	7	1	0	0	7	0	0	16
4:15 PM	0	0	0	0	1	0	0	0	0	9	0	0	0	3	1	0	14
4:30 PM	1	0	0	0	1	0	0	0	0	7	0	0	0	5	0	0	14
4:45 PM	0	0	0	0	0	0	0	0	1	4	0	0	0	12	0	0	17
5:00 PM	0	0	0	0	0	0	0	0	0	8	1	0	0	6	0	0	15
5:15 PM	0	0	0	0	1	0	0	0	0	5	0	0	0	8	1	0	15
5:30 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	2	1	0	9
5:45 PM	0	0	0	0	0	0	0	0	1	4	0	0	0	5	0	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	0	0	3	0	1	0	2	50	2	0	0	48	3	0	110
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	75.00%	0.00%	25.00%	0.00%	3.70%	92.59%	3.70%	0.00%	0.00%	94.12%	5.88%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	1	0	0	0	2	0	1	0	1	27	1	0	0	27	1	0	61
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.250	0.750	0.250	0.000	0.000	0.563	0.250	0.000	0.897
	0.250				0.750				0.806				0.583				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-060
Date: 9/15/2021

Data - Total

NS/EW Streets:	Citrus Ave				Citrus Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	1	2	0	0	2	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	76	126	25	19	14	175	8	0	3	29	104	0	64	74	16	0	733
7:15 AM	81	131	20	2	6	177	4	0	8	40	97	0	56	87	24	0	733
7:30 AM	105	179	29	1	13	222	6	0	9	51	85	0	59	76	22	0	857
7:45 AM	97	115	25	3	24	154	2	0	11	78	114	0	72	111	26	0	832
8:00 AM	104	118	36	0	22	166	8	0	6	66	119	0	55	85	14	0	799
8:15 AM	76	130	39	3	17	175	9	0	5	73	101	0	62	85	17	0	792
8:30 AM	79	123	27	4	26	142	2	0	2	72	76	0	35	73	18	0	679
8:45 AM	61	112	40	1	19	149	13	0	10	55	69	0	40	61	12	0	642
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	679	1034	241	33	141	1360	52	0	54	464	765	0	443	652	149	0	6067
APPROACH %'s :	34.17%	52.04%	12.13%	1.66%	9.08%	87.57%	3.35%	0.00%	4.21%	36.17%	59.63%	0.00%	35.61%	52.41%	11.98%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	382	542	129	7	76	717	25	0	31	268	419	0	248	357	79	0	3280
PEAK HR FACTOR :	0.910	0.757	0.827	0.583	0.792	0.807	0.694	0.000	0.705	0.859	0.880	0.000	0.861	0.804	0.760	0.000	0.957
	0.844				0.849				0.884				0.818				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	1	2	0	0	2	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	90	187	62	1	25	162	7	0	22	164	95	0	50	127	29	0	1021
4:15 PM	94	215	61	7	31	172	7	0	17	129	97	0	43	100	25	0	998
4:30 PM	85	159	63	1	21	135	8	0	22	152	93	0	30	118	38	0	925
4:45 PM	103	242	64	1	19	156	8	0	17	122	87	0	40	150	37	0	1046
5:00 PM	115	212	68	0	26	128	9	0	17	177	97	0	47	172	39	0	1107
5:15 PM	109	229	82	0	19	121	12	0	24	186	100	0	49	211	52	0	1194
5:30 PM	138	267	61	0	25	144	8	0	13	143	73	0	31	154	45	0	1102
5:45 PM	131	243	62	0	24	131	11	0	16	144	93	0	28	183	44	0	1110
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	865	1754	523	10	190	1149	70	0	148	1217	735	0	318	1215	309	0	8503
APPROACH %'s :	27.44%	55.65%	16.59%	0.32%	13.48%	81.55%	4.97%	0.00%	7.05%	57.95%	35.00%	0.00%	17.26%	65.96%	16.78%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	493	951	273	0	94	524	40	0	70	650	363	0	155	720	180	0	4513
PEAK HR FACTOR :	0.893	0.890	0.832	0.000	0.904	0.910	0.833	0.000	0.729	0.874	0.908	0.000	0.791	0.853	0.865	0.000	0.945
	0.921				0.929				0.873				0.845				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-060
Date: 9/15/2021

Data - Cars

NS/EW Streets:	Citrus Ave				Citrus Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	1	2	0	0	2	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	72	120	23	19	14	164	8	0	3	27	97	0	60	72	15	0	694
7:15 AM	75	128	20	1	5	173	4	0	8	39	85	0	53	84	23	0	698
7:30 AM	96	168	29	1	13	212	4	0	9	49	82	0	56	73	22	0	814
7:45 AM	91	108	24	2	23	149	2	0	9	73	104	0	67	106	25	0	783
8:00 AM	93	110	35	0	20	158	7	0	6	59	108	0	50	80	13	0	739
8:15 AM	66	126	37	3	15	165	8	0	3	72	93	0	60	80	17	0	745
8:30 AM	63	108	25	3	24	131	2	0	2	69	57	0	32	69	17	0	602
8:45 AM	55	104	39	1	19	133	11	0	9	55	56	0	37	60	11	0	590
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	611	972	232	30	133	1285	46	0	49	443	682	0	415	624	143	0	5665
APPROACH %'s :	33.12%	52.68%	12.57%	1.63%	9.08%	87.77%	3.14%	0.00%	4.17%	37.73%	58.09%	0.00%	35.11%	52.79%	12.10%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	346	512	125	6	71	684	21	0	27	253	387	0	233	339	77	0	3081
PEAK HR FACTOR :	0.901	0.762	0.845	0.500	0.772	0.807	0.656	0.000	0.750	0.866	0.896	0.000	0.869	0.800	0.770	0.000	0.946
	0.841				0.847				0.897				0.819				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	1	2	0	0	2	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	79	184	59	1	25	153	6	0	22	155	85	0	47	123	29	0	968
4:15 PM	85	210	56	7	31	163	7	0	16	122	92	0	43	94	23	0	949
4:30 PM	76	157	60	1	20	132	7	0	22	149	85	0	29	114	35	0	887
4:45 PM	91	238	60	1	19	152	6	0	16	115	78	0	37	142	36	0	991
5:00 PM	104	208	67	0	24	125	9	0	17	171	88	0	45	165	38	0	1061
5:15 PM	101	225	79	0	19	119	11	0	24	184	90	0	49	204	51	0	1156
5:30 PM	128	263	61	0	24	139	7	0	13	142	68	0	30	149	44	0	1068
5:45 PM	122	239	59	0	24	127	11	0	16	141	83	0	28	177	44	0	1071
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	786	1724	501	10	186	1110	64	0	146	1179	669	0	308	1168	300	0	8151
APPROACH %'s :	26.02%	57.07%	16.58%	0.33%	13.68%	81.62%	4.71%	0.00%	7.32%	59.13%	33.55%	0.00%	17.34%	65.77%	16.89%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	455	935	266	0	91	510	38	0	70	638	329	0	152	695	177	0	4356
PEAK HR FACTOR :	0.889	0.889	0.842	0.000	0.948	0.917	0.864	0.000	0.729	0.867	0.914	0.000	0.776	0.852	0.868	0.000	0.942
	0.916				0.940				0.870				0.842				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-060
Date: 9/15/2021

Data - 2axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	0 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	1	3	1	0	0	6	0	0	0	0	1	0	1	1	0	0	14
7:15 AM	1	1	0	1	1	1	0	0	0	1	3	0	1	2	1	0	13
7:30 AM	3	5	0	0	0	5	1	0	0	1	0	0	1	1	0	0	17
7:45 AM	1	1	0	1	0	2	0	0	1	3	3	0	2	2	1	0	17
8:00 AM	3	2	1	0	0	2	0	0	0	4	1	0	2	2	0	0	17
8:15 AM	2	2	0	0	0	4	0	0	1	1	3	0	1	2	0	0	16
8:30 AM	5	10	1	1	2	2	0	0	0	2	7	0	0	1	0	0	31
8:45 AM	1	2	0	0	0	6	1	0	1	0	3	0	1	1	1	0	17
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	17	26	3	3	3	28	2	0	3	12	21	0	9	12	3	0	142
APPROACH %'s :	34.69%	53.06%	6.12%	6.12%	9.09%	84.85%	6.06%	0.00%	8.33%	33.33%	58.33%	0.00%	37.50%	50.00%	12.50%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	9	10	1	1	0	13	1	0	2	9	7	0	6	7	1	0	67
PEAK HR FACTOR :	0.750	0.500	0.250	0.250	0.000	0.650	0.250	0.000	0.500	0.563	0.583	0.000	0.750	0.875	0.250	0.000	0.985
	0.656				0.583				0.643				0.700				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	0 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	6	1	2	0	0	2	1	0	0	2	2	0	1	3	0	0	20
4:15 PM	4	3	3	0	0	6	0	0	1	3	0	0	0	3	1	0	24
4:30 PM	2	2	2	0	1	2	1	0	0	2	3	0	1	0	2	0	18
4:45 PM	2	3	0	0	0	1	0	0	1	4	3	0	1	1	1	0	17
5:00 PM	2	1	0	0	2	1	0	0	0	1	2	0	1	1	1	0	12
5:15 PM	1	1	0	0	0	0	1	0	0	2	1	0	0	0	0	0	6
5:30 PM	1	2	0	0	1	2	1	0	0	1	1	0	0	2	0	0	11
5:45 PM	3	2	0	0	0	1	0	0	0	0	4	0	0	4	0	0	14
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	21	15	7	0	4	15	4	0	2	15	16	0	4	14	5	0	122
APPROACH %'s :	48.84%	34.88%	16.28%	0.00%	17.39%	65.22%	17.39%	0.00%	6.06%	45.45%	48.48%	0.00%	17.39%	60.87%	21.74%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	7	6	0	0	3	4	2	0	0	4	8	0	1	7	1	0	43
PEAK HR FACTOR :	0.583	0.750	0.000	0.000	0.375	0.500	0.500	0.000	0.000	0.500	0.500	0.000	0.250	0.438	0.250	0.000	0.768
	0.650				0.563				0.750				0.563				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-060
Date: 9/15/2021

Data - 3axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	1	2	0	0	2	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	2	1	0	0	1	0	0	0	2	1	0	1	1	0	0	11
7:15 AM	1	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	4
7:30 AM	3	4	0	0	0	1	0	0	0	1	1	0	1	1	0	0	12
7:45 AM	0	1	0	0	1	0	0	0	0	1	1	0	1	3	0	0	8
8:00 AM	2	1	0	0	1	1	0	0	0	2	4	0	1	2	0	0	14
8:15 AM	4	0	0	0	0	3	1	0	1	0	3	0	1	1	0	0	14
8:30 AM	6	2	0	0	0	2	0	0	0	0	5	0	0	3	0	0	18
8:45 AM	2	1	0	0	0	1	0	0	0	0	4	0	0	0	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	20	11	1	0	2	10	1	0	1	6	20	0	5	12	0	0	89
APPROACH %'s :	62.50%	34.38%	3.13%	0.00%	15.38%	76.92%	7.69%	0.00%	3.70%	22.22%	74.07%	0.00%	29.41%	70.59%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	9	6	0	0	2	5	1	0	1	4	9	0	4	7	0	0	48
PEAK HR FACTOR :	0.563	0.375	0.000	0.000	0.500	0.417	0.250	0.000	0.250	0.500	0.563	0.000	1.000	0.583	0.000	0.000	0.857
	0.536				0.500				0.583				0.688				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	1	2	0	0	2	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	0	0	0	0	1	0	0	0	3	3	0	1	1	0	0	12
4:15 PM	4	0	1	0	0	1	0	0	0	3	0	0	0	3	1	0	13
4:30 PM	4	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	7
4:45 PM	4	0	0	0	0	0	1	0	0	1	1	0	1	4	0	0	12
5:00 PM	0	2	0	0	0	1	0	0	0	2	4	0	1	3	0	0	13
5:15 PM	1	0	0	0	0	1	0	0	0	0	5	0	0	3	1	0	11
5:30 PM	2	1	0	0	0	2	0	0	0	0	1	0	1	0	1	0	8
5:45 PM	3	1	2	0	0	2	0	0	0	3	4	0	0	1	0	0	16
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	21	4	3	0	0	8	1	0	0	12	20	0	4	16	3	0	92
APPROACH %'s :	75.00%	14.29%	10.71%	0.00%	0.00%	88.89%	11.11%	0.00%	0.00%	37.50%	62.50%	0.00%	17.39%	69.57%	13.04%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	6	4	2	0	0	6	0	0	0	5	14	0	2	7	2	0	48
PEAK HR FACTOR :	0.500	0.500	0.250	0.000	0.000	0.750	0.000	0.000	0.000	0.417	0.700	0.000	0.500	0.583	0.500	0.000	0.750
	0.500				0.750				0.679				0.688				

National Data & Surveying Services Intersection Turning Movement Count

Location: Citrus Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-060
Date: 9/15/2021

Data - 4axle

NS/EW Streets:	Citrus Ave				Citrus Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	1	2	0	0	2	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	1	0	0	0	4	0	0	0	0	5	0	2	0	1	0	14
7:15 AM	4	2	0	0	0	2	0	0	0	0	8	0	2	0	0	0	18
7:30 AM	3	2	0	0	0	4	1	0	0	0	2	0	1	1	0	0	14
7:45 AM	5	5	1	0	0	3	0	0	1	1	6	0	2	0	0	0	24
8:00 AM	6	5	0	0	1	5	1	0	0	1	6	0	2	1	1	0	29
8:15 AM	4	2	2	0	2	3	0	0	0	0	2	0	0	2	0	0	17
8:30 AM	5	3	1	0	0	7	0	0	0	1	7	0	3	0	1	0	28
8:45 AM	3	5	1	0	0	9	1	0	0	0	6	0	2	0	0	0	27
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	31	25	5	0	3	37	3	0	1	3	42	0	14	4	3	0	171
APPROACH %'s :	50.82%	40.98%	8.20%	0.00%	6.98%	86.05%	6.98%	0.00%	2.17%	6.52%	91.30%	0.00%	66.67%	19.05%	14.29%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	18	14	3	0	3	15	2	0	1	2	16	0	5	4	1	0	84
PEAK HR FACTOR :	0.750	0.700	0.375	0.000	0.375	0.750	0.500	0.000	0.250	0.500	0.667	0.000	0.625	0.500	0.250	0.000	0.724
	0.795				0.714				0.594				0.625				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	1	2	0	0	2	2	1	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	2	1	0	0	6	0	0	0	4	5	0	1	0	0	0	21
4:15 PM	1	2	1	0	0	2	0	0	0	1	5	0	0	0	0	0	12
4:30 PM	3	0	1	0	0	1	0	0	0	1	3	0	0	3	1	0	13
4:45 PM	6	1	4	0	0	3	1	0	0	2	5	0	1	3	0	0	26
5:00 PM	9	1	1	0	0	1	0	0	0	3	3	0	0	3	0	0	21
5:15 PM	6	3	3	0	0	1	0	0	0	0	4	0	0	4	0	0	21
5:30 PM	7	1	0	0	0	1	0	0	0	0	3	0	0	3	0	0	15
5:45 PM	3	1	1	0	0	1	0	0	0	0	2	0	0	1	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	37	11	12	0	0	16	1	0	0	11	30	0	2	17	1	0	138
APPROACH %'s :	61.67%	18.33%	20.00%	0.00%	0.00%	94.12%	5.88%	0.00%	0.00%	26.83%	73.17%	0.00%	10.00%	85.00%	5.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	25	6	5	0	0	4	0	0	0	3	12	0	0	11	0	0	66
PEAK HR FACTOR :	0.694	0.500	0.417	0.000	0.000	1.000	0.000	0.000	0.000	0.250	0.750	0.000	0.000	0.688	0.000	0.000	0.786
	0.750				1.000				0.625				0.688				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-061
Date: 9/9/2021

Data - Total

NS/EW Streets:	Sierra Ave				Sierra Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	0 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	2 WT	2 WR	0 WU	TOTAL
7:00 AM	36	193	118	0	18	251	9	0	11	18	35	0	133	57	9	0	888
7:15 AM	43	203	102	1	7	280	5	1	12	25	36	1	124	63	11	0	914
7:30 AM	37	261	124	0	9	313	15	1	26	42	45	1	127	81	10	0	1092
7:45 AM	51	274	120	0	12	362	26	1	29	52	26	0	126	78	15	0	1172
8:00 AM	28	297	151	0	21	369	27	9	37	56	35	2	127	140	23	0	1322
8:15 AM	42	298	190	0	25	312	19	0	46	68	41	2	124	90	28	0	1285
8:30 AM	42	338	203	1	38	326	23	1	54	72	43	0	122	95	20	0	1378
8:45 AM	38	296	159	0	30	276	23	7	41	74	41	1	96	50	26	0	1158
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	317	2160	1167	2	160	2489	147	20	256	407	302	7	979	654	142	0	9209
APPROACH %'s :	8.69%	59.24%	32.01%	0.05%	5.68%	88.39%	5.22%	0.71%	26.34%	41.87%	31.07%	0.72%	55.15%	36.85%	8.00%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	163	1207	664	1	96	1369	95	11	166	248	145	4	499	403	86	0	5157
PEAK HR FACTOR :	0.799	0.893	0.818	0.250	0.632	0.928	0.880	0.306	0.769	0.861	0.843	0.500	0.982	0.720	0.768	0.000	0.936
	0.871				0.922				0.833				0.852				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	0 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	2 WT	2 WR	0 WU	TOTAL
4:00 PM	54	301	185	0	41	276	27	0	89	209	20	3	149	114	27	0	1495
4:15 PM	70	333	189	1	34	290	23	0	65	202	34	1	127	129	20	0	1518
4:30 PM	39	289	158	1	39	276	28	2	69	239	59	2	149	146	19	0	1515
4:45 PM	68	265	171	1	34	269	18	3	62	199	61	5	171	151	25	0	1503
5:00 PM	49	281	168	1	38	342	17	2	60	197	58	1	140	151	41	0	1546
5:15 PM	54	268	157	0	31	282	18	0	55	190	33	6	177	189	22	0	1482
5:30 PM	49	309	147	2	33	346	22	0	62	171	62	0	152	156	19	0	1530
5:45 PM	54	294	157	0	26	289	17	0	58	180	53	1	150	140	40	0	1459
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	437	2340	1332	6	276	2370	170	7	520	1587	380	19	1215	1176	213	0	12048
APPROACH %'s :	10.62%	56.87%	32.37%	0.15%	9.78%	83.95%	6.02%	0.25%	20.75%	63.33%	15.16%	0.76%	46.66%	45.16%	8.18%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	226	1168	686	4	145	1177	86	7	256	837	212	9	587	577	105	0	6082
PEAK HR FACTOR :	0.807	0.877	0.907	1.000	0.929	0.860	0.768	0.583	0.928	0.876	0.869	0.450	0.858	0.955	0.640	0.000	0.984
	0.879				0.887				0.890				0.914				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-061
Date: 9/9/2021

Data - Cars

NS/EW Streets:	Sierra Ave				Sierra Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	0	0	2	3	0	0	2	2	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	33	185	117	0	17	247	9	0	11	15	33	0	124	55	9	0	855
7:15 AM	41	201	100	1	7	279	5	1	12	24	34	1	122	60	9	0	897
7:30 AM	35	256	120	0	8	311	14	1	25	42	45	1	115	80	6	0	1059
7:45 AM	50	271	118	0	11	355	26	1	29	48	26	0	116	74	14	0	1139
8:00 AM	27	294	147	0	20	365	25	9	37	53	33	2	120	132	21	0	1285
8:15 AM	36	295	187	0	25	305	19	0	46	66	40	2	114	88	24	0	1247
8:30 AM	39	335	200	1	38	321	21	1	54	70	41	0	112	89	19	0	1341
8:45 AM	35	292	153	0	29	269	23	7	39	68	39	1	85	46	26	0	1112
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	296	2129	1142	2	155	2452	142	20	253	386	291	7	908	624	128	0	8935
APPROACH %'s :	8.29%	59.65%	32.00%	0.06%	5.60%	88.55%	5.13%	0.72%	27.00%	41.20%	31.06%	0.75%	54.70%	37.59%	7.71%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	152	1195	652	1	94	1346	91	11	166	237	140	4	462	383	78	0	5012
PEAK HR FACTOR :	0.760	0.892	0.815	0.250	0.618	0.922	0.875	0.306	0.769	0.846	0.854	0.500	0.963	0.725	0.813	0.000	0.934
	0.870				0.920				0.829				0.845				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	0	0	2	3	0	0	2	2	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	52	298	180	0	39	273	26	0	86	198	20	3	144	105	26	0	1450
4:15 PM	68	325	175	1	34	285	22	0	65	196	33	1	111	120	19	0	1455
4:30 PM	39	289	152	1	38	268	28	2	69	230	57	2	146	137	19	0	1477
4:45 PM	66	265	165	1	34	263	18	3	61	193	60	5	162	143	24	0	1463
5:00 PM	48	279	162	1	36	333	17	2	59	195	56	1	136	132	41	0	1498
5:15 PM	53	264	151	0	30	278	18	0	54	187	33	6	170	179	22	0	1445
5:30 PM	47	307	138	2	33	340	22	0	61	163	59	0	149	143	18	0	1482
5:45 PM	53	292	155	0	26	285	17	0	57	176	52	1	147	132	38	0	1431
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	426	2319	1278	6	270	2325	168	7	512	1538	370	19	1165	1091	207	0	11701
APPROACH %'s :	10.57%	57.56%	31.72%	0.15%	9.75%	83.94%	6.06%	0.25%	20.99%	63.06%	15.17%	0.78%	47.30%	44.30%	8.40%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	221	1158	654	4	142	1149	85	7	254	814	206	9	555	532	103	0	5893
PEAK HR FACTOR :	0.813	0.891	0.934	1.000	0.934	0.863	0.759	0.583	0.920	0.885	0.858	0.450	0.856	0.930	0.628	0.000	0.983
	0.895				0.891				0.896				0.904				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-061
Date: 9/9/2021

Data - 2axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	0 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	2 WT	2 WR	0 WU	TOTAL
7:00 AM	3	6	1	0	1	3	0	0	0	1	1	0	4	1	0	0	21
7:15 AM	2	2	2	0	0	1	0	0	0	0	2	0	0	2	0	0	11
7:30 AM	0	4	3	0	0	1	1	0	1	0	0	0	3	0	4	0	17
7:45 AM	0	2	2	0	0	7	0	0	0	3	0	0	3	3	1	0	21
8:00 AM	0	3	2	0	1	4	1	0	0	1	0	0	3	6	2	0	23
8:15 AM	2	2	2	0	0	5	0	0	0	2	1	0	2	1	1	0	18
8:30 AM	0	2	2	0	0	3	2	0	0	1	2	0	4	4	1	0	21
8:45 AM	2	4	2	0	1	5	0	0	2	0	2	0	6	0	0	0	24
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	25	16	0	3	29	4	0	3	8	8	0	25	17	9	0	156
APPROACH %'s :	18.00%	50.00%	32.00%	0.00%	8.33%	80.56%	11.11%	0.00%	15.79%	42.11%	42.11%	0.00%	49.02%	33.33%	17.65%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	2	9	8	0	1	19	3	0	0	7	3	0	12	14	5	0	83
PEAK HR FACTOR :	0.250	0.750	1.000	0.000	0.250	0.679	0.375	0.000	0.000	0.583	0.375	0.000	0.750	0.583	0.625	0.000	0.902
	0.792				0.821				0.833				0.705				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	0 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	2 WT	2 WR	0 WU	TOTAL
4:00 PM	1	3	3	0	2	3	1	0	3	6	0	0	4	2	1	0	29
4:15 PM	1	6	1	0	0	5	1	0	0	1	0	0	3	3	1	0	22
4:30 PM	0	0	4	0	0	6	0	0	0	3	0	0	0	5	0	0	18
4:45 PM	1	0	2	0	0	3	0	0	0	4	0	0	3	2	1	0	16
5:00 PM	0	2	2	0	2	6	0	0	1	0	2	0	0	5	0	0	20
5:15 PM	1	4	1	0	1	1	0	0	1	0	0	0	1	1	0	0	11
5:30 PM	0	0	2	0	0	4	0	0	0	5	1	0	2	2	0	0	16
5:45 PM	0	1	0	0	0	3	0	0	1	1	0	0	0	1	2	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	16	15	0	5	31	2	0	6	20	3	0	13	21	5	0	141
APPROACH %'s :	11.43%	45.71%	42.86%	0.00%	13.16%	81.58%	5.26%	0.00%	20.69%	68.97%	10.34%	0.00%	33.33%	53.85%	12.82%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	2	8	9	0	2	20	1	0	1	8	2	0	6	15	2	0	76
PEAK HR FACTOR :	0.500	0.333	0.563	0.000	0.250	0.833	0.250	0.000	0.250	0.500	0.250	0.000	0.500	0.750	0.500	0.000	0.864
	0.594				0.719				0.688				0.821				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-061
Date: 9/9/2021

Data - 3axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	0 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	2 WT	2 WR	0 WU	TOTAL
7:00 AM	0	0	0	0	0	1	0	0	0	1	1	0	2	1	0	0	6
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	4
7:30 AM	2	0	0	0	1	1	0	0	0	0	0	0	6	0	0	0	10
7:45 AM	1	0	0	0	1	0	0	0	0	0	0	0	4	1	0	0	7
8:00 AM	1	0	0	0	0	0	1	0	0	0	0	0	2	1	0	0	5
8:15 AM	0	0	1	0	0	1	0	0	0	0	0	0	2	1	1	0	6
8:30 AM	1	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	4
8:45 AM	0	0	1	0	0	1	0	0	0	1	0	0	0	1	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	1	2	0	2	4	1	0	0	4	1	0	18	6	2	0	46
APPROACH %'s :	62.50%	12.50%	25.00%	0.00%	28.57%	57.14%	14.29%	0.00%	0.00%	80.00%	20.00%	0.00%	69.23%	23.08%	7.69%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	3	1	1	0	1	1	1	0	0	1	0	0	9	3	1	0	22
PEAK HR FACTOR :	0.750	0.250	0.250	0.000	0.250	0.250	0.250	0.000	0.000	0.250	0.000	0.000	0.563	0.750	0.250	0.000	0.786
	0.625				0.750				0.250				0.650				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	0 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	2 WT	2 WR	0 WU	TOTAL
4:00 PM	1	0	0	0	0	0	0	0	0	3	0	0	1	3	0	0	8
4:15 PM	0	0	7	0	0	0	0	0	0	3	1	0	6	1	0	0	18
4:30 PM	0	0	2	0	1	1	0	0	0	3	0	0	0	2	0	0	9
4:45 PM	1	0	0	0	0	0	0	0	1	1	1	0	3	1	0	0	8
5:00 PM	0	0	1	0	0	1	0	0	0	1	0	0	0	3	0	0	6
5:15 PM	0	0	1	0	0	0	0	0	0	1	0	0	2	1	0	0	5
5:30 PM	1	1	0	0	0	0	0	0	0	1	0	0	0	4	0	0	7
5:45 PM	0	1	2	0	0	1	0	0	0	1	1	0	1	2	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	2	13	0	1	3	0	0	1	14	3	0	13	17	0	0	70
APPROACH %'s :	16.67%	11.11%	72.22%	0.00%	25.00%	75.00%	0.00%	0.00%	5.56%	77.78%	16.67%	0.00%	43.33%	56.67%	0.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	1	0	10	0	1	2	0	0	1	8	2	0	9	7	0	0	41
PEAK HR FACTOR :	0.250	0.000	0.357	0.000	0.250	0.500	0.000	0.000	0.250	0.667	0.500	0.000	0.375	0.583	0.000	0.000	0.569
	0.393				0.375				0.688				0.571				

National Data & Surveying Services Intersection Turning Movement Count

Location: Sierra Ave & Valley Blvd
City: Fontana
Control: Signalized

Project ID: 21-030070-061
Date: 9/9/2021

Data - 4axle

NS/EW Streets:	Sierra Ave				Sierra Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	0	0	2	3	0	0	2	2	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	0	0	0	0	0	0	0	1	0	0	3	0	0	0	6
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2
7:30 AM	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0	6
7:45 AM	0	1	0	0	0	0	0	0	0	1	0	0	3	0	0	0	5
8:00 AM	0	0	2	0	0	0	0	0	0	2	2	0	2	1	0	0	9
8:15 AM	4	1	0	0	0	1	0	0	0	0	0	0	6	0	2	0	14
8:30 AM	2	0	1	0	0	2	0	0	0	0	0	0	5	2	0	0	12
8:45 AM	1	0	3	0	0	1	0	0	0	5	0	0	5	3	0	0	18
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	5	7	0	0	4	0	0	0	9	2	0	28	7	3	0	72
APPROACH %'s :	36.84%	26.32%	36.84%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	81.82%	18.18%	0.00%	73.68%	18.42%	7.89%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	6	2	3	0	0	3	0	0	0	3	2	0	16	3	2	0	40
PEAK HR FACTOR :	0.375	0.500	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.375	0.250	0.000	0.667	0.375	0.250	0.000	0.714
	0.550				0.375				0.313				0.656				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	0	0	2	3	0	0	2	2	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	2	0	0	0	0	0	0	2	0	0	0	4	0	0	8
4:15 PM	1	2	6	0	0	0	0	0	0	2	0	0	7	5	0	0	23
4:30 PM	0	0	0	0	0	1	0	0	0	3	2	0	3	2	0	0	11
4:45 PM	0	0	4	0	0	3	0	0	0	1	0	0	3	5	0	0	16
5:00 PM	1	0	3	0	0	2	0	0	0	1	0	0	4	11	0	0	22
5:15 PM	0	0	4	0	0	3	0	0	0	2	0	0	4	8	0	0	21
5:30 PM	1	1	7	0	0	2	0	0	1	2	2	0	1	7	1	0	25
5:45 PM	1	0	0	0	0	0	0	0	0	2	0	0	2	5	0	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	3	26	0	0	11	0	0	1	15	4	0	24	47	1	0	136
APPROACH %'s :	12.12%	9.09%	78.79%	0.00%	0.00%	100.00%	0.00%	0.00%	5.00%	75.00%	20.00%	0.00%	33.33%	65.28%	1.39%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	2	2	13	0	0	6	0	0	0	7	2	0	17	23	0	0	72
PEAK HR FACTOR :	0.500	0.250	0.542	0.000	0.000	0.500	0.000	0.000	0.000	0.583	0.250	0.000	0.607	0.523	0.000	0.000	0.783
	0.472				0.500				0.450				0.667				

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	89	58	147	100	0	100	200	0	101	45	146	0	0	0	0	493
07:15 AM	0	116	43	159	102	0	115	217	0	116	59	175	0	0	0	0	551
07:30 AM	0	150	59	209	107	0	136	243	0	137	73	210	0	0	0	0	662
07:45 AM	0	154	71	225	109	0	122	231	0	128	71	199	0	0	0	0	655
Total	0	509	231	740	418	0	473	891	0	482	248	730	0	0	0	0	2361
08:00 AM	0	152	58	210	83	0	88	171	0	148	51	199	0	0	0	0	580
08:15 AM	0	114	74	188	68	0	85	153	0	115	72	187	0	0	0	0	528
08:30 AM	0	105	61	166	65	0	60	125	0	121	62	183	0	0	0	0	474
08:45 AM	0	93	60	153	71	0	122	193	0	113	58	171	0	0	0	0	517
Total	0	464	253	717	287	0	355	642	0	497	243	740	0	0	0	0	2099
Grand Total	0	973	484	1457	705	0	828	1533	0	979	491	1470	0	0	0	0	4460
Apprch %	0	66.8	33.2		46	0	54		0	66.6	33.4		0	0	0		
Total %	0	21.8	10.9	32.7	15.8	0	18.6	34.4	0	22	11	33	0	0	0	0	
Passenger Vehicles	0	719	202	921	577	0	728	1305	0	660	232	892	0	0	0	0	3118
% Passenger Vehicles	0	73.9	41.7	63.2	81.8	0	87.9	85.1	0	67.4	47.3	60.7	0	0	0	0	69.9
Large 2 Axle Vehicles	0	45	30	75	23	0	25	48	0	45	52	97	0	0	0	0	220
% Large 2 Axle Vehicles	0	4.6	6.2	5.1	3.3	0	3	3.1	0	4.6	10.6	6.6	0	0	0	0	4.9
3 Axle Vehicles	0	69	81	150	17	0	19	36	0	103	48	151	0	0	0	0	337
% 3 Axle Vehicles	0	7.1	16.7	10.3	2.4	0	2.3	2.3	0	10.5	9.8	10.3	0	0	0	0	7.6
4+ Axle Trucks	0	140	171	311	88	0	56	144	0	171	159	330	0	0	0	0	785
% 4+ Axle Trucks	0	14.4	35.3	21.3	12.5	0	6.8	9.4	0	17.5	32.4	22.4	0	0	0	0	17.6

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	116	43	159	102	0	115	217	0	116	59	175	0	0	0	0	551
07:30 AM	0	150	59	209	107	0	**136**	**243**	0	137	**73**	**210**	0	0	0	0	**662**
07:45 AM	0	**154**	**71**	**225**	**109**	0	122	231	0	128	71	199	0	0	0	0	655
08:00 AM	0	152	58	210	83	0	88	171	0	**148**	51	199	0	0	0	0	580
Total Volume	0	572	231	803	401	0	461	862	0	529	254	783	0	0	0	0	2448
% App. Total	0	71.2	28.8		46.5	0	53.5		0	67.6	32.4		0	0	0		
PHF	.000	.929	.813	.892	.920	.000	.847	.887	.000	.894	.870	.932	.000	.000	.000	.000	.924

Counts Unlimited, Inc.
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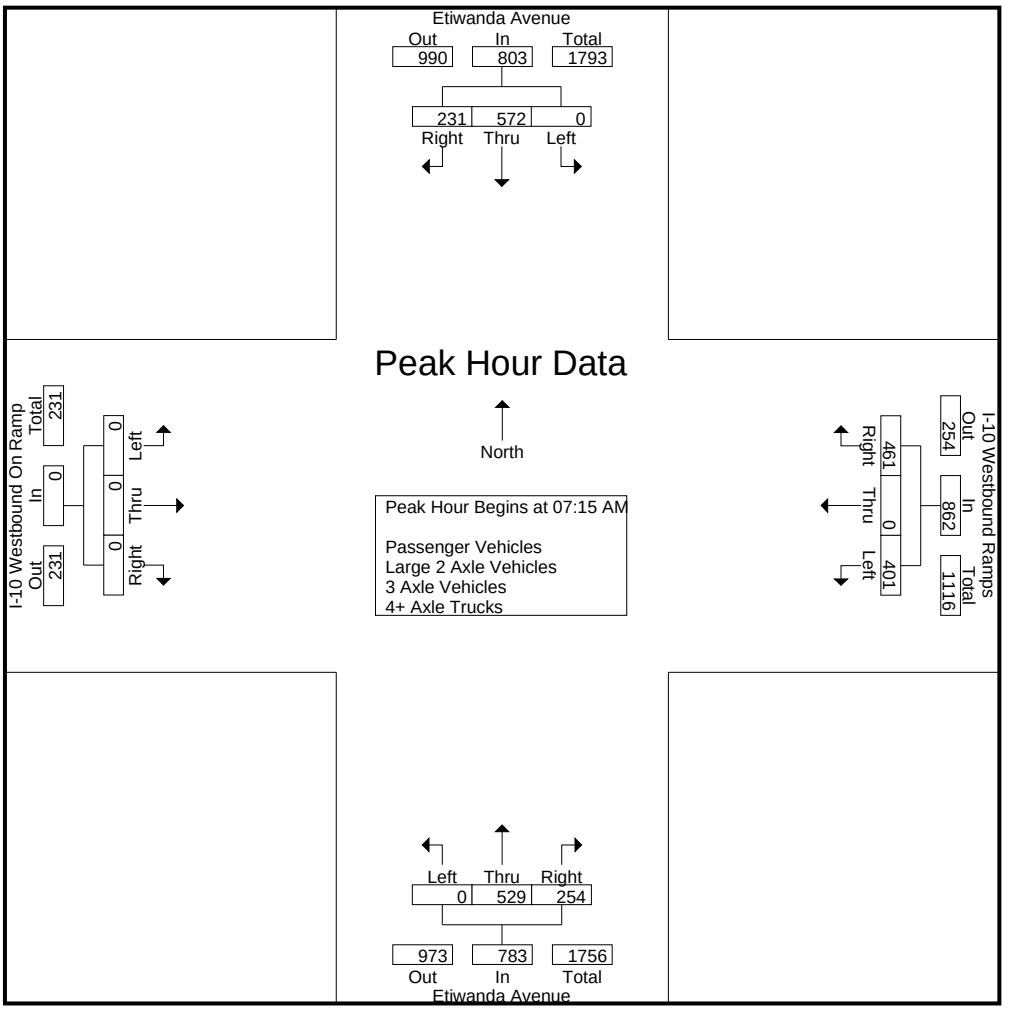
City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:00 AM				07:30 AM				07:00 AM			
+0 mins.	0	150	59	209	100	0	100	200	0	137	**73**	**210**	0	0	0	0
+15 mins.	0	**154**	71	**225**	102	0	115	217	0	128	71	199	0	0	0	0
+30 mins.	0	152	58	210	107	0	**136**	**243**	0	**148**	51	199	0	0	0	0
+45 mins.	0	114	**74**	188	**109**	0	122	231	0	115	72	187	0	0	0	0
Total Volume	0	570	262	832	418	0	473	891	0	528	267	795	0	0	0	0
% App. Total	0	68.5	31.5		46.9	0	53.1		0	66.4	33.6		0	0	0	
PHF	.000	.925	.885	.924	.959	.000	.869	.917	.000	.892	.914	.946	.000	.000	.000	.000

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City of Fontana
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File Name : 07_FON_Etiwanda_10W AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	63	19	82	80	0	91	171	0	69	15	84	0	0	0	0	337
07:15 AM	0	85	18	103	85	0	104	189	0	85	27	112	0	0	0	0	404
07:30 AM	0	108	31	139	92	0	124	216	0	100	41	141	0	0	0	0	496
07:45 AM	0	124	41	165	104	0	115	219	0	95	34	129	0	0	0	0	513
Total	0	380	109	489	361	0	434	795	0	349	117	466	0	0	0	0	1750
08:00 AM	0	115	27	142	64	0	72	136	0	95	26	121	0	0	0	0	399
08:15 AM	0	88	29	117	48	0	72	120	0	77	44	121	0	0	0	0	358
08:30 AM	0	79	18	97	47	0	48	95	0	73	26	99	0	0	0	0	291
08:45 AM	0	57	19	76	57	0	102	159	0	66	19	85	0	0	0	0	320
Total	0	339	93	432	216	0	294	510	0	311	115	426	0	0	0	0	1368
Grand Total	0	719	202	921	577	0	728	1305	0	660	232	892	0	0	0	0	3118
Apprch %	0	78.1	21.9		44.2	0	55.8		0	74	26		0	0	0		
Total %	0	23.1	6.5	29.5	18.5	0	23.3	41.9	0	21.2	7.4	28.6	0	0	0	0	

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	85	18	103	85	0	104	189	0	85	27	112	0	0	0	0	404
07:30 AM	0	108	31	139	92	0	**124**	216	0	**100**	**41**	**141**	0	0	0	0	496
07:45 AM	0	**124**	**41**	**165**	**104**	0	115	**219**	0	95	34	129	0	0	0	0	**513**
08:00 AM	0	115	27	142	64	0	72	136	0	95	26	121	0	0	0	0	399
Total Volume	0	432	117	549	345	0	415	760	0	375	128	503	0	0	0	0	1812
% App. Total	0	78.7	21.3		45.4	0	54.6		0	74.6	25.4		0	0	0		
PHF	.000	.871	.713	.832	.829	.000	.837	.868	.000	.938	.780	.892	.000	.000	.000	.000	.883

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City of Fontana
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File Name : 07_FON_Etiwanda_10W AM
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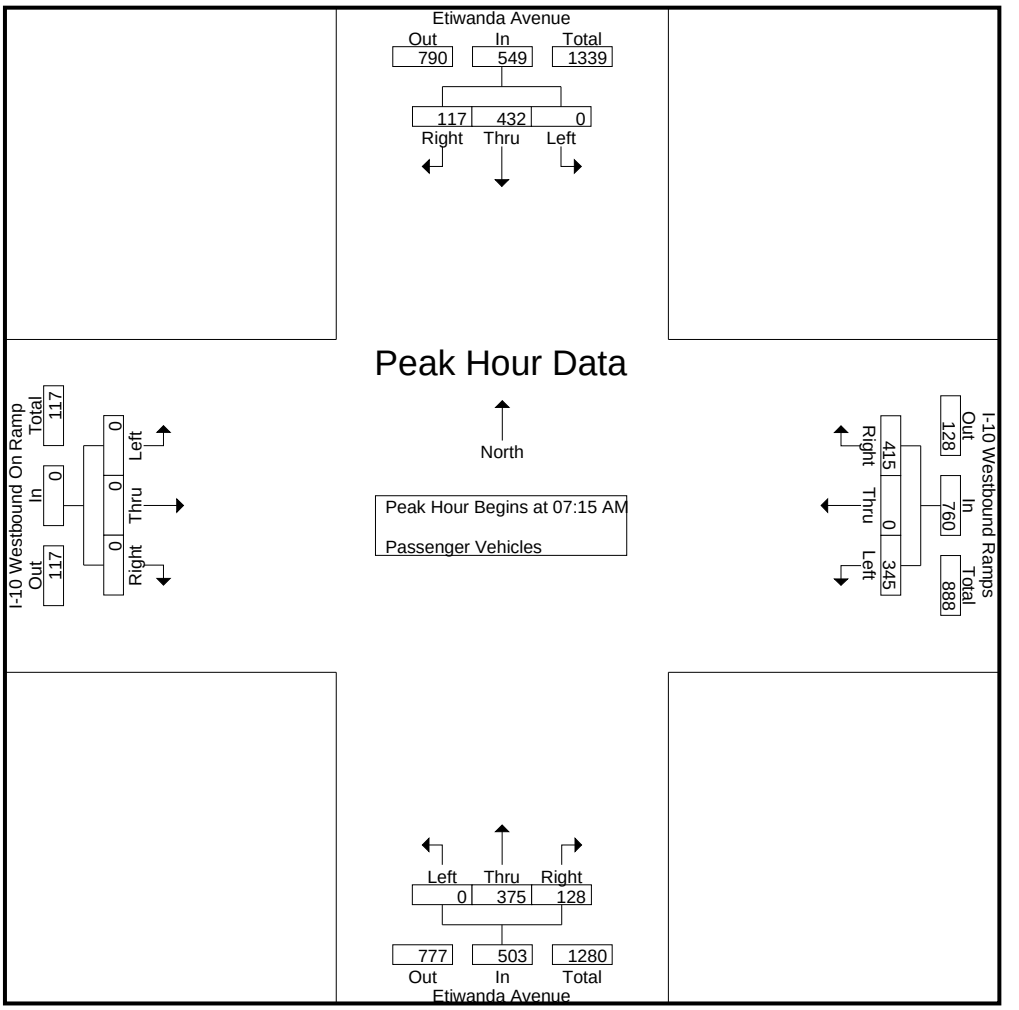
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	85	18	103	85	0	104	189	0	85	27	112	0	0	0	0
+15 mins.	0	108	31	139	92	0	**124**	216	0	**100**	**41**	**141**	0	0	0	0
+30 mins.	0	**124**	**41**	**165**	**104**	0	115	**219**	0	95	34	129	0	0	0	0
+45 mins.	0	115	27	142	64	0	72	136	0	95	26	121	0	0	0	0
Total Volume	0	432	117	549	345	0	415	760	0	375	128	503	0	0	0	0
% App. Total	0	78.7	21.3		45.4	0	54.6		0	74.6	25.4		0	0	0	
PHF	.000	.871	.713	.832	.829	.000	.837	.868	.000	.938	.780	.892	.000	.000	.000	.000

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	1	6	7	1	0	1	2	0	7	3	10	0	0	0	0	19
07:15 AM	0	5	2	7	3	0	1	4	0	6	6	12	0	0	0	0	23
07:30 AM	0	14	2	16	1	0	2	3	0	4	6	10	0	0	0	0	29
07:45 AM	0	6	3	9	1	0	3	4	0	3	8	11	0	0	0	0	24
Total	0	26	13	39	6	0	7	13	0	20	23	43	0	0	0	0	95
08:00 AM	0	5	4	9	5	0	5	10	0	4	5	9	0	0	0	0	28
08:15 AM	0	3	5	8	4	0	3	7	0	8	4	12	0	0	0	0	27
08:30 AM	0	5	2	7	4	0	4	8	0	4	10	14	0	0	0	0	29
08:45 AM	0	6	6	12	4	0	6	10	0	9	10	19	0	0	0	0	41
Total	0	19	17	36	17	0	18	35	0	25	29	54	0	0	0	0	125
Grand Total	0	45	30	75	23	0	25	48	0	45	52	97	0	0	0	0	220
Apprch %	0	60	40		47.9	0	52.1		0	46.4	53.6		0	0	0		
Total %	0	20.5	13.6	34.1	10.5	0	11.4	21.8	0	20.5	23.6	44.1	0	0	0	0	

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	5	2	7	3	0	1	4	0	**6**	6	**12**	0	0	0	0	23
07:30 AM	0	**14**	2	**16**	1	0	2	3	0	4	6	10	0	0	0	0	**29**
07:45 AM	0	6	3	9	1	0	3	4	0	3	**8**	11	0	0	0	0	24
08:00 AM	0	5	**4**	9	**5**	0	**5**	**10**	0	4	5	9	0	0	0	0	28
Total Volume	0	30	11	41	10	0	11	21	0	17	25	42	0	0	0	0	104
% App. Total	0	73.2	26.8		47.6	0	52.4		0	40.5	59.5		0	0	0		
PHF	.000	.536	.688	.641	.500	.000	.550	.525	.000	.708	.781	.875	.000	.000	.000	.000	.897

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W AM
Site Code : 10821516
Start Date : 9/28/2021
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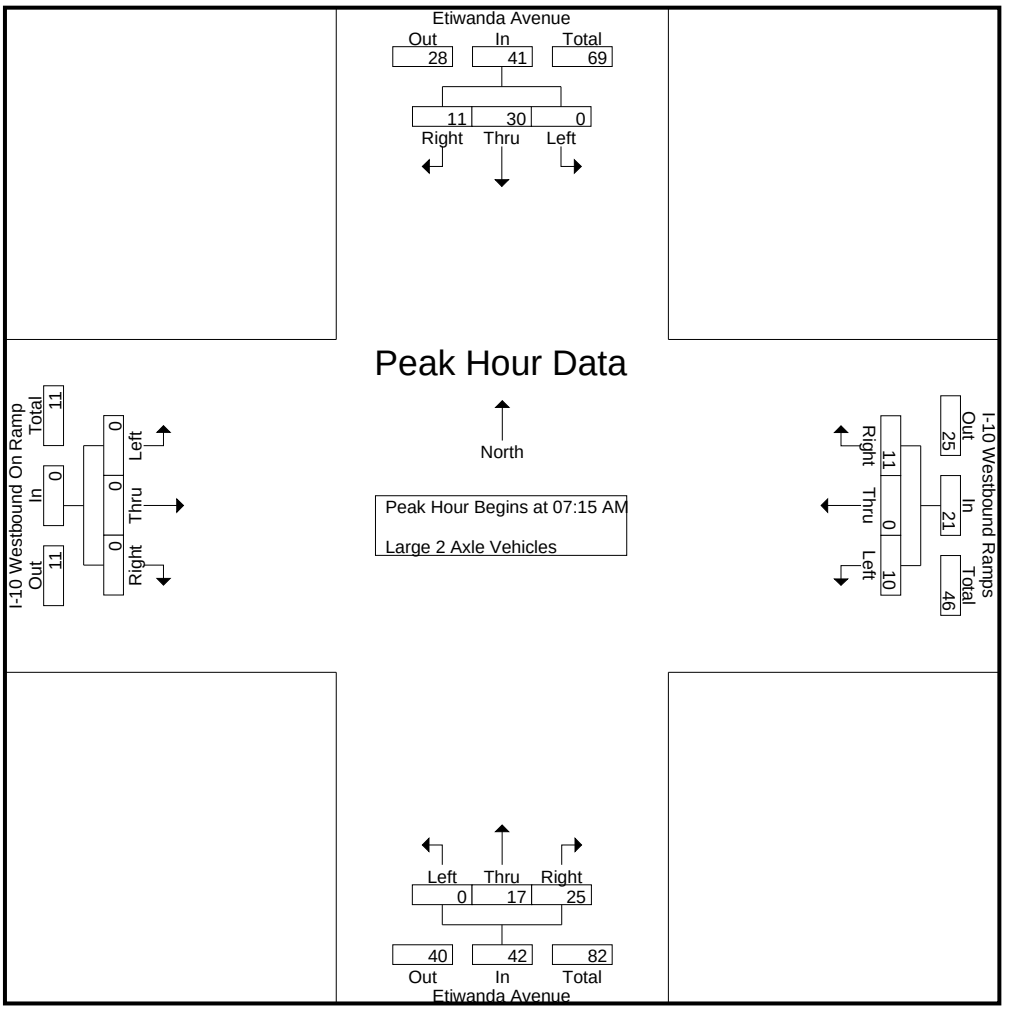

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	5	2	7	3	0	1	4	0	**6**	6	**12**	0	0	0	0
+15 mins.	0	**14**	2	**16**	1	0	2	3	0	4	6	10	0	0	0	0
+30 mins.	0	6	3	9	1	0	3	4	0	3	**8**	11	0	0	0	0
+45 mins.	0	5	**4**	9	**5**	0	**5**	**10**	0	4	5	9	0	0	0	0
Total Volume	0	30	11	41	10	0	11	21	0	17	25	42	0	0	0	0
% App. Total	0	73.2	26.8		47.6	0	52.4		0	40.5	59.5		0	0	0	
PHF	.000	.536	.688	.641	.500	.000	.550	.525	.000	.708	.781	.875	.000	.000	.000	.000

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City of Fontana
N/S: Etiwanda Avenue
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File Name : 07_FON_Etiwanda_10W AM
Site Code : 10821516
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Groups Printed- 3 Axle Vehicles

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	10	12	22	3	0	2	5	0	10	5	15	0	0	0	0	42
07:15 AM	0	8	8	16	1	0	1	2	0	4	8	12	0	0	0	0	30
07:30 AM	0	10	7	17	3	0	1	4	0	13	9	22	0	0	0	0	43
07:45 AM	0	5	12	17	1	0	1	2	0	12	2	14	0	0	0	0	33
Total	0	33	39	72	8	0	5	13	0	39	24	63	0	0	0	0	148
08:00 AM	0	10	8	18	3	0	3	6	0	21	5	26	0	0	0	0	50
08:15 AM	0	9	10	19	1	0	4	5	0	14	7	21	0	0	0	0	45
08:30 AM	0	5	13	18	3	0	2	5	0	14	8	22	0	0	0	0	45
08:45 AM	0	12	11	23	2	0	5	7	0	15	4	19	0	0	0	0	49
Total	0	36	42	78	9	0	14	23	0	64	24	88	0	0	0	0	189
Grand Total	0	69	81	150	17	0	19	36	0	103	48	151	0	0	0	0	337
Apprch %	0	46	54		47.2	0	52.8		0	68.2	31.8		0	0	0		
Total %	0	20.5	24	44.5	5	0	5.6	10.7	0	30.6	14.2	44.8	0	0	0	0	

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	8	8	16	1	0	1	2	0	4	8	12	0	0	0	0	30
07:30 AM	0	**10**	7	17	**3**	0	1	4	0	13	**9**	22	0	0	0	0	43
07:45 AM	0	5	**12**	17	1	0	1	2	0	12	2	14	0	0	0	0	33
08:00 AM	0	10	8	**18**	3	0	**3**	**6**	0	**21**	5	**26**	0	0	0	0	**50**
Total Volume	0	33	35	68	8	0	6	14	0	50	24	74	0	0	0	0	156
% App. Total	0	48.5	51.5		57.1	0	42.9		0	67.6	32.4		0	0	0		
PHF	.000	.825	.729	.944	.667	.000	.500	.583	.000	.595	.667	.712	.000	.000	.000	.000	.780

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W AM
Site Code : 10821516
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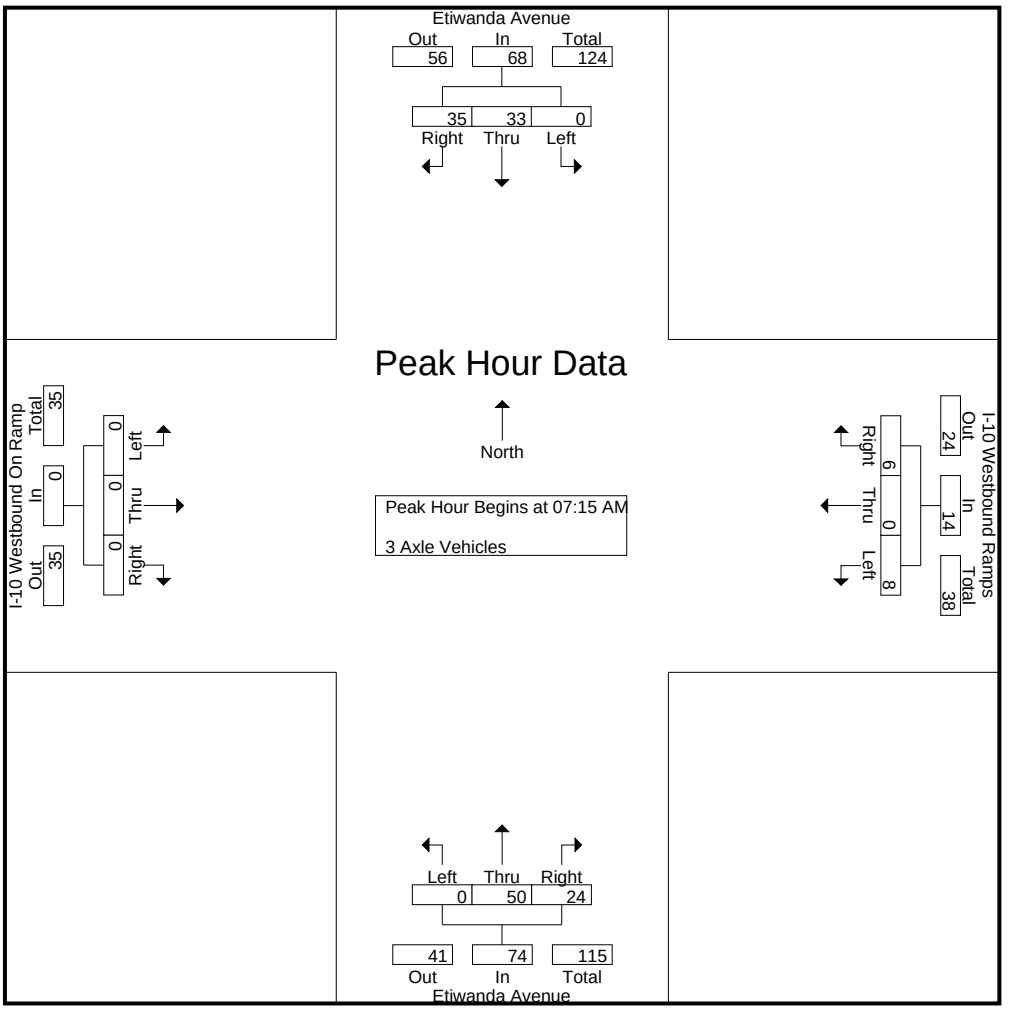

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	8	8	16	1	0	1	2	0	4	8	12	0	0	0	0
+15 mins.	0	**10**	7	17	**3**	0	1	4	0	13	**9**	22	0	0	0	0
+30 mins.	0	5	**12**	17	1	0	1	2	0	12	2	14	0	0	0	0
+45 mins.	0	10	8	**18**	3	0	**3**	**6**	0	**21**	5	**26**	0	0	0	0
Total Volume	0	33	35	68	8	0	6	14	0	50	24	74	0	0	0	0
% App. Total	0	48.5	51.5		57.1	0	42.9		0	67.6	32.4		0	0	0	
PHF	.000	.825	.729	.944	.667	.000	.500	.583	.000	.595	.667	.712	.000	.000	.000	.000

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City of Fontana
N/S: Etiwanda Avenue
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File Name : 07_FON_Etiwanda_10W AM
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Groups Printed- 4+ Axle Trucks

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	15	21	36	16	0	6	22	0	15	22	37	0	0	0	0	95
07:15 AM	0	18	15	33	13	0	9	22	0	21	18	39	0	0	0	0	94
07:30 AM	0	18	19	37	11	0	9	20	0	20	17	37	0	0	0	0	94
07:45 AM	0	19	15	34	3	0	3	6	0	18	27	45	0	0	0	0	85
Total	0	70	70	140	43	0	27	70	0	74	84	158	0	0	0	0	368
08:00 AM	0	22	19	41	11	0	8	19	0	28	15	43	0	0	0	0	103
08:15 AM	0	14	30	44	15	0	6	21	0	16	17	33	0	0	0	0	98
08:30 AM	0	16	28	44	11	0	6	17	0	30	18	48	0	0	0	0	109
08:45 AM	0	18	24	42	8	0	9	17	0	23	25	48	0	0	0	0	107
Total	0	70	101	171	45	0	29	74	0	97	75	172	0	0	0	0	417
Grand Total	0	140	171	311	88	0	56	144	0	171	159	330	0	0	0	0	785
Apprch %	0	45	55		61.1	0	38.9		0	51.8	48.2		0	0	0		
Total %	0	17.8	21.8	39.6	11.2	0	7.1	18.3	0	21.8	20.3	42	0	0	0	0	

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	18	15	33	**13**	0	**9**	**22**	0	21	18	39	0	0	0	0	94
07:30 AM	0	18	**19**	37	11	0	9	20	0	20	17	37	0	0	0	0	94
07:45 AM	0	19	15	34	3	0	3	6	0	18	**27**	**45**	0	0	0	0	85
08:00 AM	0	**22**	19	**41**	11	0	8	19	0	**28**	15	43	0	0	0	0	**103**
Total Volume	0	77	68	145	38	0	29	67	0	87	77	164	0	0	0	0	376
% App. Total	0	53.1	46.9		56.7	0	43.3		0	53	47		0	0	0		
PHF	.000	.875	.895	.884	.731	.000	.806	.761	.000	.777	.713	.911	.000	.000	.000	.000	.913

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City of Fontana
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File Name : 07_FON_Etiwanda_10W AM
Site Code : 10821516
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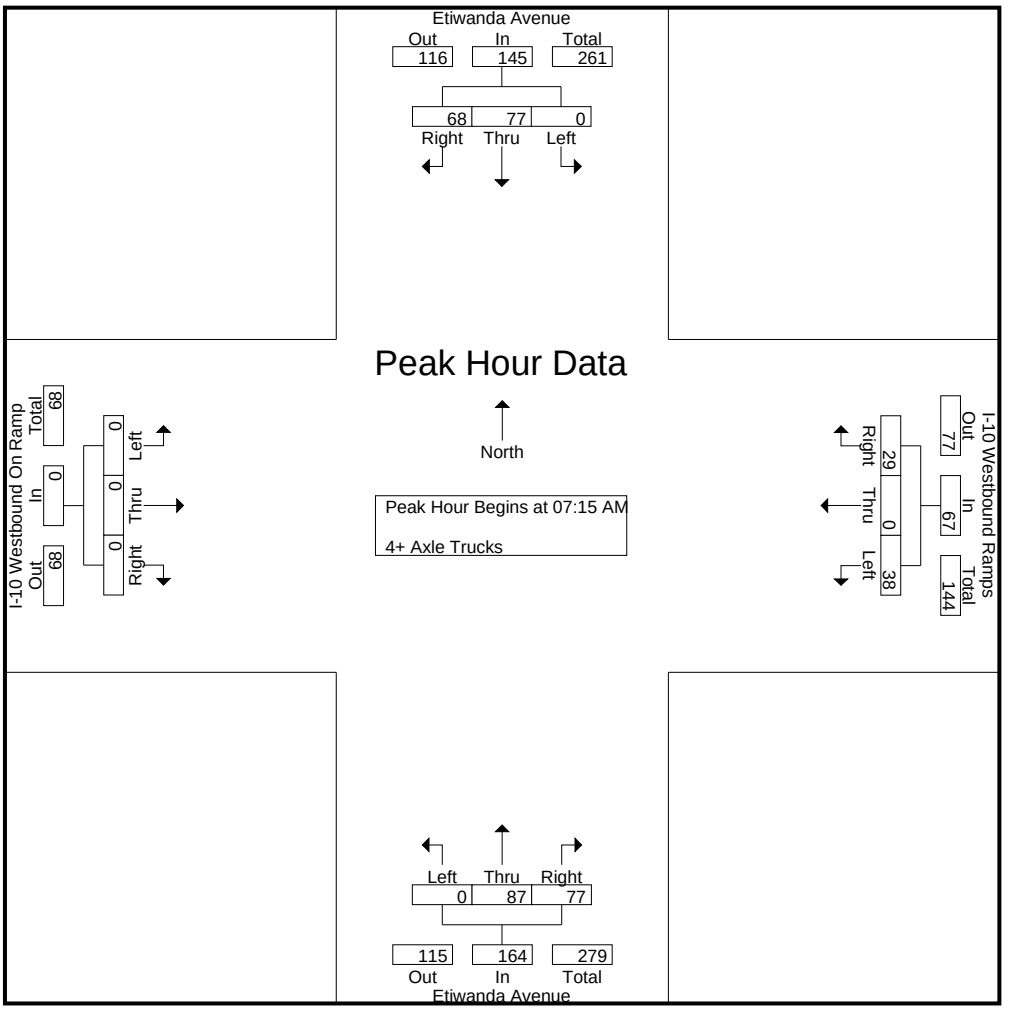

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	18	15	33	**13**	0	**9**	**22**	0	21	18	39	0	0	0	0
+15 mins.	0	18	**19**	37	11	0	9	20	0	20	17	37	0	0	0	0
+30 mins.	0	19	15	34	3	0	3	6	0	18	**27**	**45**	0	0	0	0
+45 mins.	0	**22**	19	**41**	11	0	8	19	0	**28**	15	43	0	0	0	0
Total Volume	0	77	68	145	38	0	29	67	0	87	77	164	0	0	0	0
% App. Total	0	53.1	46.9		56.7	0	43.3		0	53	47		0	0	0	
PHF	.000	.875	.895	.884	.731	.000	.806	.761	.000	.777	.713	.911	.000	.000	.000	.000

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W PM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	226	64	290	71	0	87	158	0	181	111	292	0	0	0	0	740
04:15 PM	0	176	76	252	51	0	82	133	0	192	108	300	0	0	0	0	685
04:30 PM	0	218	105	323	58	0	77	135	0	185	140	325	0	0	0	0	783
04:45 PM	0	243	71	314	71	0	100	171	0	194	117	311	0	0	0	0	796
Total	0	863	316	1179	251	0	346	597	0	752	476	1228	0	0	0	0	3004
05:00 PM	0	223	54	277	76	0	107	183	0	189	139	328	0	0	0	0	788
05:15 PM	0	225	49	274	73	0	96	169	0	156	80	236	0	0	0	0	679
05:30 PM	0	177	51	228	62	0	103	165	0	166	97	263	0	0	0	0	656
05:45 PM	0	168	35	203	61	0	89	150	0	172	94	266	0	0	0	0	619
Total	0	793	189	982	272	0	395	667	0	683	410	1093	0	0	0	0	2742
Grand Total	0	1656	505	2161	523	0	741	1264	0	1435	886	2321	0	0	0	0	5746
Apprch %	0	76.6	23.4		41.4	0	58.6		0	61.8	38.2		0	0	0		
Total %	0	28.8	8.8	37.6	9.1	0	12.9	22	0	25	15.4	40.4	0	0	0	0	
Passenger Vehicles	0	1408	381	1789	384	0	657	1041	0	1144	744	1888	0	0	0	0	4718
% Passenger Vehicles	0	85	75.4	82.8	73.4	0	88.7	82.4	0	79.7	84	81.3	0	0	0	0	82.1
Large 2 Axle Vehicles	0	54	22	76	28	0	16	44	0	33	25	58	0	0	0	0	178
% Large 2 Axle Vehicles	0	3.3	4.4	3.5	5.4	0	2.2	3.5	0	2.3	2.8	2.5	0	0	0	0	3.1
3 Axle Vehicles	0	68	34	102	26	0	17	43	0	98	16	114	0	0	0	0	259
% 3 Axle Vehicles	0	4.1	6.7	4.7	5	0	2.3	3.4	0	6.8	1.8	4.9	0	0	0	0	4.5
4+ Axle Trucks	0	126	68	194	85	0	51	136	0	160	101	261	0	0	0	0	591
% 4+ Axle Trucks	0	7.6	13.5	9	16.3	0	6.9	10.8	0	11.1	11.4	11.2	0	0	0	0	10.3

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	176	76	252	51	0	82	133	0	192	108	300	0	0	0	0	685
04:30 PM	0	218	**105**	**323**	58	0	77	135	0	185	**140**	325	0	0	0	0	783
04:45 PM	0	**243**	71	314	71	0	100	171	0	**194**	117	311	0	0	0	0	**796**
05:00 PM	0	223	54	277	**76**	0	**107**	**183**	0	189	139	**328**	0	0	0	0	788
Total Volume	0	860	306	1166	256	0	366	622	0	760	504	1264	0	0	0	0	3052
% App. Total	0	73.8	26.2		41.2	0	58.8		0	60.1	39.9		0	0	0		
PHF	.000	.885	.729	.902	.842	.000	.855	.850	.000	.979	.900	.963	.000	.000	.000	.000	.959

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City of Fontana
N/S: Etiwanda Avenue
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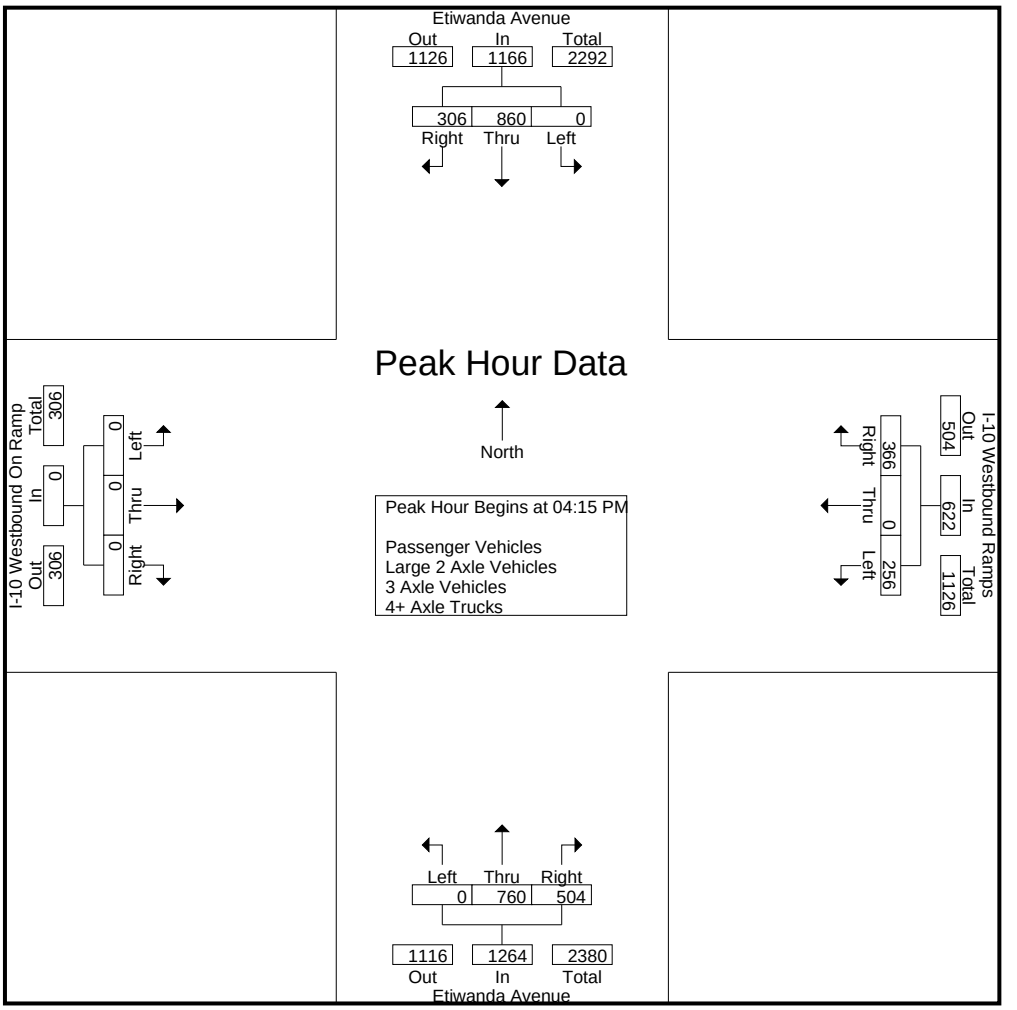

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:45 PM				04:15 PM				04:00 PM			
+0 mins.	0	218	**105**	**323**	71	0	100	171	0	192	108	300	0	0	0	0
+15 mins.	0	**243**	71	314	**76**	0	**107**	**183**	0	185	**140**	325	0	0	0	0
+30 mins.	0	223	54	277	73	0	96	169	0	**194**	117	311	0	0	0	0
+45 mins.	0	225	49	274	62	0	103	165	0	189	139	**328**	0	0	0	0
Total Volume	0	909	279	1188	282	0	406	688	0	760	504	1264	0	0	0	0
% App. Total	0	76.5	23.5		41	0	59		0	60.1	39.9		0	0	0	
PHF	.000	.935	.664	.920	.928	.000	.949	.940	.000	.979	.900	.963	.000	.000	.000	.000

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City of Fontana
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Weather: Clear

File Name : 07_FON_Etiwanda_10W PM
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Groups Printed- Passenger Vehicles

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	199	47	246	53	0	74	127	0	131	90	221	0	0	0	0	594
04:15 PM	0	157	55	212	37	0	70	107	0	146	87	233	0	0	0	0	552
04:30 PM	0	189	79	268	41	0	70	111	0	146	123	269	0	0	0	0	648
04:45 PM	0	205	53	258	57	0	90	147	0	161	101	262	0	0	0	0	667
Total	0	750	234	984	188	0	304	492	0	584	401	985	0	0	0	0	2461
05:00 PM	0	185	39	224	55	0	93	148	0	154	117	271	0	0	0	0	643
05:15 PM	0	185	38	223	52	0	89	141	0	131	63	194	0	0	0	0	558
05:30 PM	0	149	41	190	49	0	91	140	0	141	83	224	0	0	0	0	554
05:45 PM	0	139	29	168	40	0	80	120	0	134	80	214	0	0	0	0	502
Total	0	658	147	805	196	0	353	549	0	560	343	903	0	0	0	0	2257
Grand Total	0	1408	381	1789	384	0	657	1041	0	1144	744	1888	0	0	0	0	4718
Apprch %	0	78.7	21.3		36.9	0	63.1		0	60.6	39.4		0	0	0		
Total %	0	29.8	8.1	37.9	8.1	0	13.9	22.1	0	24.2	15.8	40	0	0	0	0	

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	157	55	212	37	0	70	107	0	146	87	233	0	0	0	0	552
04:30 PM	0	189	**79**	**268**	41	0	70	111	0	146	**123**	269	0	0	0	0	648
04:45 PM	0	**205**	53	258	**57**	0	90	147	0	**161**	101	262	0	0	0	0	**667**
05:00 PM	0	185	39	224	55	0	**93**	**148**	0	154	117	**271**	0	0	0	0	643
Total Volume	0	736	226	962	190	0	323	513	0	607	428	1035	0	0	0	0	2510
% App. Total	0	76.5	23.5		37	0	63		0	58.6	41.4		0	0	0		
PHF	.000	.898	.715	.897	.833	.000	.868	.867	.000	.943	.870	.955	.000	.000	.000	.000	.941

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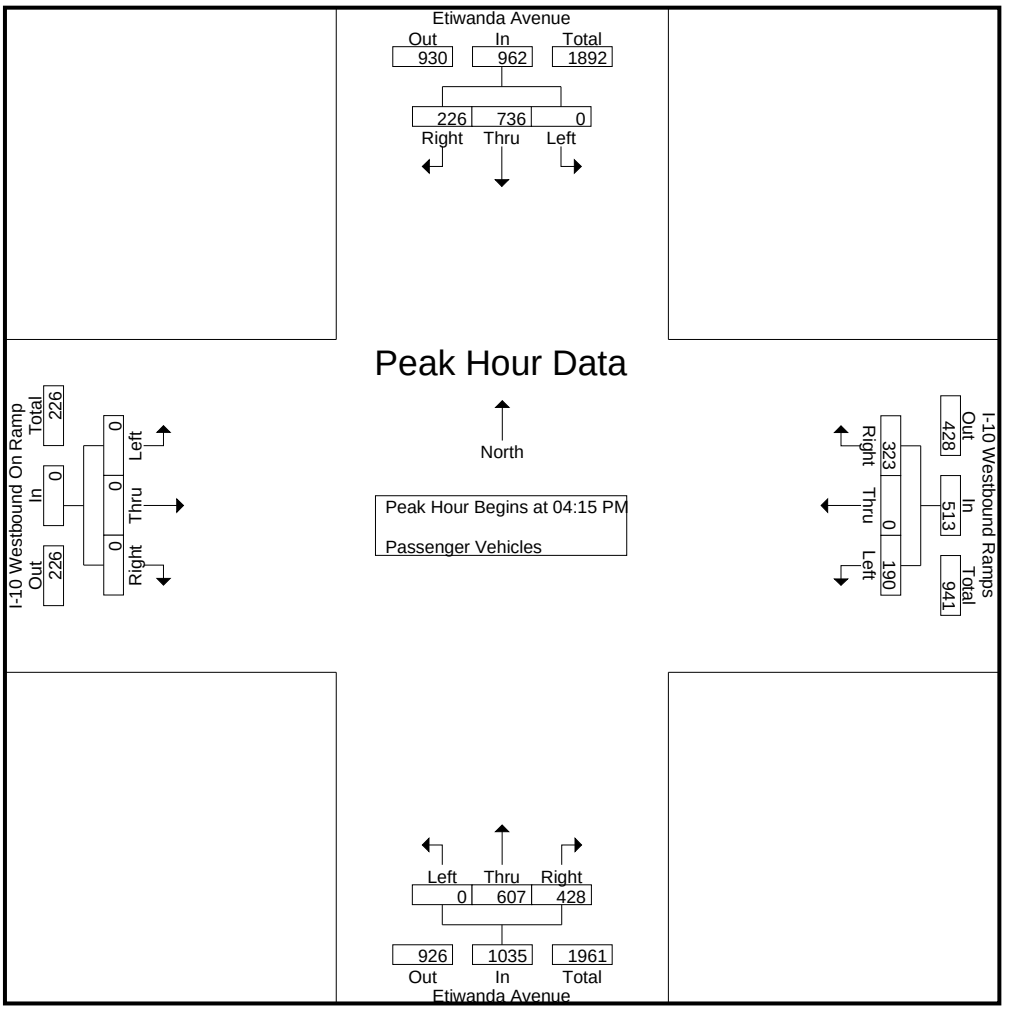
City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	157	55	212	37	0	70	107	0	146	87	233	0	0	0	0
+15 mins.	0	189	**79**	**268**	41	0	70	111	0	146	**123**	269	0	0	0	0
+30 mins.	0	**205**	53	258	**57**	0	90	147	0	**161**	101	262	0	0	0	0
+45 mins.	0	185	39	224	55	0	**93**	**148**	0	154	117	**271**	0	0	0	0
Total Volume	0	736	226	962	190	0	323	513	0	607	428	1035	0	0	0	0
% App. Total	0	76.5	23.5		37	0	63		0	58.6	41.4		0	0	0	
PHF	.000	.898	.715	.897	.833	.000	.868	.867	.000	.943	.870	.955	.000	.000	.000	.000

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	10	4	14	4	0	2	6	0	7	4	11	0	0	0	0	31
04:15 PM	0	6	3	9	5	0	2	7	0	6	4	10	0	0	0	0	26
04:30 PM	0	7	7	14	5	0	1	6	0	9	4	13	0	0	0	0	33
04:45 PM	0	10	3	13	5	0	3	8	0	1	4	5	0	0	0	0	26
Total	0	33	17	50	19	0	8	27	0	23	16	39	0	0	0	0	116
05:00 PM	0	9	1	10	4	0	3	7	0	3	4	7	0	0	0	0	24
05:15 PM	0	8	2	10	3	0	3	6	0	2	2	4	0	0	0	0	20
05:30 PM	0	1	0	1	2	0	1	3	0	1	3	4	0	0	0	0	8
05:45 PM	0	3	2	5	0	0	1	1	0	4	0	4	0	0	0	0	10
Total	0	21	5	26	9	0	8	17	0	10	9	19	0	0	0	0	62
Grand Total	0	54	22	76	28	0	16	44	0	33	25	58	0	0	0	0	178
Apprch %	0	71.1	28.9		63.6	0	36.4		0	56.9	43.1		0	0	0		
Total %	0	30.3	12.4	42.7	15.7	0	9	24.7	0	18.5	14	32.6	0	0	0	0	

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	6	3	9	**5**	0	2	7	0	6	**4**	10	0	0	0	0	26
04:30 PM	0	7	**7**	**14**	5	0	1	6	0	**9**	4	**13**	0	0	0	0	**33**
04:45 PM	0	**10**	3	13	5	0	**3**	**8**	0	1	4	5	0	0	0	0	26
05:00 PM	0	9	1	10	4	0	3	7	0	3	4	7	0	0	0	0	24
Total Volume	0	32	14	46	19	0	9	28	0	19	16	35	0	0	0	0	109
% App. Total	0	69.6	30.4		67.9	0	32.1		0	54.3	45.7		0	0	0		
PHF	.000	.800	.500	.821	.950	.000	.750	.875	.000	.528	1.00	.673	.000	.000	.000	.000	.826

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W PM
Site Code : 10821516
Start Date : 9/28/2021
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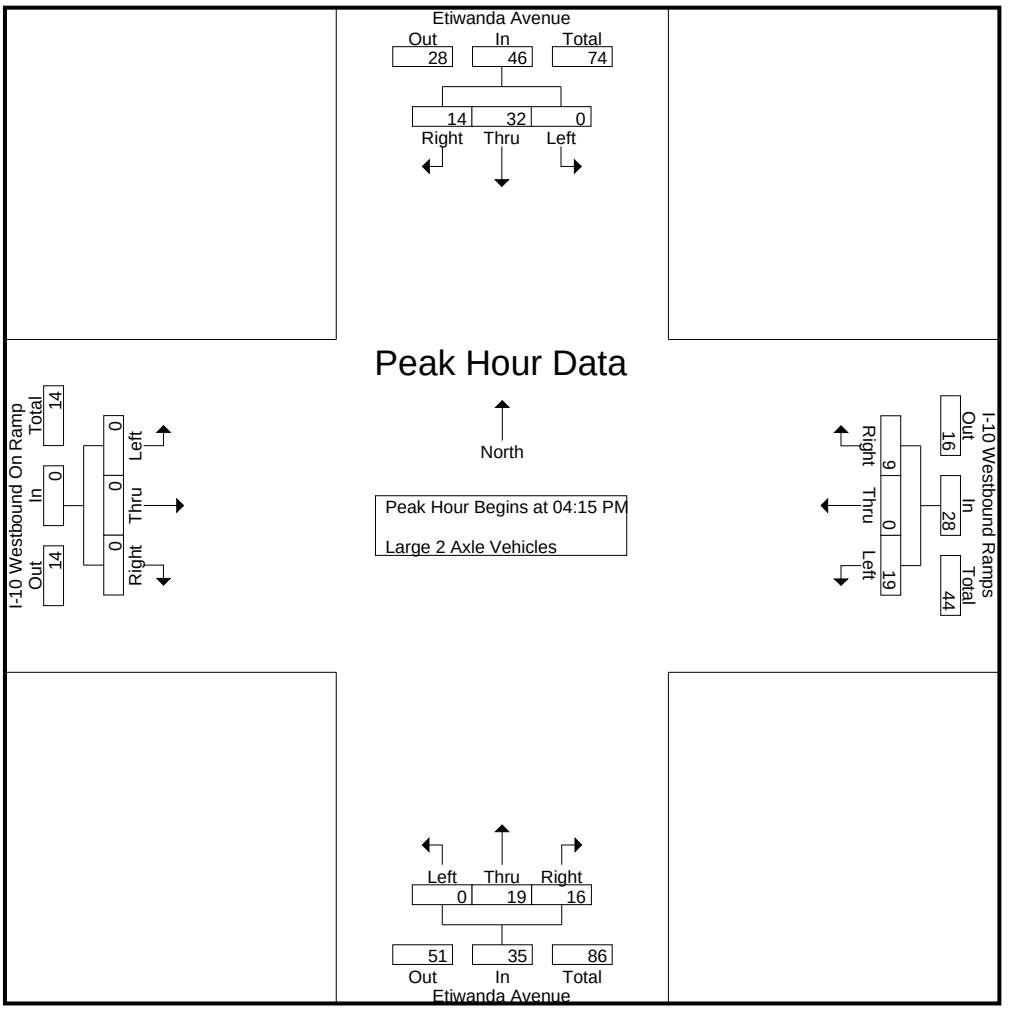

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	6	3	9	**5**	0	2	7	0	6	**4**	10	0	0	0	0
+15 mins.	0	7	**7**	**14**	5	0	1	6	0	**9**	4	**13**	0	0	0	0
+30 mins.	0	**10**	3	13	5	0	**3**	**8**	0	1	4	5	0	0	0	0
+45 mins.	0	9	1	10	4	0	3	7	0	3	4	7	0	0	0	0
Total Volume	0	32	14	46	19	0	9	28	0	19	16	35	0	0	0	0
% App. Total	0	69.6	30.4		67.9	0	32.1		0	54.3	45.7		0	0	0	
PHF	.000	.800	.500	.821	.950	.000	.750	.875	.000	.528	1.000	.673	.000	.000	.000	.000

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	4	3	7	3	0	4	7	0	25	2	27	0	0	0	0	41
04:15 PM	0	3	8	11	0	0	2	2	0	21	4	25	0	0	0	0	38
04:30 PM	0	4	6	10	4	0	0	4	0	10	2	12	0	0	0	0	26
04:45 PM	0	10	5	15	4	0	1	5	0	13	1	14	0	0	0	0	34
Total	0	21	22	43	11	0	7	18	0	69	9	78	0	0	0	0	139
05:00 PM	0	10	4	14	5	0	4	9	0	8	3	11	0	0	0	0	34
05:15 PM	0	14	4	18	3	0	0	3	0	4	2	6	0	0	0	0	27
05:30 PM	0	12	3	15	1	0	2	3	0	7	1	8	0	0	0	0	26
05:45 PM	0	11	1	12	6	0	4	10	0	10	1	11	0	0	0	0	33
Total	0	47	12	59	15	0	10	25	0	29	7	36	0	0	0	0	120
Grand Total	0	68	34	102	26	0	17	43	0	98	16	114	0	0	0	0	259
Apprch %	0	66.7	33.3		60.5	0	39.5		0	86	14		0	0	0		
Total %	0	26.3	13.1	39.4	10	0	6.6	16.6	0	37.8	6.2	44	0	0	0	0	

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	3	**8**	11	0	0	2	2	0	**21**	**4**	**25**	0	0	0	0	**38**
04:30 PM	0	4	6	10	4	0	0	4	0	10	2	12	0	0	0	0	26
04:45 PM	0	**10**	5	**15**	4	0	1	5	0	13	1	14	0	0	0	0	34
05:00 PM	0	10	4	14	**5**	0	**4**	**9**	0	8	3	11	0	0	0	0	34
Total Volume	0	27	23	50	13	0	7	20	0	52	10	62	0	0	0	0	132
% App. Total	0	54	46		65	0	35		0	83.9	16.1		0	0	0		
PHF	.000	.675	.719	.833	.650	.000	.438	.556	.000	.619	.625	.620	.000	.000	.000	.000	.868

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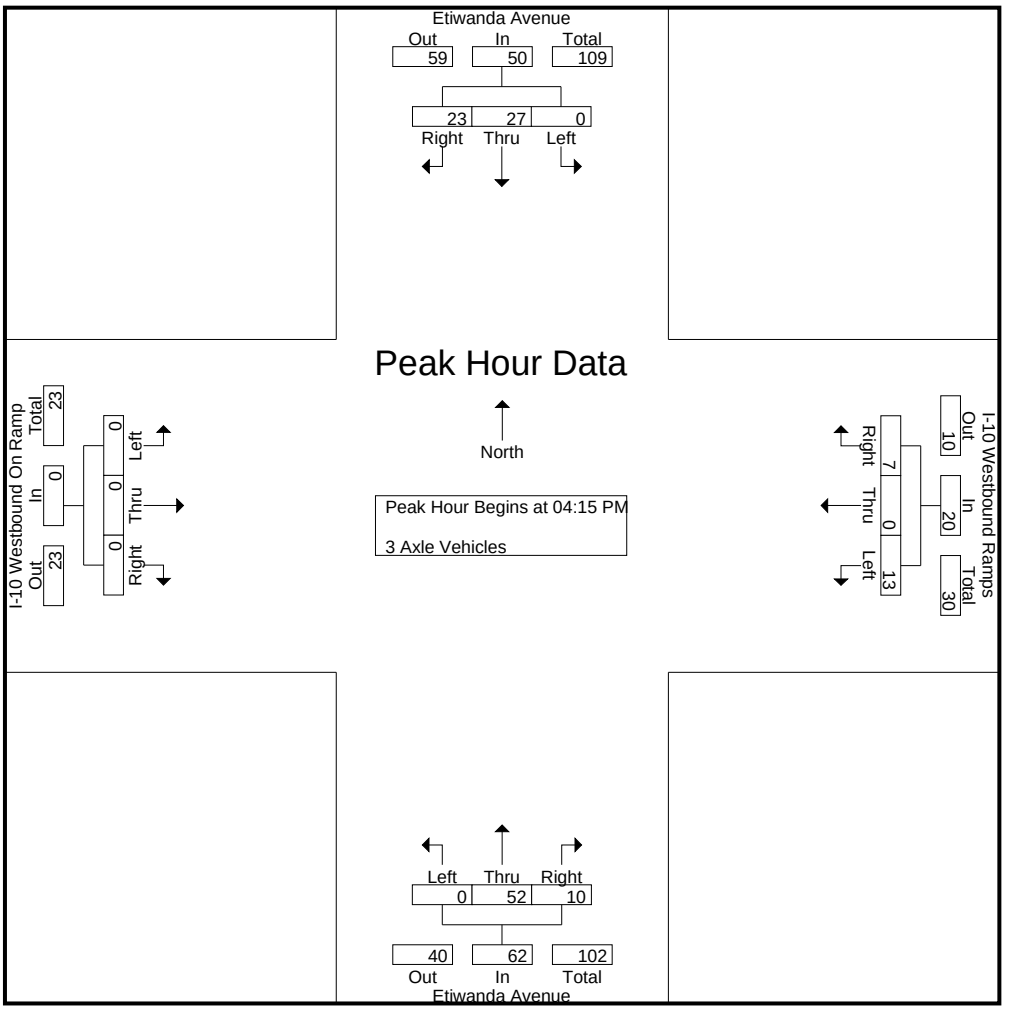
City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	3	**8**	11	0	0	2	2	0	**21**	**4**	**25**	0	0	0	0
+15 mins.	0	4	6	10	4	0	0	4	0	10	2	12	0	0	0	0
+30 mins.	0	**10**	5	**15**	4	0	1	5	0	13	1	14	0	0	0	0
+45 mins.	0	10	4	14	**5**	0	**4**	**9**	0	8	3	11	0	0	0	0
Total Volume	0	27	23	50	13	0	7	20	0	52	10	62	0	0	0	0
% App. Total	0	54	46		65	0	35		0	83.9	16.1		0	0	0	
PHF	.000	.675	.719	.833	.650	.000	.438	.556	.000	.619	.625	.620	.000	.000	.000	.000

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	13	10	23	11	0	7	18	0	18	15	33	0	0	0	0	74
04:15 PM	0	10	10	20	9	0	8	17	0	19	13	32	0	0	0	0	69
04:30 PM	0	18	13	31	8	0	6	14	0	20	11	31	0	0	0	0	76
04:45 PM	0	18	10	28	5	0	6	11	0	19	11	30	0	0	0	0	69
Total	0	59	43	102	33	0	27	60	0	76	50	126	0	0	0	0	288
05:00 PM	0	19	10	29	12	0	7	19	0	24	15	39	0	0	0	0	87
05:15 PM	0	18	5	23	15	0	4	19	0	19	13	32	0	0	0	0	74
05:30 PM	0	15	7	22	10	0	9	19	0	17	10	27	0	0	0	0	68
05:45 PM	0	15	3	18	15	0	4	19	0	24	13	37	0	0	0	0	74
Total	0	67	25	92	52	0	24	76	0	84	51	135	0	0	0	0	303
Grand Total	0	126	68	194	85	0	51	136	0	160	101	261	0	0	0	0	591
Apprch %	0	64.9	35.1		62.5	0	37.5		0	61.3	38.7		0	0	0		
Total %	0	21.3	11.5	32.8	14.4	0	8.6	23	0	27.1	17.1	44.2	0	0	0	0	

	Etiwanda Avenue Southbound				I-10 Westbound Ramps Westbound				Etiwanda Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	10	10	20	9	0	**8**	17	0	19	13	32	0	0	0	0	69
04:30 PM	0	18	**13**	**31**	8	0	6	14	0	20	11	31	0	0	0	0	76
04:45 PM	0	18	10	28	5	0	6	11	0	19	11	30	0	0	0	0	69
05:00 PM	0	**19**	10	29	**12**	0	7	**19**	0	**24**	**15**	**39**	0	0	0	0	**87**
Total Volume	0	65	43	108	34	0	27	61	0	82	50	132	0	0	0	0	301
% App. Total	0	60.2	39.8		55.7	0	44.3		0	62.1	37.9		0	0	0		
PHF	.000	.855	.827	.871	.708	.000	.844	.803	.000	.854	.833	.846	.000	.000	.000	.000	.865

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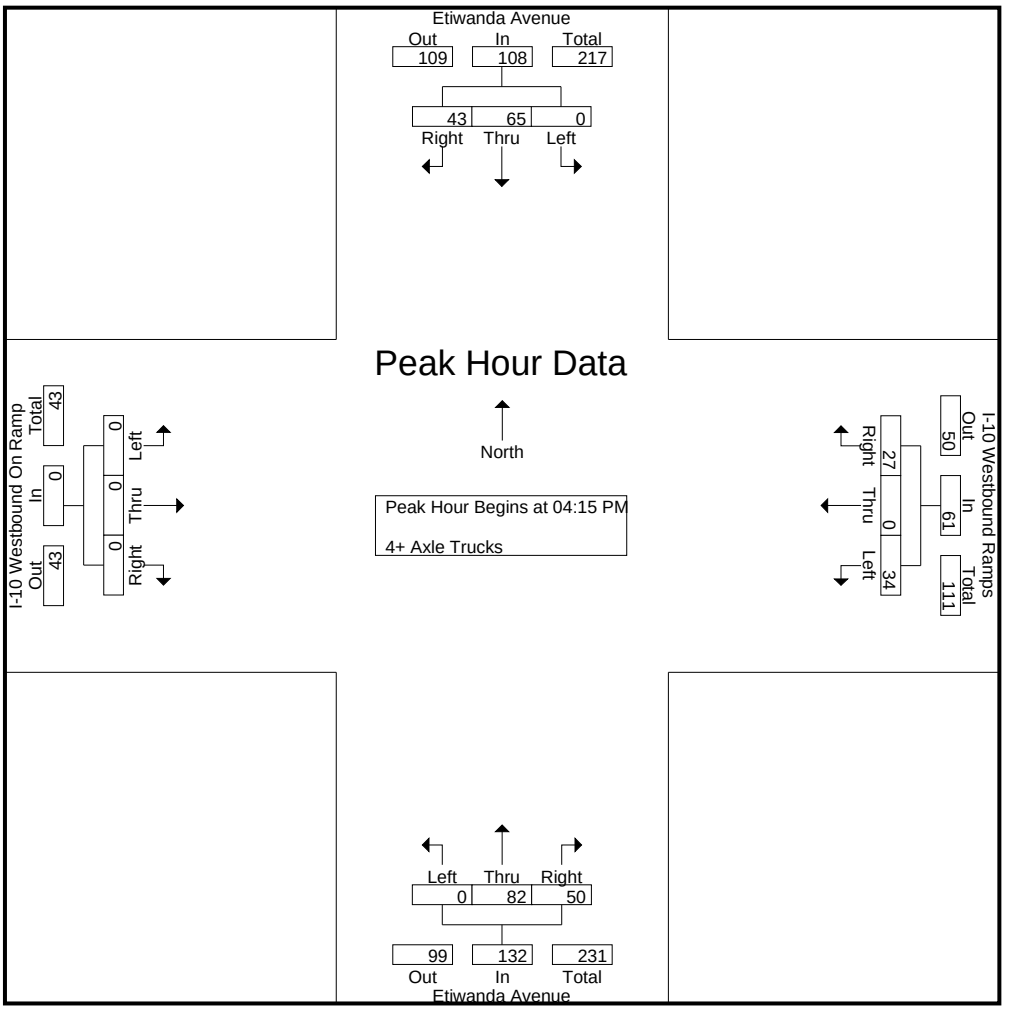
City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 07_FON_Etiwanda_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	10	10	20	9	0	**8**	17	0	19	13	32	0	0	0	0
+15 mins.	0	18	**13**	**31**	8	0	6	14	0	20	11	31	0	0	0	0
+30 mins.	0	18	10	28	5	0	6	11	0	19	11	30	0	0	0	0
+45 mins.	0	**19**	10	29	**12**	0	7	**19**	0	**24**	**15**	**39**	0	0	0	0
Total Volume	0	65	43	108	34	0	27	61	0	82	50	132	0	0	0	0
% App. Total	0	60.2	39.8		55.7	0	44.3		0	62.1	37.9		0	0	0	
PHF	.000	.855	.827	.871	.708	.000	.844	.803	.000	.854	.833	.846	.000	.000	.000	.000

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 05_FON_Cherry_10W AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	269	269	131	131	262	182	75	257	788
07:15 AM	0	301	301	148	126	274	193	103	296	871
07:30 AM	0	312	312	165	126	291	205	78	283	886
07:45 AM	0	379	379	170	152	322	214	101	315	1016
Total	0	1261	1261	614	535	1149	794	357	1151	3561
08:00 AM	0	354	354	128	126	254	230	86	316	924
08:15 AM	0	333	333	79	101	180	217	92	309	822
08:30 AM	0	294	294	89	113	202	248	81	329	825
08:45 AM	0	258	258	85	137	222	198	79	277	757
Total	0	1239	1239	381	477	858	893	338	1231	3328
Grand Total	0	2500	2500	995	1012	2007	1687	695	2382	6889
Apprch %	0	100		49.6	50.4		70.8	29.2		
Total %	0	36.3	36.3	14.4	14.7	29.1	24.5	10.1	34.6	
Passenger Vehicles	0	1906	1906	839	825	1664	1391	477	1868	5438
% Passenger Vehicles	0	76.2	76.2	84.3	81.5	82.9	82.5	68.6	78.4	78.9
Large 2 Axle Vehicles	0	152	152	30	46	76	79	16	95	323
% Large 2 Axle Vehicles	0	6.1	6.1	3	4.5	3.8	4.7	2.3	4	4.7
3 Axle Vehicles	0	139	139	34	54	88	88	30	118	345
% 3 Axle Vehicles	0	5.6	5.6	3.4	5.3	4.4	5.2	4.3	5	5
4+ Axle Trucks	0	303	303	92	87	179	129	172	301	783
% 4+ Axle Trucks	0	12.1	12.1	9.2	8.6	8.9	7.6	24.7	12.6	11.4

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	301	301	148	126	274	193	**103**	296	871
07:30 AM	0	312	312	165	126	291	205	78	283	886
07:45 AM	0	**379**	**379**	**170**	**152**	**322**	214	101	315	**1016**
08:00 AM	0	354	354	128	126	254	**230**	86	**316**	924
Total Volume	0	1346	1346	611	530	1141	842	368	1210	3697
% App. Total	0	100		53.5	46.5		69.6	30.4		
PHF	.000	.888	.888	.899	.872	.886	.915	.893	.957	.910

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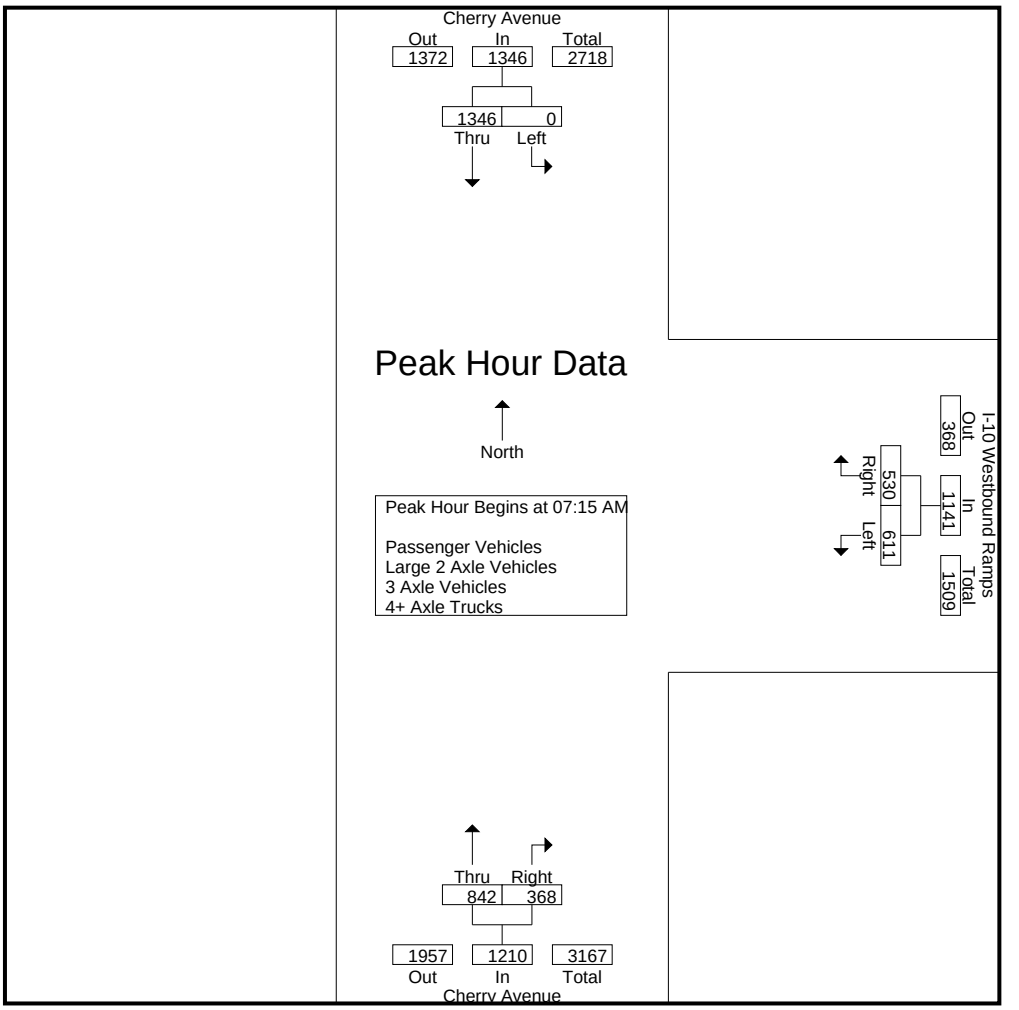
City of Fontana
N/S: Cherry Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 05_FON_Cherry_10W AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:00 AM			07:45 AM		
+0 mins.	0	312	312	131	131	262	214	**101**	315
+15 mins.	0	**379**	**379**	148	126	274	230	86	316
+30 mins.	0	354	354	165	126	291	217	92	309
+45 mins.	0	333	333	**170**	**152**	**322**	**248**	81	**329**
Total Volume	0	1378	1378	614	535	1149	909	360	1269
% App. Total	0	100		53.4	46.6		71.6	28.4	
PHF	.000	.909	.909	.903	.880	.892	.916	.891	.964

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 05_FON_Cherry_10W AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	217	217	115	105	220	151	53	204	641
07:15 AM	0	222	222	132	109	241	167	76	243	706
07:30 AM	0	248	248	152	109	261	173	55	228	737
07:45 AM	0	322	322	147	133	280	184	69	253	855
Total	0	1009	1009	546	456	1002	675	253	928	2939
08:00 AM	0	266	266	95	97	192	193	66	259	717
08:15 AM	0	256	256	61	84	145	177	57	234	635
08:30 AM	0	204	204	70	84	154	202	56	258	616
08:45 AM	0	171	171	67	104	171	144	45	189	531
Total	0	897	897	293	369	662	716	224	940	2499
Grand Total	0	1906	1906	839	825	1664	1391	477	1868	5438
Apprch %	0	100		50.4	49.6		74.5	25.5		
Total %	0	35	35	15.4	15.2	30.6	25.6	8.8	34.4	

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	222	222	132	109	241	167	**76**	243	706
07:30 AM	0	248	248	**152**	109	261	173	55	228	737
07:45 AM	0	**322**	**322**	147	**133**	**280**	184	69	253	**855**
08:00 AM	0	266	266	95	97	192	**193**	66	**259**	717
Total Volume	0	1058	1058	526	448	974	717	266	983	3015
% App. Total	0	100		54	46		72.9	27.1		
PHF	.000	.821	.821	.865	.842	.870	.929	.875	.949	.882

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 05_FON_Cherry_10W AM
Site Code : 10821516
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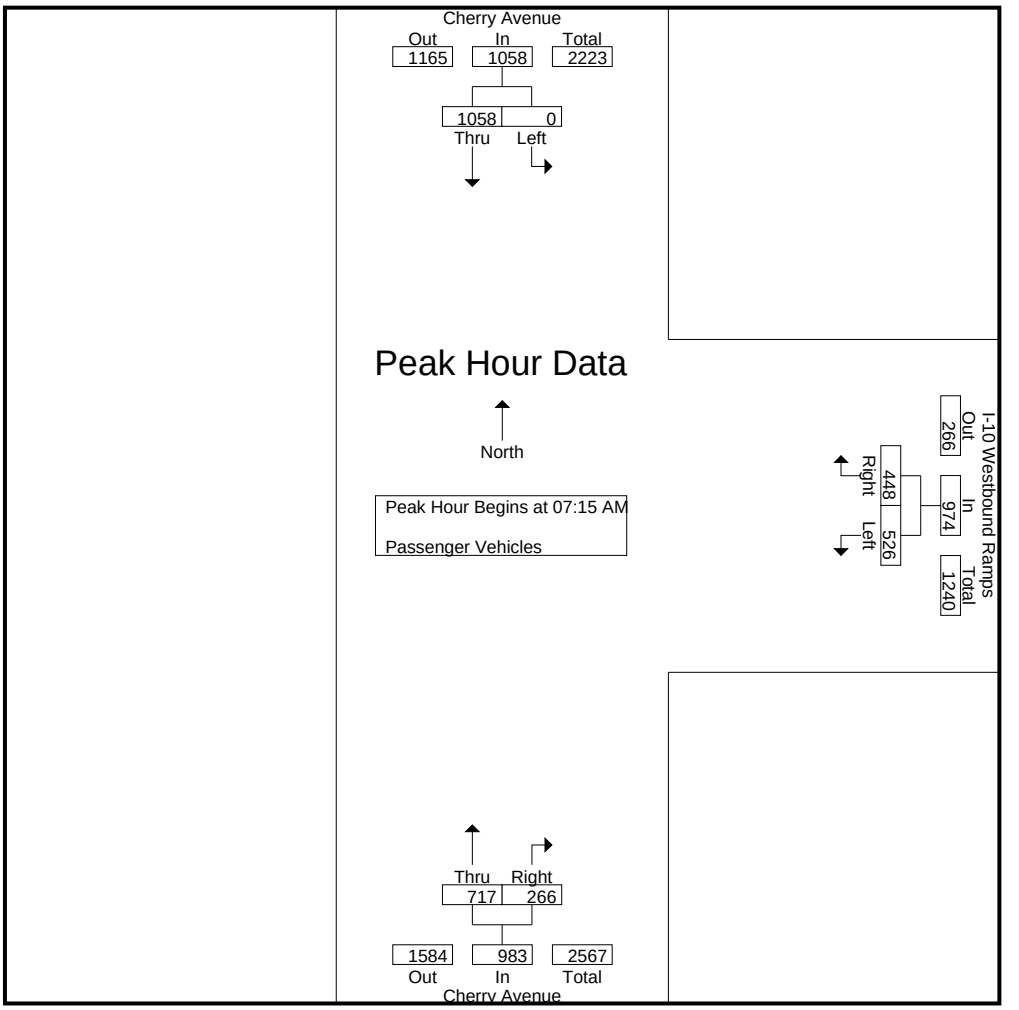

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	222	222	132	109	241	167	**76**	243
+15 mins.	0	248	248	**152**	109	261	173	55	228
+30 mins.	0	**322**	**322**	147	**133**	**280**	184	69	253
+45 mins.	0	266	266	95	97	192	**193**	66	**259**
Total Volume	0	1058	1058	526	448	974	717	266	983
% App. Total	0	100		54	46		72.9	27.1	
PHF	.000	.821	.821	.865	.842	.870	.929	.875	.949

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City of Fontana
N/S: Cherry Avenue
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Weather: Clear

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Groups Printed- Large 2 Axle Vehicles

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	9	9	1	4	5	9	3	12	26
07:15 AM	0	19	19	1	2	3	8	5	13	35
07:30 AM	0	16	16	4	5	9	11	0	11	36
07:45 AM	0	14	14	2	4	6	7	2	9	29
Total	0	58	58	8	15	23	35	10	45	126
08:00 AM	0	23	23	6	11	17	10	2	12	52
08:15 AM	0	23	23	7	4	11	11	1	12	46
08:30 AM	0	23	23	5	8	13	9	0	9	45
08:45 AM	0	25	25	4	8	12	14	3	17	54
Total	0	94	94	22	31	53	44	6	50	197
Grand Total	0	152	152	30	46	76	79	16	95	323
Apprch %	0	100		39.5	60.5		83.2	16.8		
Total %	0	47.1	47.1	9.3	14.2	23.5	24.5	5	29.4	

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	19	19	1	2	3	8	**5**	**13**	35
07:30 AM	0	16	16	4	5	9	**11**	0	11	36
07:45 AM	0	14	14	2	4	6	7	2	9	29
08:00 AM	0	**23**	**23**	**6**	**11**	**17**	10	2	12	**52**
Total Volume	0	72	72	13	22	35	36	9	45	152
% App. Total	0	100		37.1	62.9		80	20		
PHF	.000	.783	.783	.542	.500	.515	.818	.450	.865	.731

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City of Fontana
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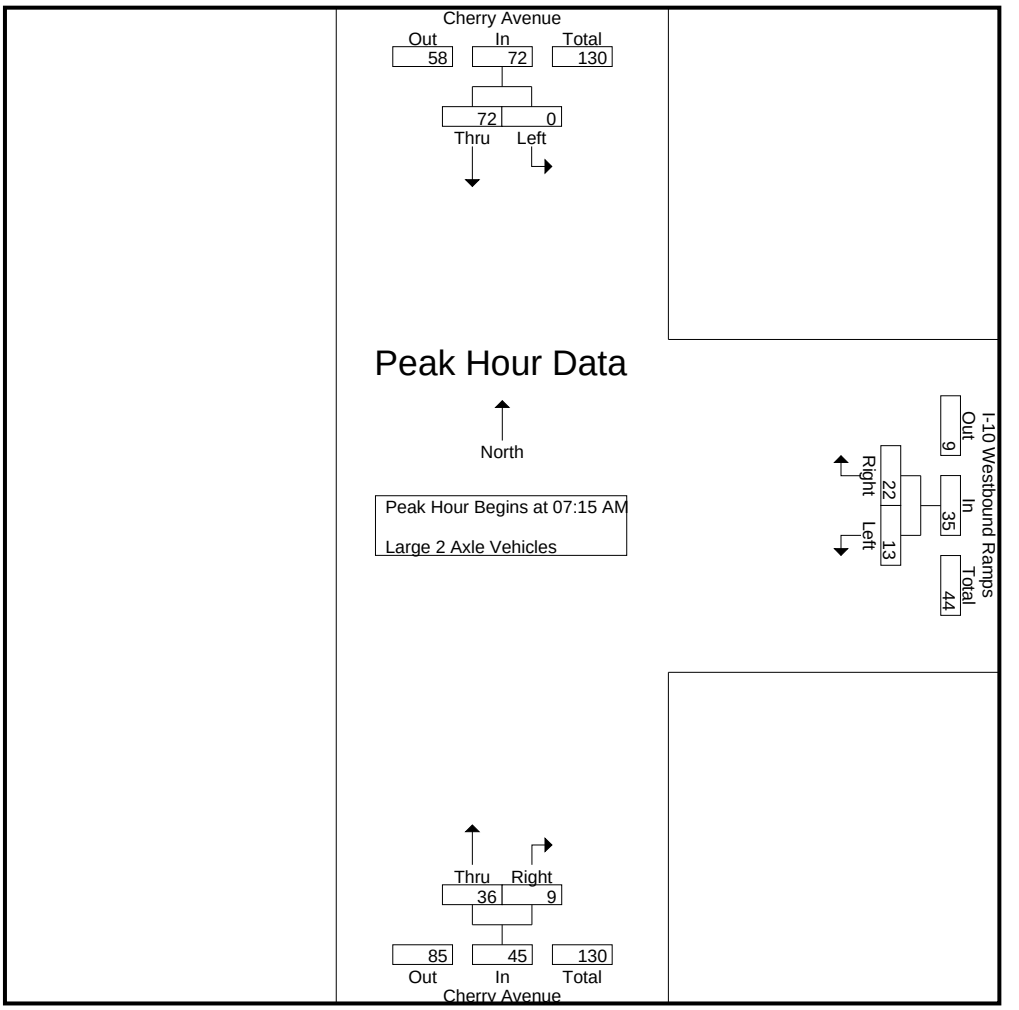

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	19	19	1	2	3	8	**5**	**13**
+15 mins.	0	16	16	4	5	9	**11**	0	11
+30 mins.	0	14	14	2	4	6	7	2	9
+45 mins.	0	**23**	**23**	**6**	**11**	**17**	10	2	12
Total Volume	0	72	72	13	22	35	36	9	45
% App. Total	0	100		37.1	62.9		80	20	
PHF	.000	.783	.783	.542	.500	.515	.818	.450	.865

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 05_FON_Cherry_10W AM
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Groups Printed- 3 Axle Vehicles

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	9	9	5	6	11	7	2	9	29
07:15 AM	0	27	27	7	6	13	12	4	16	56
07:30 AM	0	13	13	2	5	7	8	2	10	30
07:45 AM	0	10	10	7	6	13	11	7	18	41
Total	0	59	59	21	23	44	38	15	53	156
08:00 AM	0	16	16	8	7	15	14	3	17	48
08:15 AM	0	18	18	1	6	7	12	6	18	43
08:30 AM	0	26	26	3	9	12	12	2	14	52
08:45 AM	0	20	20	1	9	10	12	4	16	46
Total	0	80	80	13	31	44	50	15	65	189
Grand Total	0	139	139	34	54	88	88	30	118	345
Apprch %	0	100		38.6	61.4		74.6	25.4		
Total %	0	40.3	40.3	9.9	15.7	25.5	25.5	8.7	34.2	

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	**27**	**27**	7	6	13	12	4	16	**56**
07:30 AM	0	13	13	2	5	7	8	2	10	30
07:45 AM	0	10	10	7	6	13	11	**7**	**18**	41
08:00 AM	0	16	16	**8**	**7**	**15**	**14**	3	17	48
Total Volume	0	66	66	24	24	48	45	16	61	175
% App. Total	0	100		50	50		73.8	26.2		
PHF	.000	.611	.611	.750	.857	.800	.804	.571	.847	.781

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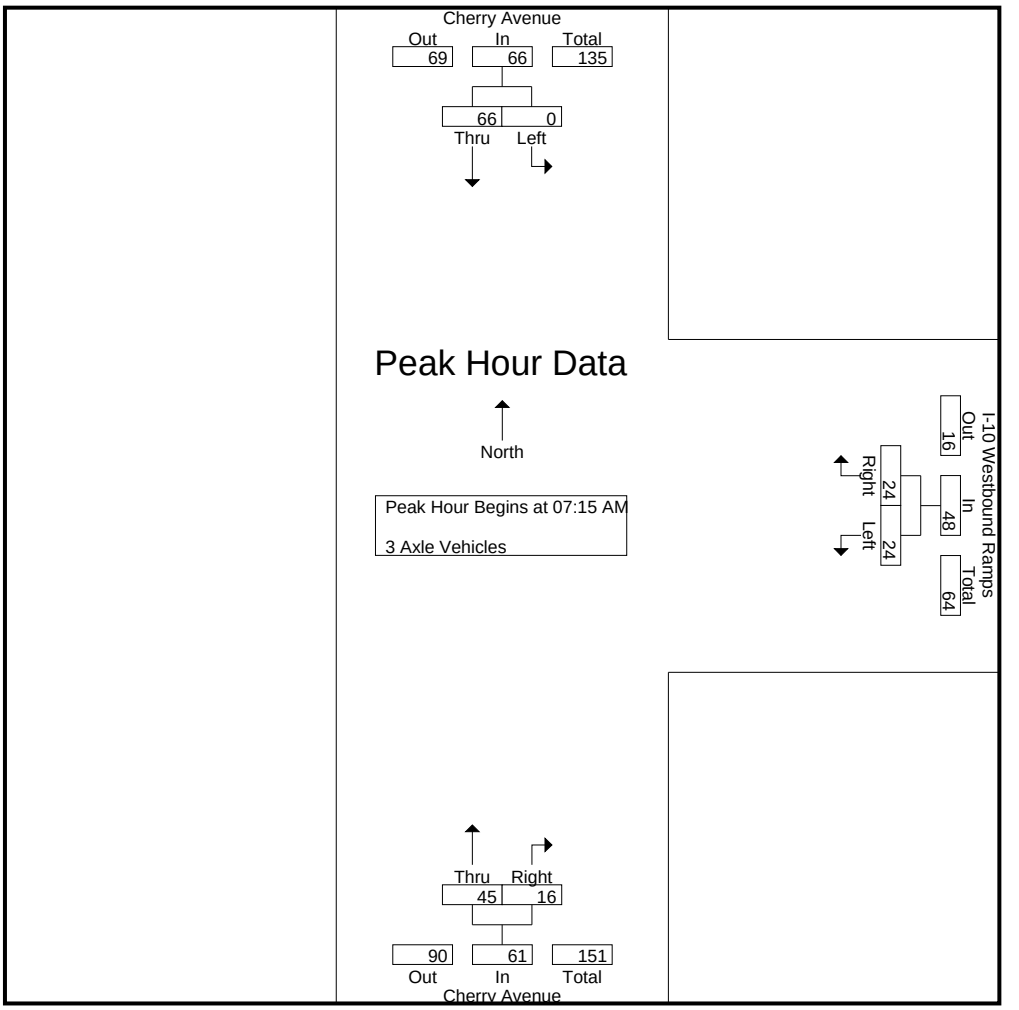

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	**27**	**27**	7	6	13	12	4	16
+15 mins.	0	13	13	2	5	7	8	2	10
+30 mins.	0	10	10	7	6	13	11	**7**	**18**
+45 mins.	0	16	16	**8**	**7**	**15**	**14**	3	17
Total Volume	0	66	66	24	24	48	45	16	61
% App. Total	0	100		50	50		73.8	26.2	
PHF	.000	.611	.611	.750	.857	.800	.804	.571	.847

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City of Fontana
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Weather: Clear

File Name : 05_FON_Cherry_10W AM
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Groups Printed- 4+ Axle Trucks

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	34	34	10	16	26	15	17	32	92
07:15 AM	0	33	33	8	9	17	6	18	24	74
07:30 AM	0	35	35	7	7	14	13	21	34	83
07:45 AM	0	33	33	14	9	23	12	23	35	91
Total	0	135	135	39	41	80	46	79	125	340
08:00 AM	0	49	49	19	11	30	13	15	28	107
08:15 AM	0	36	36	10	7	17	17	28	45	98
08:30 AM	0	41	41	11	12	23	25	23	48	112
08:45 AM	0	42	42	13	16	29	28	27	55	126
Total	0	168	168	53	46	99	83	93	176	443
Grand Total	0	303	303	92	87	179	129	172	301	783
Apprch %	0	100		51.4	48.6		42.9	57.1		
Total %	0	38.7	38.7	11.7	11.1	22.9	16.5	22	38.4	

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	33	33	8	9	17	6	18	24	74
07:30 AM	0	35	35	7	7	14	**13**	21	34	83
07:45 AM	0	33	33	14	9	23	12	**23**	**35**	91
08:00 AM	0	**49**	**49**	**19**	**11**	**30**	13	15	28	**107**
Total Volume	0	150	150	48	36	84	44	77	121	355
% App. Total	0	100		57.1	42.9		36.4	63.6		
PHF	.000	.765	.765	.632	.818	.700	.846	.837	.864	.829

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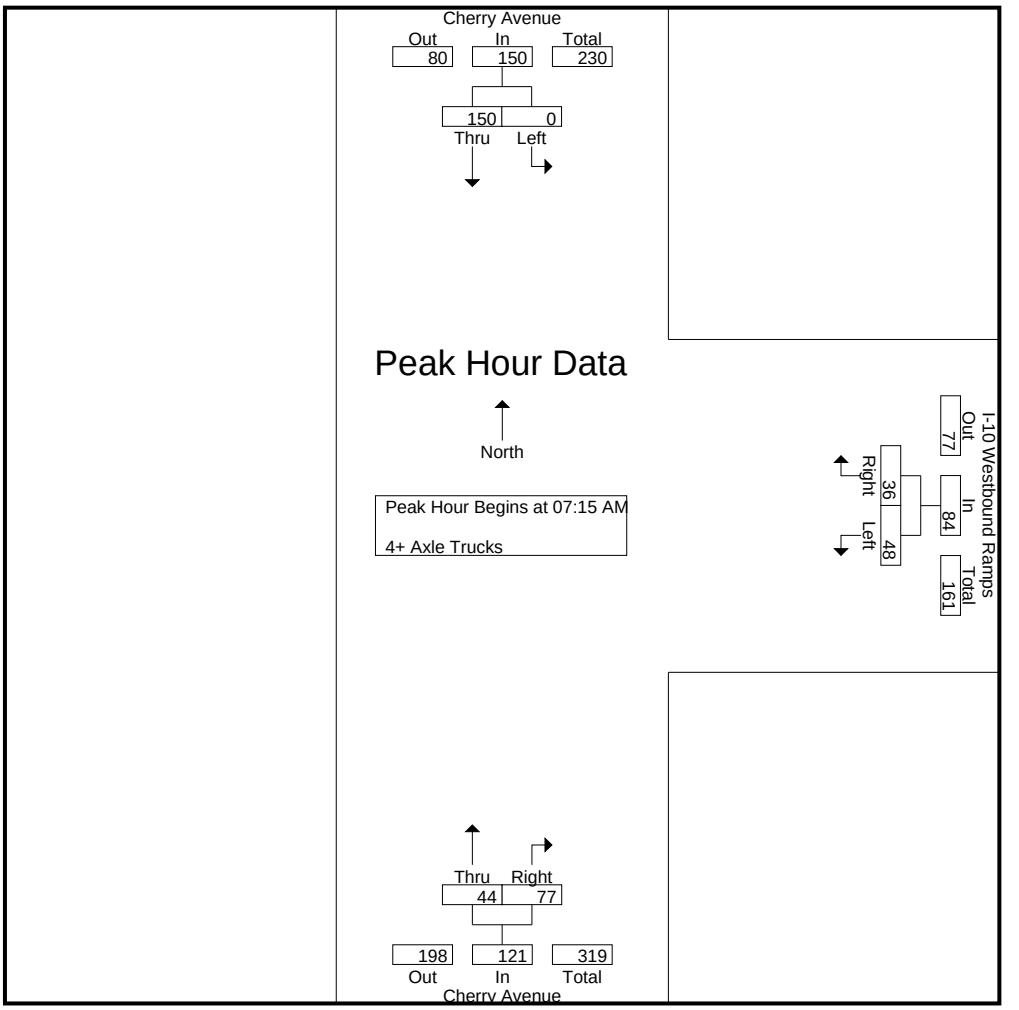

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	33	33	8	9	17	6	18	24
+15 mins.	0	35	35	7	7	14	**13**	21	34
+30 mins.	0	33	33	14	9	23	12	**23**	**35**
+45 mins.	0	**49**	**49**	**19**	**11**	**30**	13	15	28
Total Volume	0	150	150	48	36	84	44	77	121
% App. Total	0	100		57.1	42.9		36.4	63.6	
PHF	.000	.765	.765	.632	.818	.700	.846	.837	.864

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City of Fontana
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Weather: Clear

File Name : 05_FON_Cherry_10W PM
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	371	371	97	92	189	283	60	343	903
04:15 PM	0	353	353	99	92	191	286	68	354	898
04:30 PM	0	414	414	105	98	203	294	73	367	984
04:45 PM	0	370	370	97	108	205	295	82	377	952
Total	0	1508	1508	398	390	788	1158	283	1441	3737
05:00 PM	0	345	345	103	85	188	287	78	365	898
05:15 PM	0	315	315	84	114	198	281	88	369	882
05:30 PM	0	334	334	98	101	199	283	76	359	892
05:45 PM	0	294	294	108	98	206	249	57	306	806
Total	0	1288	1288	393	398	791	1100	299	1399	3478
Grand Total	0	2796	2796	791	788	1579	2258	582	2840	7215
Apprch %	0	100		50.1	49.9		79.5	20.5		
Total %	0	38.8	38.8	11	10.9	21.9	31.3	8.1	39.4	
Passenger Vehicles	0	2374	2374	636	641	1277	2020	463	2483	6134
% Passenger Vehicles	0	84.9	84.9	80.4	81.3	80.9	89.5	79.6	87.4	85
Large 2 Axle Vehicles	0	86	86	26	27	53	43	12	55	194
% Large 2 Axle Vehicles	0	3.1	3.1	3.3	3.4	3.4	1.9	2.1	1.9	2.7
3 Axle Vehicles	0	135	135	35	39	74	71	23	94	303
% 3 Axle Vehicles	0	4.8	4.8	4.4	4.9	4.7	3.1	4	3.3	4.2
4+ Axle Trucks	0	201	201	94	81	175	124	84	208	584
% 4+ Axle Trucks	0	7.2	7.2	11.9	10.3	11.1	5.5	14.4	7.3	8.1

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	371	371	97	92	189	283	60	343	903
04:15 PM	0	353	353	99	92	191	286	68	354	898
04:30 PM	0	**414**	**414**	**105**	98	203	294	73	367	**984**
04:45 PM	0	370	370	97	**108**	**205**	**295**	**82**	**377**	952
Total Volume	0	1508	1508	398	390	788	1158	283	1441	3737
% App. Total	0	100		50.5	49.5		80.4	19.6		
PHF	.000	.911	.911	.948	.903	.961	.981	.863	.956	.949

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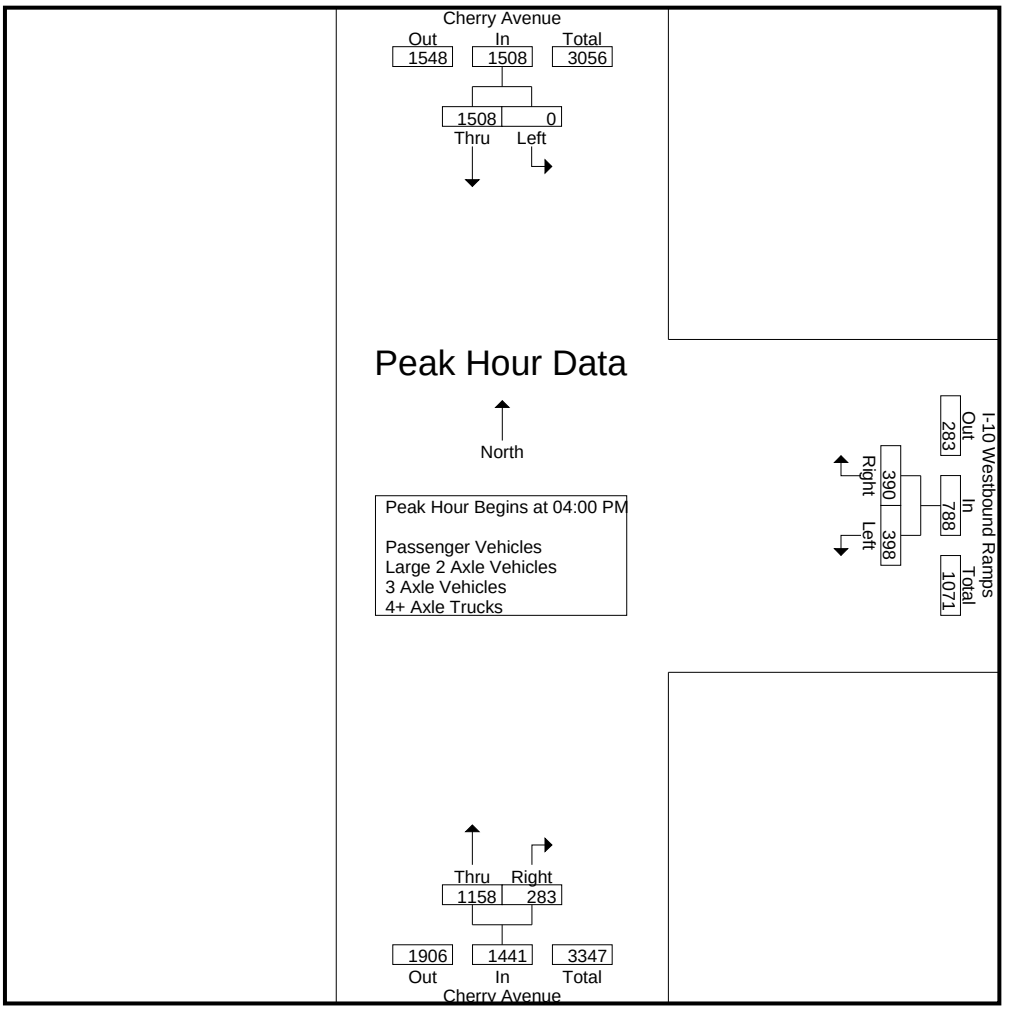

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:30 PM			04:30 PM		
+0 mins.	0	371	371	**105**	98	203	294	73	367
+15 mins.	0	353	353	97	108	**205**	**295**	82	**377**
+30 mins.	0	**414**	**414**	103	85	188	287	78	365
+45 mins.	0	370	370	84	**114**	198	281	**88**	369
Total Volume	0	1508	1508	389	405	794	1157	321	1478
% App. Total	0	100		49	51		78.3	21.7	
PHF	.000	.911	.911	.926	.888	.968	.981	.912	.980

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Groups Printed- Passenger Vehicles

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	306	306	68	80	148	252	41	293	747
04:15 PM	0	298	298	85	66	151	264	55	319	768
04:30 PM	0	350	350	80	78	158	253	59	312	820
04:45 PM	0	329	329	89	98	187	258	65	323	839
Total	0	1283	1283	322	322	644	1027	220	1247	3174
05:00 PM	0	296	296	76	65	141	254	63	317	754
05:15 PM	0	261	261	61	95	156	260	70	330	747
05:30 PM	0	279	279	84	86	170	259	62	321	770
05:45 PM	0	255	255	93	73	166	220	48	268	689
Total	0	1091	1091	314	319	633	993	243	1236	2960
Grand Total	0	2374	2374	636	641	1277	2020	463	2483	6134
Apprch %	0	100		49.8	50.2		81.4	18.6		
Total %	0	38.7	38.7	10.4	10.4	20.8	32.9	7.5	40.5	

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	306	306	68	80	148	252	41	293	747
04:15 PM	0	298	298	85	66	151	**264**	55	319	768
04:30 PM	0	**350**	**350**	80	78	158	253	59	312	820
04:45 PM	0	329	329	**89**	**98**	**187**	258	**65**	**323**	**839**
Total Volume	0	1283	1283	322	322	644	1027	220	1247	3174
% App. Total	0	100		50	50		82.4	17.6		
PHF	.000	.916	.916	.904	.821	.861	.973	.846	.965	.946

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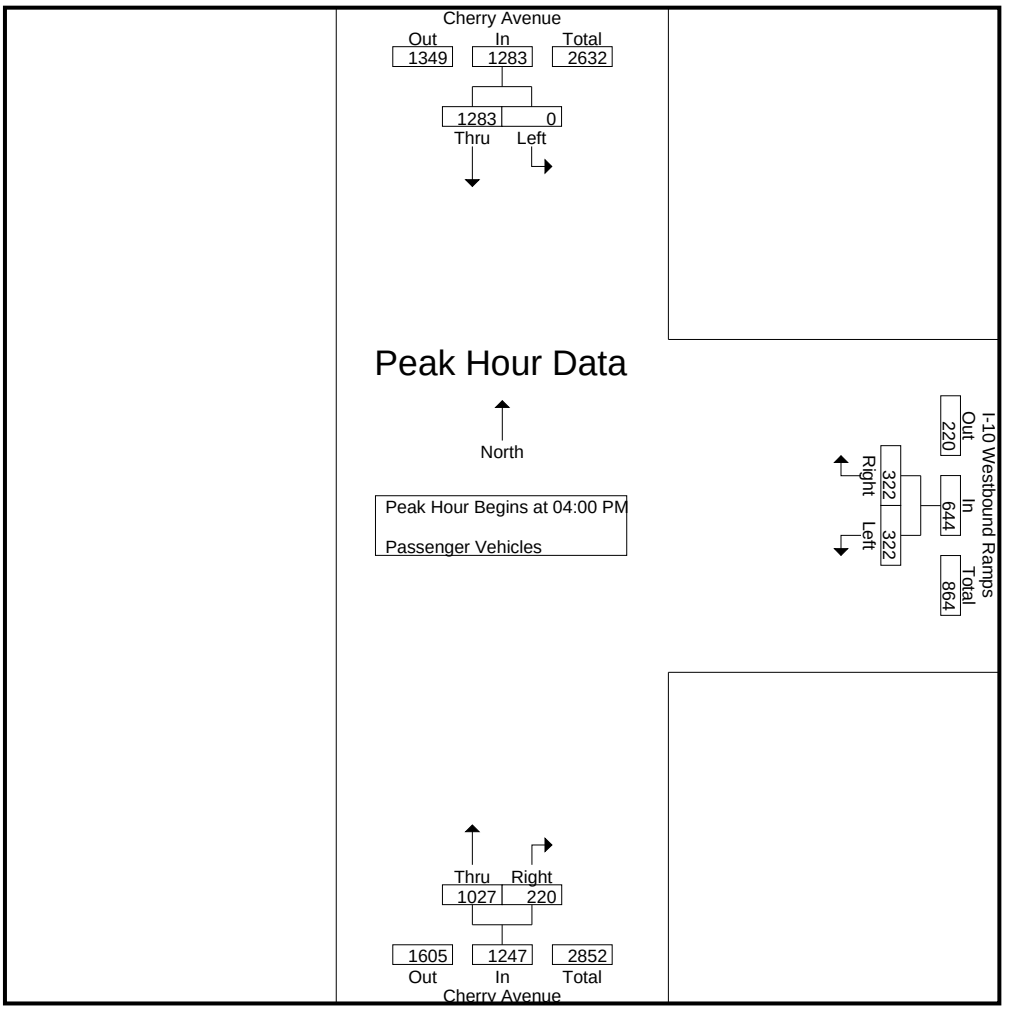

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	306	306	68	80	148	252	41	293
+15 mins.	0	298	298	85	66	151	**264**	55	319
+30 mins.	0	**350**	**350**	80	78	158	253	59	312
+45 mins.	0	329	329	**89**	**98**	**187**	258	**65**	**323**
Total Volume	0	1283	1283	322	322	644	1027	220	1247
% App. Total	0	100		50	50		82.4	17.6	
PHF	.000	.916	.916	.904	.821	.861	.973	.846	.965

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 05_FON_Cherry_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	13	13	4	1	5	7	3	10	28
04:15 PM	0	17	17	3	6	9	3	1	4	30
04:30 PM	0	9	9	3	2	5	8	0	8	22
04:45 PM	0	14	14	2	2	4	8	2	10	28
Total	0	53	53	12	11	23	26	6	32	108
05:00 PM	0	9	9	7	5	12	4	2	6	27
05:15 PM	0	9	9	3	6	9	4	2	6	24
05:30 PM	0	11	11	2	2	4	6	1	7	22
05:45 PM	0	4	4	2	3	5	3	1	4	13
Total	0	33	33	14	16	30	17	6	23	86
Grand Total	0	86	86	26	27	53	43	12	55	194
Apprch %	0	100		49.1	50.9		78.2	21.8		
Total %	0	44.3	44.3	13.4	13.9	27.3	22.2	6.2	28.4	

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	13	13	**4**	1	5	7	**3**	**10**	28
04:15 PM	0	**17**	**17**	3	**6**	**9**	3	1	4	**30**
04:30 PM	0	9	9	3	2	5	**8**	0	8	22
04:45 PM	0	14	14	2	2	4	8	2	10	28
Total Volume	0	53	53	12	11	23	26	6	32	108
% App. Total	0	100		52.2	47.8		81.2	18.8		
PHF	.000	.779	.779	.750	.458	.639	.813	.500	.800	.900

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City of Fontana
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File Name : 05_FON_Cherry_10W PM
Site Code : 10821516
Start Date : 9/28/2021
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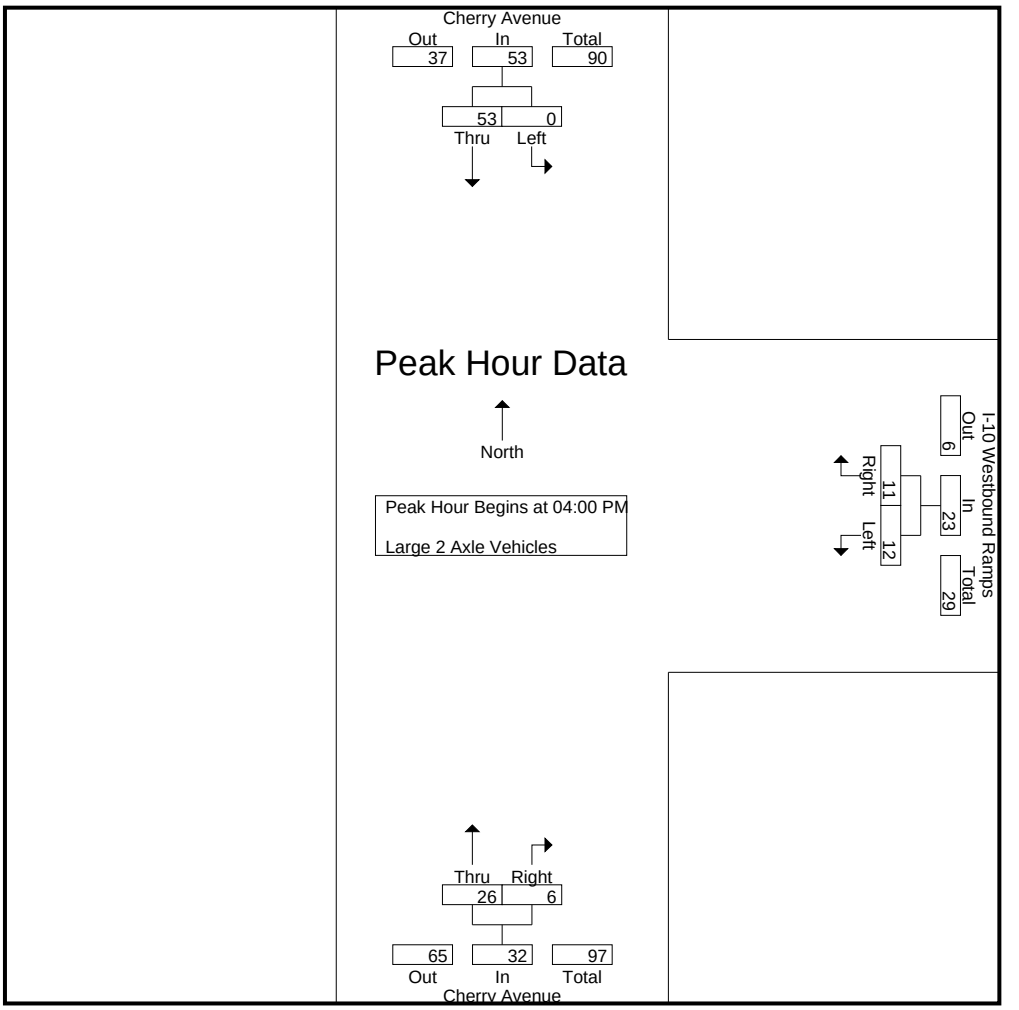

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	13	13	**4**	1	5	7	**3**	**10**
+15 mins.	0	**17**	**17**	3	**6**	**9**	3	1	4
+30 mins.	0	9	9	3	2	5	**8**	0	8
+45 mins.	0	14	14	2	2	4	8	2	10
Total Volume	0	53	53	12	11	23	26	6	32
% App. Total	0	100		52.2	47.8		81.2	18.8	
PHF	.000	.779	.779	.750	.458	.639	.813	.500	.800

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 05_FON_Cherry_10W PM
Site Code : 10821516
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Groups Printed- 3 Axle Vehicles

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	21	21	7	1	8	9	4	13	42
04:15 PM	0	21	21	3	7	10	11	3	14	45
04:30 PM	0	22	22	4	7	11	13	0	13	46
04:45 PM	0	10	10	0	3	3	9	4	13	26
Total	0	74	74	14	18	32	42	11	53	159
05:00 PM	0	14	14	5	7	12	9	3	12	38
05:15 PM	0	18	18	9	3	12	5	3	8	38
05:30 PM	0	19	19	3	4	7	6	3	9	35
05:45 PM	0	10	10	4	7	11	9	3	12	33
Total	0	61	61	21	21	42	29	12	41	144
Grand Total	0	135	135	35	39	74	71	23	94	303
Apprch %	0	100		47.3	52.7		75.5	24.5		
Total %	0	44.6	44.6	11.6	12.9	24.4	23.4	7.6	31	

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	21	21	**7**	1	8	9	**4**	13	42
04:15 PM	0	21	21	3	**7**	10	11	3	**14**	45
04:30 PM	0	**22**	**22**	4	7	**11**	**13**	0	13	**46**
04:45 PM	0	10	10	0	3	3	9	4	13	26
Total Volume	0	74	74	14	18	32	42	11	53	159
% App. Total	0	100		43.8	56.2		79.2	20.8		
PHF	.000	.841	.841	.500	.643	.727	.808	.688	.946	.864

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City of Fontana
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File Name : 05_FON_Cherry_10W PM
Site Code : 10821516
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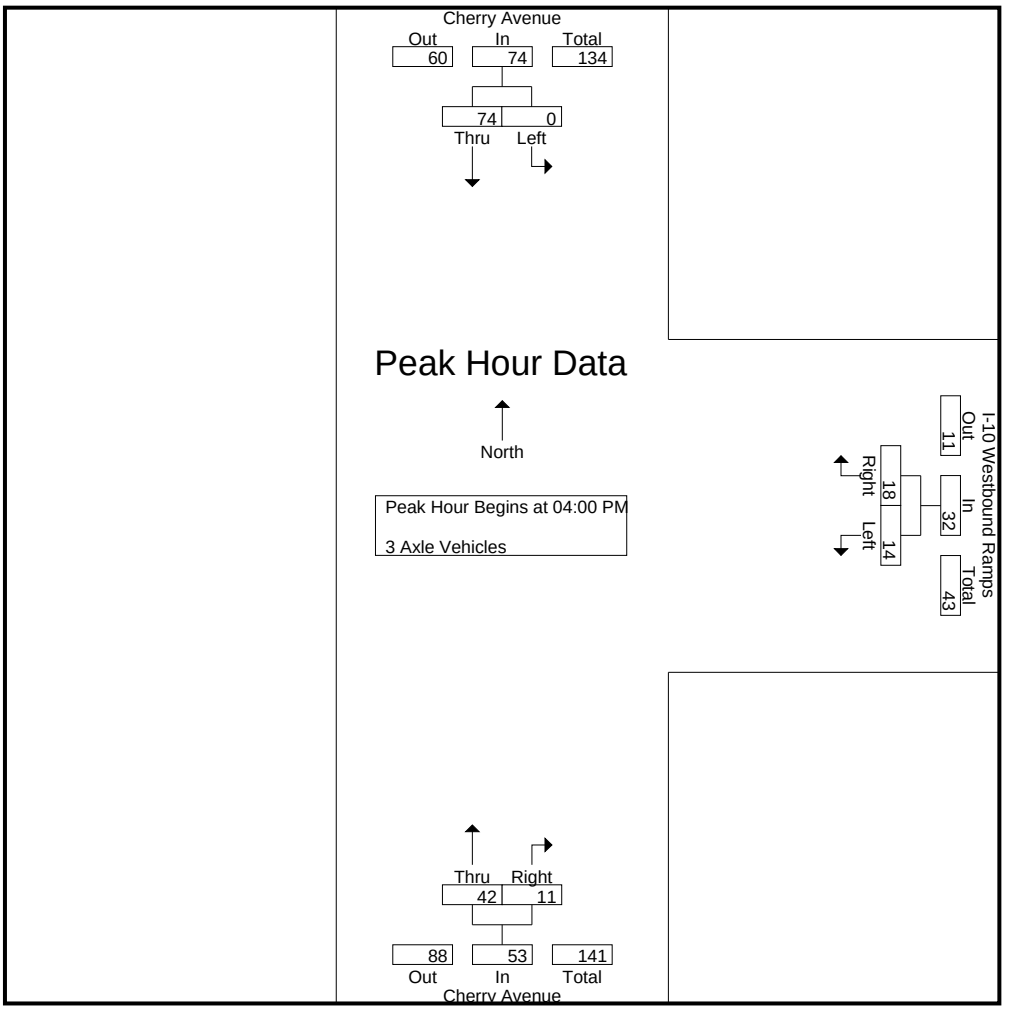

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	21	21	**7**	1	8	9	**4**	13
+15 mins.	0	21	21	3	**7**	10	11	3	**14**
+30 mins.	0	**22**	**22**	4	7	**11**	**13**	0	13
+45 mins.	0	10	10	0	3	3	9	4	13
Total Volume	0	74	74	14	18	32	42	11	53
% App. Total	0	100		43.8	56.2		79.2	20.8	
PHF	.000	.841	.841	.500	.643	.727	.808	.688	.946

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 05_FON_Cherry_10W PM
Site Code : 10821516
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Groups Printed- 4+ Axle Trucks

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	31	31	18	10	28	15	12	27	86
04:15 PM	0	17	17	8	13	21	8	9	17	55
04:30 PM	0	33	33	18	11	29	20	14	34	96
04:45 PM	0	17	17	6	5	11	20	11	31	59
Total	0	98	98	50	39	89	63	46	109	296
05:00 PM	0	26	26	15	8	23	20	10	30	79
05:15 PM	0	27	27	11	10	21	12	13	25	73
05:30 PM	0	25	25	9	9	18	12	10	22	65
05:45 PM	0	25	25	9	15	24	17	5	22	71
Total	0	103	103	44	42	86	61	38	99	288
Grand Total	0	201	201	94	81	175	124	84	208	584
Apprch %	0	100		53.7	46.3		59.6	40.4		
Total %	0	34.4	34.4	16.1	13.9	30	21.2	14.4	35.6	

	Cherry Avenue Southbound			I-10 Westbound Ramps Westbound			Cherry Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	31	31	**18**	10	28	15	12	27	86
04:15 PM	0	17	17	8	**13**	21	8	9	17	55
04:30 PM	0	**33**	**33**	18	11	**29**	**20**	**14**	**34**	**96**
04:45 PM	0	17	17	6	5	11	20	11	31	59
Total Volume	0	98	98	50	39	89	63	46	109	296
% App. Total	0	100		56.2	43.8		57.8	42.2		
PHF	.000	.742	.742	.694	.750	.767	.788	.821	.801	.771

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File Name : 05_FON_Cherry_10W PM
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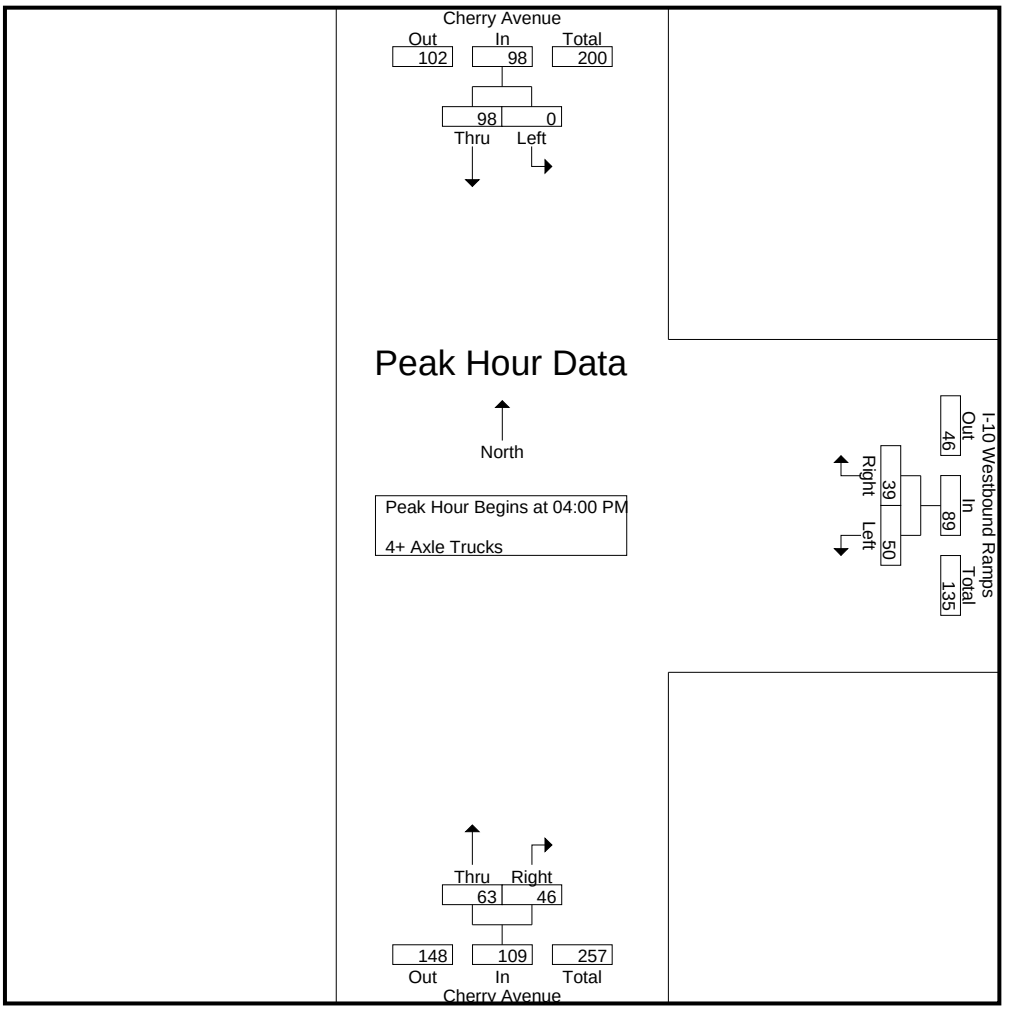

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	31	31	**18**	10	28	15	12	27
+15 mins.	0	17	17	8	**13**	21	8	9	17
+30 mins.	0	**33**	**33**	18	11	**29**	**20**	**14**	**34**
+45 mins.	0	17	17	6	5	11	20	11	31
Total Volume	0	98	98	50	39	89	63	46	109
% App. Total	0	100		56.2	43.8		57.8	42.2	
PHF	.000	.742	.742	.694	.750	.767	.788	.821	.801

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 03_FON_Citrus_10W AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	154	127	281	64	0	113	177	0	128	45	173	0	0	0	0	631
07:15 AM	0	201	118	319	82	0	127	209	0	151	54	205	0	0	0	0	733
07:30 AM	0	245	105	350	77	0	112	189	0	162	60	222	0	0	0	0	761
07:45 AM	0	242	108	350	93	0	120	213	0	147	53	200	0	0	0	0	763
Total	0	842	458	1300	316	0	472	788	0	588	212	800	0	0	0	0	2888
08:00 AM	0	233	102	335	71	0	68	139	0	156	42	198	0	0	0	0	672
08:15 AM	0	233	98	331	69	0	75	144	0	186	67	253	0	0	0	0	728
08:30 AM	0	148	93	241	60	0	85	145	0	150	52	202	0	0	0	0	588
08:45 AM	0	160	97	257	77	0	100	177	0	127	51	178	0	0	0	0	612
Total	0	774	390	1164	277	0	328	605	0	619	212	831	0	0	0	0	2600
Grand Total	0	1616	848	2464	593	0	800	1393	0	1207	424	1631	0	0	0	0	5488
Apprch %	0	65.6	34.4		42.6	0	57.4		0	74	26		0	0	0		
Total %	0	29.4	15.5	44.9	10.8	0	14.6	25.4	0	22	7.7	29.7	0	0	0	0	
Passenger Vehicles	0	1498	796	2294	532	0	748	1280	0	1133	344	1477	0	0	0	0	5051
% Passenger Vehicles	0	92.7	93.9	93.1	89.7	0	93.5	91.9	0	93.9	81.1	90.6	0	0	0	0	92
Large 2 Axle Vehicles	0	40	22	62	17	0	21	38	0	39	14	53	0	0	0	0	153
% Large 2 Axle Vehicles	0	2.5	2.6	2.5	2.9	0	2.6	2.7	0	3.2	3.3	3.2	0	0	0	0	2.8
3 Axle Vehicles	0	29	7	36	10	0	20	30	0	9	15	24	0	0	0	0	90
% 3 Axle Vehicles	0	1.8	0.8	1.5	1.7	0	2.5	2.2	0	0.7	3.5	1.5	0	0	0	0	1.6
4+ Axle Trucks	0	49	23	72	34	0	11	45	0	26	51	77	0	0	0	0	194
% 4+ Axle Trucks	0	3	2.7	2.9	5.7	0	1.4	3.2	0	2.2	12	4.7	0	0	0	0	3.5

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	201	**118**	319	82	0	**127**	209	0	151	54	205	0	0	0	0	733
07:30 AM	0	**245**	105	**350**	77	0	112	189	0	**162**	**60**	**222**	0	0	0	0	761
07:45 AM	0	242	108	350	**93**	0	120	**213**	0	147	53	200	0	0	0	0	**763**
08:00 AM	0	233	102	335	71	0	68	139	0	156	42	198	0	0	0	0	672
Total Volume	0	921	433	1354	323	0	427	750	0	616	209	825	0	0	0	0	2929
% App. Total	0	68	32		43.1	0	56.9		0	74.7	25.3		0	0	0		
PHF	.000	.940	.917	.967	.868	.000	.841	.880	.000	.951	.871	.929	.000	.000	.000	.000	.960

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File Name : 03_FON_Citrus_10W AM
Site Code : 10821516
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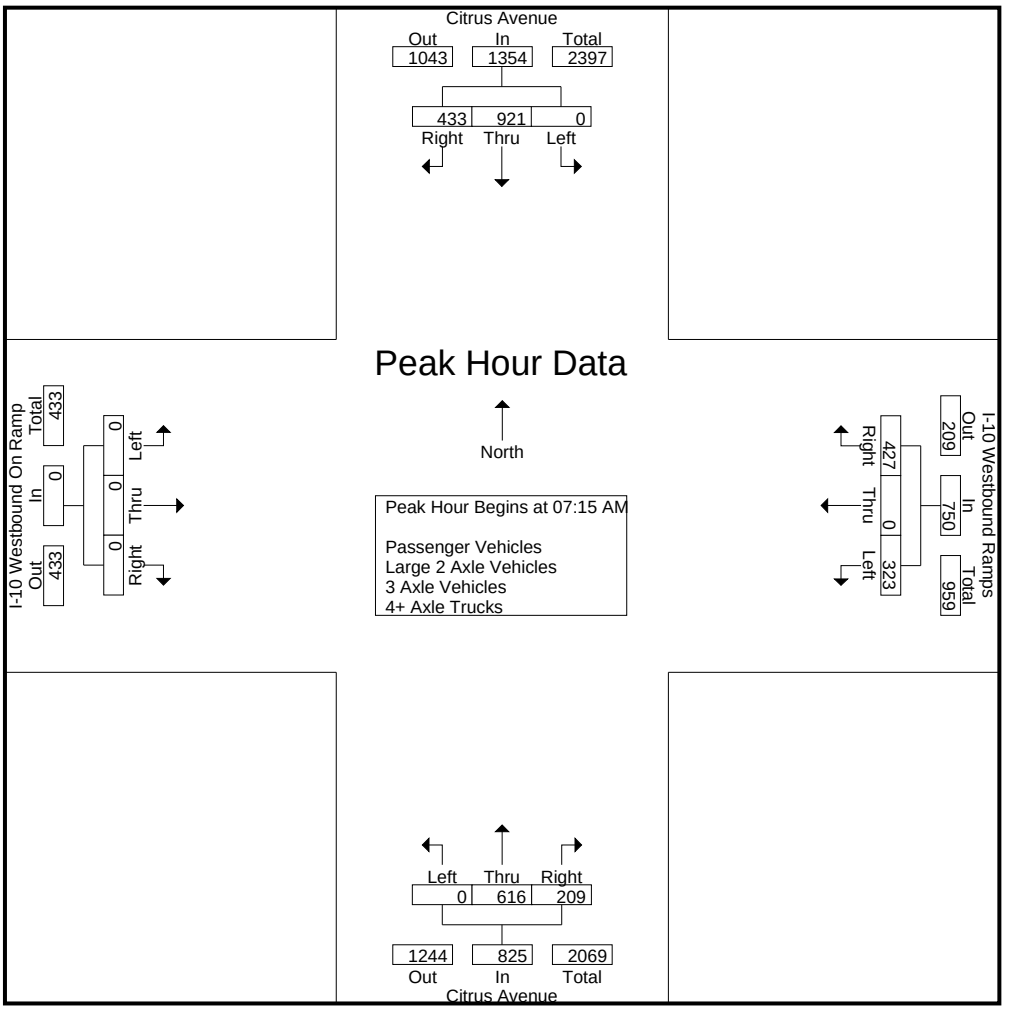

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:00 AM				07:30 AM				07:00 AM			
+0 mins.	0	**245**	105	**350**	64	0	113	177	0	162	60	222	0	0	0	0
+15 mins.	0	242	**108**	350	82	0	**127**	209	0	147	53	200	0	0	0	0
+30 mins.	0	233	102	335	77	0	112	189	0	156	42	198	0	0	0	0
+45 mins.	0	233	98	331	**93**	0	120	**213**	0	**186**	**67**	**253**	0	0	0	0
Total Volume	0	953	413	1366	316	0	472	788	0	651	222	873	0	0	0	0
% App. Total	0	69.8	30.2		40.1	0	59.9		0	74.6	25.4		0	0	0	
PHF	.000	.972	.956	.976	.849	.000	.929	.925	.000	.875	.828	.863	.000	.000	.000	.000

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Westbound Ramps
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File Name : 03_FON_Citrus_10W AM
Site Code : 10821516
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Groups Printed- Passenger Vehicles

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	144	122	266	60	0	106	166	0	119	41	160	0	0	0	0	592
07:15 AM	0	190	114	304	73	0	122	195	0	145	49	194	0	0	0	0	693
07:30 AM	0	232	100	332	70	0	106	176	0	153	45	198	0	0	0	0	706
07:45 AM	0	225	97	322	88	0	115	203	0	142	40	182	0	0	0	0	707
Total	0	791	433	1224	291	0	449	740	0	559	175	734	0	0	0	0	2698
08:00 AM	0	221	98	319	66	0	61	127	0	142	34	176	0	0	0	0	622
08:15 AM	0	220	88	308	64	0	73	137	0	175	58	233	0	0	0	0	678
08:30 AM	0	126	86	212	50	0	76	126	0	135	43	178	0	0	0	0	516
08:45 AM	0	140	91	231	61	0	89	150	0	122	34	156	0	0	0	0	537
Total	0	707	363	1070	241	0	299	540	0	574	169	743	0	0	0	0	2353
Grand Total	0	1498	796	2294	532	0	748	1280	0	1133	344	1477	0	0	0	0	5051
Apprch %	0	65.3	34.7		41.6	0	58.4		0	76.7	23.3		0	0	0		
Total %	0	29.7	15.8	45.4	10.5	0	14.8	25.3	0	22.4	6.8	29.2	0	0	0	0	

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	190	**114**	304	73	0	**122**	195	0	145	**49**	194	0	0	0	0	693
07:30 AM	0	**232**	100	**332**	70	0	106	176	0	**153**	45	**198**	0	0	0	0	706
07:45 AM	0	225	97	322	**88**	0	115	**203**	0	142	40	182	0	0	0	0	**707**
08:00 AM	0	221	98	319	66	0	61	127	0	142	34	176	0	0	0	0	622
Total Volume	0	868	409	1277	297	0	404	701	0	582	168	750	0	0	0	0	2728
% App. Total	0	68	32		42.4	0	57.6		0	77.6	22.4		0	0	0		
PHF	.000	.935	.897	.962	.844	.000	.828	.863	.000	.951	.857	.947	.000	.000	.000	.000	.965

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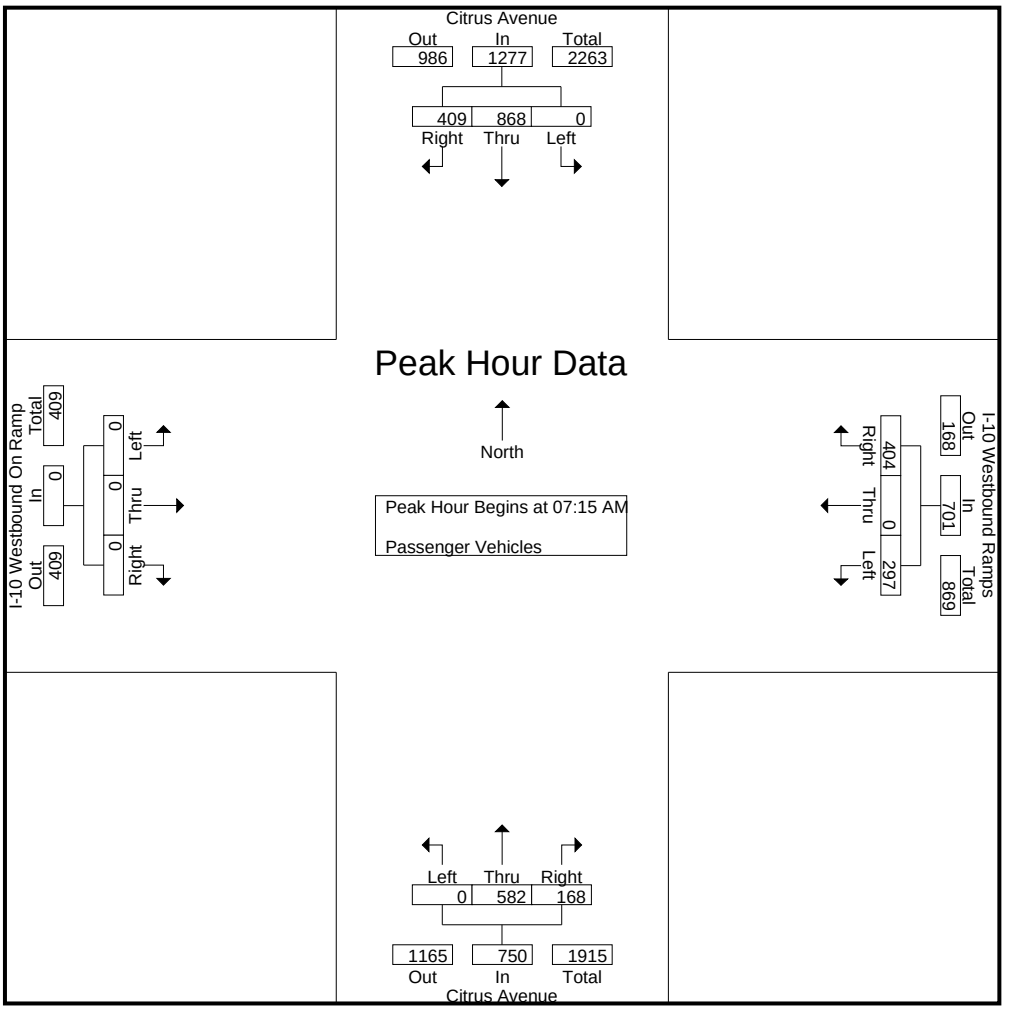

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	190	**114**	304	73	0	**122**	195	0	145	**49**	194	0	0	0	0
+15 mins.	0	**232**	100	**332**	70	0	106	176	0	**153**	45	**198**	0	0	0	0
+30 mins.	0	225	97	322	**88**	0	115	**203**	0	142	40	182	0	0	0	0
+45 mins.	0	221	98	319	66	0	61	127	0	142	34	176	0	0	0	0
Total Volume	0	868	409	1277	297	0	404	701	0	582	168	750	0	0	0	0
% App. Total	0	68	32		42.4	0	57.6		0	77.6	22.4		0	0	0	
PHF	.000	.935	.897	.962	.844	.000	.828	.863	.000	.951	.857	.947	.000	.000	.000	.000

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(951)268-6268

City of Fontana
N/S: Citrus Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 03_FON_Citrus_10W AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	3	4	7	1	0	2	3	0	5	0	5	0	0	0	0	15
07:15 AM	0	5	2	7	1	0	1	2	0	3	2	5	0	0	0	0	14
07:30 AM	0	5	1	6	0	0	3	3	0	4	2	6	0	0	0	0	15
07:45 AM	0	6	4	10	3	0	1	4	0	4	0	4	0	0	0	0	18
Total	0	19	11	30	5	0	7	12	0	16	4	20	0	0	0	0	62
08:00 AM	0	4	1	5	1	0	5	6	0	7	2	9	0	0	0	0	20
08:15 AM	0	4	4	8	1	0	1	2	0	6	3	9	0	0	0	0	19
08:30 AM	0	4	3	7	4	0	4	8	0	6	3	9	0	0	0	0	24
08:45 AM	0	9	3	12	6	0	4	10	0	4	2	6	0	0	0	0	28
Total	0	21	11	32	12	0	14	26	0	23	10	33	0	0	0	0	91
Grand Total	0	40	22	62	17	0	21	38	0	39	14	53	0	0	0	0	153
Apprch %	0	64.5	35.5		44.7	0	55.3		0	73.6	26.4		0	0	0		
Total %	0	26.1	14.4	40.5	11.1	0	13.7	24.8	0	25.5	9.2	34.6	0	0	0	0	

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	5	2	7	1	0	1	2	0	3	**2**	5	0	0	0	0	14
07:30 AM	0	5	1	6	0	0	3	3	0	4	2	6	0	0	0	0	15
07:45 AM	0	**6**	**4**	**10**	**3**	0	1	4	0	4	0	4	0	0	0	0	18
08:00 AM	0	4	1	5	1	0	**5**	**6**	0	**7**	2	**9**	0	0	0	0	**20**
Total Volume	0	20	8	28	5	0	10	15	0	18	6	24	0	0	0	0	67
% App. Total	0	71.4	28.6		33.3	0	66.7		0	75	25		0	0	0		
PHF	.000	.833	.500	.700	.417	.000	.500	.625	.000	.643	.750	.667	.000	.000	.000	.000	.838

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File Name : 03_FON_Citrus_10W AM
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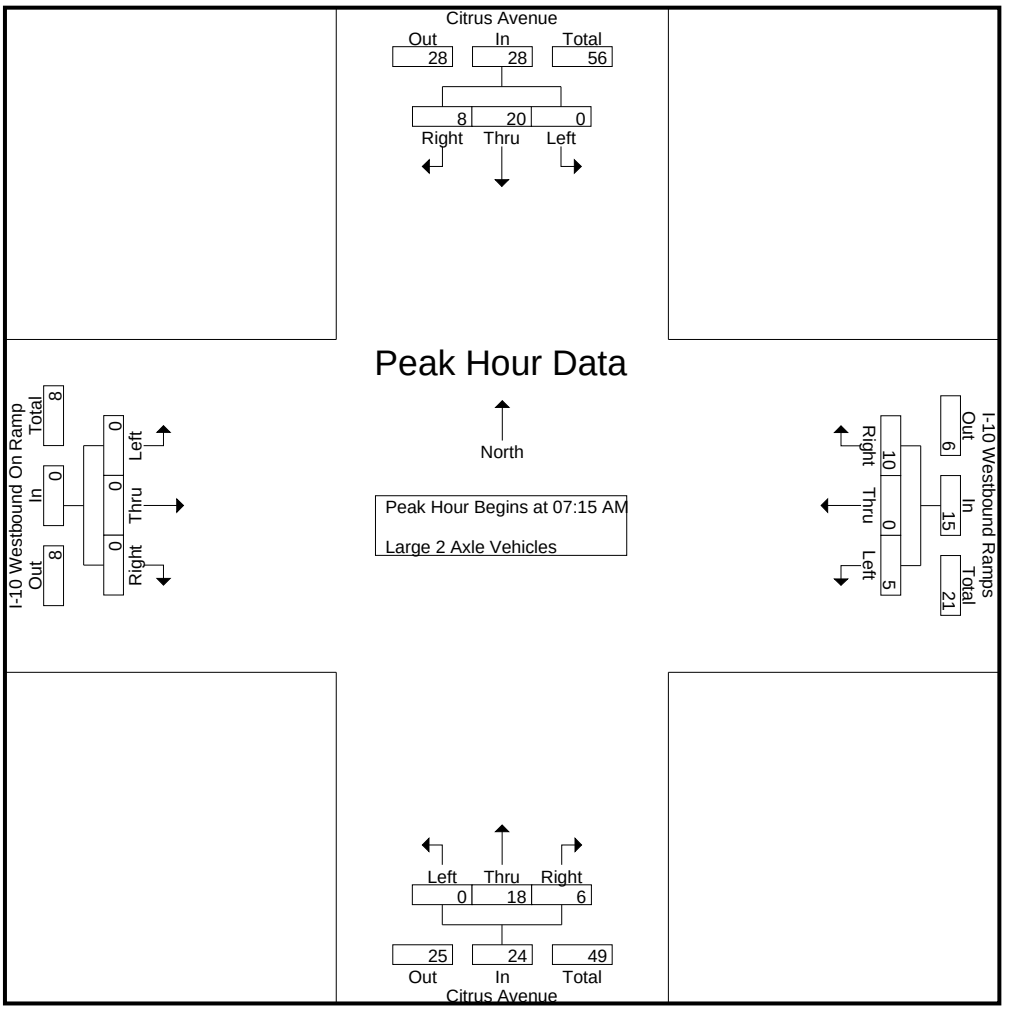

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	5	2	7	1	0	1	2	0	3	**2**	5	0	0	0	0
+15 mins.	0	5	1	6	0	0	3	3	0	4	2	6	0	0	0	0
+30 mins.	0	**6**	**4**	**10**	**3**	0	1	4	0	4	0	4	0	0	0	0
+45 mins.	0	4	1	5	1	0	**5**	**6**	0	**7**	2	**9**	0	0	0	0
Total Volume	0	20	8	28	5	0	10	15	0	18	6	24	0	0	0	0
% App. Total	0	71.4	28.6		33.3	0	66.7		0	75	25		0	0	0	
PHF	.000	.833	.500	.700	.417	.000	.500	.625	.000	.643	.750	.667	.000	.000	.000	.000

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File Name : 03_FON_Citrus_10W AM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- 3 Axle Vehicles

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	3	0	3	0	0	3	3	0	1	1	2	0	0	0	0	8
07:15 AM	0	1	0	1	1	0	2	3	0	0	0	0	0	0	0	0	4
07:30 AM	0	3	1	4	3	0	3	6	0	2	2	4	0	0	0	0	14
07:45 AM	0	7	0	7	0	0	3	3	0	0	5	5	0	0	0	0	15
Total	0	14	1	15	4	0	11	15	0	3	8	11	0	0	0	0	41
08:00 AM	0	3	2	5	1	0	2	3	0	1	3	4	0	0	0	0	12
08:15 AM	0	3	1	4	1	0	1	2	0	1	1	2	0	0	0	0	8
08:30 AM	0	7	2	9	1	0	3	4	0	4	0	4	0	0	0	0	17
08:45 AM	0	2	1	3	3	0	3	6	0	0	3	3	0	0	0	0	12
Total	0	15	6	21	6	0	9	15	0	6	7	13	0	0	0	0	49
Grand Total	0	29	7	36	10	0	20	30	0	9	15	24	0	0	0	0	90
Apprch %	0	80.6	19.4		33.3	0	66.7		0	37.5	62.5		0	0	0		
Total %	0	32.2	7.8	40	11.1	0	22.2	33.3	0	10	16.7	26.7	0	0	0	0	

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	1	0	1	1	0	2	3	0	0	0	0	0	0	0	0	4
07:30 AM	0	3	1	4	**3**	0	**3**	**6**	0	**2**	2	4	0	0	0	0	14
07:45 AM	0	**7**	0	**7**	0	0	3	3	0	0	**5**	**5**	0	0	0	0	**15**
08:00 AM	0	3	**2**	5	1	0	2	3	0	1	3	4	0	0	0	0	12
Total Volume	0	14	3	17	5	0	10	15	0	3	10	13	0	0	0	0	45
% App. Total	0	82.4	17.6		33.3	0	66.7		0	23.1	76.9		0	0	0		
PHF	.000	.500	.375	.607	.417	.000	.833	.625	.000	.375	.500	.650	.000	.000	.000	.000	.750

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File Name : 03_FON_Citrus_10W AM
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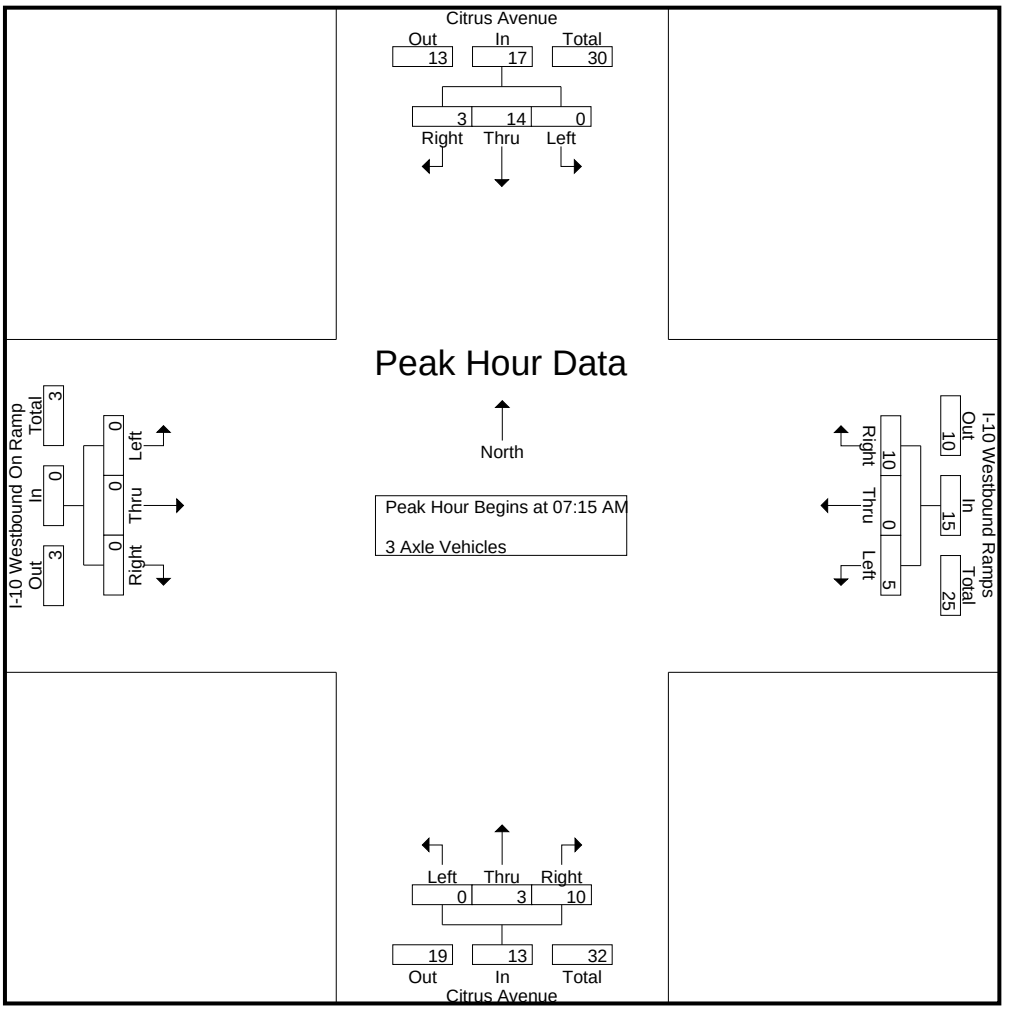

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	1	0	1	1	0	2	3	0	0	0	0	0	0	0	0
+15 mins.	0	3	1	4	**3**	0	**3**	**6**	0	**2**	2	4	0	0	0	0
+30 mins.	0	**7**	0	**7**	0	0	3	3	0	0	**5**	**5**	0	0	0	0
+45 mins.	0	3	**2**	5	1	0	2	3	0	1	3	4	0	0	0	0
Total Volume	0	14	3	17	5	0	10	15	0	3	10	13	0	0	0	0
% App. Total	0	82.4	17.6		33.3	0	66.7		0	23.1	76.9		0	0	0	
PHF	.000	.500	.375	.607	.417	.000	.833	.625	.000	.375	.500	.650	.000	.000	.000	.000

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File Name : 03_FON_Citrus_10W AM
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Start Date : 9/28/2021
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Groups Printed- 4+ Axle Trucks

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	4	1	5	3	0	2	5	0	3	3	6	0	0	0	0	16
07:15 AM	0	5	2	7	7	0	2	9	0	3	3	6	0	0	0	0	22
07:30 AM	0	5	3	8	4	0	0	4	0	3	11	14	0	0	0	0	26
07:45 AM	0	4	7	11	2	0	1	3	0	1	8	9	0	0	0	0	23
Total	0	18	13	31	16	0	5	21	0	10	25	35	0	0	0	0	87
08:00 AM	0	5	1	6	3	0	0	3	0	6	3	9	0	0	0	0	18
08:15 AM	0	6	5	11	3	0	0	3	0	4	5	9	0	0	0	0	23
08:30 AM	0	11	2	13	5	0	2	7	0	5	6	11	0	0	0	0	31
08:45 AM	0	9	2	11	7	0	4	11	0	1	12	13	0	0	0	0	35
Total	0	31	10	41	18	0	6	24	0	16	26	42	0	0	0	0	107
Grand Total	0	49	23	72	34	0	11	45	0	26	51	77	0	0	0	0	194
Apprch %	0	68.1	31.9		75.6	0	24.4		0	33.8	66.2		0	0	0		
Total %	0	25.3	11.9	37.1	17.5	0	5.7	23.2	0	13.4	26.3	39.7	0	0	0	0	

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	**5**	2	7	**7**	0	**2**	**9**	0	3	3	6	0	0	0	0	22
07:30 AM	0	5	3	8	4	0	0	4	0	3	**11**	**14**	0	0	0	0	**26**
07:45 AM	0	4	**7**	**11**	2	0	1	3	0	1	8	9	0	0	0	0	23
08:00 AM	0	5	1	6	3	0	0	3	0	**6**	3	9	0	0	0	0	18
Total Volume	0	19	13	32	16	0	3	19	0	13	25	38	0	0	0	0	89
% App. Total	0	59.4	40.6		84.2	0	15.8		0	34.2	65.8		0	0	0		
PHF	.000	.950	.464	.727	.571	.000	.375	.528	.000	.542	.568	.679	.000	.000	.000	.000	.856

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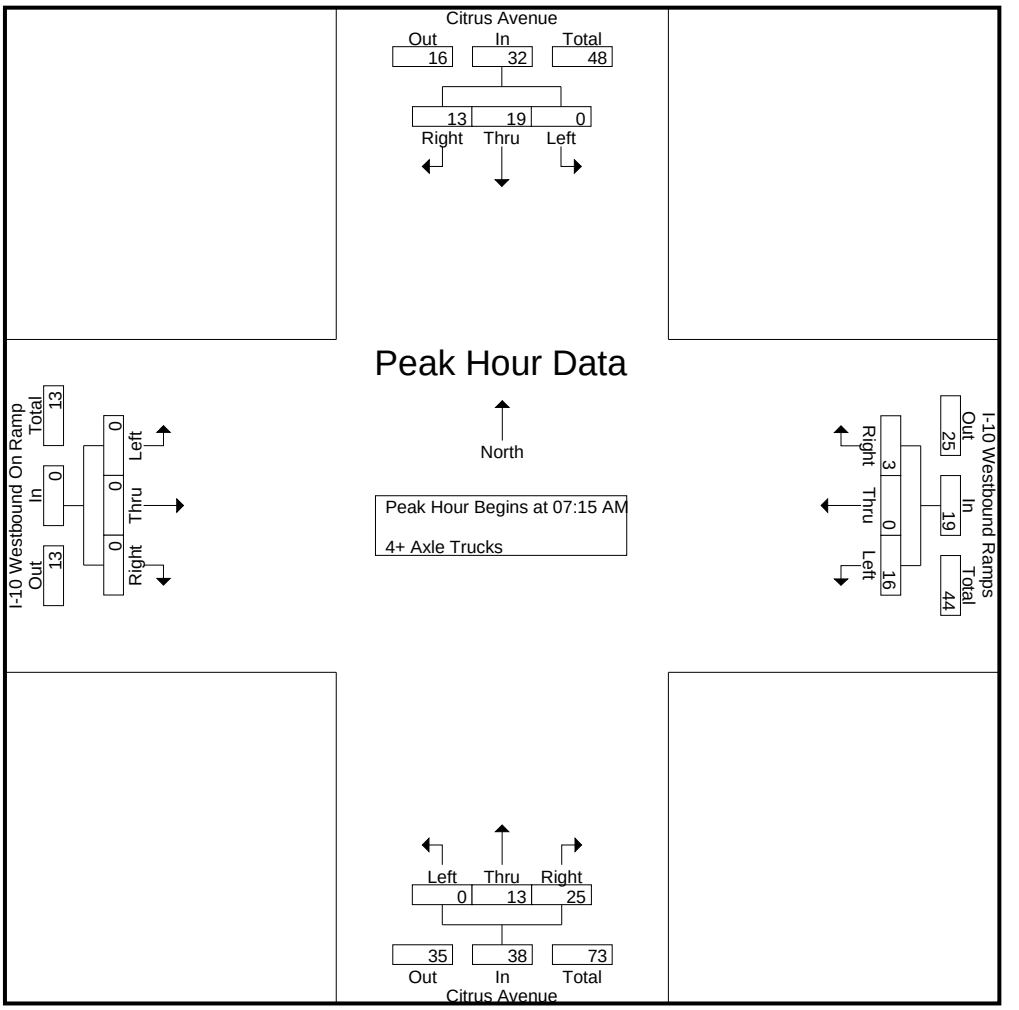

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	**5**	2	7	**7**	0	**2**	**9**	0	3	3	6	0	0	0	0
+15 mins.	0	5	3	8	4	0	0	4	0	3	**11**	**14**	0	0	0	0
+30 mins.	0	4	**7**	**11**	2	0	1	3	0	1	8	9	0	0	0	0
+45 mins.	0	5	1	6	3	0	0	3	0	**6**	3	9	0	0	0	0
Total Volume	0	19	13	32	16	0	3	19	0	13	25	38	0	0	0	0
% App. Total	0	59.4	40.6		84.2	0	15.8		0	34.2	65.8		0	0	0	
PHF	.000	.950	.464	.727	.571	.000	.375	.528	.000	.542	.568	.679	.000	.000	.000	.000

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E/W: I-10 Westbound Ramps
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File Name : 03_FON_Citrus_10W PM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	241	106	347	46	0	134	180	0	275	54	329	0	0	0	0	856
04:15 PM	0	216	118	334	44	0	104	148	0	264	43	307	0	0	0	0	789
04:30 PM	0	199	119	318	52	0	105	157	0	222	69	291	0	0	0	0	766
04:45 PM	0	176	102	278	62	0	108	170	0	273	53	326	0	0	0	0	774
Total	0	832	445	1277	204	0	451	655	0	1034	219	1253	0	0	0	0	3185
05:00 PM	0	195	97	292	55	0	113	168	0	270	49	319	0	0	0	0	779
05:15 PM	0	187	79	266	50	1	113	164	0	237	55	292	0	0	0	0	722
05:30 PM	0	190	101	291	56	0	114	170	0	266	69	335	0	0	0	0	796
05:45 PM	0	180	103	283	52	0	115	167	0	261	74	335	0	0	0	0	785
Total	0	752	380	1132	213	1	455	669	0	1034	247	1281	0	0	0	0	3082
Grand Total	0	1584	825	2409	417	1	906	1324	0	2068	466	2534	0	0	0	0	6267
Apprch %	0	65.8	34.2		31.5	0.1	68.4		0	81.6	18.4		0	0	0		
Total %	0	25.3	13.2	38.4	6.7	0	14.5	21.1	0	33	7.4	40.4	0	0	0	0	
Passenger Vehicles	0	1502	786	2288	371	0	848	1219	0	1999	417	2416	0	0	0	0	5923
% Passenger Vehicles	0	94.8	95.3	95	89	0	93.6	92.1	0	96.7	89.5	95.3	0	0	0	0	94.5
Large 2 Axle Vehicles	0	26	10	36	16	0	18	34	0	35	7	42	0	0	0	0	112
% Large 2 Axle Vehicles	0	1.6	1.2	1.5	3.8	0	2	2.6	0	1.7	1.5	1.7	0	0	0	0	1.8
3 Axle Vehicles	0	18	7	25	2	1	12	15	0	12	12	24	0	0	0	0	64
% 3 Axle Vehicles	0	1.1	0.8	1	0.5	100	1.3	1.1	0	0.6	2.6	0.9	0	0	0	0	1
4+ Axle Trucks	0	38	22	60	28	0	28	56	0	22	30	52	0	0	0	0	168
% 4+ Axle Trucks	0	2.4	2.7	2.5	6.7	0	3.1	4.2	0	1.1	6.4	2.1	0	0	0	0	2.7

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**241**	106	**347**	46	0	**134**	**180**	0	**275**	54	**329**	0	0	0	0	**856**
04:15 PM	0	216	118	334	44	0	104	148	0	264	43	307	0	0	0	0	789
04:30 PM	0	199	**119**	318	52	0	105	157	0	222	**69**	291	0	0	0	0	766
04:45 PM	0	176	102	278	**62**	0	108	170	0	273	53	326	0	0	0	0	774
Total Volume	0	832	445	1277	204	0	451	655	0	1034	219	1253	0	0	0	0	3185
% App. Total	0	65.2	34.8		31.1	0	68.9		0	82.5	17.5		0	0	0		
PHF	.000	.863	.935	.920	.823	.000	.841	.910	.000	.940	.793	.952	.000	.000	.000	.000	.930

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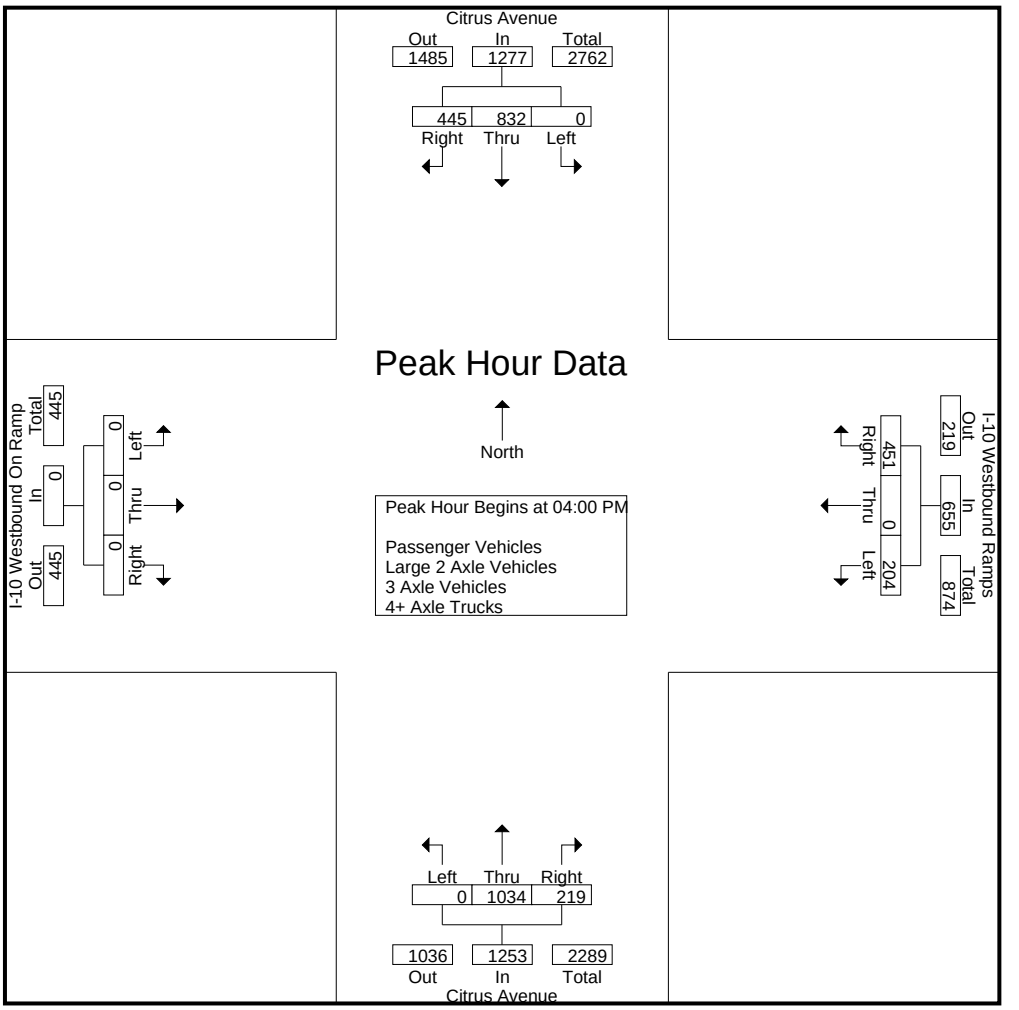

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				05:00 PM				04:00 PM			
+0 mins.	0	**241**	106	**347**	**62**	0	108	**170**	0	**270**	49	319	0	0	0	0
+15 mins.	0	216	118	334	55	0	113	168	0	237	55	292	0	0	0	0
+30 mins.	0	199	**119**	318	50	**1**	113	164	0	266	69	**335**	0	0	0	0
+45 mins.	0	176	102	278	56	0	**114**	170	0	261	**74**	335	0	0	0	0
Total Volume	0	832	445	1277	223	1	448	672	0	1034	247	1281	0	0	0	0
% App. Total	0	65.2	34.8		33.2	0.1	66.7		0	80.7	19.3		0	0	0	
PHF	.000	.863	.935	.920	.899	.250	.982	.988	.000	.957	.834	.956	.000	.000	.000	.000

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City of Fontana
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E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 03_FON_Citrus_10W PM
Site Code : 10821516
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Groups Printed- Passenger Vehicles

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	231	102	333	39	0	124	163	0	260	45	305	0	0	0	0	801
04:15 PM	0	198	112	310	40	0	96	136	0	252	41	293	0	0	0	0	739
04:30 PM	0	187	114	301	47	0	99	146	0	214	62	276	0	0	0	0	723
04:45 PM	0	168	98	266	54	0	98	152	0	261	47	308	0	0	0	0	726
Total	0	784	426	1210	180	0	417	597	0	987	195	1182	0	0	0	0	2989
05:00 PM	0	186	92	278	47	0	104	151	0	261	41	302	0	0	0	0	731
05:15 PM	0	179	73	252	46	0	110	156	0	235	50	285	0	0	0	0	693
05:30 PM	0	183	97	280	50	0	110	160	0	261	62	323	0	0	0	0	763
05:45 PM	0	170	98	268	48	0	107	155	0	255	69	324	0	0	0	0	747
Total	0	718	360	1078	191	0	431	622	0	1012	222	1234	0	0	0	0	2934
Grand Total	0	1502	786	2288	371	0	848	1219	0	1999	417	2416	0	0	0	0	5923
Apprch %	0	65.6	34.4		30.4	0	69.6		0	82.7	17.3		0	0	0		
Total %	0	25.4	13.3	38.6	6.3	0	14.3	20.6	0	33.7	7	40.8	0	0	0	0	

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**231**	102	**333**	39	0	**124**	**163**	0	260	45	305	0	0	0	0	**801**
04:15 PM	0	198	112	310	40	0	96	136	0	252	41	293	0	0	0	0	739
04:30 PM	0	187	**114**	301	47	0	99	146	0	214	**62**	276	0	0	0	0	723
04:45 PM	0	168	98	266	**54**	0	98	152	0	**261**	47	**308**	0	0	0	0	726
Total Volume	0	784	426	1210	180	0	417	597	0	987	195	1182	0	0	0	0	2989
% App. Total	0	64.8	35.2		30.2	0	69.8		0	83.5	16.5		0	0	0		
PHF	.000	.848	.934	.908	.833	.000	.841	.916	.000	.945	.786	.959	.000	.000	.000	.000	.933

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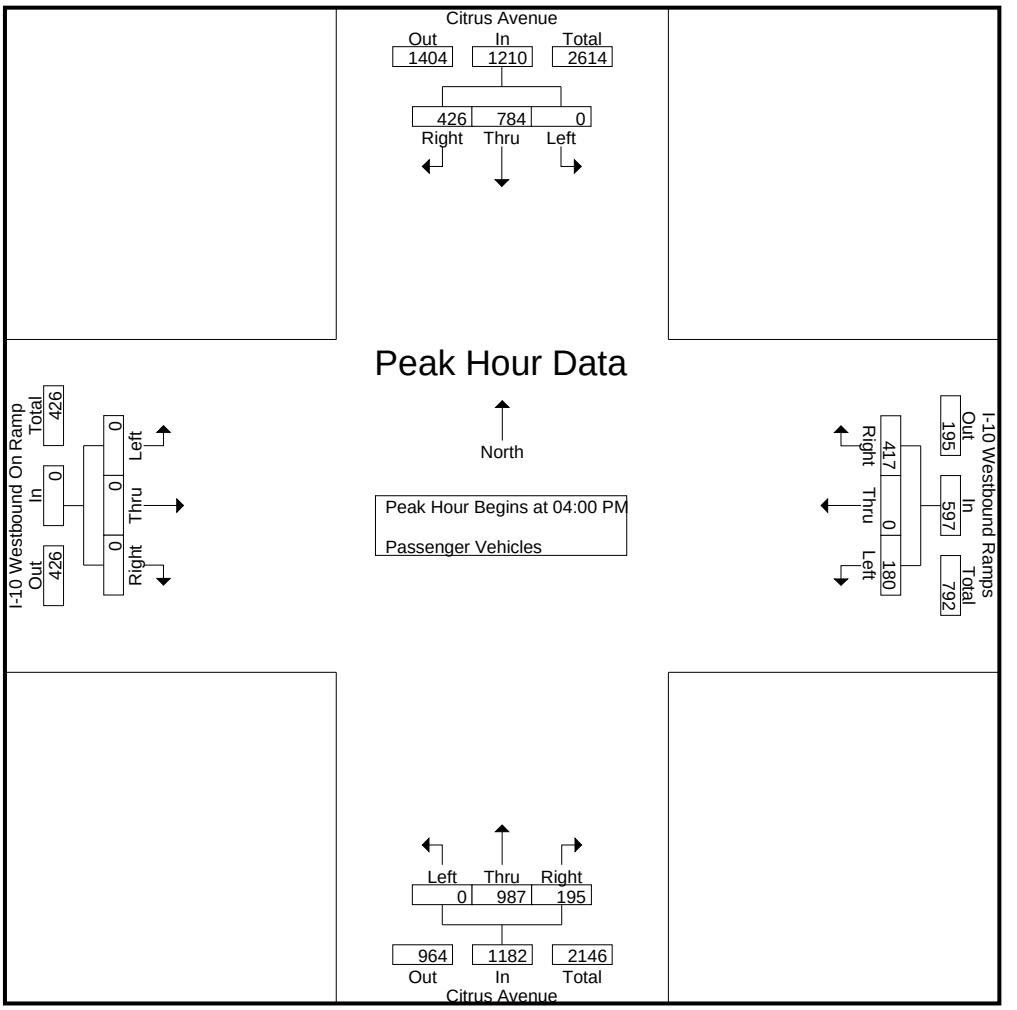
City of Fontana
N/S: Citrus Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 03_FON_Citrus_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	**231**	102	**333**	39	0	**124**	**163**	0	260	45	305	0	0	0	0
+15 mins.	0	198	112	310	40	0	96	136	0	252	41	293	0	0	0	0
+30 mins.	0	187	**114**	301	47	0	99	146	0	214	**62**	276	0	0	0	0
+45 mins.	0	168	98	266	**54**	0	98	152	0	**261**	47	**308**	0	0	0	0
Total Volume	0	784	426	1210	180	0	417	597	0	987	195	1182	0	0	0	0
% App. Total	0	64.8	35.2		30.2	0	69.8		0	83.5	16.5		0	0	0	
PHF	.000	.848	.934	.908	.833	.000	.841	.916	.000	.945	.786	.959	.000	.000	.000	.000

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 03_FON_Citrus_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	1	0	1	0	0	3	3	0	8	1	9	0	0	0	0	13
04:15 PM	0	11	0	11	1	0	3	4	0	10	0	10	0	0	0	0	25
04:30 PM	0	5	2	7	3	0	1	4	0	3	2	5	0	0	0	0	16
04:45 PM	0	1	2	3	3	0	2	5	0	9	1	10	0	0	0	0	18
Total	0	18	4	22	7	0	9	16	0	30	4	34	0	0	0	0	72
05:00 PM	0	1	1	2	4	0	2	6	0	3	1	4	0	0	0	0	12
05:15 PM	0	2	3	5	1	0	2	3	0	0	1	1	0	0	0	0	9
05:30 PM	0	1	1	2	2	0	1	3	0	2	0	2	0	0	0	0	7
05:45 PM	0	4	1	5	2	0	4	6	0	0	1	1	0	0	0	0	12
Total	0	8	6	14	9	0	9	18	0	5	3	8	0	0	0	0	40
Grand Total	0	26	10	36	16	0	18	34	0	35	7	42	0	0	0	0	112
Apprch %	0	72.2	27.8		47.1	0	52.9		0	83.3	16.7		0	0	0		
Total %	0	23.2	8.9	32.1	14.3	0	16.1	30.4	0	31.2	6.2	37.5	0	0	0	0	

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	1	0	1	0	0	**3**	3	0	8	1	9	0	0	0	0	13
04:15 PM	0	**11**	0	**11**	1	0	3	4	0	**10**	0	**10**	0	0	0	0	**25**
04:30 PM	0	5	**2**	7	**3**	0	1	4	0	3	**2**	5	0	0	0	0	16
04:45 PM	0	1	2	3	3	0	2	**5**	0	9	1	10	0	0	0	0	18
Total Volume	0	18	4	22	7	0	9	16	0	30	4	34	0	0	0	0	72
% App. Total	0	81.8	18.2		43.8	0	56.2		0	88.2	11.8		0	0	0		
PHF	.000	.409	.500	.500	.583	.000	.750	.800	.000	.750	.500	.850	.000	.000	.000	.000	.720

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 03_FON_Citrus_10W PM
Site Code : 10821516
Start Date : 9/28/2021
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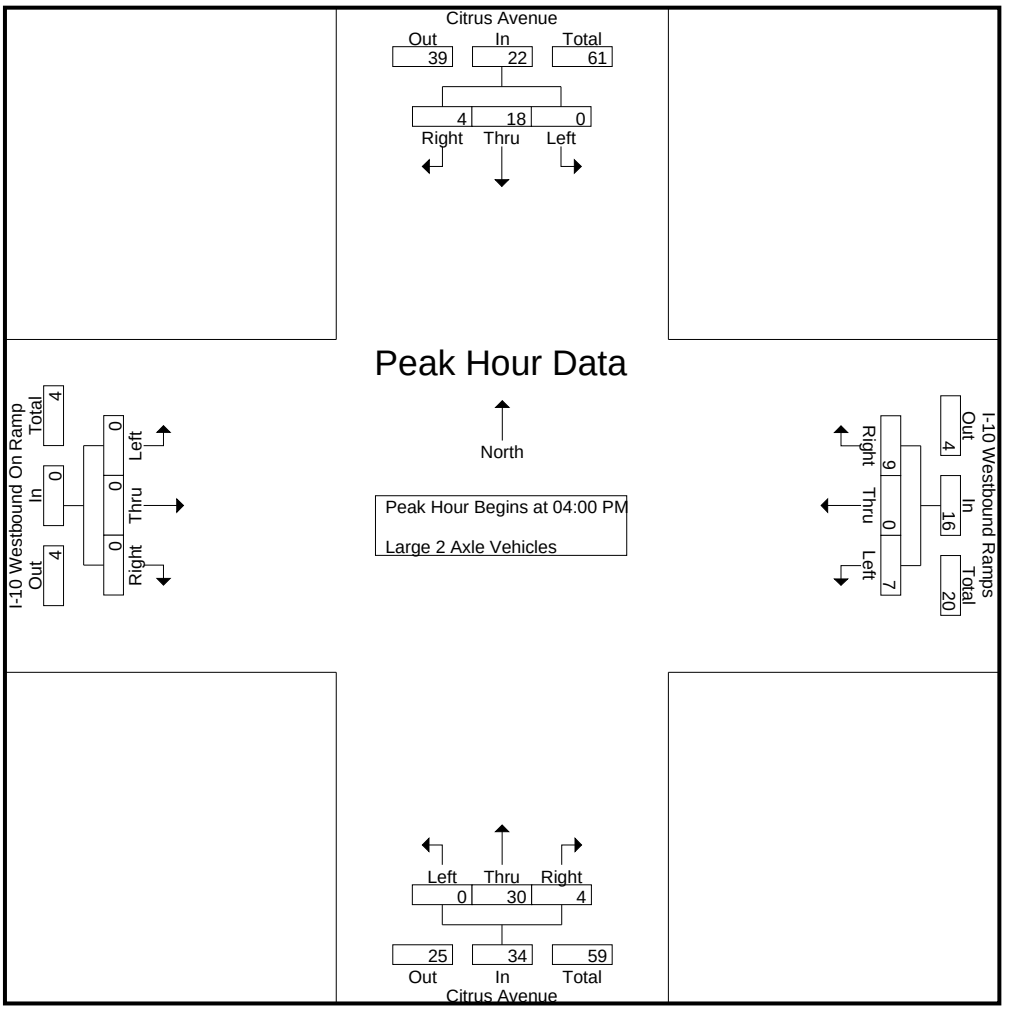

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	1	0	1	0	0	**3**	3	0	8	1	9	0	0	0	0
+15 mins.	0	**11**	0	**11**	1	0	3	4	0	**10**	0	**10**	0	0	0	0
+30 mins.	0	5	**2**	7	**3**	0	1	4	0	3	**2**	5	0	0	0	0
+45 mins.	0	1	2	3	3	0	2	**5**	0	9	1	10	0	0	0	0
Total Volume	0	18	4	22	7	0	9	16	0	30	4	34	0	0	0	0
% App. Total	0	81.8	18.2		43.8	0	56.2		0	88.2	11.8		0	0	0	
PHF	.000	.409	.500	.500	.583	.000	.750	.800	.000	.750	.500	.850	.000	.000	.000	.000

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 03_FON_Citrus_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	2	1	3	1	0	4	5	0	3	1	4	0	0	0	0	12
04:15 PM	0	2	1	3	1	0	1	2	0	0	0	0	0	0	0	0	5
04:30 PM	0	3	0	3	0	0	1	1	0	2	1	3	0	0	0	0	7
04:45 PM	0	2	1	3	0	0	2	2	0	3	3	6	0	0	0	0	11
Total	0	9	3	12	2	0	8	10	0	8	5	13	0	0	0	0	35
05:00 PM	0	3	2	5	0	0	4	4	0	2	2	4	0	0	0	0	13
05:15 PM	0	2	0	2	0	1	0	1	0	1	1	2	0	0	0	0	5
05:30 PM	0	2	0	2	0	0	0	0	0	1	3	4	0	0	0	0	6
05:45 PM	0	2	2	4	0	0	0	0	0	0	1	1	0	0	0	0	5
Total	0	9	4	13	0	1	4	5	0	4	7	11	0	0	0	0	29
Grand Total	0	18	7	25	2	1	12	15	0	12	12	24	0	0	0	0	64
Apprch %	0	72	28		13.3	6.7	80		0	50	50		0	0	0		
Total %	0	28.1	10.9	39.1	3.1	1.6	18.8	23.4	0	18.8	18.8	37.5	0	0	0	0	

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	2	**1**	**3**	**1**	0	**4**	**5**	0	**3**	1	4	0	0	0	0	**12**
04:15 PM	0	2	1	3	1	0	1	2	0	0	0	0	0	0	0	0	5
04:30 PM	0	**3**	0	3	0	0	1	1	0	2	1	3	0	0	0	0	7
04:45 PM	0	2	1	3	0	0	2	2	0	3	**3**	**6**	0	0	0	0	11
Total Volume	0	9	3	12	2	0	8	10	0	8	5	13	0	0	0	0	35
% App. Total	0	75	25		20	0	80		0	61.5	38.5		0	0	0		
PHF	.000	.750	.750	1.00	.500	.000	.500	.500	.000	.667	.417	.542	.000	.000	.000	.000	.729

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 03_FON_Citrus_10W PM
Site Code : 10821516
Start Date : 9/28/2021
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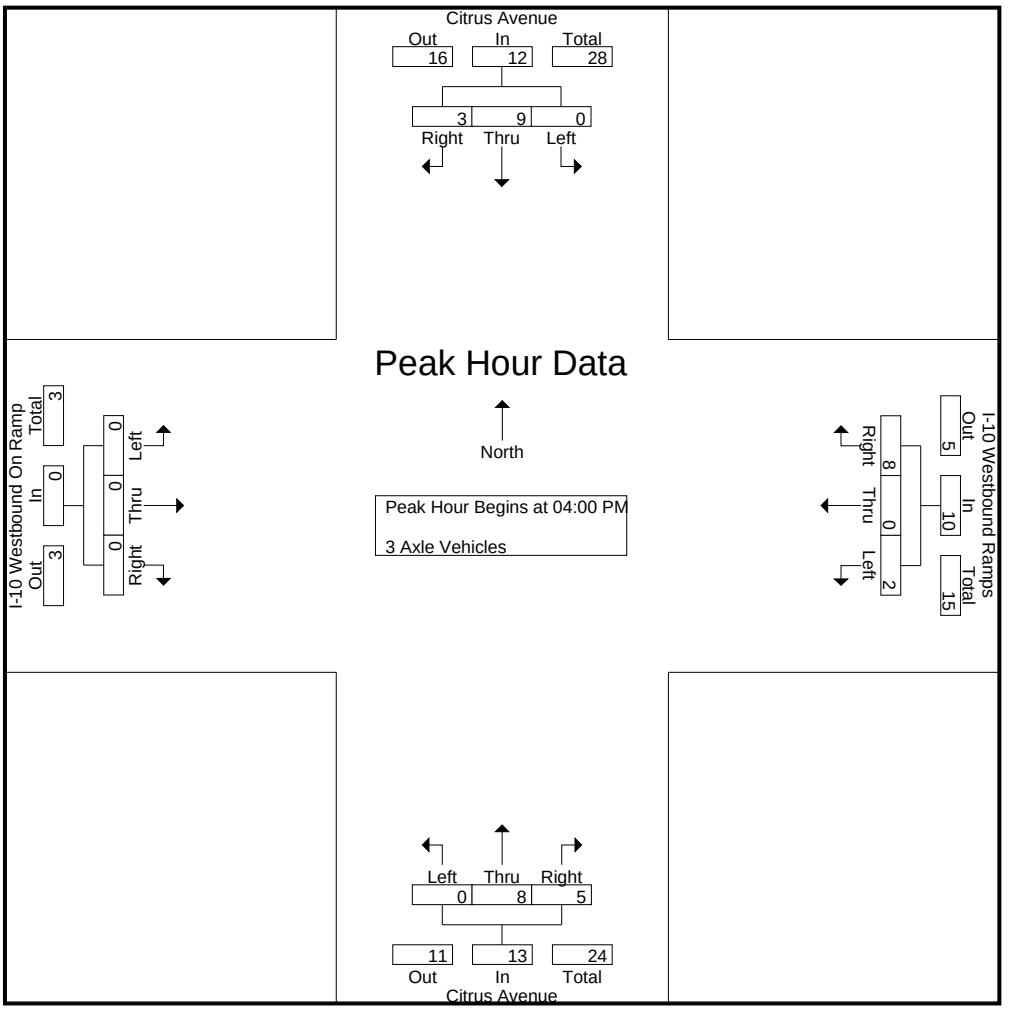

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	2	**1**	**3**	**1**	0	**4**	**5**	0	**3**	1	4	0	0	0	0
+15 mins.	0	2	1	3	1	0	1	2	0	0	0	0	0	0	0	0
+30 mins.	0	**3**	0	3	0	0	1	1	0	2	1	3	0	0	0	0
+45 mins.	0	2	1	3	0	0	2	2	0	3	**3**	**6**	0	0	0	0
Total Volume	0	9	3	12	2	0	8	10	0	8	5	13	0	0	0	0
% App. Total	0	75	25		20	0	80		0	61.5	38.5		0	0	0	
PHF	.000	.750	.750	1.000	.500	.000	.500	.500	.000	.667	.417	.542	.000	.000	.000	.000

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 03_FON_Citrus_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	7	3	10	6	0	3	9	0	4	7	11	0	0	0	0	30
04:15 PM	0	5	5	10	2	0	4	6	0	2	2	4	0	0	0	0	20
04:30 PM	0	4	3	7	2	0	4	6	0	3	4	7	0	0	0	0	20
04:45 PM	0	5	1	6	5	0	6	11	0	0	2	2	0	0	0	0	19
Total	0	21	12	33	15	0	17	32	0	9	15	24	0	0	0	0	89
05:00 PM	0	5	2	7	4	0	3	7	0	4	5	9	0	0	0	0	23
05:15 PM	0	4	3	7	3	0	1	4	0	1	3	4	0	0	0	0	15
05:30 PM	0	4	3	7	4	0	3	7	0	2	4	6	0	0	0	0	20
05:45 PM	0	4	2	6	2	0	4	6	0	6	3	9	0	0	0	0	21
Total	0	17	10	27	13	0	11	24	0	13	15	28	0	0	0	0	79
Grand Total	0	38	22	60	28	0	28	56	0	22	30	52	0	0	0	0	168
Apprch %	0	63.3	36.7		50	0	50		0	42.3	57.7		0	0	0		
Total %	0	22.6	13.1	35.7	16.7	0	16.7	33.3	0	13.1	17.9	31	0	0	0	0	

	Citrus Avenue Southbound				I-10 Westbound Ramps Westbound				Citrus Avenue Northbound				I-10 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**7**	3	**10**	**6**	0	3	9	0	**4**	**7**	**11**	0	0	0	0	**30**
04:15 PM	0	5	**5**	10	2	0	4	6	0	2	2	4	0	0	0	0	20
04:30 PM	0	4	3	7	2	0	4	6	0	3	4	7	0	0	0	0	20
04:45 PM	0	5	1	6	5	0	**6**	**11**	0	0	2	2	0	0	0	0	19
Total Volume	0	21	12	33	15	0	17	32	0	9	15	24	0	0	0	0	89
% App. Total	0	63.6	36.4		46.9	0	53.1		0	37.5	62.5		0	0	0		
PHF	.000	.750	.600	.825	.625	.000	.708	.727	.000	.563	.536	.545	.000	.000	.000	.000	.742

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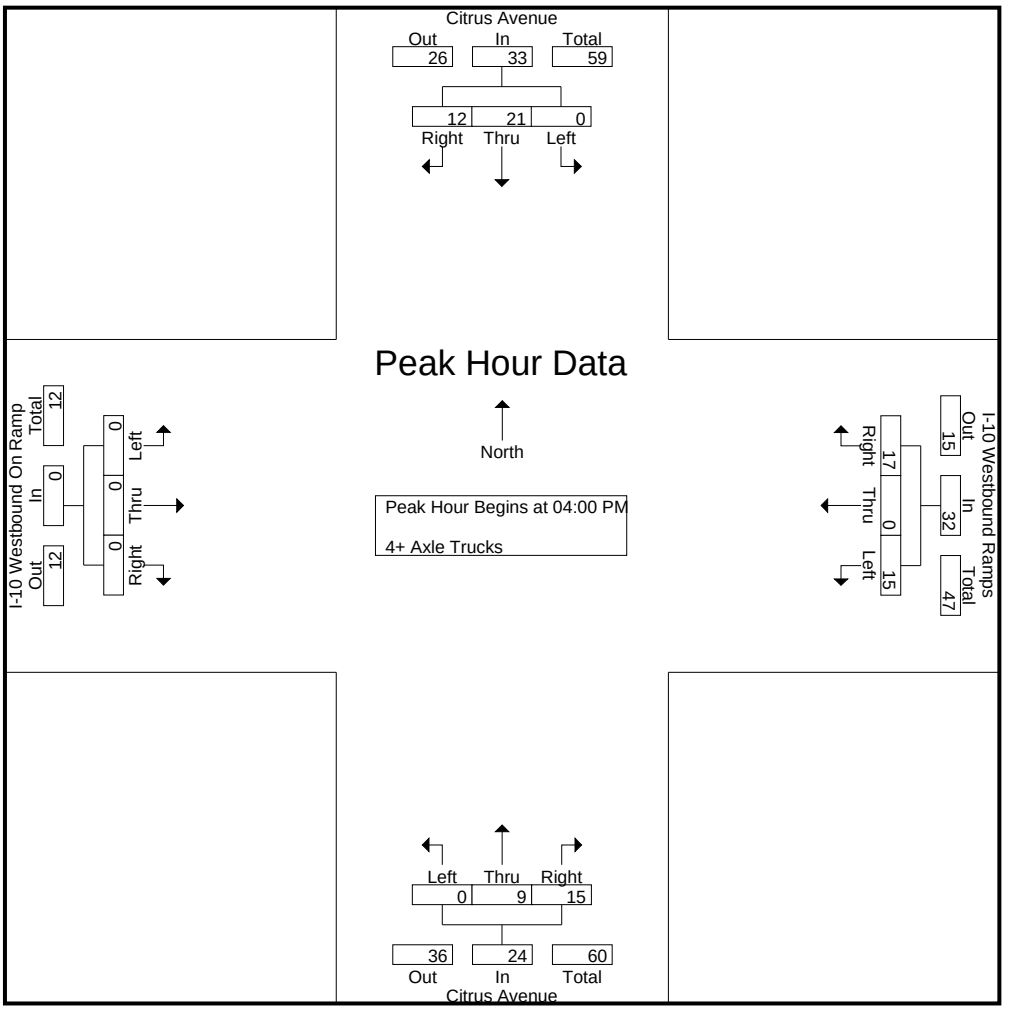
City of Fontana
N/S: Citrus Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : 03_FON_Citrus_10W PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	**7**	3	**10**	**6**	0	3	9	0	**4**	**7**	**11**	0	0	0	0
+15 mins.	0	5	**5**	10	2	0	4	6	0	2	2	4	0	0	0	0
+30 mins.	0	4	3	7	2	0	4	6	0	3	4	7	0	0	0	0
+45 mins.	0	5	1	6	5	0	**6**	**11**	0	0	2	2	0	0	0	0
Total Volume	0	21	12	33	15	0	17	32	0	9	15	24	0	0	0	0
% App. Total	0	63.6	36.4		46.9	0	53.1		0	37.5	62.5		0	0	0	
PHF	.000	.750	.600	.825	.625	.000	.708	.727	.000	.563	.536	.545	.000	.000	.000	.000

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	155	32	187	0	0	0	0	0	117	55	172	32	0	105	137	496
07:15 AM	0	179	36	215	0	0	0	0	0	128	43	171	49	0	103	152	538
07:30 AM	0	214	46	260	0	0	0	0	0	157	60	217	51	0	137	188	665
07:45 AM	0	221	43	264	0	0	0	0	0	160	51	211	42	0	134	176	651
Total	0	769	157	926	0	0	0	0	0	562	209	771	174	0	479	653	2350
08:00 AM	0	188	51	239	0	0	0	0	0	133	57	190	60	0	108	168	597
08:15 AM	0	150	29	179	0	0	0	0	0	146	61	207	44	0	122	166	552
08:30 AM	0	157	28	185	0	0	0	0	0	142	48	190	53	0	105	158	533
08:45 AM	0	148	25	173	0	0	0	0	0	123	50	173	48	0	112	160	506
Total	0	643	133	776	0	0	0	0	0	544	216	760	205	0	447	652	2188
Grand Total	0	1412	290	1702	0	0	0	0	0	1106	425	1531	379	0	926	1305	4538
Apprch %	0	83	17		0	0	0		0	72.2	27.8		29	0	71		
Total %	0	31.1	6.4	37.5	0	0	0	0	0	24.4	9.4	33.7	8.4	0	20.4	28.8	
Passenger Vehicles	0	1119	213	1332	0	0	0	0	0	696	252	948	217	0	690	907	3187
% Passenger Vehicles	0	79.2	73.4	78.3	0	0	0	0	0	62.9	59.3	61.9	57.3	0	74.5	69.5	70.2
Large 2 Axle Vehicles	0	62	8	70	0	0	0	0	0	80	41	121	17	0	38	55	246
% Large 2 Axle Vehicles	0	4.4	2.8	4.1	0	0	0	0	0	7.2	9.6	7.9	4.5	0	4.1	4.2	5.4
3 Axle Vehicles	0	65	17	82	0	0	0	0	0	93	21	114	53	0	43	96	292
% 3 Axle Vehicles	0	4.6	5.9	4.8	0	0	0	0	0	8.4	4.9	7.4	14	0	4.6	7.4	6.4
4+ Axle Trucks	0	166	52	218	0	0	0	0	0	237	111	348	92	0	155	247	813
% 4+ Axle Trucks	0	11.8	17.9	12.8	0	0	0	0	0	21.4	26.1	22.7	24.3	0	16.7	18.9	17.9

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	214	46	260	0	0	0	0	0	157	60	**217**	51	0	**137**	**188**	**665**
07:45 AM	0	**221**	43	**264**	0	0	0	0	0	**160**	51	211	42	0	134	176	651
08:00 AM	0	188	**51**	239	0	0	0	0	0	133	57	190	**60**	0	108	168	597
08:15 AM	0	150	29	179	0	0	0	0	0	146	**61**	207	44	0	122	166	552
Total Volume	0	773	169	942	0	0	0	0	0	596	229	825	197	0	501	698	2465
% App. Total	0	82.1	17.9		0	0	0		0	72.2	27.8		28.2	0	71.8		
PHF	.000	.874	.828	.892	.000	.000	.000	.000	.000	.931	.939	.950	.821	.000	.914	.928	.927

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Corona, CA 92878
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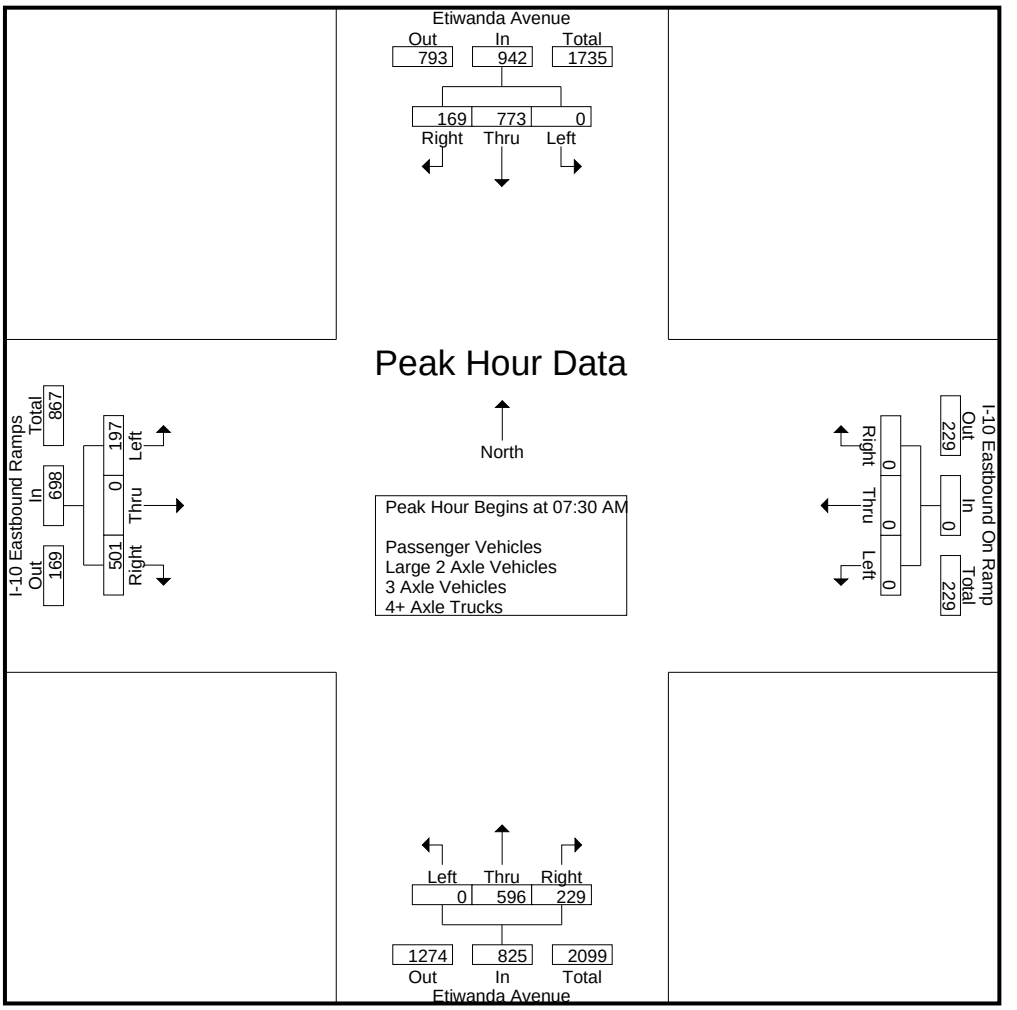
City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:30 AM				07:30 AM			
+0 mins.	0	179	36	215	0	0	0	0	0	157	60	**217**	51	0	**137**	**188**
+15 mins.	0	214	46	260	0	0	0	0	0	**160**	51	211	42	0	134	176
+30 mins.	0	**221**	43	**264**	0	0	0	0	0	133	57	190	**60**	0	108	168
+45 mins.	0	188	**51**	239	0	0	0	0	0	146	**61**	207	44	0	122	166
Total Volume	0	802	176	978	0	0	0	0	0	596	229	825	197	0	501	698
% App. Total	0	82	18		0	0	0		0	72.2	27.8		28.2	0	71.8	
PHF	.000	.907	.863	.926	.000	.000	.000	.000	.000	.931	.939	.950	.821	.000	.914	.928

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	120	23	143	0	0	0	0	0	67	39	106	18	0	77	95	344
07:15 AM	0	145	26	171	0	0	0	0	0	84	24	108	32	0	82	114	393
07:30 AM	0	171	34	205	0	0	0	0	0	110	29	139	34	0	106	140	484
07:45 AM	0	195	33	228	0	0	0	0	0	102	28	130	28	0	107	135	493
Total	0	631	116	747	0	0	0	0	0	363	120	483	112	0	372	484	1714
08:00 AM	0	147	38	185	0	0	0	0	0	84	38	122	37	0	84	121	428
08:15 AM	0	122	21	143	0	0	0	0	0	101	35	136	25	0	91	116	395
08:30 AM	0	112	22	134	0	0	0	0	0	81	28	109	23	0	76	99	342
08:45 AM	0	107	16	123	0	0	0	0	0	67	31	98	20	0	67	87	308
Total	0	488	97	585	0	0	0	0	0	333	132	465	105	0	318	423	1473
Grand Total	0	1119	213	1332	0	0	0	0	0	696	252	948	217	0	690	907	3187
Apprch %	0	84	16		0	0	0		0	73.4	26.6		23.9	0	76.1		
Total %	0	35.1	6.7	41.8	0	0	0	0	0	21.8	7.9	29.7	6.8	0	21.7	28.5	

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	171	34	205	0	0	0	0	0	**110**	29	**139**	34	0	106	**140**	484
07:45 AM	0	**195**	33	**228**	0	0	0	0	0	102	28	130	28	0	**107**	135	**493**
08:00 AM	0	147	**38**	185	0	0	0	0	0	84	**38**	122	**37**	0	84	121	428
08:15 AM	0	122	21	143	0	0	0	0	0	101	35	136	25	0	91	116	395
Total Volume	0	635	126	761	0	0	0	0	0	397	130	527	124	0	388	512	1800
% App. Total	0	83.4	16.6		0	0	0		0	75.3	24.7		24.2	0	75.8		
PHF	.000	.814	.829	.834	.000	.000	.000	.000	.000	.902	.855	.948	.838	.000	.907	.914	.913

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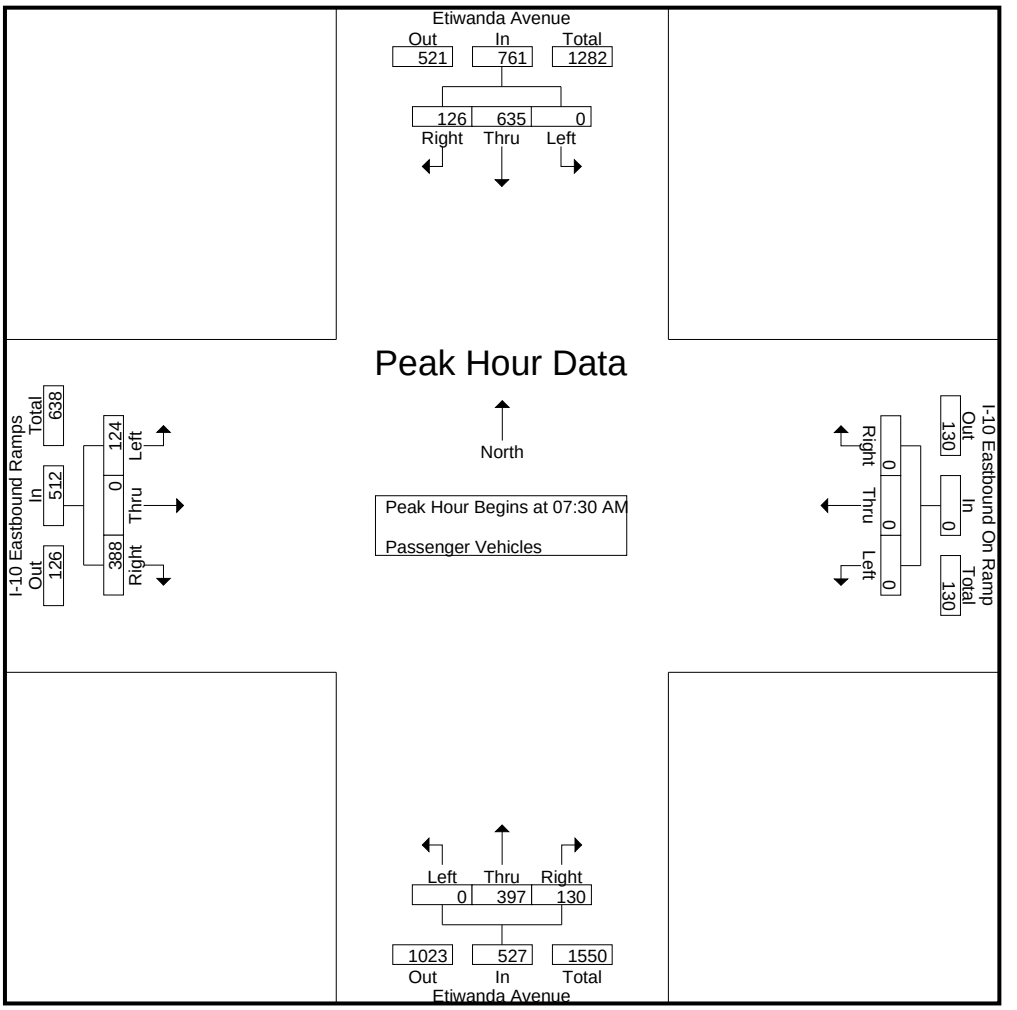
City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	171	34	205	0	0	0	0	0	**110**	29	**139**	34	0	106	**140**
+15 mins.	0	**195**	33	**228**	0	0	0	0	0	102	28	130	28	0	**107**	135
+30 mins.	0	147	**38**	185	0	0	0	0	0	84	**38**	122	**37**	0	84	121
+45 mins.	0	122	21	143	0	0	0	0	0	101	35	136	25	0	91	116
Total Volume	0	635	126	761	0	0	0	0	0	397	130	527	124	0	388	512
% App. Total	0	83.4	16.6		0	0	0		0	75.3	24.7		24.2	0	75.8	
PHF	.000	.814	.829	.834	.000	.000	.000	.000	.000	.902	.855	.948	.838	.000	.907	.914

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	2	0	2	0	0	0	0	0	7	2	9	3	0	8	11	22
07:15 AM	0	5	1	6	0	0	0	0	0	9	5	14	4	0	2	6	26
07:30 AM	0	12	4	16	0	0	0	0	0	7	8	15	1	0	5	6	37
07:45 AM	0	4	2	6	0	0	0	0	0	12	7	19	2	0	6	8	33
Total	0	23	7	30	0	0	0	0	0	35	22	57	10	0	21	31	118
08:00 AM	0	11	0	11	0	0	0	0	0	7	4	11	1	0	4	5	27
08:15 AM	0	7	0	7	0	0	0	0	0	10	4	14	1	0	8	9	30
08:30 AM	0	12	0	12	0	0	0	0	0	14	5	19	2	0	3	5	36
08:45 AM	0	9	1	10	0	0	0	0	0	14	6	20	3	0	2	5	35
Total	0	39	1	40	0	0	0	0	0	45	19	64	7	0	17	24	128
Grand Total	0	62	8	70	0	0	0	0	0	80	41	121	17	0	38	55	246
Apprch %	0	88.6	11.4		0	0	0		0	66.1	33.9		30.9	0	69.1		
Total %	0	25.2	3.3	28.5	0	0	0	0	0	32.5	16.7	49.2	6.9	0	15.4	22.4	

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	**12**	**4**	**16**	0	0	0	0	0	7	**8**	15	1	0	5	6	**37**
07:45 AM	0	4	2	6	0	0	0	0	0	**12**	7	**19**	**2**	0	6	8	33
08:00 AM	0	11	0	11	0	0	0	0	0	7	4	11	1	0	4	5	27
08:15 AM	0	7	0	7	0	0	0	0	0	10	4	14	1	0	**8**	**9**	30
Total Volume	0	34	6	40	0	0	0	0	0	36	23	59	5	0	23	28	127
% App. Total	0	85	15		0	0	0		0	61	39		17.9	0	82.1		
PHF	.000	.708	.375	.625	.000	.000	.000	.000	.000	.750	.719	.776	.625	.000	.719	.778	.858

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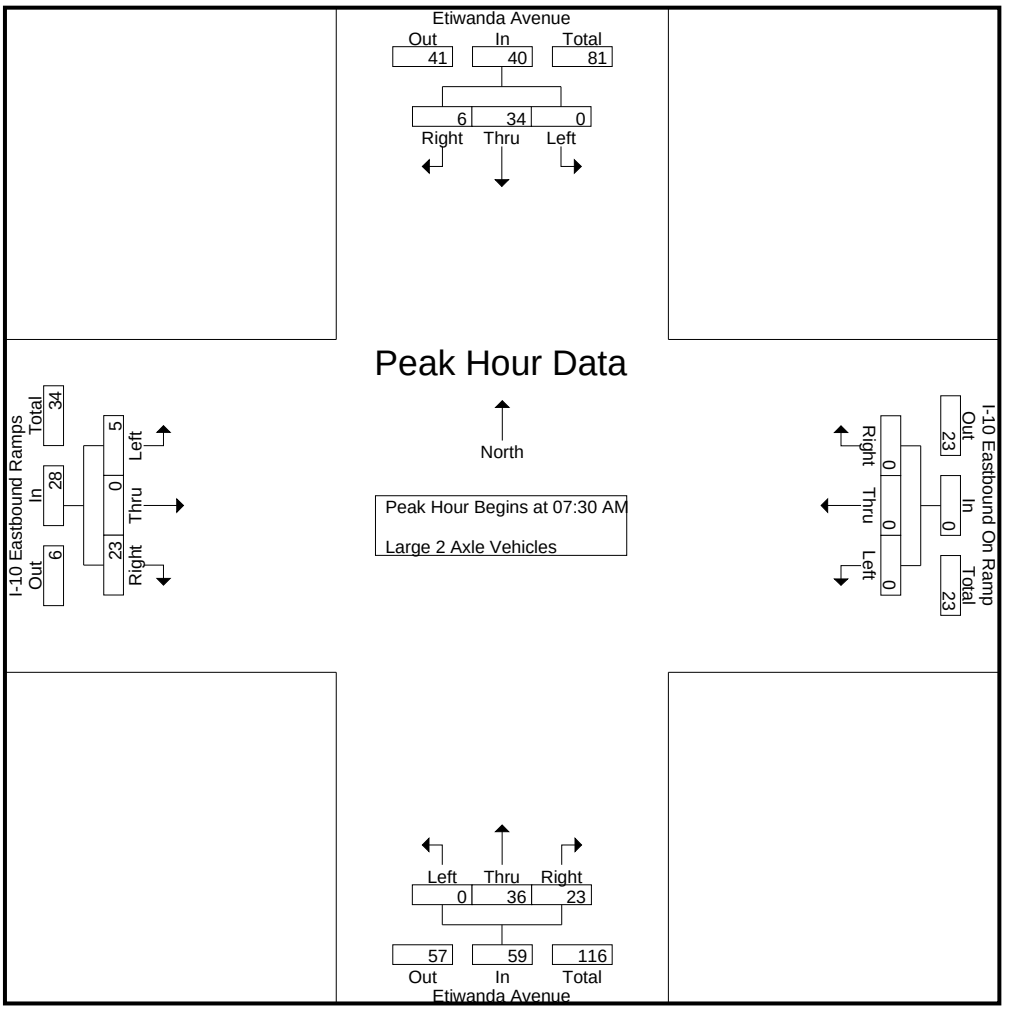
City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	**12**	**4**	**16**	0	0	0	0	0	7	**8**	15	1	0	5	6
+15 mins.	0	4	2	6	0	0	0	0	0	**12**	7	**19**	**2**	0	6	8
+30 mins.	0	11	0	11	0	0	0	0	0	7	4	11	1	0	4	5
+45 mins.	0	7	0	7	0	0	0	0	0	10	4	14	1	0	**8**	**9**
Total Volume	0	34	6	40	0	0	0	0	0	36	23	59	5	0	23	28
% App. Total	0	85	15		0	0	0		0	61	39		17.9	0	82.1	
PHF	.000	.708	.375	.625	.000	.000	.000	.000	.000	.750	.719	.776	.625	.000	.719	.778

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	12	1	13	0	0	0	0	0	16	2	18	1	0	5	6	37
07:15 AM	0	7	2	9	0	0	0	0	0	7	1	8	3	0	3	6	23
07:30 AM	0	7	4	11	0	0	0	0	0	12	4	16	4	0	8	12	39
07:45 AM	0	6	1	7	0	0	0	0	0	12	3	15	1	0	2	3	25
Total	0	32	8	40	0	0	0	0	0	47	10	57	9	0	18	27	124
08:00 AM	0	12	1	13	0	0	0	0	0	11	1	12	13	0	4	17	42
08:15 AM	0	7	2	9	0	0	0	0	0	11	4	15	10	0	8	18	42
08:30 AM	0	4	2	6	0	0	0	0	0	14	3	17	10	0	2	12	35
08:45 AM	0	10	4	14	0	0	0	0	0	10	3	13	11	0	11	22	49
Total	0	33	9	42	0	0	0	0	0	46	11	57	44	0	25	69	168
Grand Total	0	65	17	82	0	0	0	0	0	93	21	114	53	0	43	96	292
Apprch %	0	79.3	20.7		0	0	0		0	81.6	18.4		55.2	0	44.8		
Total %	0	22.3	5.8	28.1	0	0	0	0	0	31.8	7.2	39	18.2	0	14.7	32.9	

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	7	**4**	11	0	0	0	0	0	**12**	**4**	**16**	4	0	**8**	12	39
07:45 AM	0	6	1	7	0	0	0	0	0	12	3	15	1	0	2	3	25
08:00 AM	0	**12**	1	**13**	0	0	0	0	0	11	1	12	**13**	0	4	17	**42**
08:15 AM	0	7	2	9	0	0	0	0	0	11	4	15	10	0	8	**18**	42
Total Volume	0	32	8	40	0	0	0	0	0	46	12	58	28	0	22	50	148
% App. Total	0	80	20		0	0	0		0	79.3	20.7		56	0	44		
PHF	.000	.667	.500	.769	.000	.000	.000	.000	.000	.958	.750	.906	.538	.000	.688	.694	.881

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E AM
Site Code : 10821516
Start Date : 9/28/2021
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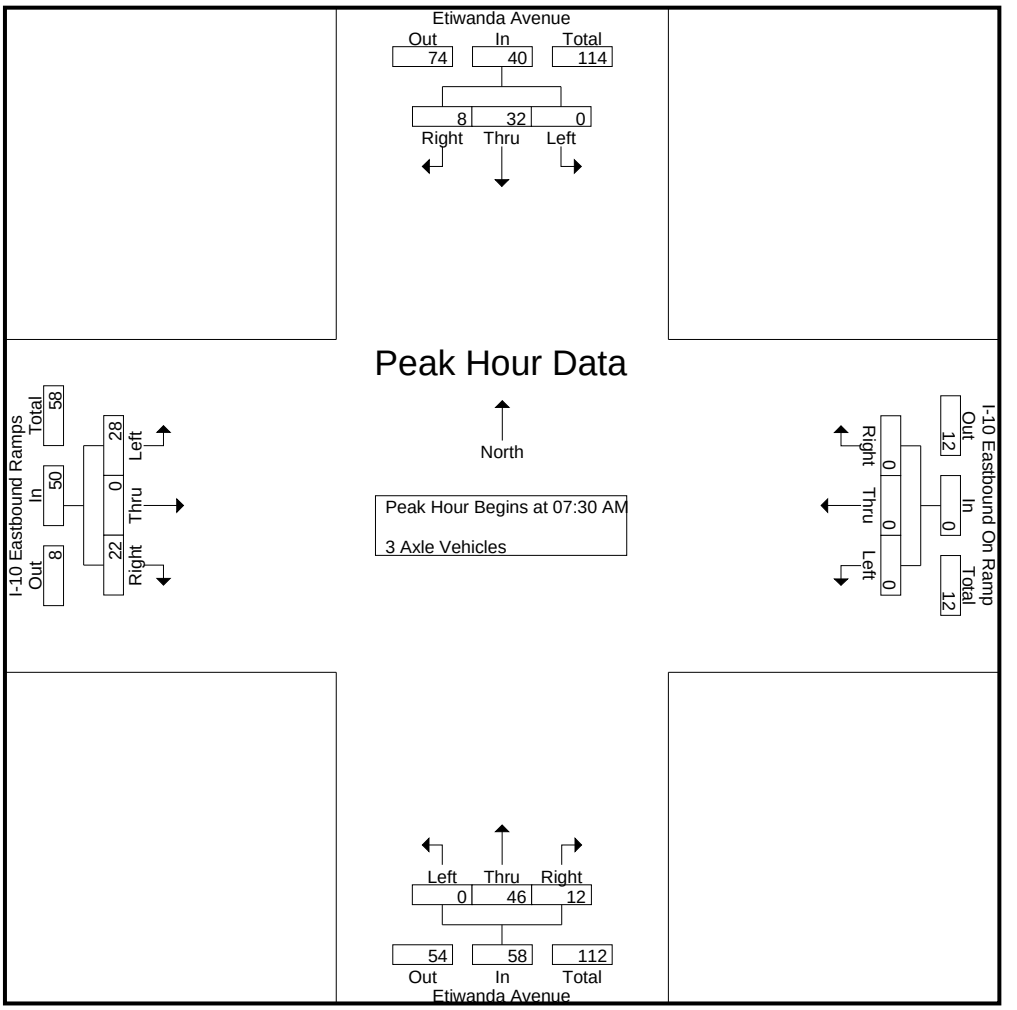

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	7	**4**	11	0	0	0	0	0	**12**	**4**	**16**	4	0	**8**	12
+15 mins.	0	6	1	7	0	0	0	0	0	12	3	15	1	0	2	3
+30 mins.	0	**12**	1	**13**	0	0	0	0	0	11	1	12	**13**	0	4	17
+45 mins.	0	7	2	9	0	0	0	0	0	11	4	15	10	0	8	**18**
Total Volume	0	32	8	40	0	0	0	0	0	46	12	58	28	0	22	50
% App. Total	0	80	20		0	0	0		0	79.3	20.7		56	0	44	
PHF	.000	.667	.500	.769	.000	.000	.000	.000	.000	.958	.750	.906	.538	.000	.688	.694

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E AM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- 4+ Axle Trucks

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	21	8	29	0	0	0	0	0	27	12	39	10	0	15	25	93
07:15 AM	0	22	7	29	0	0	0	0	0	28	13	41	10	0	16	26	96
07:30 AM	0	24	4	28	0	0	0	0	0	28	19	47	12	0	18	30	105
07:45 AM	0	16	7	23	0	0	0	0	0	34	13	47	11	0	19	30	100
Total	0	83	26	109	0	0	0	0	0	117	57	174	43	0	68	111	394
08:00 AM	0	18	12	30	0	0	0	0	0	31	14	45	9	0	16	25	100
08:15 AM	0	14	6	20	0	0	0	0	0	24	18	42	8	0	15	23	85
08:30 AM	0	29	4	33	0	0	0	0	0	33	12	45	18	0	24	42	120
08:45 AM	0	22	4	26	0	0	0	0	0	32	10	42	14	0	32	46	114
Total	0	83	26	109	0	0	0	0	0	120	54	174	49	0	87	136	419
Grand Total	0	166	52	218	0	0	0	0	0	237	111	348	92	0	155	247	813
Apprch %	0	76.1	23.9		0	0	0		0	68.1	31.9		37.2	0	62.8		
Total %	0	20.4	6.4	26.8	0	0	0	0	0	29.2	13.7	42.8	11.3	0	19.1	30.4	

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	**24**	4	28	0	0	0	0	0	28	**19**	**47**	**12**	0	18	**30**	**105**
07:45 AM	0	16	7	23	0	0	0	0	0	**34**	13	47	11	0	**19**	30	100
08:00 AM	0	18	**12**	**30**	0	0	0	0	0	31	14	45	9	0	16	25	100
08:15 AM	0	14	6	20	0	0	0	0	0	24	18	42	8	0	15	23	85
Total Volume	0	72	29	101	0	0	0	0	0	117	64	181	40	0	68	108	390
% App. Total	0	71.3	28.7		0	0	0		0	64.6	35.4		37	0	63		
PHF	.000	.750	.604	.842	.000	.000	.000	.000	.000	.860	.842	.963	.833	.000	.895	.900	.929

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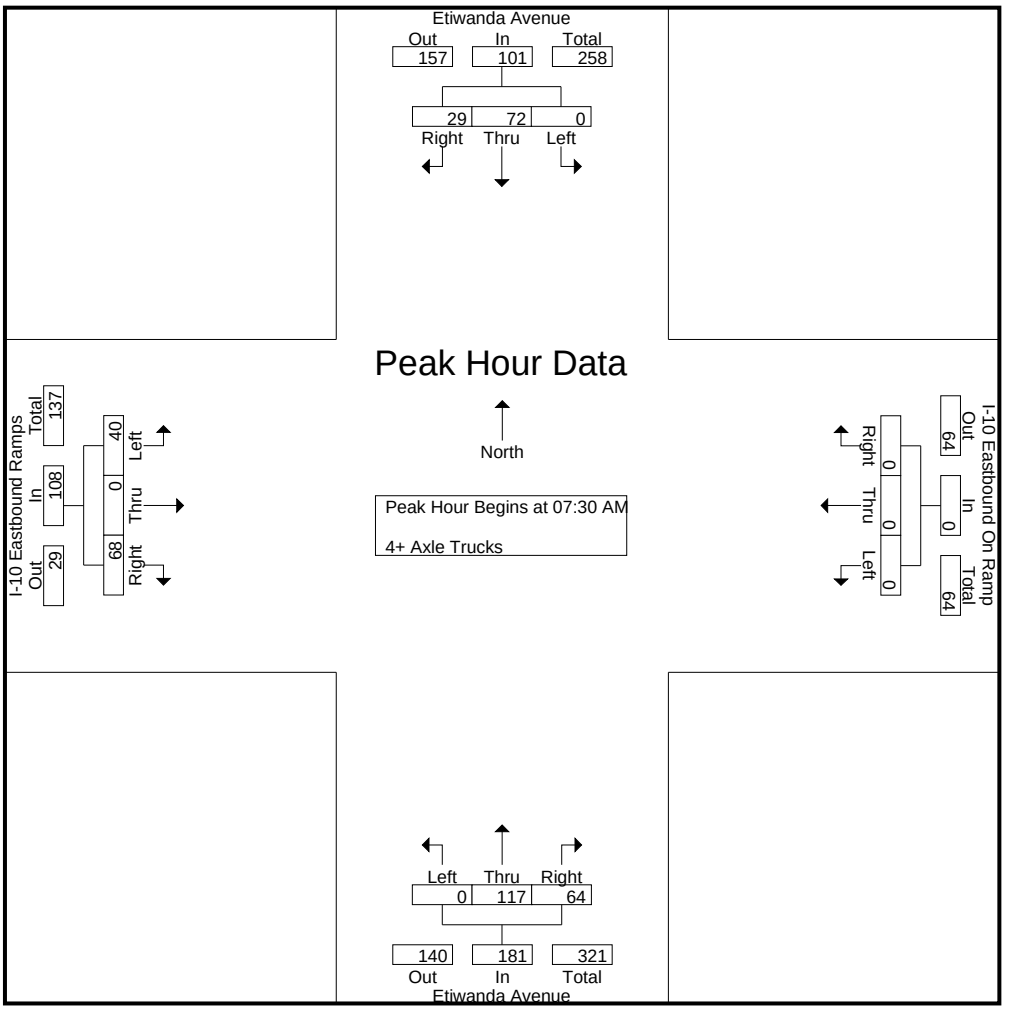
City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	**24**	4	28	0	0	0	0	0	28	**19**	**47**	**12**	0	18	**30**
+15 mins.	0	16	7	23	0	0	0	0	0	**34**	13	47	11	0	**19**	30
+30 mins.	0	18	**12**	**30**	0	0	0	0	0	31	14	45	9	0	16	25
+45 mins.	0	14	6	20	0	0	0	0	0	24	18	42	8	0	15	23
Total Volume	0	72	29	101	0	0	0	0	0	117	64	181	40	0	68	108
% App. Total	0	71.3	28.7		0	0	0		0	64.6	35.4		37	0	63	
PHF	.000	.750	.604	.842	.000	.000	.000	.000	.000	.860	.842	.963	.833	.000	.895	.900

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	209	98	307	0	0	0	0	0	250	120	370	50	0	66	116	793
04:15 PM	0	158	66	224	0	0	0	0	0	253	103	356	47	0	54	101	681
04:30 PM	0	192	94	286	0	0	0	0	0	282	104	386	42	0	60	102	774
04:45 PM	0	217	95	312	0	0	0	0	0	252	119	371	61	0	63	124	807
Total	0	776	353	1129	0	0	0	0	0	1037	446	1483	200	0	243	443	3055
05:00 PM	0	224	86	310	0	0	0	0	0	285	87	372	48	0	31	79	761
05:15 PM	0	204	103	307	0	0	0	0	0	201	85	286	40	0	49	89	682
05:30 PM	0	167	67	234	0	0	0	0	0	229	85	314	42	0	50	92	640
05:45 PM	0	166	67	233	0	0	0	0	0	219	76	295	53	0	40	93	621
Total	0	761	323	1084	0	0	0	0	0	934	333	1267	183	0	170	353	2704
Grand Total	0	1537	676	2213	0	0	0	0	0	1971	779	2750	383	0	413	796	5759
Apprch %	0	69.5	30.5		0	0	0		0	71.7	28.3		48.1	0	51.9		
Total %	0	26.7	11.7	38.4	0	0	0	0	0	34.2	13.5	47.8	6.7	0	7.2	13.8	
Passenger Vehicles	0	1218	617	1835	0	0	0	0	0	1654	651	2305	267	0	242	509	4649
% Passenger Vehicles	0	79.2	91.3	82.9	0	0	0	0	0	83.9	83.6	83.8	69.7	0	58.6	63.9	80.7
Large 2 Axle Vehicles	0	68	17	85	0	0	0	0	0	48	24	72	10	0	30	40	197
% Large 2 Axle Vehicles	0	4.4	2.5	3.8	0	0	0	0	0	2.4	3.1	2.6	2.6	0	7.3	5	3.4
3 Axle Vehicles	0	81	8	89	0	0	0	0	0	67	25	92	41	0	15	56	237
% 3 Axle Vehicles	0	5.3	1.2	4	0	0	0	0	0	3.4	3.2	3.3	10.7	0	3.6	7	4.1
4+ Axle Trucks	0	170	34	204	0	0	0	0	0	202	79	281	65	0	126	191	676
% 4+ Axle Trucks	0	11.1	5	9.2	0	0	0	0	0	10.2	10.1	10.2	17	0	30.5	24	11.7

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	209	**98**	307	0	0	0	0	0	250	**120**	370	50	0	**66**	116	793
04:15 PM	0	158	66	224	0	0	0	0	0	253	103	356	47	0	54	101	681
04:30 PM	0	192	94	286	0	0	0	0	0	**282**	104	**386**	42	0	60	102	774
04:45 PM	0	**217**	95	**312**	0	0	0	0	0	252	119	371	**61**	0	63	**124**	**807**
Total Volume	0	776	353	1129	0	0	0	0	0	1037	446	1483	200	0	243	443	3055
% App. Total	0	68.7	31.3		0	0	0		0	69.9	30.1		45.1	0	54.9		
PHF	.000	.894	.901	.905	.000	.000	.000	.000	.000	.919	.929	.960	.820	.000	.920	.893	.946

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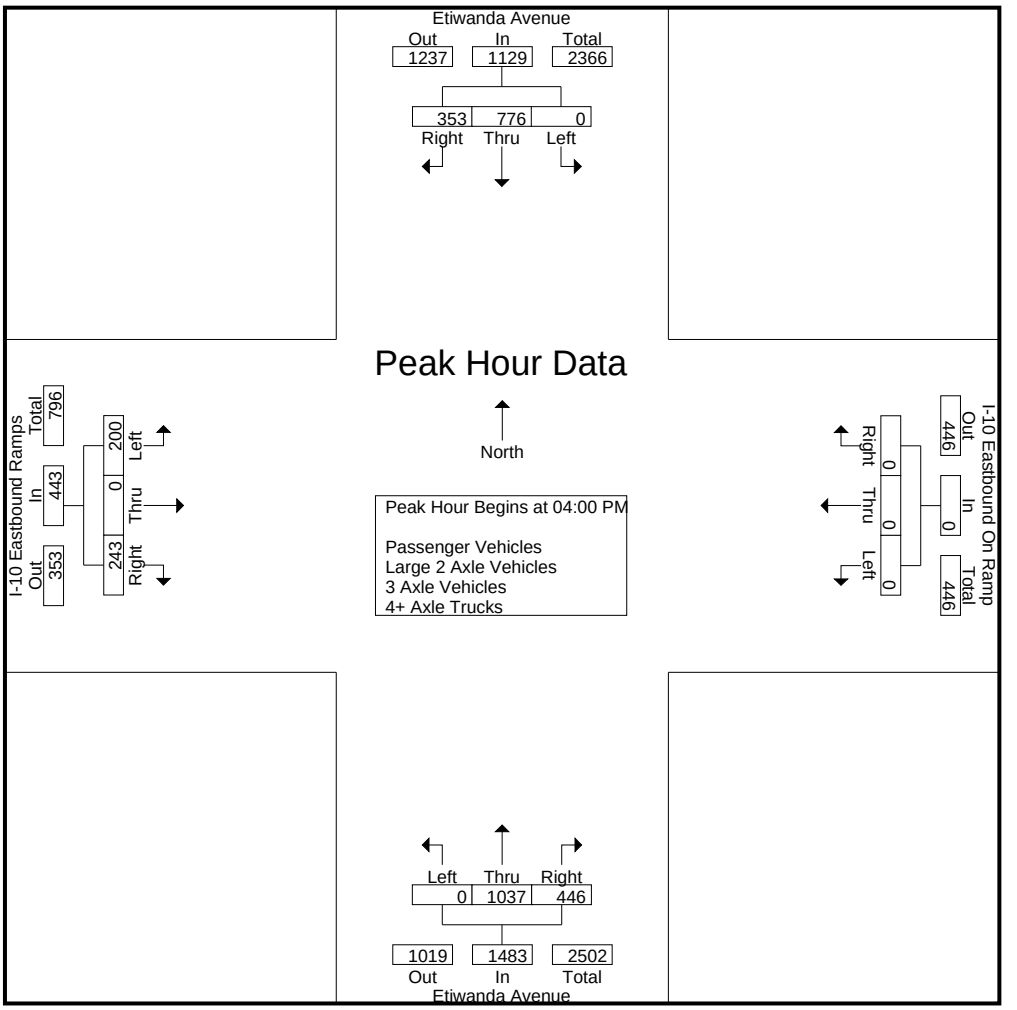
City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				04:15 PM				04:00 PM			
+0 mins.	0	192	94	286	0	0	0	0	0	253	103	356	50	0	**66**	116
+15 mins.	0	217	95	**312**	0	0	0	0	0	282	104	**386**	47	0	54	101
+30 mins.	0	**224**	86	310	0	0	0	0	0	252	**119**	371	42	0	60	102
+45 mins.	0	204	**103**	307	0	0	0	0	0	**285**	87	372	**61**	0	63	**124**
Total Volume	0	837	378	1215	0	0	0	0	0	1072	413	1485	200	0	243	443
% App. Total	0	68.9	31.1		0	0	0		0	72.2	27.8		45.1	0	54.9	
PHF	.000	.934	.917	.974	.000	.000	.000	.000	.000	.940	.868	.962	.820	.000	.920	.893

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	169	91	260	0	0	0	0	0	200	104	304	28	0	34	62	626
04:15 PM	0	131	62	193	0	0	0	0	0	209	84	293	26	0	33	59	545
04:30 PM	0	154	86	240	0	0	0	0	0	243	85	328	30	0	41	71	639
04:45 PM	0	181	84	265	0	0	0	0	0	220	97	317	45	0	43	88	670
Total	0	635	323	958	0	0	0	0	0	872	370	1242	129	0	151	280	2480
05:00 PM	0	171	78	249	0	0	0	0	0	240	77	317	36	0	15	51	617
05:15 PM	0	157	90	247	0	0	0	0	0	164	75	239	31	0	25	56	542
05:30 PM	0	136	63	199	0	0	0	0	0	197	69	266	34	0	27	61	526
05:45 PM	0	119	63	182	0	0	0	0	0	181	60	241	37	0	24	61	484
Total	0	583	294	877	0	0	0	0	0	782	281	1063	138	0	91	229	2169
Grand Total	0	1218	617	1835	0	0	0	0	0	1654	651	2305	267	0	242	509	4649
Apprch %	0	66.4	33.6		0	0	0		0	71.8	28.2		52.5	0	47.5		
Total %	0	26.2	13.3	39.5	0	0	0	0	0	35.6	14	49.6	5.7	0	5.2	10.9	

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	169	**91**	260	0	0	0	0	0	200	**104**	304	28	0	34	62	626
04:15 PM	0	131	62	193	0	0	0	0	0	209	84	293	26	0	33	59	545
04:30 PM	0	154	86	240	0	0	0	0	0	**243**	85	**328**	30	0	41	71	639
04:45 PM	0	**181**	84	**265**	0	0	0	0	0	220	97	317	**45**	0	**43**	**88**	**670**
Total Volume	0	635	323	958	0	0	0	0	0	872	370	1242	129	0	151	280	2480
% App. Total	0	66.3	33.7		0	0	0		0	70.2	29.8		46.1	0	53.9		
PHF	.000	.877	.887	.904	.000	.000	.000	.000	.000	.897	.889	.947	.717	.000	.878	.795	.925

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City of Fontana
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File Name : 08_FON_Etiwanda_10E PM
Site Code : 10821516
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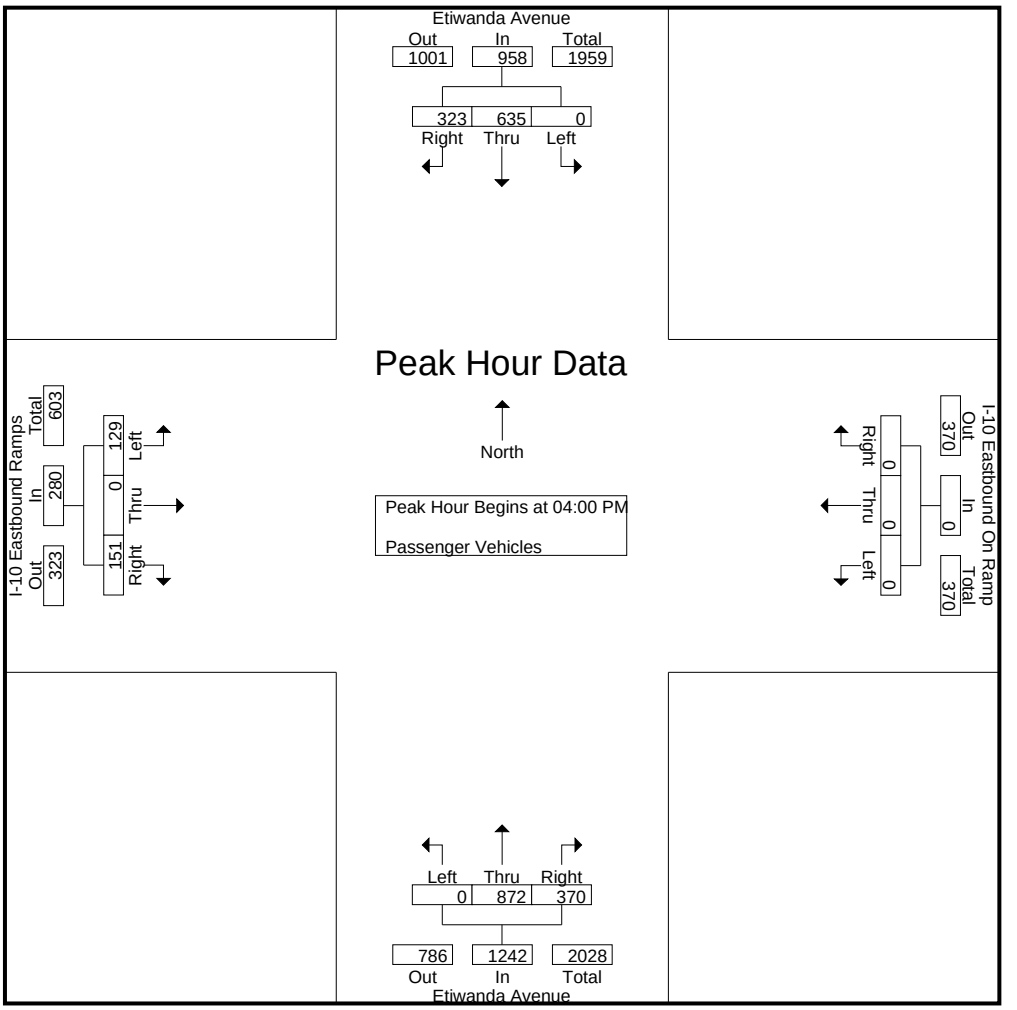

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	169	**91**	260	0	0	0	0	0	200	**104**	304	28	0	34	62
+15 mins.	0	131	62	193	0	0	0	0	0	209	84	293	26	0	33	59
+30 mins.	0	154	86	240	0	0	0	0	0	**243**	85	**328**	30	0	41	71
+45 mins.	0	**181**	84	**265**	0	0	0	0	0	220	97	317	**45**	0	**43**	**88**
Total Volume	0	635	323	958	0	0	0	0	0	872	370	1242	129	0	151	280
% App. Total	0	66.3	33.7		0	0	0		0	70.2	29.8		46.1	0	53.9	
PHF	.000	.877	.887	.904	.000	.000	.000	.000	.000	.897	.889	.947	.717	.000	.878	.795

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City of Fontana
N/S: Etiwanda Avenue
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Weather: Clear

File Name : 08_FON_Etiwanda_10E PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	12	3	15	0	0	0	0	0	9	4	13	2	0	3	5	33
04:15 PM	0	9	2	11	0	0	0	0	0	5	4	9	4	0	5	9	29
04:30 PM	0	8	4	12	0	0	0	0	0	9	2	11	2	0	5	7	30
04:45 PM	0	11	1	12	0	0	0	0	0	4	4	8	0	0	4	4	24
Total	0	40	10	50	0	0	0	0	0	27	14	41	8	0	17	25	116
05:00 PM	0	12	3	15	0	0	0	0	0	8	1	9	0	0	2	2	26
05:15 PM	0	9	3	12	0	0	0	0	0	3	1	4	1	0	3	4	20
05:30 PM	0	3	0	3	0	0	0	0	0	5	4	9	0	0	6	6	18
05:45 PM	0	4	1	5	0	0	0	0	0	5	4	9	1	0	2	3	17
Total	0	28	7	35	0	0	0	0	0	21	10	31	2	0	13	15	81
Grand Total	0	68	17	85	0	0	0	0	0	48	24	72	10	0	30	40	197
Apprch %	0	80	20		0	0	0		0	66.7	33.3		25	0	75		
Total %	0	34.5	8.6	43.1	0	0	0	0	0	24.4	12.2	36.5	5.1	0	15.2	20.3	

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**12**	3	**15**	0	0	0	0	0	**9**	**4**	**13**	2	0	3	5	**33**
04:15 PM	0	9	2	11	0	0	0	0	0	5	4	9	**4**	0	**5**	**9**	29
04:30 PM	0	8	**4**	12	0	0	0	0	0	9	2	11	2	0	5	7	30
04:45 PM	0	11	1	12	0	0	0	0	0	4	4	8	0	0	4	4	24
Total Volume	0	40	10	50	0	0	0	0	0	27	14	41	8	0	17	25	116
% App. Total	0	80	20		0	0	0		0	65.9	34.1		32	0	68		
PHF	.000	.833	.625	.833	.000	.000	.000	.000	.000	.750	.875	.788	.500	.000	.850	.694	.879

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E PM
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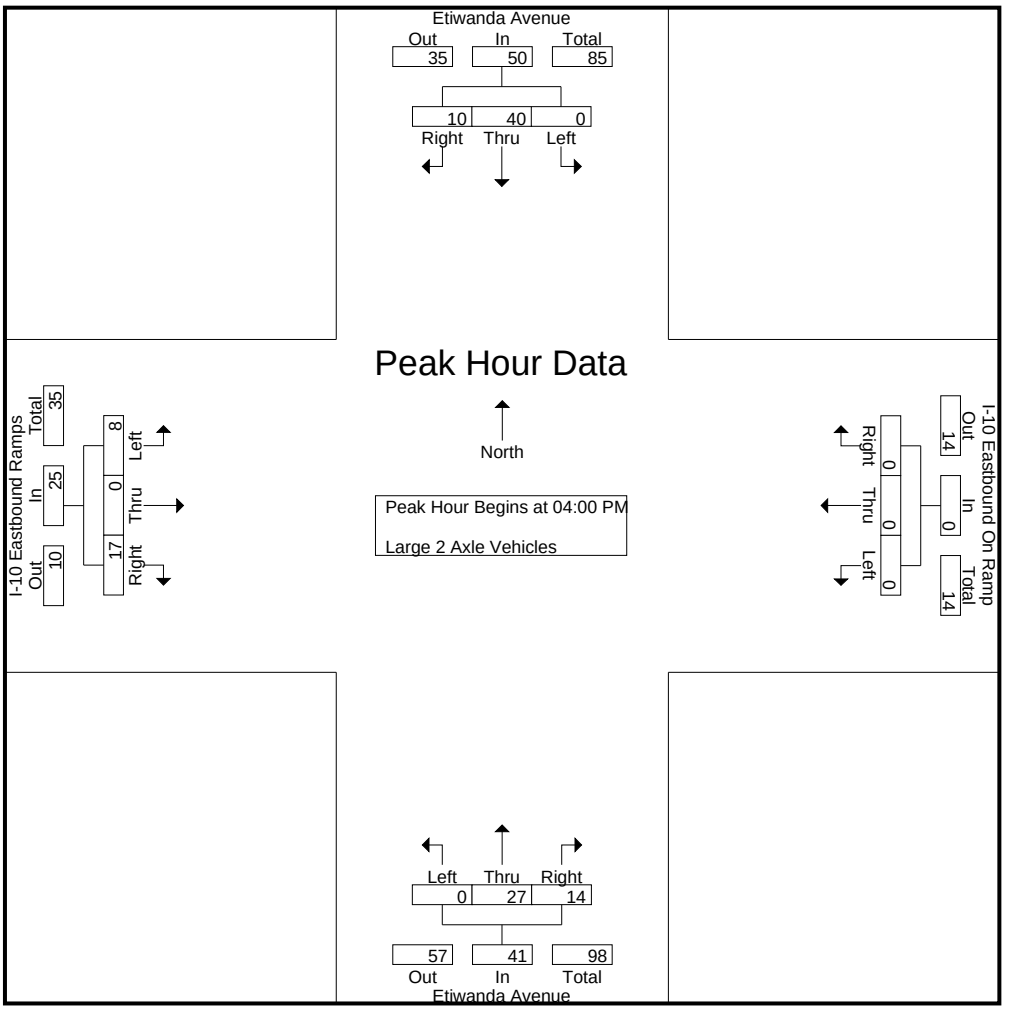

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	**12**	3	**15**	0	0	0	0	0	**9**	**4**	**13**	2	0	3	5
+15 mins.	0	9	2	11	0	0	0	0	0	5	4	9	**4**	0	**5**	**9**
+30 mins.	0	8	**4**	12	0	0	0	0	0	9	2	11	2	0	5	7
+45 mins.	0	11	1	12	0	0	0	0	0	4	4	8	0	0	4	4
Total Volume	0	40	10	50	0	0	0	0	0	27	14	41	8	0	17	25
% App. Total	0	80	20		0	0	0		0	65.9	34.1		32	0	68	
PHF	.000	.833	.625	.833	.000	.000	.000	.000	.000	.750	.875	.788	.500	.000	.850	.694

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E PM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- 3 Axle Vehicles

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	6	1	7	0	0	0	0	0	15	0	15	12	0	3	15	37
04:15 PM	0	3	1	4	0	0	0	0	0	13	4	17	11	0	3	14	35
04:30 PM	0	8	0	8	0	0	0	0	0	7	6	13	2	0	3	5	26
04:45 PM	0	12	2	14	0	0	0	0	0	5	5	10	7	0	1	8	32
Total	0	29	4	33	0	0	0	0	0	40	15	55	32	0	10	42	130
05:00 PM	0	14	2	16	0	0	0	0	0	7	2	9	3	0	1	4	29
05:15 PM	0	15	1	16	0	0	0	0	0	5	2	7	1	0	1	2	25
05:30 PM	0	9	1	10	0	0	0	0	0	7	5	12	2	0	2	4	26
05:45 PM	0	14	0	14	0	0	0	0	0	8	1	9	3	0	1	4	27
Total	0	52	4	56	0	0	0	0	0	27	10	37	9	0	5	14	107
Grand Total	0	81	8	89	0	0	0	0	0	67	25	92	41	0	15	56	237
Apprch %	0	91	9		0	0	0		0	72.8	27.2		73.2	0	26.8		
Total %	0	34.2	3.4	37.6	0	0	0	0	0	28.3	10.5	38.8	17.3	0	6.3	23.6	

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	6	1	7	0	0	0	0	0	**15**	0	15	**12**	0	**3**	**15**	**37**
04:15 PM	0	3	1	4	0	0	0	0	0	13	4	**17**	11	0	3	14	35
04:30 PM	0	8	0	8	0	0	0	0	0	7	**6**	13	2	0	3	5	26
04:45 PM	0	**12**	**2**	**14**	0	0	0	0	0	5	5	10	7	0	1	8	32
Total Volume	0	29	4	33	0	0	0	0	0	40	15	55	32	0	10	42	130
% App. Total	0	87.9	12.1		0	0	0		0	72.7	27.3		76.2	0	23.8		
PHF	.000	.604	.500	.589	.000	.000	.000	.000	.000	.667	.625	.809	.667	.000	.833	.700	.878

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E PM
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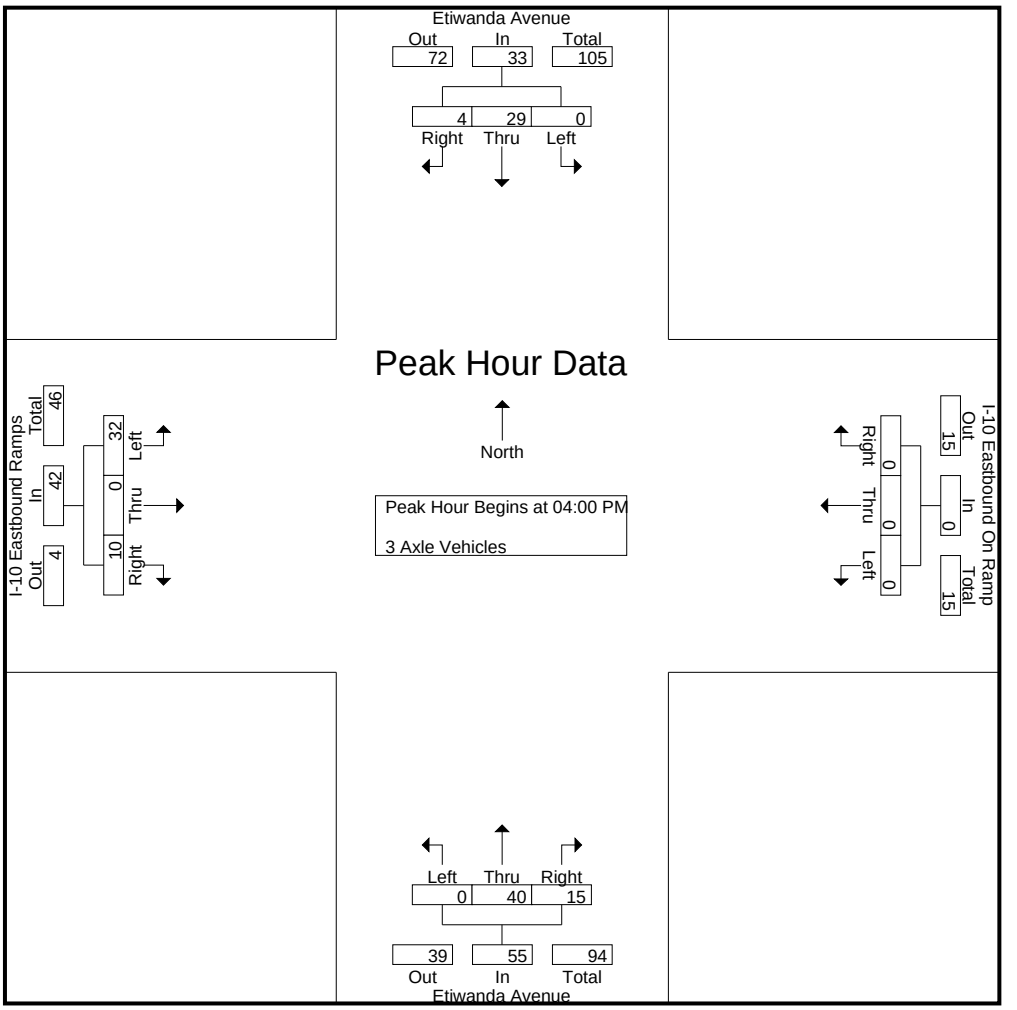

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	6	1	7	0	0	0	0	0	**15**	0	15	**12**	0	**3**	**15**
+15 mins.	0	3	1	4	0	0	0	0	0	13	4	**17**	11	0	3	14
+30 mins.	0	8	0	8	0	0	0	0	0	7	**6**	13	2	0	3	5
+45 mins.	0	**12**	**2**	**14**	0	0	0	0	0	5	5	10	7	0	1	8
Total Volume	0	29	4	33	0	0	0	0	0	40	15	55	32	0	10	42
% App. Total	0	87.9	12.1		0	0	0		0	72.7	27.3		76.2	0	23.8	
PHF	.000	.604	.500	.589	.000	.000	.000	.000	.000	.667	.625	.809	.667	.000	.833	.700

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City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E PM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- 4+ Axle Trucks

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	22	3	25	0	0	0	0	0	26	12	38	8	0	26	34	97
04:15 PM	0	15	1	16	0	0	0	0	0	26	11	37	6	0	13	19	72
04:30 PM	0	22	4	26	0	0	0	0	0	23	11	34	8	0	11	19	79
04:45 PM	0	13	8	21	0	0	0	0	0	23	13	36	9	0	15	24	81
Total	0	72	16	88	0	0	0	0	0	98	47	145	31	0	65	96	329
05:00 PM	0	27	3	30	0	0	0	0	0	30	7	37	9	0	13	22	89
05:15 PM	0	23	9	32	0	0	0	0	0	29	7	36	7	0	20	27	95
05:30 PM	0	19	3	22	0	0	0	0	0	20	7	27	6	0	15	21	70
05:45 PM	0	29	3	32	0	0	0	0	0	25	11	36	12	0	13	25	93
Total	0	98	18	116	0	0	0	0	0	104	32	136	34	0	61	95	347
Grand Total	0	170	34	204	0	0	0	0	0	202	79	281	65	0	126	191	676
Apprch %	0	83.3	16.7		0	0	0		0	71.9	28.1		34	0	66		
Total %	0	25.1	5	30.2	0	0	0	0	0	29.9	11.7	41.6	9.6	0	18.6	28.3	

	Etiwanda Avenue Southbound				I-10 Eastbound On Ramp Westbound				Etiwanda Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**22**	3	25	0	0	0	0	0	**26**	12	**38**	8	0	**26**	**34**	**97**
04:15 PM	0	15	1	16	0	0	0	0	0	26	11	37	6	0	13	19	72
04:30 PM	0	22	4	**26**	0	0	0	0	0	23	11	34	8	0	11	19	79
04:45 PM	0	13	**8**	21	0	0	0	0	0	23	**13**	36	**9**	0	15	24	81
Total Volume	0	72	16	88	0	0	0	0	0	98	47	145	31	0	65	96	329
% App. Total	0	81.8	18.2		0	0	0		0	67.6	32.4		32.3	0	67.7		
PHF	.000	.818	.500	.846	.000	.000	.000	.000	.000	.942	.904	.954	.861	.000	.625	.706	.848

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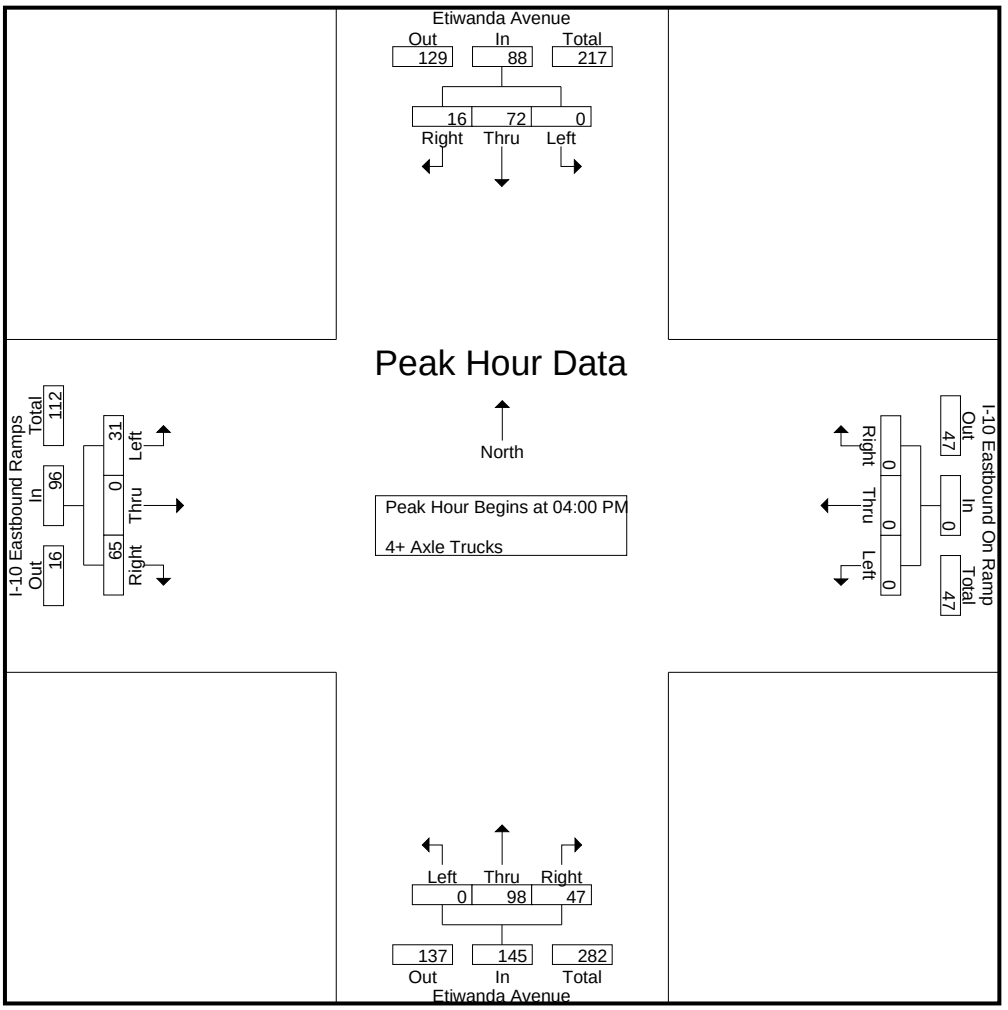
City of Fontana
N/S: Etiwanda Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 08_FON_Etiwanda_10E PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	**22**	3	25	0	0	0	0	0	**26**	12	**38**	8	0	**26**	**34**
+15 mins.	0	15	1	16	0	0	0	0	0	26	11	37	6	0	13	19
+30 mins.	0	22	4	**26**	0	0	0	0	0	23	11	34	8	0	11	19
+45 mins.	0	13	**8**	21	0	0	0	0	0	23	**13**	36	**9**	0	15	24
Total Volume	0	72	16	88	0	0	0	0	0	98	47	145	31	0	65	96
% App. Total	0	81.8	18.2		0	0	0		0	67.6	32.4		32.3	0	67.7	
PHF	.000	.818	.500	.846	.000	.000	.000	.000	.000	.942	.904	.954	.861	.000	.625	.706

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 06_FON_Cherry_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	80	227	0	307	0	0	0	0	0	172	59	231	85	3	102	190	728
07:15 AM	71	277	0	348	0	0	0	0	0	215	86	301	73	1	111	185	834
07:30 AM	89	308	0	397	0	0	0	0	0	211	85	296	77	0	102	179	872
07:45 AM	81	373	0	454	0	0	0	0	0	243	91	334	83	3	119	205	993
Total	321	1185	0	1506	0	0	0	0	0	841	321	1162	318	7	434	759	3427
08:00 AM	81	310	0	391	0	0	0	0	0	230	95	325	91	0	121	212	928
08:15 AM	80	254	0	334	0	0	0	0	0	236	91	327	68	2	107	177	838
08:30 AM	86	194	0	280	0	0	0	0	0	248	88	336	76	0	122	198	814
08:45 AM	84	163	0	247	0	0	0	0	0	191	83	274	74	0	87	161	682
Total	331	921	0	1252	0	0	0	0	0	905	357	1262	309	2	437	748	3262
Grand Total	652	2106	0	2758	0	0	0	0	0	1746	678	2424	627	9	871	1507	6689
Apprch %	23.6	76.4	0		0	0	0		0	72	28		41.6	0.6	57.8		
Total %	9.7	31.5	0	41.2	0	0	0	0	0	26.1	10.1	36.2	9.4	0.1	13	22.5	
Passenger Vehicles	455	1783	0	2238	0	0	0	0	0	1333	515	1848	495	7	659	1161	5247
% Passenger Vehicles	69.8	84.7	0	81.1	0	0	0	0	0	76.3	76	76.2	78.9	77.8	75.7	77	78.4
Large 2 Axle Vehicles	41	68	0	109	0	0	0	0	0	80	28	108	45	1	20	66	283
% Large 2 Axle Vehicles	6.3	3.2	0	4	0	0	0	0	0	4.6	4.1	4.5	7.2	11.1	2.3	4.4	4.2
3 Axle Vehicles	42	93	0	135	0	0	0	0	0	80	37	117	34	0	43	77	329
% 3 Axle Vehicles	6.4	4.4	0	4.9	0	0	0	0	0	4.6	5.5	4.8	5.4	0	4.9	5.1	4.9
4+ Axle Trucks	114	162	0	276	0	0	0	0	0	253	98	351	53	1	149	203	830
% 4+ Axle Trucks	17.5	7.7	0	10	0	0	0	0	0	14.5	14.5	14.5	8.5	11.1	17.1	13.5	12.4

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**89**	308	0	397	0	0	0	0	0	211	85	296	77	0	102	179	872
07:45 AM	81	**373**	0	**454**	0	0	0	0	0	**243**	91	**334**	83	**3**	119	205	**993**
08:00 AM	81	310	0	391	0	0	0	0	0	230	**95**	325	**91**	0	**121**	**212**	928
08:15 AM	80	254	0	334	0	0	0	0	0	236	91	327	68	2	107	177	838
Total Volume	331	1245	0	1576	0	0	0	0	0	920	362	1282	319	5	449	773	3631
% App. Total	21	79	0		0	0	0		0	71.8	28.2		41.3	0.6	58.1		
PHF	.930	.834	.000	.868	.000	.000	.000	.000	.000	.947	.953	.960	.876	.417	.928	.912	.914

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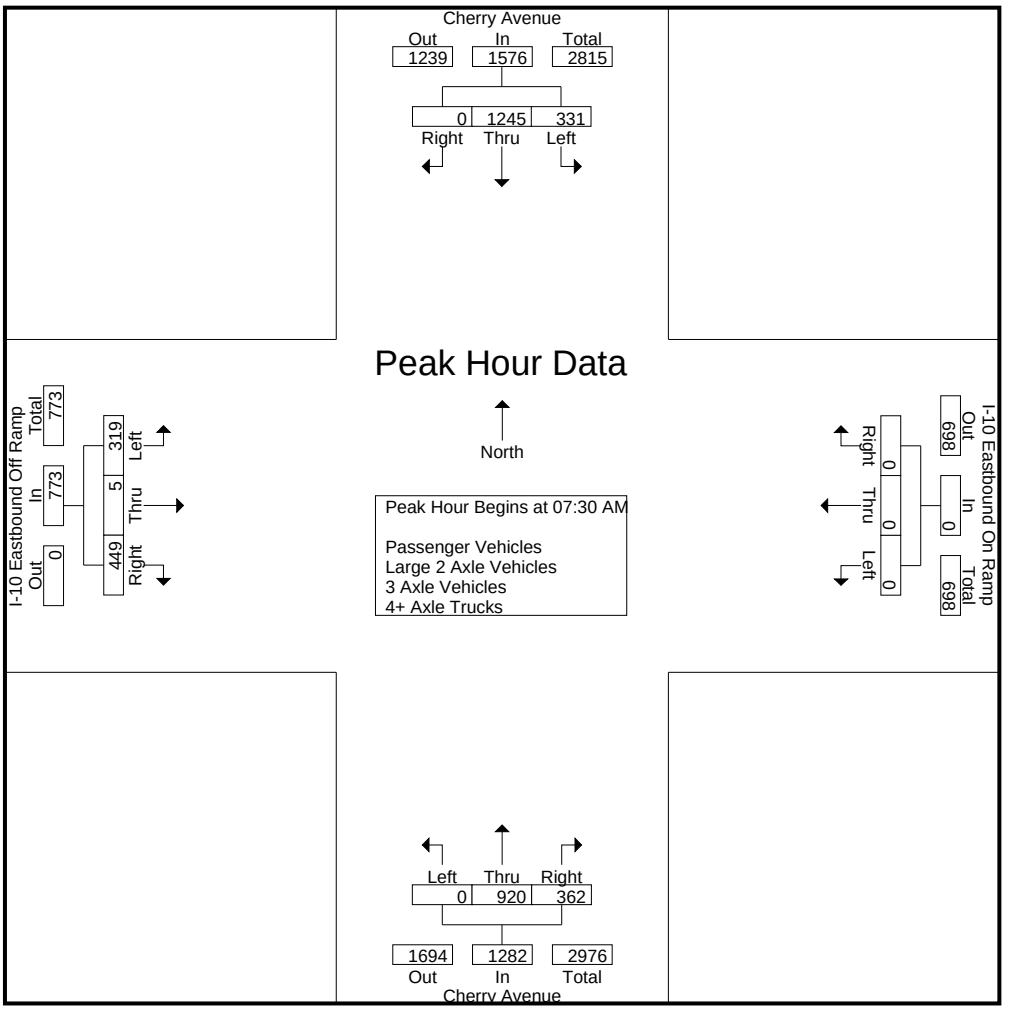
City of Fontana
N/S: Cherry Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 06_FON_Cherry_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:45 AM				07:45 AM			
+0 mins.	71	277	0	348	0	0	0	0	0	243	91	334	83	**3**	119	205
+15 mins.	**89**	308	0	397	0	0	0	0	0	230	**95**	325	**91**	0	121	**212**
+30 mins.	81	**373**	0	**454**	0	0	0	0	0	236	91	327	68	2	107	177
+45 mins.	81	310	0	391	0	0	0	0	0	**248**	88	**336**	76	0	**122**	198
Total Volume	322	1268	0	1590	0	0	0	0	0	957	365	1322	318	5	469	792
% App. Total	20.3	79.7	0		0	0	0		0	72.4	27.6		40.2	0.6	59.2	
PHF	.904	.850	.000	.876	.000	.000	.000	.000	.000	.965	.961	.984	.874	.417	.961	.934

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Weather: Clear

File Name : 06_FON_Cherry_10E AM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- Passenger Vehicles

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	58	195	0	253	0	0	0	0	0	128	46	174	69	2	78	149	576
07:15 AM	43	242	0	285	0	0	0	0	0	173	59	232	67	1	82	150	667
07:30 AM	69	273	0	342	0	0	0	0	0	165	63	228	58	0	74	132	702
07:45 AM	62	334	0	396	0	0	0	0	0	190	70	260	71	3	91	165	821
Total	232	1044	0	1276	0	0	0	0	0	656	238	894	265	6	325	596	2766
08:00 AM	53	254	0	307	0	0	0	0	0	179	74	253	75	0	93	168	728
08:15 AM	57	212	0	269	0	0	0	0	0	178	74	252	47	1	89	137	658
08:30 AM	61	150	0	211	0	0	0	0	0	191	66	257	58	0	92	150	618
08:45 AM	52	123	0	175	0	0	0	0	0	129	63	192	50	0	60	110	477
Total	223	739	0	962	0	0	0	0	0	677	277	954	230	1	334	565	2481
Grand Total	455	1783	0	2238	0	0	0	0	0	1333	515	1848	495	7	659	1161	5247
Apprch %	20.3	79.7	0		0	0	0		0	72.1	27.9		42.6	0.6	56.8		
Total %	8.7	34	0	42.7	0	0	0	0	0	25.4	9.8	35.2	9.4	0.1	12.6	22.1	

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**69**	273	0	342	0	0	0	0	0	165	63	228	58	0	74	132	702
07:45 AM	62	**334**	0	**396**	0	0	0	0	0	**190**	70	**260**	71	**3**	91	165	**821**
08:00 AM	53	254	0	307	0	0	0	0	0	179	**74**	253	**75**	0	**93**	**168**	728
08:15 AM	57	212	0	269	0	0	0	0	0	178	74	252	47	1	89	137	658
Total Volume	241	1073	0	1314	0	0	0	0	0	712	281	993	251	4	347	602	2909
% App. Total	18.3	81.7	0		0	0	0		0	71.7	28.3		41.7	0.7	57.6		
PHF	.873	.803	.000	.830	.000	.000	.000	.000	.000	.937	.949	.955	.837	.333	.933	.896	.886

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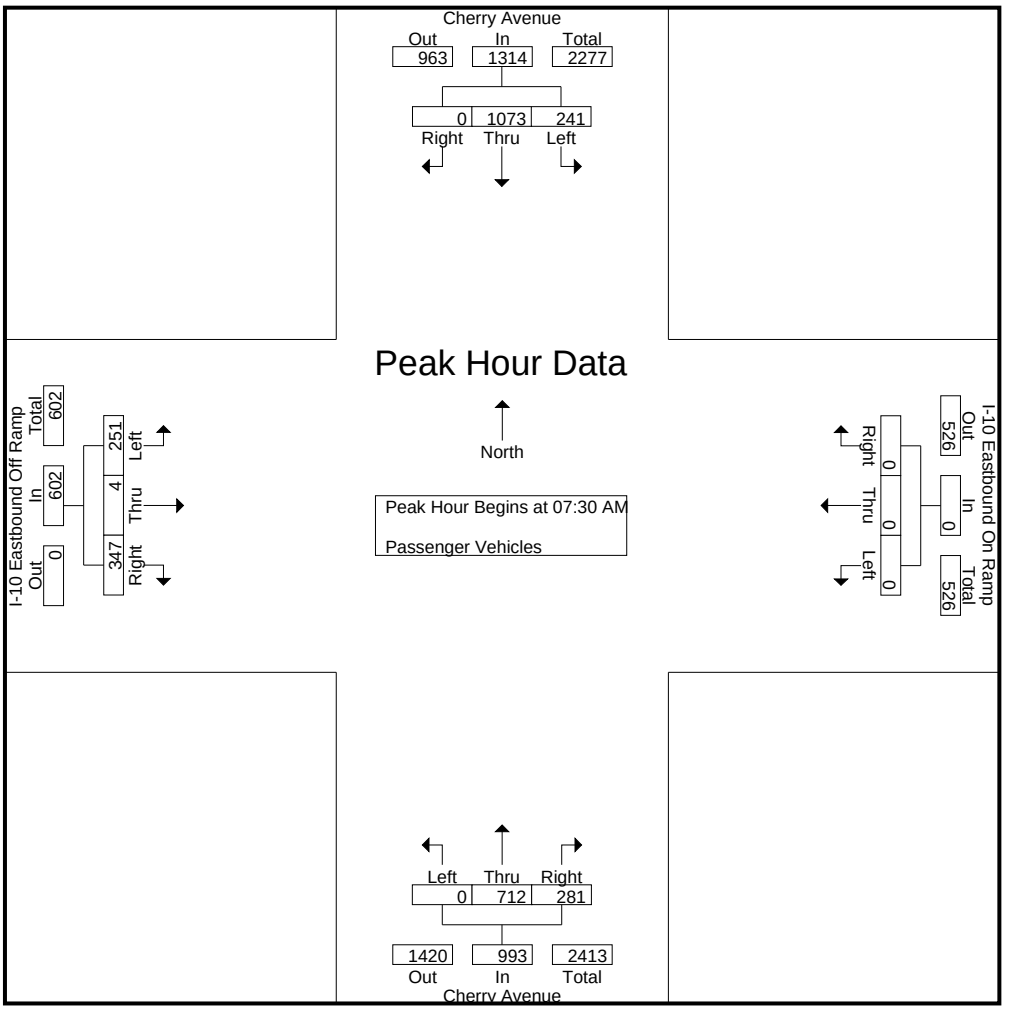
City of Fontana
N/S: Cherry Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 06_FON_Cherry_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**69**	273	0	342	0	0	0	0	0	165	63	228	58	0	74	132
+15 mins.	62	**334**	0	**396**	0	0	0	0	0	**190**	70	**260**	71	**3**	91	165
+30 mins.	53	254	0	307	0	0	0	0	0	179	**74**	253	**75**	0	**93**	**168**
+45 mins.	57	212	0	269	0	0	0	0	0	178	74	252	47	1	89	137
Total Volume	241	1073	0	1314	0	0	0	0	0	712	281	993	251	4	347	602
% App. Total	18.3	81.7	0		0	0	0		0	71.7	28.3		41.7	0.7	57.6	
PHF	.873	.803	.000	.830	.000	.000	.000	.000	.000	.937	.949	.955	.837	.333	.933	.896

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 06_FON_Cherry_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	4	0	4	0	0	0	0	0	11	2	13	5	0	5	10	27
07:15 AM	8	5	0	13	0	0	0	0	0	10	5	15	3	0	2	5	33
07:30 AM	4	9	0	13	0	0	0	0	0	9	3	12	8	0	5	13	38
07:45 AM	3	7	0	10	0	0	0	0	0	9	4	13	4	0	2	6	29
Total	15	25	0	40	0	0	0	0	0	39	14	53	20	0	14	34	127
08:00 AM	8	7	0	15	0	0	0	0	0	11	5	16	7	0	2	9	40
08:15 AM	7	14	0	21	0	0	0	0	0	11	3	14	4	1	3	8	43
08:30 AM	5	11	0	16	0	0	0	0	0	11	2	13	4	0	1	5	34
08:45 AM	6	11	0	17	0	0	0	0	0	8	4	12	10	0	0	10	39
Total	26	43	0	69	0	0	0	0	0	41	14	55	25	1	6	32	156
Grand Total	41	68	0	109	0	0	0	0	0	80	28	108	45	1	20	66	283
Apprch %	37.6	62.4	0		0	0	0		0	74.1	25.9		68.2	1.5	30.3		
Total %	14.5	24	0	38.5	0	0	0	0	0	28.3	9.9	38.2	15.9	0.4	7.1	23.3	

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	4	9	0	13	0	0	0	0	0	9	3	12	**8**	0	**5**	**13**	38
07:45 AM	3	7	0	10	0	0	0	0	0	9	4	13	4	0	2	6	29
08:00 AM	**8**	7	0	15	0	0	0	0	0	**11**	**5**	**16**	7	0	2	9	40
08:15 AM	7	**14**	0	**21**	0	0	0	0	0	11	3	14	4	**1**	3	8	**43**
Total Volume	22	37	0	59	0	0	0	0	0	40	15	55	23	1	12	36	150
% App. Total	37.3	62.7	0		0	0	0		0	72.7	27.3		63.9	2.8	33.3		
PHF	.688	.661	.000	.702	.000	.000	.000	.000	.000	.909	.750	.859	.719	.250	.600	.692	.872

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 06_FON_Cherry_10E AM
Site Code : 10821516
Start Date : 9/28/2021
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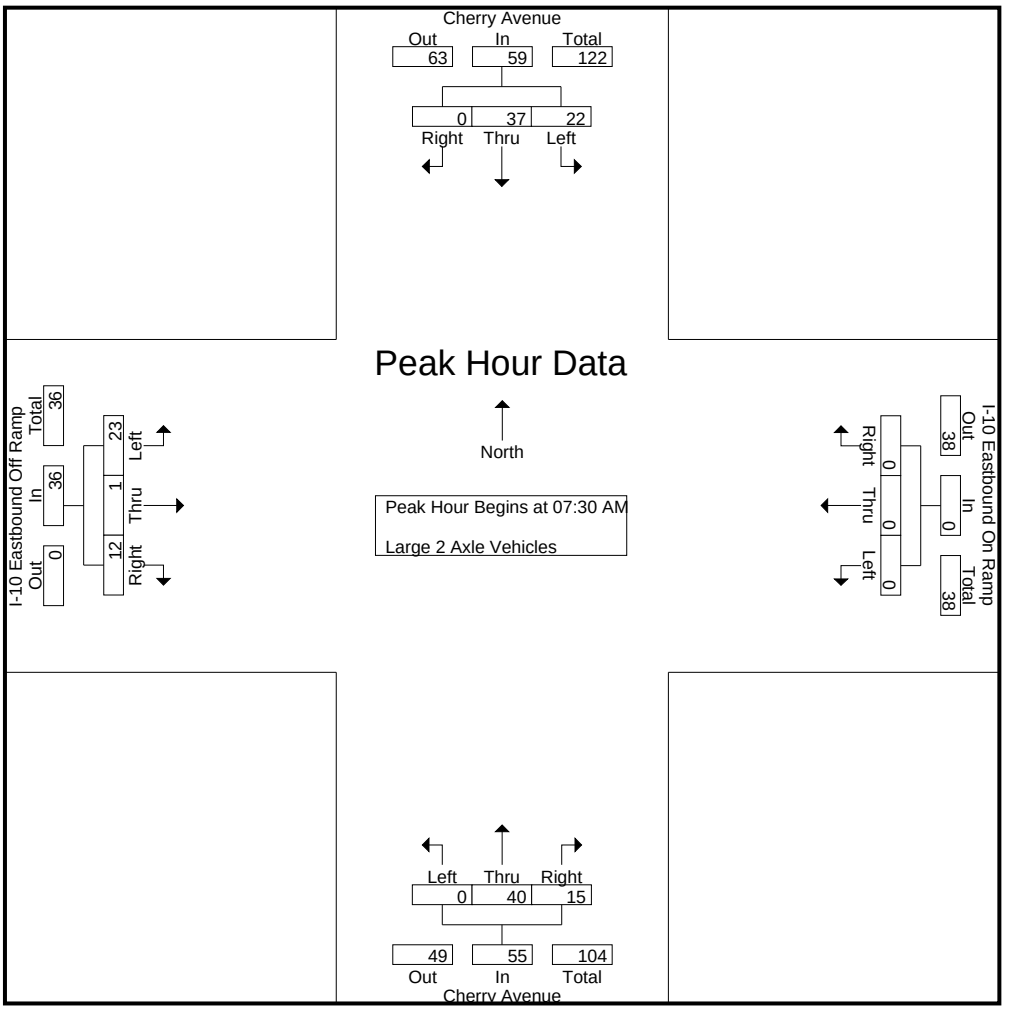

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	4	9	0	13	0	0	0	0	0	9	3	12	**8**	0	**5**	**13**
+15 mins.	3	7	0	10	0	0	0	0	0	9	4	13	4	0	2	6
+30 mins.	**8**	7	0	15	0	0	0	0	0	**11**	**5**	**16**	7	0	2	9
+45 mins.	7	**14**	0	**21**	0	0	0	0	0	11	3	14	4	**1**	3	8
Total Volume	22	37	0	59	0	0	0	0	0	40	15	55	23	1	12	36
% App. Total	37.3	62.7	0		0	0	0		0	72.7	27.3		63.9	2.8	33.3	
PHF	.688	.661	.000	.702	.000	.000	.000	.000	.000	.909	.750	.859	.719	.250	.600	.692

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 06_FON_Cherry_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	5	9	0	14	0	0	0	0	0	7	4	11	3	0	3	6	31
07:15 AM	7	16	0	23	0	0	0	0	0	12	5	17	1	0	8	9	49
07:30 AM	4	8	0	12	0	0	0	0	0	8	7	15	3	0	6	9	36
07:45 AM	2	13	0	15	0	0	0	0	0	13	5	18	4	0	5	9	42
Total	18	46	0	64	0	0	0	0	0	40	21	61	11	0	22	33	158
08:00 AM	3	20	0	23	0	0	0	0	0	10	5	15	6	0	5	11	49
08:15 AM	9	5	0	14	0	0	0	0	0	11	2	13	7	0	2	9	36
08:30 AM	4	13	0	17	0	0	0	0	0	6	6	12	3	0	4	7	36
08:45 AM	8	9	0	17	0	0	0	0	0	13	3	16	7	0	10	17	50
Total	24	47	0	71	0	0	0	0	0	40	16	56	23	0	21	44	171
Grand Total	42	93	0	135	0	0	0	0	0	80	37	117	34	0	43	77	329
Apprch %	31.1	68.9	0		0	0	0		0	68.4	31.6		44.2	0	55.8		
Total %	12.8	28.3	0	41	0	0	0	0	0	24.3	11.2	35.6	10.3	0	13.1	23.4	

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	4	8	0	12	0	0	0	0	0	8	**7**	15	3	0	**6**	9	36
07:45 AM	2	13	0	15	0	0	0	0	0	**13**	5	**18**	4	0	5	9	42
08:00 AM	3	**20**	0	**23**	0	0	0	0	0	10	5	15	6	0	5	**11**	**49**
08:15 AM	**9**	5	0	14	0	0	0	0	0	11	2	13	**7**	0	2	9	36
Total Volume	18	46	0	64	0	0	0	0	0	42	19	61	20	0	18	38	163
% App. Total	28.1	71.9	0		0	0	0		0	68.9	31.1		52.6	0	47.4		
PHF	.500	.575	.000	.696	.000	.000	.000	.000	.000	.808	.679	.847	.714	.000	.750	.864	.832

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 06_FON_Cherry_10E AM
Site Code : 10821516
Start Date : 9/28/2021
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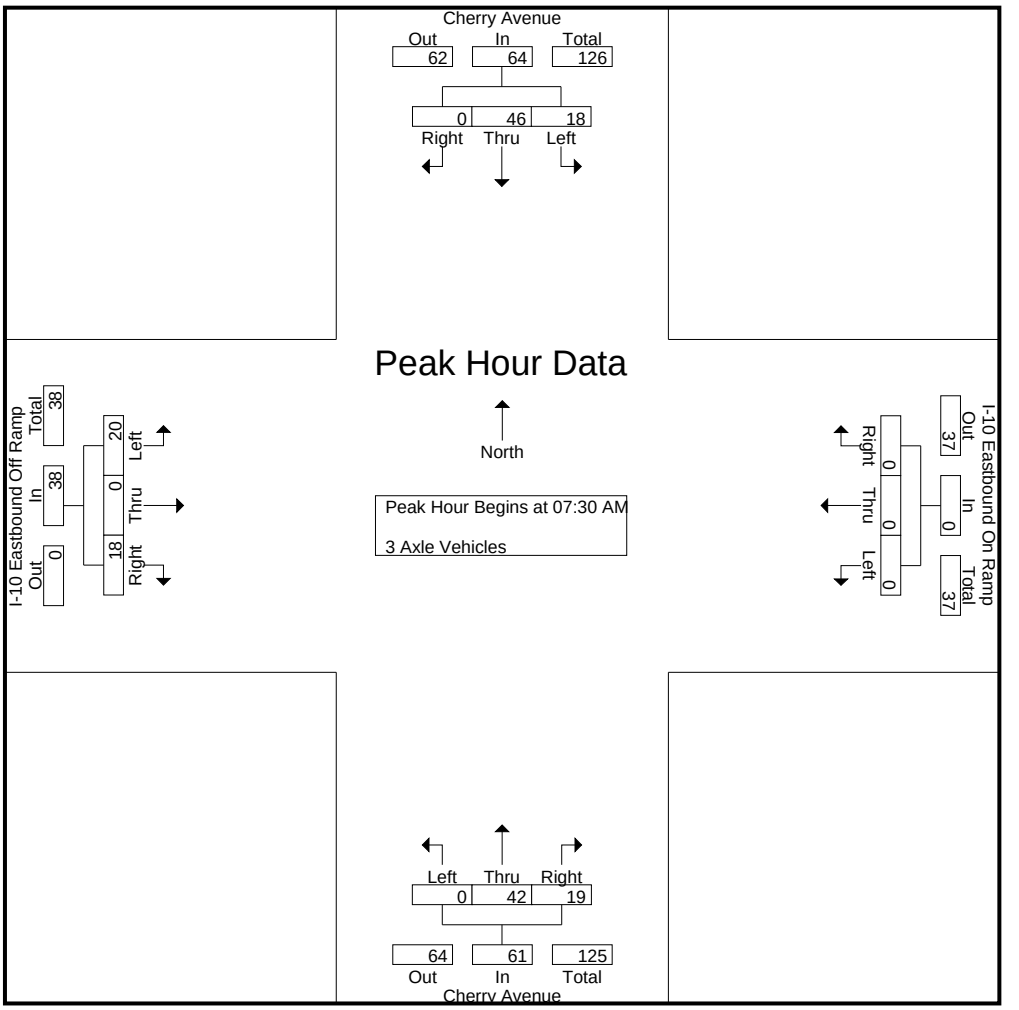

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	4	8	0	12	0	0	0	0	0	8	**7**	15	3	0	**6**	9
+15 mins.	2	13	0	15	0	0	0	0	0	**13**	5	**18**	4	0	5	9
+30 mins.	3	**20**	0	**23**	0	0	0	0	0	10	5	15	6	0	5	**11**
+45 mins.	**9**	5	0	14	0	0	0	0	0	11	2	13	**7**	0	2	9
Total Volume	18	46	0	64	0	0	0	0	0	42	19	61	20	0	18	38
% App. Total	28.1	71.9	0		0	0	0		0	68.9	31.1		52.6	0	47.4	
PHF	.500	.575	.000	.696	.000	.000	.000	.000	.000	.808	.679	.847	.714	.000	.750	.864

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Groups Printed- 4+ Axle Trucks

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	17	19	0	36	0	0	0	0	0	26	7	33	8	1	16	25	94
07:15 AM	13	14	0	27	0	0	0	0	0	20	17	37	2	0	19	21	85
07:30 AM	12	18	0	30	0	0	0	0	0	29	12	41	8	0	17	25	96
07:45 AM	14	19	0	33	0	0	0	0	0	31	12	43	4	0	21	25	101
Total	56	70	0	126	0	0	0	0	0	106	48	154	22	1	73	96	376
08:00 AM	17	29	0	46	0	0	0	0	0	30	11	41	3	0	21	24	111
08:15 AM	7	23	0	30	0	0	0	0	0	36	12	48	10	0	13	23	101
08:30 AM	16	20	0	36	0	0	0	0	0	40	14	54	11	0	25	36	126
08:45 AM	18	20	0	38	0	0	0	0	0	41	13	54	7	0	17	24	116
Total	58	92	0	150	0	0	0	0	0	147	50	197	31	0	76	107	454
Grand Total	114	162	0	276	0	0	0	0	0	253	98	351	53	1	149	203	830
Apprch %	41.3	58.7	0		0	0	0		0	72.1	27.9		26.1	0.5	73.4		
Total %	13.7	19.5	0	33.3	0	0	0	0	0	30.5	11.8	42.3	6.4	0.1	18	24.5	

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	12	18	0	30	0	0	0	0	0	29	**12**	41	8	0	17	**25**	96
07:45 AM	14	19	0	33	0	0	0	0	0	31	12	43	4	0	**21**	25	101
08:00 AM	**17**	**29**	0	**46**	0	0	0	0	0	30	11	41	3	0	21	24	**111**
08:15 AM	7	23	0	30	0	0	0	0	0	**36**	12	**48**	**10**	0	13	23	101
Total Volume	50	89	0	139	0	0	0	0	0	126	47	173	25	0	72	97	409
% App. Total	36	64	0		0	0	0		0	72.8	27.2		25.8	0	74.2		
PHF	.735	.767	.000	.755	.000	.000	.000	.000	.000	.875	.979	.901	.625	.000	.857	.970	.921

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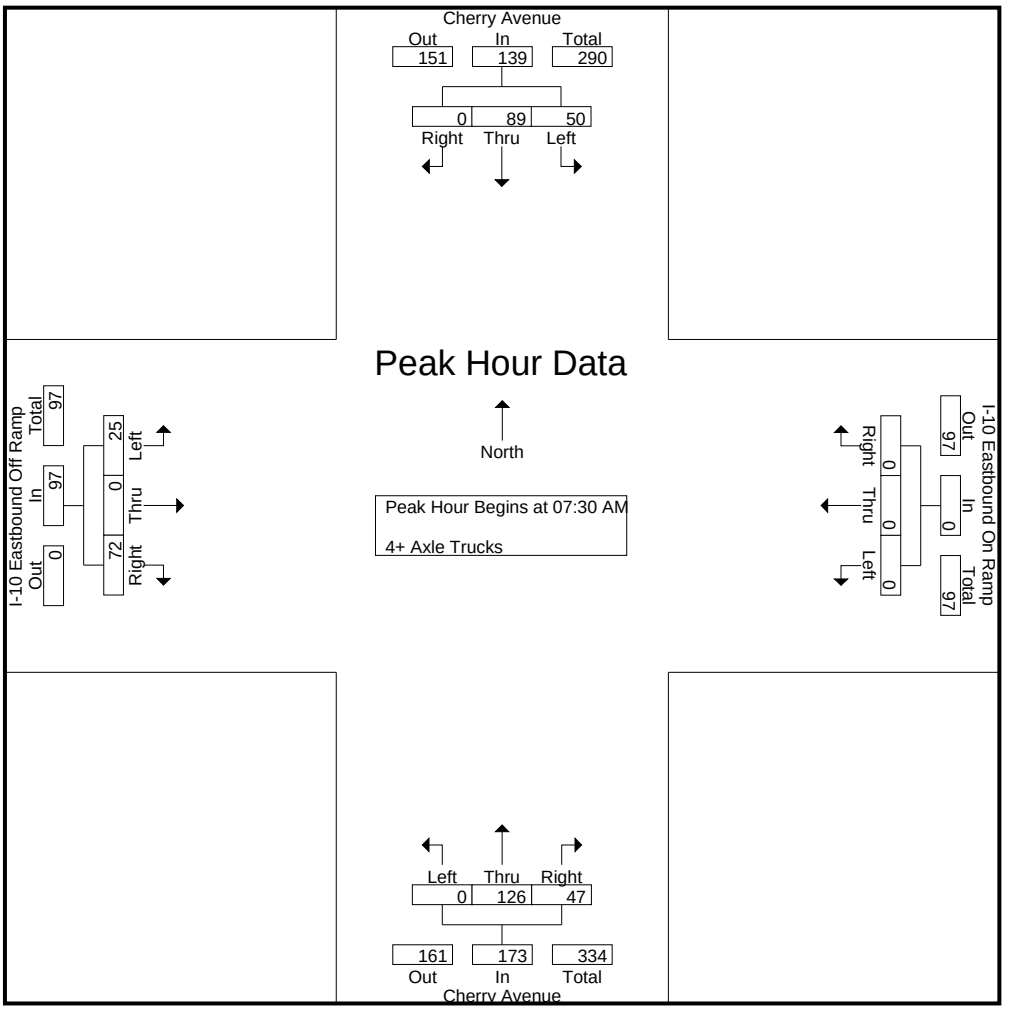

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	12	18	0	30	0	0	0	0	0	29	**12**	41	8	0	17	**25**
+15 mins.	14	19	0	33	0	0	0	0	0	31	12	43	4	0	**21**	25
+30 mins.	**17**	**29**	0	**46**	0	0	0	0	0	30	11	41	3	0	21	24
+45 mins.	7	23	0	30	0	0	0	0	0	**36**	12	**48**	**10**	0	13	23
Total Volume	50	89	0	139	0	0	0	0	0	126	47	173	25	0	72	97
% App. Total	36	64	0		0	0	0		0	72.8	27.2		25.8	0	74.2	
PHF	.735	.767	.000	.755	.000	.000	.000	.000	.000	.875	.979	.901	.625	.000	.857	.970

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City of Fontana
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File Name : 06_FON_Cherry_10E PM
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	133	234	0	367	0	0	0	0	0	236	55	291	104	4	108	216	874
04:15 PM	101	211	0	312	0	0	0	0	0	257	87	344	98	7	105	210	866
04:30 PM	130	259	0	389	0	0	0	0	0	251	70	321	104	12	91	207	917
04:45 PM	97	231	0	328	0	0	0	0	0	277	82	359	100	19	105	224	911
Total	461	935	0	1396	0	0	0	0	0	1021	294	1315	406	42	409	857	3568
05:00 PM	105	252	0	357	0	0	0	0	0	246	95	341	115	4	118	237	935
05:15 PM	88	199	0	287	0	0	0	0	0	276	92	368	94	14	97	205	860
05:30 PM	100	213	0	313	0	0	0	0	0	252	91	343	101	14	119	234	890
05:45 PM	94	206	0	300	0	0	0	0	0	210	71	281	96	4	95	195	776
Total	387	870	0	1257	0	0	0	0	0	984	349	1333	406	36	429	871	3461
Grand Total	848	1805	0	2653	0	0	0	0	0	2005	643	2648	812	78	838	1728	7029
Apprch %	32	68	0		0	0	0		0	75.7	24.3		47	4.5	48.5		
Total %	12.1	25.7	0	37.7	0	0	0	0	0	28.5	9.1	37.7	11.6	1.1	11.9	24.6	
Passenger Vehicles	716	1482	0	2198	0	0	0	0	0	1746	545	2291	701	75	658	1434	5923
% Passenger Vehicles	84.4	82.1	0	82.8	0	0	0	0	0	87.1	84.8	86.5	86.3	96.2	78.5	83	84.3
Large 2 Axle Vehicles	27	50	0	77	0	0	0	0	0	47	16	63	18	2	25	45	185
% Large 2 Axle Vehicles	3.2	2.8	0	2.9	0	0	0	0	0	2.3	2.5	2.4	2.2	2.6	3	2.6	2.6
3 Axle Vehicles	46	107	0	153	0	0	0	0	0	73	14	87	23	1	15	39	279
% 3 Axle Vehicles	5.4	5.9	0	5.8	0	0	0	0	0	3.6	2.2	3.3	2.8	1.3	1.8	2.3	4
4+ Axle Trucks	59	166	0	225	0	0	0	0	0	139	68	207	70	0	140	210	642
% 4+ Axle Trucks	7	9.2	0	8.5	0	0	0	0	0	6.9	10.6	7.8	8.6	0	16.7	12.2	9.1

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	101	211	0	312	0	0	0	0	0	257	87	344	98	7	105	210	866
04:30 PM	**130**	**259**	0	**389**	0	0	0	0	0	251	70	321	104	12	91	207	917
04:45 PM	97	231	0	328	0	0	0	0	0	**277**	82	**359**	100	**19**	105	224	911
05:00 PM	105	252	0	357	0	0	0	0	0	246	**95**	341	**115**	4	**118**	**237**	**935**
Total Volume	433	953	0	1386	0	0	0	0	0	1031	334	1365	417	42	419	878	3629
% App. Total	31.2	68.8	0		0	0	0		0	75.5	24.5		47.5	4.8	47.7		
PHF	.833	.920	.000	.891	.000	.000	.000	.000	.000	.931	.879	.951	.907	.553	.888	.926	.970

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City of Fontana
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File Name : 06_FON_Cherry_10E PM
Site Code : 10821516
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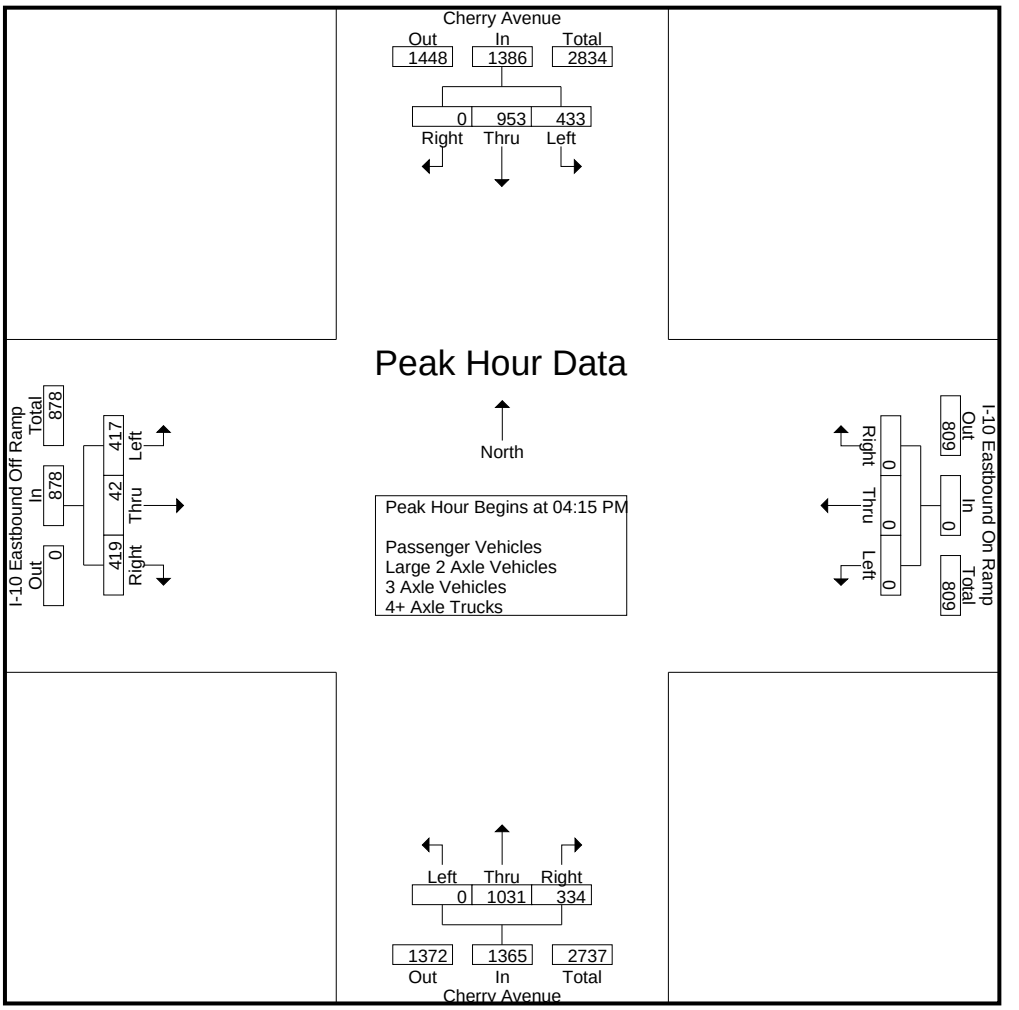

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:45 PM				04:45 PM			
+0 mins.	**133**	234	0	367	0	0	0	0	0	**277**	82	359	100	**19**	105	224
+15 mins.	101	211	0	312	0	0	0	0	0	246	**95**	341	**115**	4	118	**237**
+30 mins.	130	**259**	0	**389**	0	0	0	0	0	276	92	**368**	94	14	97	205
+45 mins.	97	231	0	328	0	0	0	0	0	252	91	343	101	14	**119**	234
Total Volume	461	935	0	1396	0	0	0	0	0	1051	360	1411	410	51	439	900
% App. Total	33	67	0		0	0	0		0	74.5	25.5		45.6	5.7	48.8	
PHF	.867	.903	.000	.897	.000	.000	.000	.000	.000	.949	.947	.959	.891	.671	.922	.949

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Groups Printed- Passenger Vehicles

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	109	183	0	292	0	0	0	0	0	201	50	251	89	4	75	168	711
04:15 PM	80	181	0	261	0	0	0	0	0	220	71	291	88	7	84	179	731
04:30 PM	111	210	0	321	0	0	0	0	0	216	62	278	89	11	68	168	767
04:45 PM	88	200	0	288	0	0	0	0	0	237	71	308	89	19	91	199	795
Total	388	774	0	1162	0	0	0	0	0	874	254	1128	355	41	318	714	3004
05:00 PM	93	203	0	296	0	0	0	0	0	216	79	295	92	4	97	193	784
05:15 PM	77	159	0	236	0	0	0	0	0	249	78	327	79	13	78	170	733
05:30 PM	78	171	0	249	0	0	0	0	0	225	79	304	90	13	93	196	749
05:45 PM	80	175	0	255	0	0	0	0	0	182	55	237	85	4	72	161	653
Total	328	708	0	1036	0	0	0	0	0	872	291	1163	346	34	340	720	2919
Grand Total	716	1482	0	2198	0	0	0	0	0	1746	545	2291	701	75	658	1434	5923
Apprch %	32.6	67.4	0		0	0	0		0	76.2	23.8		48.9	5.2	45.9		
Total %	12.1	25	0	37.1	0	0	0	0	0	29.5	9.2	38.7	11.8	1.3	11.1	24.2	

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	80	181	0	261	0	0	0	0	0	220	71	291	88	7	84	179	731
04:30 PM	**111**	**210**	0	**321**	0	0	0	0	0	216	62	278	89	11	68	168	767
04:45 PM	88	200	0	288	0	0	0	0	0	**237**	71	**308**	89	**19**	91	**199**	**795**
05:00 PM	93	203	0	296	0	0	0	0	0	216	**79**	295	**92**	4	**97**	193	784
Total Volume	372	794	0	1166	0	0	0	0	0	889	283	1172	358	41	340	739	3077
% App. Total	31.9	68.1	0		0	0	0		0	75.9	24.1		48.4	5.5	46		
PHF	.838	.945	.000	.908	.000	.000	.000	.000	.000	.938	.896	.951	.973	.539	.876	.928	.968

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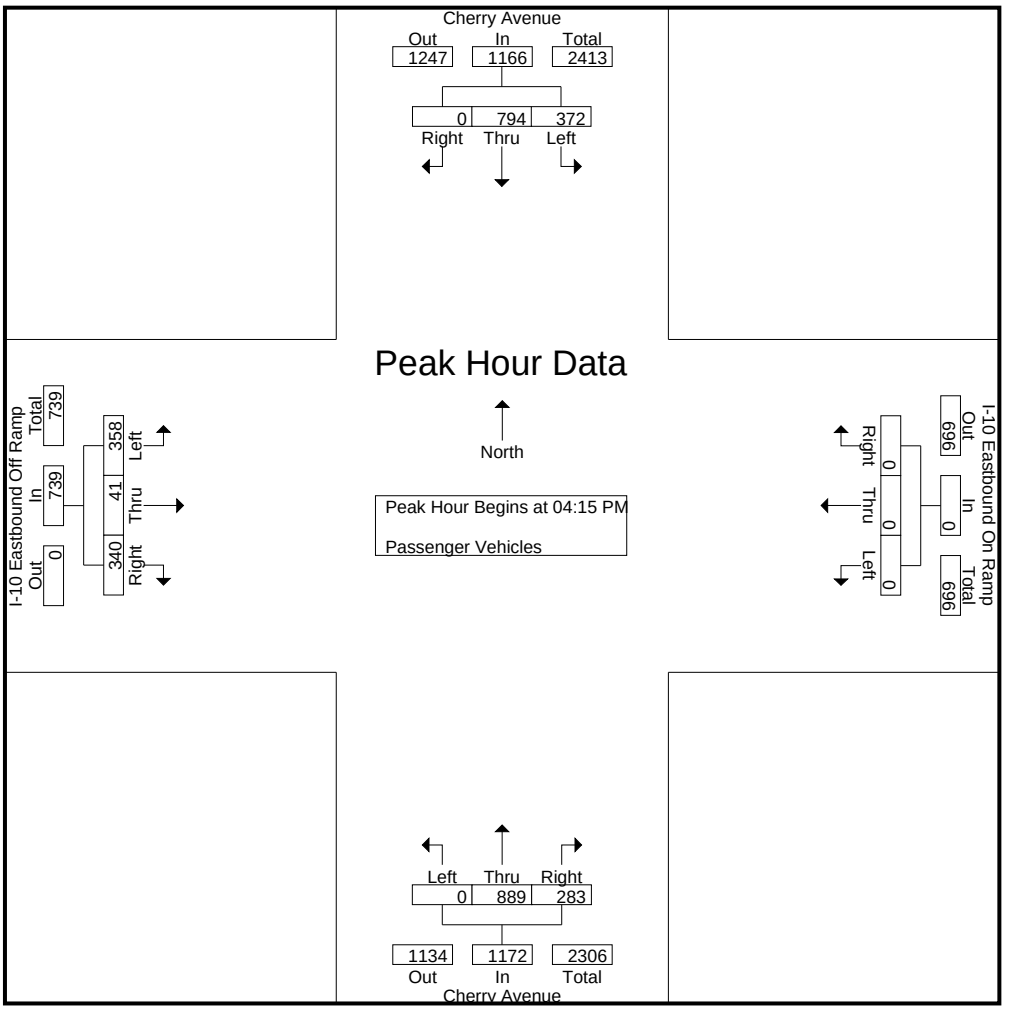

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	80	181	0	261	0	0	0	0	0	220	71	291	88	7	84	179
+15 mins.	**111**	**210**	0	**321**	0	0	0	0	0	216	62	278	89	11	68	168
+30 mins.	88	200	0	288	0	0	0	0	0	**237**	71	**308**	89	**19**	91	**199**
+45 mins.	93	203	0	296	0	0	0	0	0	216	**79**	295	**92**	4	**97**	193
Total Volume	372	794	0	1166	0	0	0	0	0	889	283	1172	358	41	340	739
% App. Total	31.9	68.1	0		0	0	0		0	75.9	24.1		48.4	5.5	46	
PHF	.838	.945	.000	.908	.000	.000	.000	.000	.000	.938	.896	.951	.973	.539	.876	.928

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Groups Printed- Large 2 Axle Vehicles

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	11	0	12	0	0	0	0	0	5	0	5	3	0	4	7	24
04:15 PM	7	3	0	10	0	0	0	0	0	9	1	10	2	0	5	7	27
04:30 PM	5	6	0	11	0	0	0	0	0	6	0	6	2	1	4	7	24
04:45 PM	2	7	0	9	0	0	0	0	0	7	2	9	1	0	2	3	21
Total	15	27	0	42	0	0	0	0	0	27	3	30	8	1	15	24	96
05:00 PM	2	8	0	10	0	0	0	0	0	4	3	7	4	0	3	7	24
05:15 PM	3	4	0	7	0	0	0	0	0	5	2	7	5	1	1	7	21
05:30 PM	5	6	0	11	0	0	0	0	0	5	4	9	1	0	3	4	24
05:45 PM	2	5	0	7	0	0	0	0	0	6	4	10	0	0	3	3	20
Total	12	23	0	35	0	0	0	0	0	20	13	33	10	1	10	21	89
Grand Total	27	50	0	77	0	0	0	0	0	47	16	63	18	2	25	45	185
Apprch %	35.1	64.9	0		0	0	0		0	74.6	25.4		40	4.4	55.6		
Total %	14.6	27	0	41.6	0	0	0	0	0	25.4	8.6	34.1	9.7	1.1	13.5	24.3	

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**7**	3	0	10	0	0	0	0	0	**9**	1	**10**	2	0	**5**	**7**	**27**
04:30 PM	5	6	0	**11**	0	0	0	0	0	6	0	6	2	**1**	4	7	24
04:45 PM	2	7	0	9	0	0	0	0	0	7	2	9	1	0	2	3	21
05:00 PM	2	**8**	0	10	0	0	0	0	0	4	**3**	7	**4**	0	3	7	24
Total Volume	16	24	0	40	0	0	0	0	0	26	6	32	9	1	14	24	96
% App. Total	40	60	0		0	0	0		0	81.2	18.8		37.5	4.2	58.3		
PHF	.571	.750	.000	.909	.000	.000	.000	.000	.000	.722	.500	.800	.563	.250	.700	.857	.889

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 06_FON_Cherry_10E PM
Site Code : 10821516
Start Date : 9/28/2021
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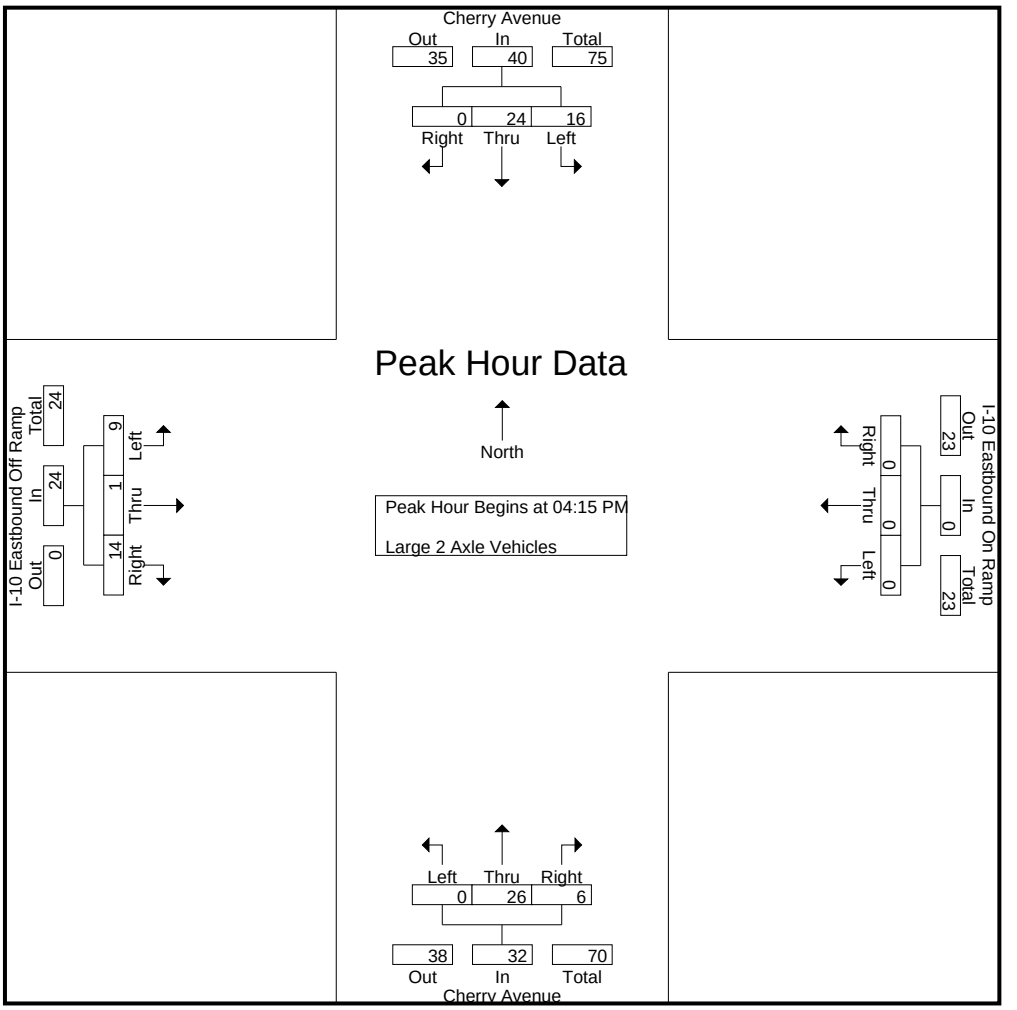

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	**7**	3	0	10	0	0	0	0	0	**9**	1	**10**	2	0	**5**	**7**
+15 mins.	5	6	0	**11**	0	0	0	0	0	6	0	6	2	**1**	4	7
+30 mins.	2	7	0	9	0	0	0	0	0	7	2	9	1	0	2	3
+45 mins.	2	**8**	0	10	0	0	0	0	0	4	**3**	7	**4**	0	3	7
Total Volume	16	24	0	40	0	0	0	0	0	26	6	32	9	1	14	24
% App. Total	40	60	0		0	0	0		0	81.2	18.8		37.5	4.2	58.3	
PHF	.571	.750	.000	.909	.000	.000	.000	.000	.000	.722	.500	.800	.563	.250	.700	.857

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City of Fontana
N/S: Cherry Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 06_FON_Cherry_10E PM
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Groups Printed- 3 Axle Vehicles

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	8	17	0	25	0	0	0	0	0	13	0	13	1	0	2	3	41
04:15 PM	7	14	0	21	0	0	0	0	0	10	3	13	3	0	2	5	39
04:30 PM	5	16	0	21	0	0	0	0	0	8	0	8	4	0	0	4	33
04:45 PM	2	8	0	10	0	0	0	0	0	14	2	16	1	0	2	3	29
Total	22	55	0	77	0	0	0	0	0	45	5	50	9	0	6	15	142
05:00 PM	4	15	0	19	0	0	0	0	0	8	3	11	5	0	4	9	39
05:15 PM	7	16	0	23	0	0	0	0	0	4	1	5	4	0	1	5	33
05:30 PM	9	13	0	22	0	0	0	0	0	7	3	10	2	1	2	5	37
05:45 PM	4	8	0	12	0	0	0	0	0	9	2	11	3	0	2	5	28
Total	24	52	0	76	0	0	0	0	0	28	9	37	14	1	9	24	137
Grand Total	46	107	0	153	0	0	0	0	0	73	14	87	23	1	15	39	279
Apprch %	30.1	69.9	0		0	0	0		0	83.9	16.1		59	2.6	38.5		
Total %	16.5	38.4	0	54.8	0	0	0	0	0	26.2	5	31.2	8.2	0.4	5.4	14	

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**7**	14	0	**21**	0	0	0	0	0	10	**3**	13	3	0	2	5	**39**
04:30 PM	5	**16**	0	21	0	0	0	0	0	8	0	8	4	0	0	4	33
04:45 PM	2	8	0	10	0	0	0	0	0	**14**	2	**16**	1	0	2	3	29
05:00 PM	4	15	0	19	0	0	0	0	0	8	3	11	**5**	0	**4**	**9**	39
Total Volume	18	53	0	71	0	0	0	0	0	40	8	48	13	0	8	21	140
% App. Total	25.4	74.6	0		0	0	0		0	83.3	16.7		61.9	0	38.1		
PHF	.643	.828	.000	.845	.000	.000	.000	.000	.000	.714	.667	.750	.650	.000	.500	.583	.897

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City of Fontana
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File Name : 06_FON_Cherry_10E PM
Site Code : 10821516
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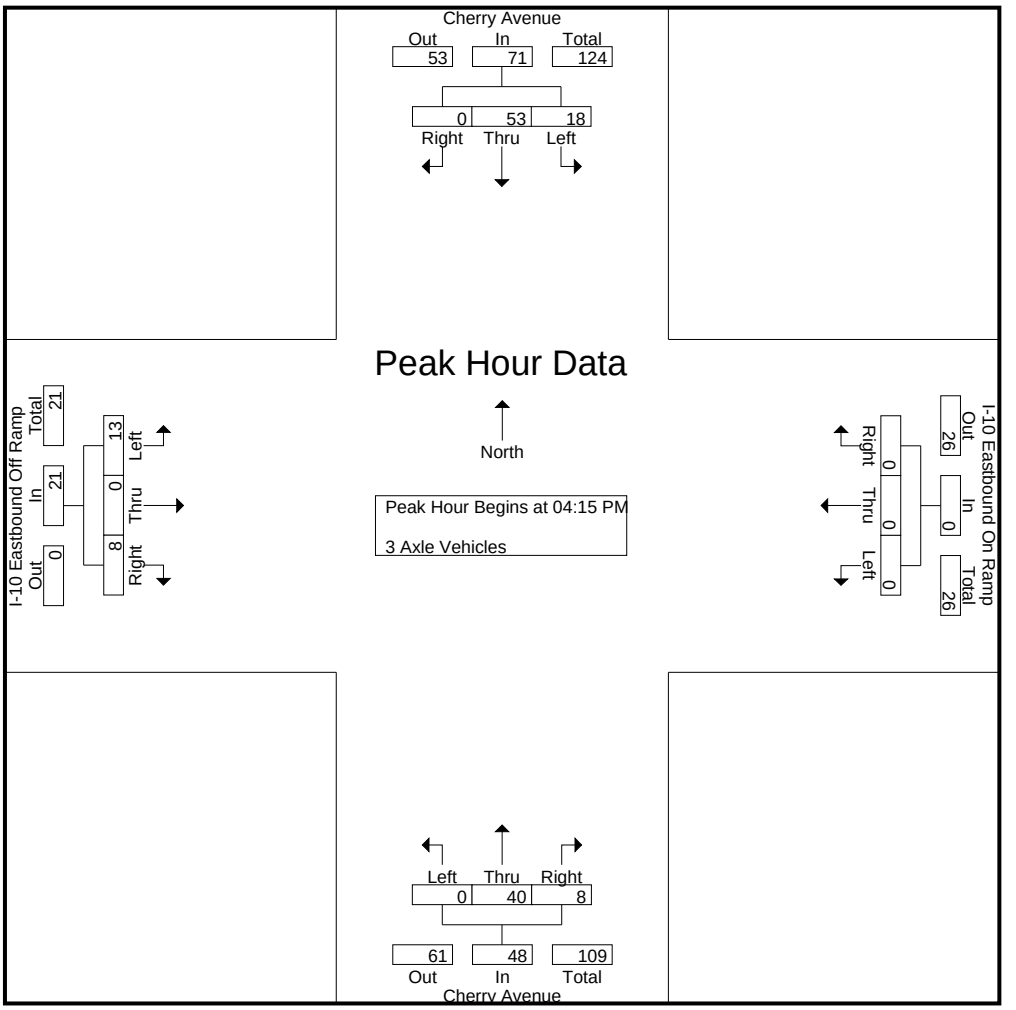

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	**7**	14	0	**21**	0	0	0	0	0	10	**3**	13	3	0	2	5
+15 mins.	5	**16**	0	21	0	0	0	0	0	8	0	8	4	0	0	4
+30 mins.	2	8	0	10	0	0	0	0	0	**14**	2	**16**	1	0	2	3
+45 mins.	4	15	0	19	0	0	0	0	0	8	3	11	**5**	0	**4**	**9**
Total Volume	18	53	0	71	0	0	0	0	0	40	8	48	13	0	8	21
% App. Total	25.4	74.6	0		0	0	0		0	83.3	16.7		61.9	0	38.1	
PHF	.643	.828	.000	.845	.000	.000	.000	.000	.000	.714	.667	.750	.650	.000	.500	.583

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City of Fontana
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Weather: Clear

File Name : 06_FON_Cherry_10E PM
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Groups Printed- 4+ Axle Trucks

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	15	23	0	38	0	0	0	0	0	17	5	22	11	0	27	38	98
04:15 PM	7	13	0	20	0	0	0	0	0	18	12	30	5	0	14	19	69
04:30 PM	9	27	0	36	0	0	0	0	0	21	8	29	9	0	19	28	93
04:45 PM	5	16	0	21	0	0	0	0	0	19	7	26	9	0	10	19	66
Total	36	79	0	115	0	0	0	0	0	75	32	107	34	0	70	104	326
05:00 PM	6	26	0	32	0	0	0	0	0	18	10	28	14	0	14	28	88
05:15 PM	1	20	0	21	0	0	0	0	0	18	11	29	6	0	17	23	73
05:30 PM	8	23	0	31	0	0	0	0	0	15	5	20	8	0	21	29	80
05:45 PM	8	18	0	26	0	0	0	0	0	13	10	23	8	0	18	26	75
Total	23	87	0	110	0	0	0	0	0	64	36	100	36	0	70	106	316
Grand Total	59	166	0	225	0	0	0	0	0	139	68	207	70	0	140	210	642
Apprch %	26.2	73.8	0		0	0	0		0	67.1	32.9		33.3	0	66.7		
Total %	9.2	25.9	0	35	0	0	0	0	0	21.7	10.6	32.2	10.9	0	21.8	32.7	

	Cherry Avenue Southbound				I-10 Eastbound On Ramp Westbound				Cherry Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	7	13	0	20	0	0	0	0	0	18	**12**	**30**	5	0	14	19	69
04:30 PM	**9**	**27**	0	**36**	0	0	0	0	0	**21**	8	29	9	0	**19**	**28**	**93**
04:45 PM	5	16	0	21	0	0	0	0	0	19	7	26	9	0	10	19	66
05:00 PM	6	26	0	32	0	0	0	0	0	18	10	28	**14**	0	14	28	88
Total Volume	27	82	0	109	0	0	0	0	0	76	37	113	37	0	57	94	316
% App. Total	24.8	75.2	0		0	0	0		0	67.3	32.7		39.4	0	60.6		
PHF	.750	.759	.000	.757	.000	.000	.000	.000	.000	.905	.771	.942	.661	.000	.750	.839	.849

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File Name : 06_FON_Cherry_10E PM
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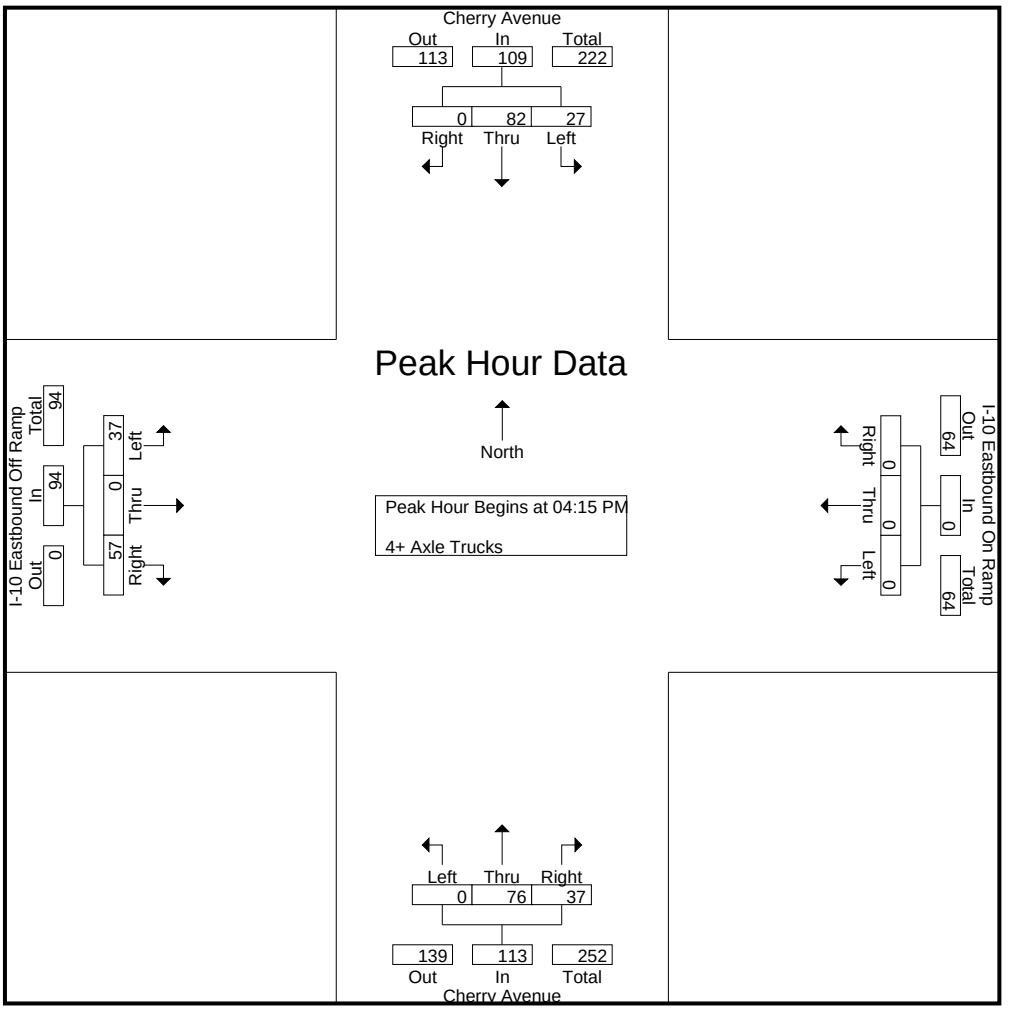

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	7	13	0	20	0	0	0	0	0	18	**12**	**30**	5	0	14	19
+15 mins.	**9**	**27**	0	**36**	0	0	0	0	0	**21**	8	29	9	0	**19**	**28**
+30 mins.	5	16	0	21	0	0	0	0	0	19	7	26	9	0	10	19
+45 mins.	6	26	0	32	0	0	0	0	0	18	10	28	**14**	0	14	28
Total Volume	27	82	0	109	0	0	0	0	0	76	37	113	37	0	57	94
% App. Total	24.8	75.2	0		0	0	0		0	67.3	32.7		39.4	0	60.6	
PHF	.750	.759	.000	.757	.000	.000	.000	.000	.000	.905	.771	.942	.661	.000	.750	.839

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City of Fontana
N/S: Citrus Avenue
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Weather: Clear

File Name : 04_FON_Citrus_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	104	118	0	222	0	0	0	0	0	91	50	141	79	0	104	183	546
07:15 AM	129	160	0	289	0	0	0	0	0	134	56	190	77	1	68	146	625
07:30 AM	157	161	0	318	0	0	0	0	0	124	60	184	89	2	72	163	665
07:45 AM	127	196	0	323	0	0	0	0	0	123	65	188	77	0	70	147	658
Total	517	635	0	1152	0	0	0	0	0	472	231	703	322	3	314	639	2494
08:00 AM	99	235	0	334	0	0	0	0	0	124	75	199	77	5	96	178	711
08:15 AM	103	202	0	305	0	0	0	0	0	183	65	248	78	0	77	155	708
08:30 AM	93	128	0	221	0	0	0	0	0	152	76	228	59	1	60	120	569
08:45 AM	93	139	0	232	0	0	0	0	0	114	66	180	62	2	42	106	518
Total	388	704	0	1092	0	0	0	0	0	573	282	855	276	8	275	559	2506
Grand Total	905	1339	0	2244	0	0	0	0	0	1045	513	1558	598	11	589	1198	5000
Apprch %	40.3	59.7	0		0	0	0		0	67.1	32.9		49.9	0.9	49.2		
Total %	18.1	26.8	0	44.9	0	0	0	0	0	20.9	10.3	31.2	12	0.2	11.8	24	
Passenger Vehicles	809	1227	0	2036	0	0	0	0	0	913	419	1332	564	10	493	1067	4435
% Passenger Vehicles	89.4	91.6	0	90.7	0	0	0	0	0	87.4	81.7	85.5	94.3	90.9	83.7	89.1	88.7
Large 2 Axle Vehicles	39	48	0	87	0	0	0	0	0	45	21	66	20	1	14	35	188
% Large 2 Axle Vehicles	4.3	3.6	0	3.9	0	0	0	0	0	4.3	4.1	4.2	3.3	9.1	2.4	2.9	3.8
3 Axle Vehicles	20	17	0	37	0	0	0	0	0	16	12	28	4	0	13	17	82
% 3 Axle Vehicles	2.2	1.3	0	1.6	0	0	0	0	0	1.5	2.3	1.8	0.7	0	2.2	1.4	1.6
4+ Axle Trucks	37	47	0	84	0	0	0	0	0	71	61	132	10	0	69	79	295
% 4+ Axle Trucks	4.1	3.5	0	3.7	0	0	0	0	0	6.8	11.9	8.5	1.7	0	11.7	6.6	5.9

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**157**	161	0	318	0	0	0	0	0	124	60	184	**89**	2	72	163	665
07:45 AM	127	196	0	323	0	0	0	0	0	123	65	188	77	0	70	147	658
08:00 AM	99	**235**	0	**334**	0	0	0	0	0	124	**75**	199	77	**5**	**96**	**178**	**711**
08:15 AM	103	202	0	305	0	0	0	0	0	**183**	65	**248**	78	0	77	155	708
Total Volume	486	794	0	1280	0	0	0	0	0	554	265	819	321	7	315	643	2742
% App. Total	38	62	0		0	0	0		0	67.6	32.4		49.9	1.1	49		
PHF	.774	.845	.000	.958	.000	.000	.000	.000	.000	.757	.883	.826	.902	.350	.820	.903	.964

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N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
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File Name : 04_FON_Citrus_10E AM
Site Code : 10821516
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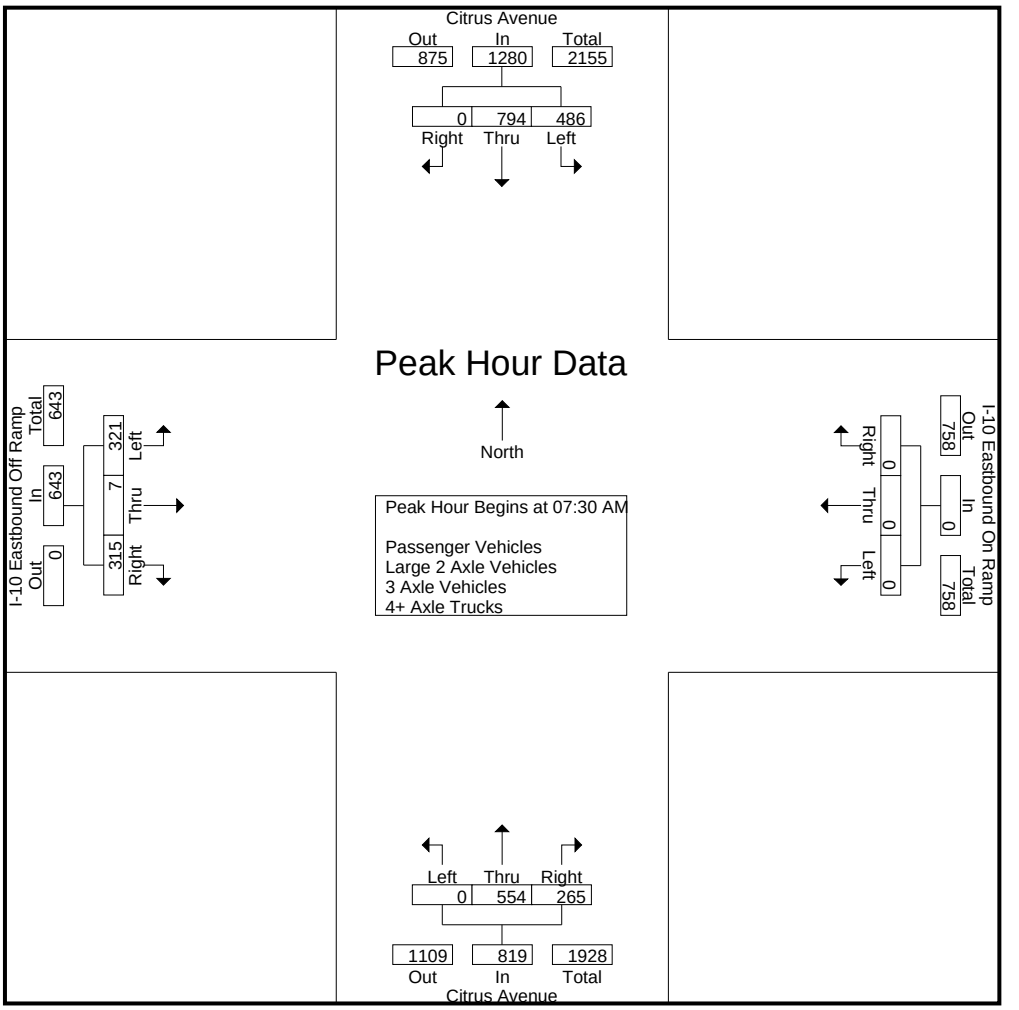

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:00 AM				07:45 AM				07:30 AM			
+0 mins.	**157**	161	0	318	0	0	0	0	0	123	65	188	**89**	2	72	163
+15 mins.	127	196	0	323	0	0	0	0	0	124	75	199	77	0	70	147
+30 mins.	99	**235**	0	**334**	0	0	0	0	0	**183**	65	**248**	77	**5**	**96**	**178**
+45 mins.	103	202	0	305	0	0	0	0	0	152	**76**	228	78	0	77	155
Total Volume	486	794	0	1280	0	0	0	0	0	582	281	863	321	7	315	643
% App. Total	38	62	0		0	0	0		0	67.4	32.6		49.9	1.1	49	
PHF	.774	.845	.000	.958	.000	.000	.000	.000	.000	.795	.924	.870	.902	.350	.820	.903

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File Name : 04_FON_Citrus_10E AM
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Groups Printed- Passenger Vehicles

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	95	108	0	203	0	0	0	0	0	81	40	121	76	0	91	167	491
07:15 AM	119	148	0	267	0	0	0	0	0	121	46	167	74	1	60	135	569
07:30 AM	144	146	0	290	0	0	0	0	0	105	51	156	84	2	63	149	595
07:45 AM	116	183	0	299	0	0	0	0	0	107	57	164	73	0	61	134	597
Total	474	585	0	1059	0	0	0	0	0	414	194	608	307	3	275	585	2252
08:00 AM	90	224	0	314	0	0	0	0	0	108	62	170	72	4	82	158	642
08:15 AM	92	189	0	281	0	0	0	0	0	166	53	219	73	0	59	132	632
08:30 AM	77	109	0	186	0	0	0	0	0	131	54	185	53	1	45	99	470
08:45 AM	76	120	0	196	0	0	0	0	0	94	56	150	59	2	32	93	439
Total	335	642	0	977	0	0	0	0	0	499	225	724	257	7	218	482	2183
Grand Total	809	1227	0	2036	0	0	0	0	0	913	419	1332	564	10	493	1067	4435
Apprch %	39.7	60.3	0		0	0	0		0	68.5	31.5		52.9	0.9	46.2		
Total %	18.2	27.7	0	45.9	0	0	0	0	0	20.6	9.4	30	12.7	0.2	11.1	24.1	

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**144**	146	0	290	0	0	0	0	0	105	51	156	**84**	2	63	149	595
07:45 AM	116	183	0	299	0	0	0	0	0	107	57	164	73	0	61	134	597
08:00 AM	90	**224**	0	**314**	0	0	0	0	0	108	**62**	170	72	**4**	**82**	**158**	**642**
08:15 AM	92	189	0	281	0	0	0	0	0	**166**	53	**219**	73	0	59	132	632
Total Volume	442	742	0	1184	0	0	0	0	0	486	223	709	302	6	265	573	2466
% App. Total	37.3	62.7	0		0	0	0		0	68.5	31.5		52.7	1	46.2		
PHF	.767	.828	.000	.943	.000	.000	.000	.000	.000	.732	.899	.809	.899	.375	.808	.907	.960

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City of Fontana
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Weather: Clear

File Name : 04_FON_Citrus_10E AM
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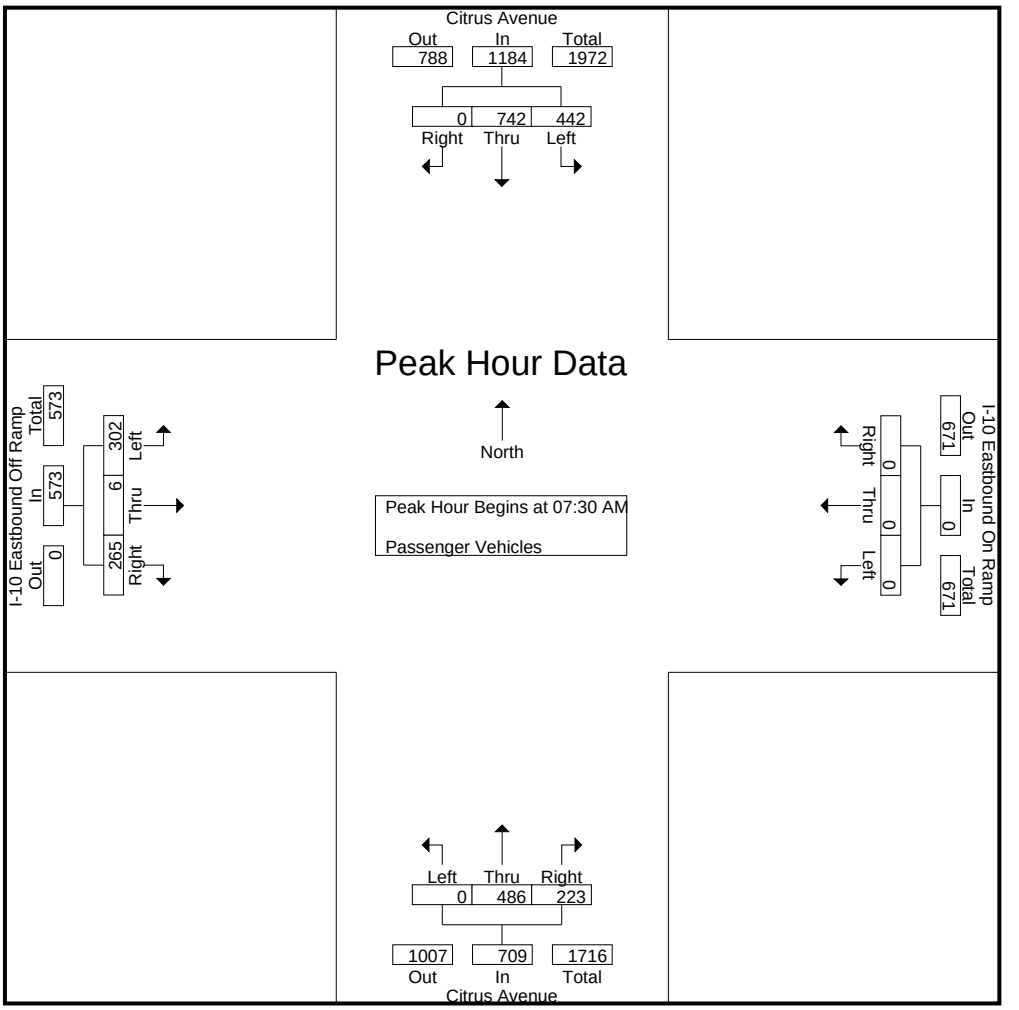

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**144**	146	0	290	0	0	0	0	0	105	51	156	**84**	2	63	149
+15 mins.	116	183	0	299	0	0	0	0	0	107	57	164	73	0	61	134
+30 mins.	90	**224**	0	**314**	0	0	0	0	0	108	**62**	170	72	**4**	**82**	**158**
+45 mins.	92	189	0	281	0	0	0	0	0	**166**	53	**219**	73	0	59	132
Total Volume	442	742	0	1184	0	0	0	0	0	486	223	709	302	6	265	573
% App. Total	37.3	62.7	0		0	0	0		0	68.5	31.5		52.7	1	46.2	
PHF	.767	.828	.000	.943	.000	.000	.000	.000	.000	.732	.899	.809	.899	.375	.808	.907

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	6	0	8	0	0	0	0	0	3	4	7	2	0	1	3	18
07:15 AM	5	2	0	7	0	0	0	0	0	6	4	10	3	0	2	5	22
07:30 AM	8	5	0	13	0	0	0	0	0	4	2	6	3	0	1	4	23
07:45 AM	7	7	0	14	0	0	0	0	0	4	1	5	3	0	0	3	22
Total	22	20	0	42	0	0	0	0	0	17	11	28	11	0	4	15	85
08:00 AM	3	5	0	8	0	0	0	0	0	5	4	9	2	1	3	6	23
08:15 AM	3	7	0	10	0	0	0	0	0	8	2	10	4	0	4	8	28
08:30 AM	4	7	0	11	0	0	0	0	0	10	2	12	2	0	2	4	27
08:45 AM	7	9	0	16	0	0	0	0	0	5	2	7	1	0	1	2	25
Total	17	28	0	45	0	0	0	0	0	28	10	38	9	1	10	20	103
Grand Total	39	48	0	87	0	0	0	0	0	45	21	66	20	1	14	35	188
Apprch %	44.8	55.2	0		0	0	0		0	68.2	31.8		57.1	2.9	40		
Total %	20.7	25.5	0	46.3	0	0	0	0	0	23.9	11.2	35.1	10.6	0.5	7.4	18.6	

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**8**	5	0	13	0	0	0	0	0	4	2	6	3	0	1	4	23
07:45 AM	7	**7**	0	**14**	0	0	0	0	0	4	1	5	3	0	0	3	22
08:00 AM	3	5	0	8	0	0	0	0	0	5	**4**	9	2	**1**	3	6	23
08:15 AM	3	7	0	10	0	0	0	0	0	**8**	2	**10**	**4**	0	**4**	**8**	**28**
Total Volume	21	24	0	45	0	0	0	0	0	21	9	30	12	1	8	21	96
% App. Total	46.7	53.3	0		0	0	0		0	70	30		57.1	4.8	38.1		
PHF	.656	.857	.000	.804	.000	.000	.000	.000	.000	.656	.563	.750	.750	.250	.500	.656	.857

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E AM
Site Code : 10821516
Start Date : 9/28/2021
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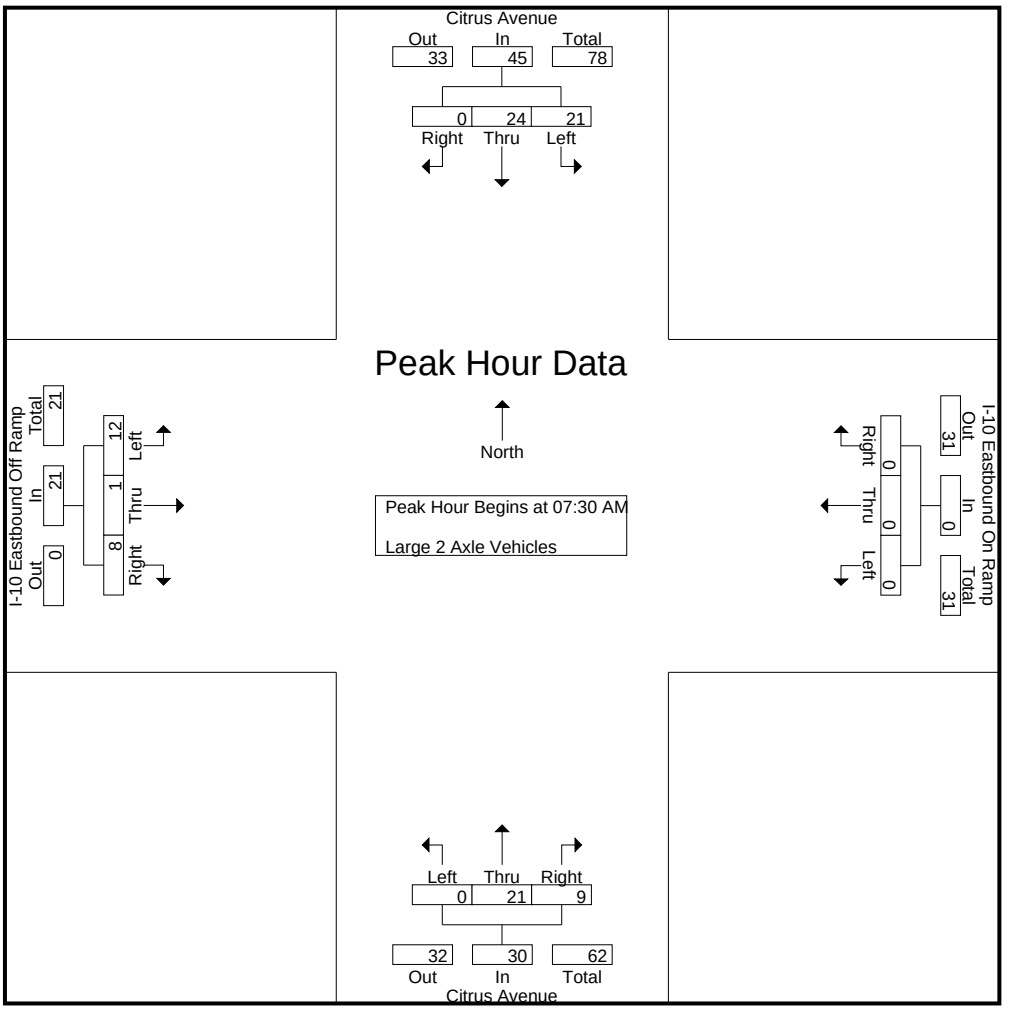

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**8**	5	0	13	0	0	0	0	0	4	2	6	3	0	1	4
+15 mins.	7	**7**	0	**14**	0	0	0	0	0	4	1	5	3	0	0	3
+30 mins.	3	5	0	8	0	0	0	0	0	5	**4**	9	2	**1**	3	6
+45 mins.	3	7	0	10	0	0	0	0	0	**8**	2	**10**	**4**	0	**4**	**8**
Total Volume	21	24	0	45	0	0	0	0	0	21	9	30	12	1	8	21
% App. Total	46.7	53.3	0		0	0	0		0	70	30		57.1	4.8	38.1	
PHF	.656	.857	.000	.804	.000	.000	.000	.000	.000	.656	.563	.750	.750	.250	.500	.656

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	0	0	3	0	0	0	0	0	2	1	3	0	0	1	1	7
07:15 AM	1	1	0	2	0	0	0	0	0	1	1	2	0	0	0	0	4
07:30 AM	1	5	0	6	0	0	0	0	0	0	1	1	2	0	1	3	10
07:45 AM	2	4	0	6	0	0	0	0	0	4	0	4	0	0	2	2	12
Total	7	10	0	17	0	0	0	0	0	7	3	10	2	0	4	6	33
08:00 AM	3	1	0	4	0	0	0	0	0	3	1	4	1	0	3	4	12
08:15 AM	3	1	0	4	0	0	0	0	0	1	2	3	1	0	3	4	11
08:30 AM	5	3	0	8	0	0	0	0	0	3	6	9	0	0	2	2	19
08:45 AM	2	2	0	4	0	0	0	0	0	2	0	2	0	0	1	1	7
Total	13	7	0	20	0	0	0	0	0	9	9	18	2	0	9	11	49
Grand Total	20	17	0	37	0	0	0	0	0	16	12	28	4	0	13	17	82
Apprch %	54.1	45.9	0		0	0	0		0	57.1	42.9		23.5	0	76.5		
Total %	24.4	20.7	0	45.1	0	0	0	0	0	19.5	14.6	34.1	4.9	0	15.9	20.7	

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	**5**	0	**6**	0	0	0	0	0	0	1	1	**2**	0	1	3	10
07:45 AM	2	4	0	6	0	0	0	0	0	**4**	0	**4**	0	0	2	2	**12**
08:00 AM	**3**	1	0	4	0	0	0	0	0	3	1	4	1	0	**3**	**4**	12
08:15 AM	3	1	0	4	0	0	0	0	0	1	**2**	3	1	0	3	4	11
Total Volume	9	11	0	20	0	0	0	0	0	8	4	12	4	0	9	13	45
% App. Total	45	55	0		0	0	0		0	66.7	33.3		30.8	0	69.2		
PHF	.750	.550	.000	.833	.000	.000	.000	.000	.000	.500	.500	.750	.500	.000	.750	.813	.938

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E AM
Site Code : 10821516
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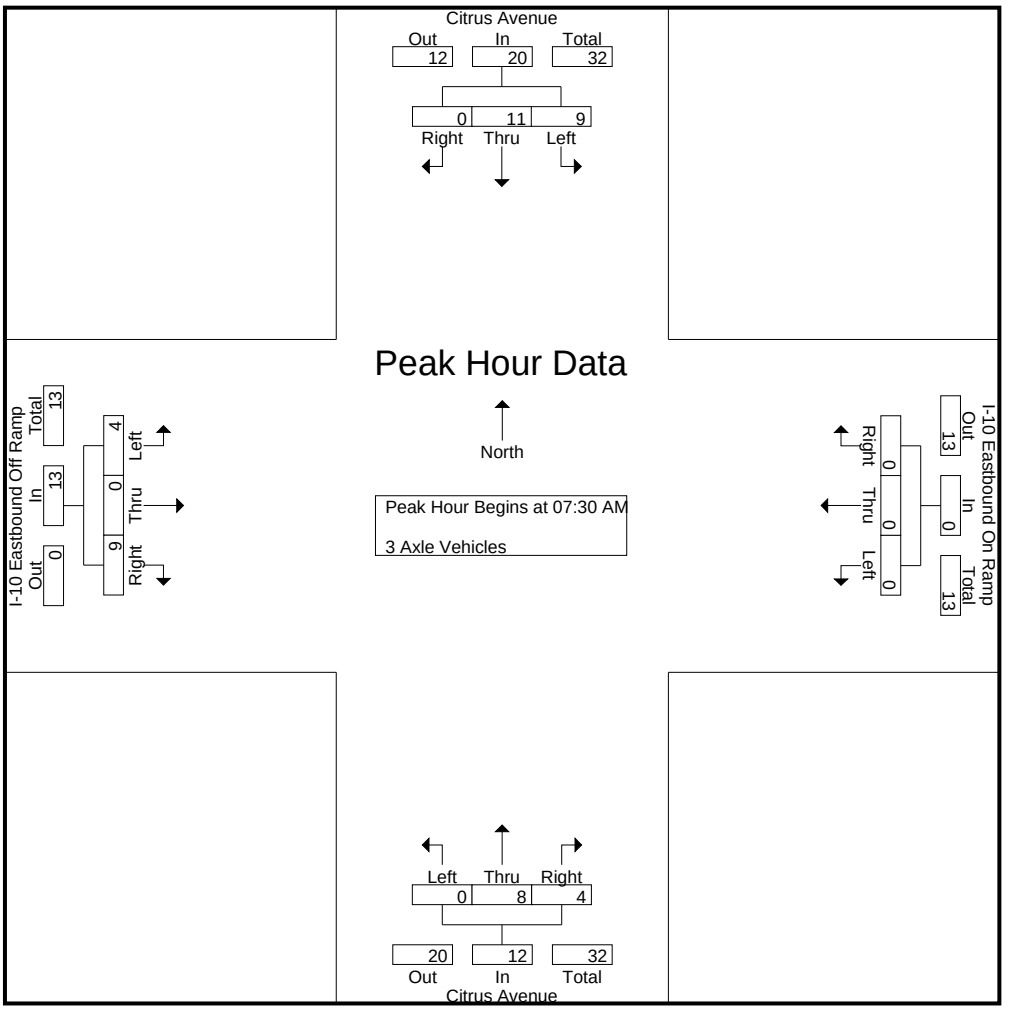

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	1	**5**	0	**6**	0	0	0	0	0	0	1	1	**2**	0	1	3
+15 mins.	2	4	0	6	0	0	0	0	0	**4**	0	**4**	0	0	2	2
+30 mins.	**3**	1	0	4	0	0	0	0	0	3	1	4	1	0	**3**	**4**
+45 mins.	3	1	0	4	0	0	0	0	0	1	**2**	3	1	0	3	4
Total Volume	9	11	0	20	0	0	0	0	0	8	4	12	4	0	9	13
% App. Total	45	55	0		0	0	0		0	66.7	33.3		30.8	0	69.2	
PHF	.750	.550	.000	.833	.000	.000	.000	.000	.000	.500	.500	.750	.500	.000	.750	.813

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	4	0	8	0	0	0	0	0	5	5	10	1	0	11	12	30
07:15 AM	4	9	0	13	0	0	0	0	0	6	5	11	0	0	6	6	30
07:30 AM	4	5	0	9	0	0	0	0	0	15	6	21	0	0	7	7	37
07:45 AM	2	2	0	4	0	0	0	0	0	8	7	15	1	0	7	8	27
Total	14	20	0	34	0	0	0	0	0	34	23	57	2	0	31	33	124
08:00 AM	3	5	0	8	0	0	0	0	0	8	8	16	2	0	8	10	34
08:15 AM	5	5	0	10	0	0	0	0	0	8	8	16	0	0	11	11	37
08:30 AM	7	9	0	16	0	0	0	0	0	8	14	22	4	0	11	15	53
08:45 AM	8	8	0	16	0	0	0	0	0	13	8	21	2	0	8	10	47
Total	23	27	0	50	0	0	0	0	0	37	38	75	8	0	38	46	171
Grand Total	37	47	0	84	0	0	0	0	0	71	61	132	10	0	69	79	295
Apprch %	44	56	0		0	0	0		0	53.8	46.2		12.7	0	87.3		
Total %	12.5	15.9	0	28.5	0	0	0	0	0	24.1	20.7	44.7	3.4	0	23.4	26.8	

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	4	**5**	0	9	0	0	0	0	0	**15**	6	**21**	0	0	7	7	**37**
07:45 AM	2	2	0	4	0	0	0	0	0	8	7	15	1	0	7	8	27
08:00 AM	3	5	0	8	0	0	0	0	0	8	**8**	16	**2**	0	8	10	34
08:15 AM	**5**	5	0	**10**	0	0	0	0	0	8	8	16	0	0	**11**	**11**	37
Total Volume	14	17	0	31	0	0	0	0	0	39	29	68	3	0	33	36	135
% App. Total	45.2	54.8	0		0	0	0		0	57.4	42.6		8.3	0	91.7		
PHF	.700	.850	.000	.775	.000	.000	.000	.000	.000	.650	.906	.810	.375	.000	.750	.818	.912

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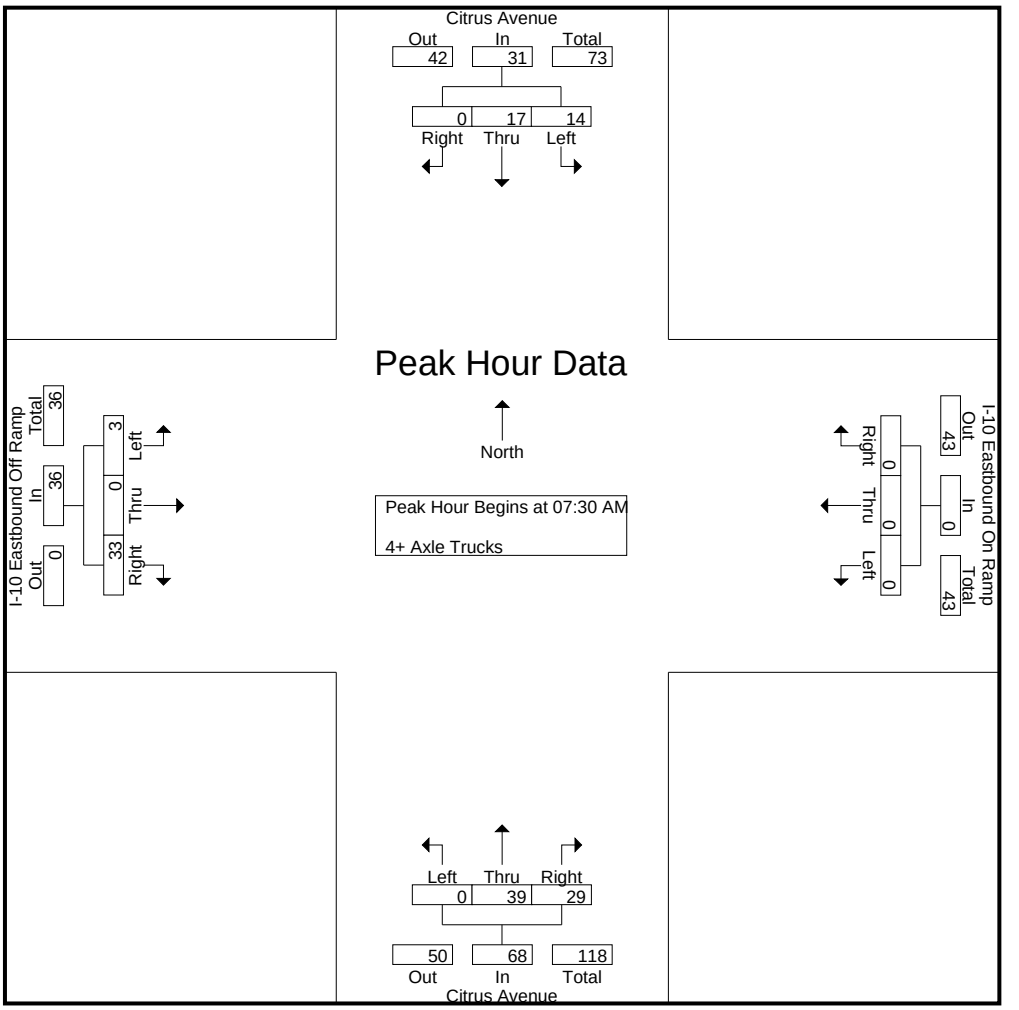
City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	4	**5**	0	9	0	0	0	0	0	**15**	6	**21**	0	0	7	7
+15 mins.	2	2	0	4	0	0	0	0	0	8	7	15	1	0	7	8
+30 mins.	3	5	0	8	0	0	0	0	0	8	**8**	16	**2**	0	8	10
+45 mins.	**5**	5	0	**10**	0	0	0	0	0	8	8	16	0	0	**11**	**11**
Total Volume	14	17	0	31	0	0	0	0	0	39	29	68	3	0	33	36
% App. Total	45.2	54.8	0		0	0	0		0	57.4	42.6		8.3	0	91.7	
PHF	.700	.850	.000	.775	.000	.000	.000	.000	.000	.650	.906	.810	.375	.000	.750	.818

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	128	138	0	266	0	0	0	0	0	227	108	335	107	2	50	159	760
04:15 PM	128	159	0	287	0	0	0	0	0	214	136	350	100	0	41	141	778
04:30 PM	115	148	0	263	0	0	0	0	0	200	113	313	101	3	42	146	722
04:45 PM	92	144	0	236	0	0	0	0	0	192	92	284	122	2	45	169	689
Total	463	589	0	1052	0	0	0	0	0	833	449	1282	430	7	178	615	2949
05:00 PM	106	142	0	248	0	0	0	0	0	185	102	287	130	6	51	187	722
05:15 PM	106	156	0	262	0	0	0	0	0	202	97	299	107	4	36	147	708
05:30 PM	111	145	0	256	0	0	0	0	0	221	75	296	115	2	43	160	712
05:45 PM	95	128	0	223	0	0	0	0	0	231	72	303	110	1	78	189	715
Total	418	571	0	989	0	0	0	0	0	839	346	1185	462	13	208	683	2857
Grand Total	881	1160	0	2041	0	0	0	0	0	1672	795	2467	892	20	386	1298	5806
Apprch %	43.2	56.8	0		0	0	0		0	67.8	32.2		68.7	1.5	29.7		
Total %	15.2	20	0	35.2	0	0	0	0	0	28.8	13.7	42.5	15.4	0.3	6.6	22.4	
Passenger Vehicles	825	1074	0	1899	0	0	0	0	0	1581	731	2312	855	20	344	1219	5430
% Passenger Vehicles	93.6	92.6	0	93	0	0	0	0	0	94.6	91.9	93.7	95.9	100	89.1	93.9	93.5
Large 2 Axle Vehicles	22	35	0	57	0	0	0	0	0	31	19	50	19	0	12	31	138
% Large 2 Axle Vehicles	2.5	3	0	2.8	0	0	0	0	0	1.9	2.4	2	2.1	0	3.1	2.4	2.4
3 Axle Vehicles	12	10	0	22	0	0	0	0	0	20	10	30	5	0	4	9	61
% 3 Axle Vehicles	1.4	0.9	0	1.1	0	0	0	0	0	1.2	1.3	1.2	0.6	0	1	0.7	1.1
4+ Axle Trucks	22	41	0	63	0	0	0	0	0	40	35	75	13	0	26	39	177
% 4+ Axle Trucks	2.5	3.5	0	3.1	0	0	0	0	0	2.4	4.4	3	1.5	0	6.7	3	3

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**128**	138	0	266	0	0	0	0	0	**227**	108	335	107	2	**50**	159	760
04:15 PM	128	**159**	0	**287**	0	0	0	0	0	214	**136**	**350**	100	0	41	141	**778**
04:30 PM	115	148	0	263	0	0	0	0	0	200	113	313	101	**3**	42	146	722
04:45 PM	92	144	0	236	0	0	0	0	0	192	92	284	**122**	2	45	**169**	689
Total Volume	463	589	0	1052	0	0	0	0	0	833	449	1282	430	7	178	615	2949
% App. Total	44	56	0		0	0	0		0	65	35		69.9	1.1	28.9		
PHF	.904	.926	.000	.916	.000	.000	.000	.000	.000	.917	.825	.916	.881	.583	.890	.910	.948

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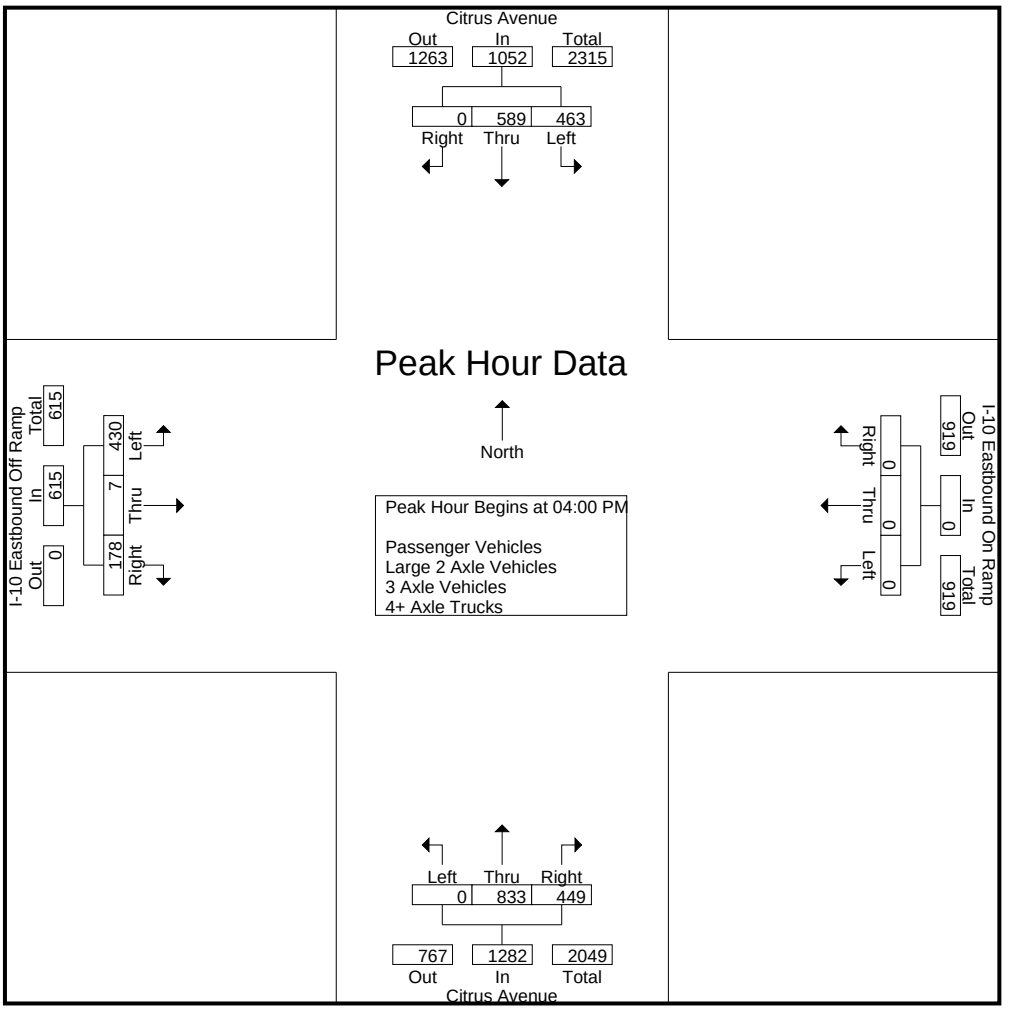
City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				05:00 PM			
+0 mins.	**128**	138	0	266	0	0	0	0	0	**227**	108	335	**130**	**6**	51	187
+15 mins.	128	**159**	0	**287**	0	0	0	0	0	214	**136**	**350**	107	4	36	147
+30 mins.	115	148	0	263	0	0	0	0	0	200	113	313	115	2	43	160
+45 mins.	92	144	0	236	0	0	0	0	0	192	92	284	110	1	**78**	**189**
Total Volume	463	589	0	1052	0	0	0	0	0	833	449	1282	462	13	208	683
% App. Total	44	56	0		0	0	0		0	65	35		67.6	1.9	30.5	
PHF	.904	.926	.000	.916	.000	.000	.000	.000	.000	.917	.825	.916	.888	.542	.667	.903

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	121	129	0	250	0	0	0	0	0	206	95	301	101	2	42	145	696
04:15 PM	118	143	0	261	0	0	0	0	0	203	125	328	94	0	33	127	716
04:30 PM	109	136	0	245	0	0	0	0	0	190	101	291	95	3	38	136	672
04:45 PM	84	133	0	217	0	0	0	0	0	181	85	266	118	2	40	160	643
Total	432	541	0	973	0	0	0	0	0	780	406	1186	408	7	153	568	2727
05:00 PM	101	132	0	233	0	0	0	0	0	170	95	265	125	6	43	174	672
05:15 PM	99	146	0	245	0	0	0	0	0	194	90	284	106	4	34	144	673
05:30 PM	103	138	0	241	0	0	0	0	0	214	72	286	110	2	42	154	681
05:45 PM	90	117	0	207	0	0	0	0	0	223	68	291	106	1	72	179	677
Total	393	533	0	926	0	0	0	0	0	801	325	1126	447	13	191	651	2703
Grand Total	825	1074	0	1899	0	0	0	0	0	1581	731	2312	855	20	344	1219	5430
Apprch %	43.4	56.6	0		0	0	0		0	68.4	31.6		70.1	1.6	28.2		
Total %	15.2	19.8	0	35	0	0	0	0	0	29.1	13.5	42.6	15.7	0.4	6.3	22.4	

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**121**	129	0	250	0	0	0	0	0	**206**	95	301	101	2	**42**	145	696
04:15 PM	118	**143**	0	**261**	0	0	0	0	0	203	**125**	**328**	94	0	33	127	**716**
04:30 PM	109	136	0	245	0	0	0	0	0	190	101	291	95	**3**	38	136	672
04:45 PM	84	133	0	217	0	0	0	0	0	181	85	266	**118**	2	40	**160**	643
Total Volume	432	541	0	973	0	0	0	0	0	780	406	1186	408	7	153	568	2727
% App. Total	44.4	55.6	0		0	0	0		0	65.8	34.2		71.8	1.2	26.9		
PHF	.893	.946	.000	.932	.000	.000	.000	.000	.000	.947	.812	.904	.864	.583	.911	.888	.952

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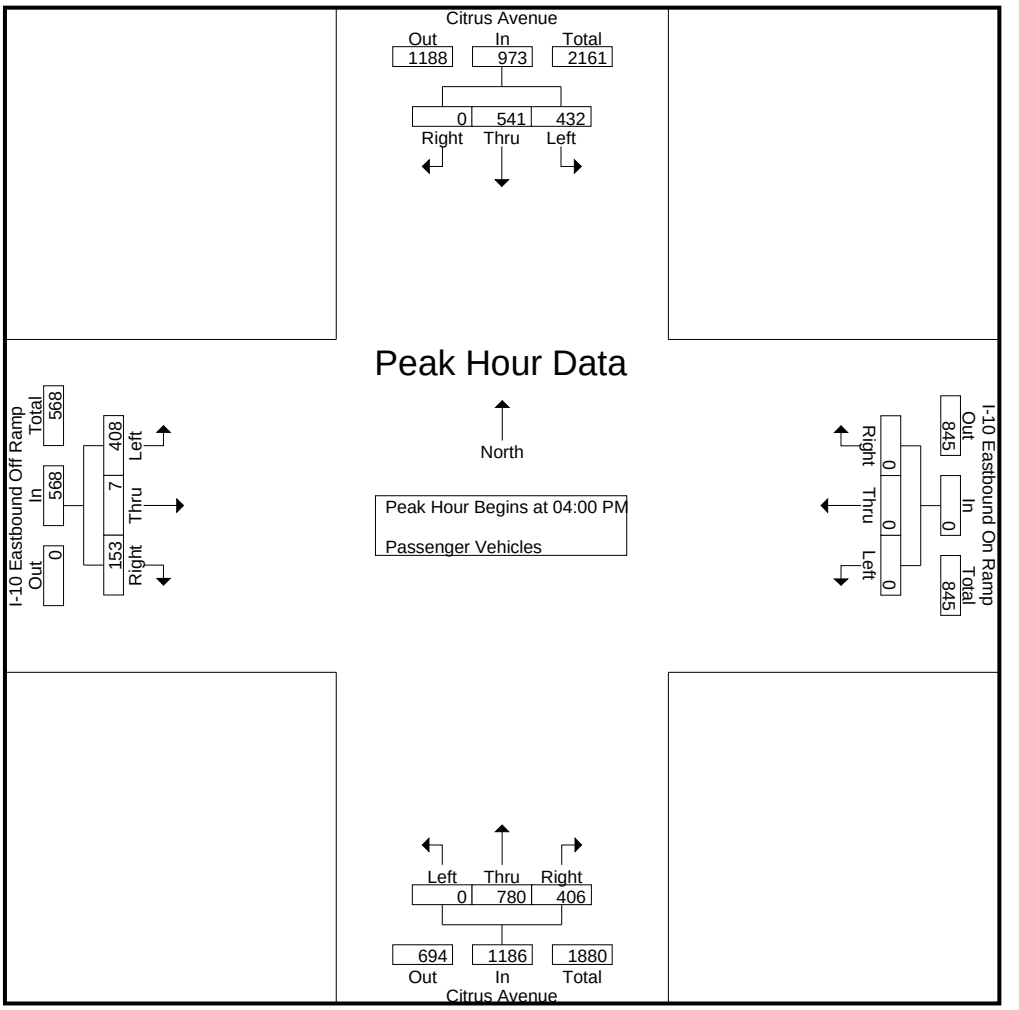
City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	**121**	129	0	250	0	0	0	0	0	**206**	95	301	101	2	**42**	145
+15 mins.	118	**143**	0	**261**	0	0	0	0	0	203	**125**	**328**	94	0	33	127
+30 mins.	109	136	0	245	0	0	0	0	0	190	101	291	95	**3**	38	136
+45 mins.	84	133	0	217	0	0	0	0	0	181	85	266	**118**	2	40	**160**
Total Volume	432	541	0	973	0	0	0	0	0	780	406	1186	408	7	153	568
% App. Total	44.4	55.6	0		0	0	0		0	65.8	34.2		71.8	1.2	26.9	
PHF	.893	.946	.000	.932	.000	.000	.000	.000	.000	.947	.812	.904	.864	.583	.911	.888

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	1	0	2	0	0	0	0	0	11	3	14	2	0	3	5	21
04:15 PM	6	9	0	15	0	0	0	0	0	6	4	10	6	0	2	8	33
04:30 PM	2	8	0	10	0	0	0	0	0	4	4	8	2	0	3	5	23
04:45 PM	2	4	0	6	0	0	0	0	0	4	4	8	3	0	0	3	17
Total	11	22	0	33	0	0	0	0	0	25	15	40	13	0	8	21	94
05:00 PM	2	5	0	7	0	0	0	0	0	3	2	5	2	0	2	4	16
05:15 PM	1	2	0	3	0	0	0	0	0	1	2	3	1	0	0	1	7
05:30 PM	4	2	0	6	0	0	0	0	0	0	0	0	3	0	0	3	9
05:45 PM	4	4	0	8	0	0	0	0	0	2	0	2	0	0	2	2	12
Total	11	13	0	24	0	0	0	0	0	6	4	10	6	0	4	10	44
Grand Total	22	35	0	57	0	0	0	0	0	31	19	50	19	0	12	31	138
Apprch %	38.6	61.4	0		0	0	0		0	62	38		61.3	0	38.7		
Total %	15.9	25.4	0	41.3	0	0	0	0	0	22.5	13.8	36.2	13.8	0	8.7	22.5	

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	1	1	0	2	0	0	0	0	0	**11**	3	**14**	2	0	**3**	5	21
04:15 PM	**6**	**9**	0	**15**	0	0	0	0	0	6	**4**	10	**6**	0	2	**8**	**33**
04:30 PM	2	8	0	10	0	0	0	0	0	4	4	8	2	0	3	5	23
04:45 PM	2	4	0	6	0	0	0	0	0	4	4	8	3	0	0	3	17
Total Volume	11	22	0	33	0	0	0	0	0	25	15	40	13	0	8	21	94
% App. Total	33.3	66.7	0		0	0	0		0	62.5	37.5		61.9	0	38.1		
PHF	.458	.611	.000	.550	.000	.000	.000	.000	.000	.568	.938	.714	.542	.000	.667	.656	.712

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E PM
Site Code : 10821516
Start Date : 9/28/2021
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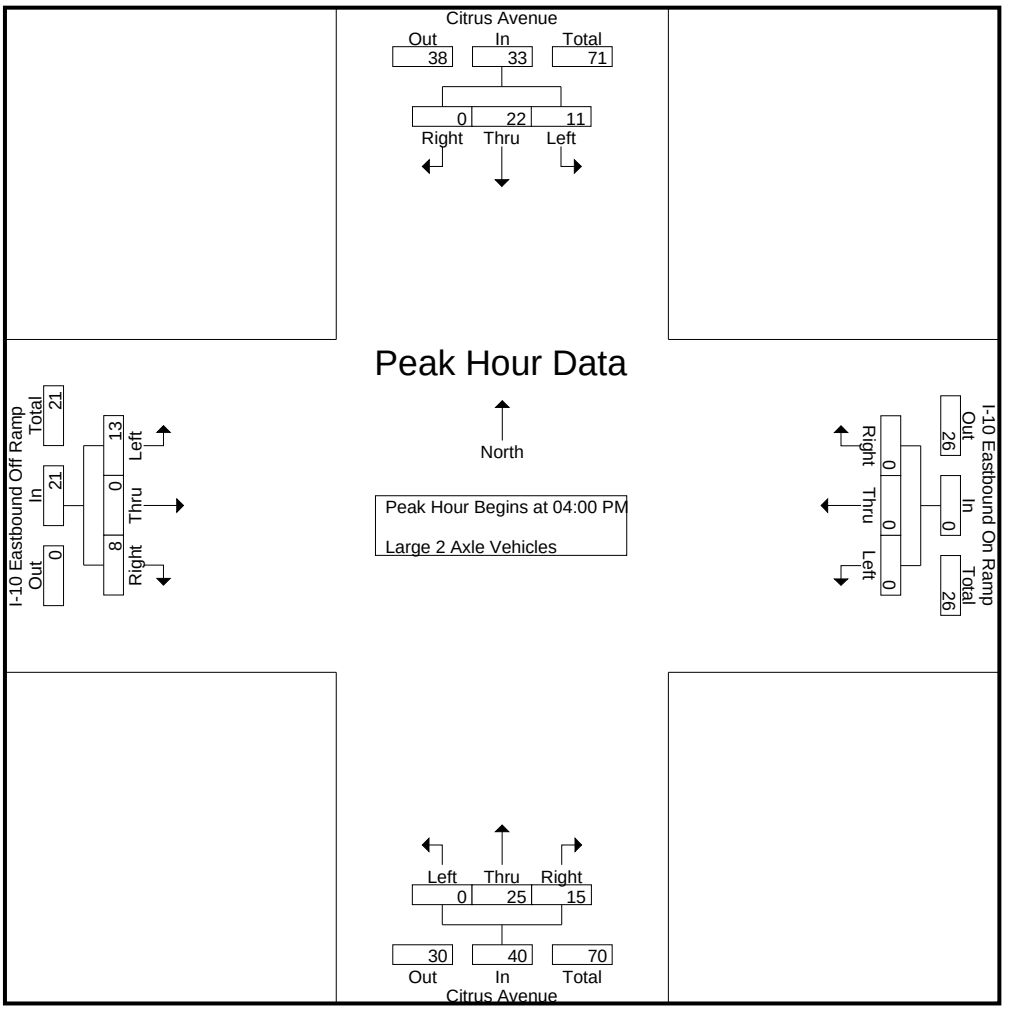

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	1	1	0	2	0	0	0	0	0	**11**	3	**14**	2	0	**3**	5
+15 mins.	**6**	**9**	0	**15**	0	0	0	0	0	6	**4**	10	**6**	0	2	**8**
+30 mins.	2	8	0	10	0	0	0	0	0	4	4	8	2	0	3	5
+45 mins.	2	4	0	6	0	0	0	0	0	4	4	8	3	0	0	3
Total Volume	11	22	0	33	0	0	0	0	0	25	15	40	13	0	8	21
% App. Total	33.3	66.7	0		0	0	0		0	62.5	37.5		61.9	0	38.1	
PHF	.458	.611	.000	.550	.000	.000	.000	.000	.000	.568	.938	.714	.542	.000	.667	.656

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	3	1	0	4	0	0	0	0	0	2	1	3	2	0	1	3	10
04:15 PM	1	3	0	4	0	0	0	0	0	0	2	2	0	0	2	2	8
04:30 PM	2	0	0	2	0	0	0	0	0	2	1	3	2	0	0	2	7
04:45 PM	2	1	0	3	0	0	0	0	0	5	0	5	0	0	1	1	9
Total	8	5	0	13	0	0	0	0	0	9	4	13	4	0	4	8	34
05:00 PM	1	1	0	2	0	0	0	0	0	4	1	5	1	0	0	1	8
05:15 PM	1	3	0	4	0	0	0	0	0	3	3	6	0	0	0	0	10
05:30 PM	1	0	0	1	0	0	0	0	0	3	1	4	0	0	0	0	5
05:45 PM	1	1	0	2	0	0	0	0	0	1	1	2	0	0	0	0	4
Total	4	5	0	9	0	0	0	0	0	11	6	17	1	0	0	1	27
Grand Total	12	10	0	22	0	0	0	0	0	20	10	30	5	0	4	9	61
Apprch %	54.5	45.5	0		0	0	0		0	66.7	33.3		55.6	0	44.4		
Total %	19.7	16.4	0	36.1	0	0	0	0	0	32.8	16.4	49.2	8.2	0	6.6	14.8	

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**3**	1	0	**4**	0	0	0	0	0	2	1	3	**2**	0	1	**3**	**10**
04:15 PM	1	**3**	0	4	0	0	0	0	0	0	**2**	2	0	0	**2**	2	8
04:30 PM	2	0	0	2	0	0	0	0	0	2	1	3	2	0	0	2	7
04:45 PM	2	1	0	3	0	0	0	0	0	**5**	0	**5**	0	0	1	1	9
Total Volume	8	5	0	13	0	0	0	0	0	9	4	13	4	0	4	8	34
% App. Total	61.5	38.5	0		0	0	0		0	69.2	30.8		50	0	50		
PHF	.667	.417	.000	.813	.000	.000	.000	.000	.000	.450	.500	.650	.500	.000	.500	.667	.850

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E PM
Site Code : 10821516
Start Date : 9/28/2021
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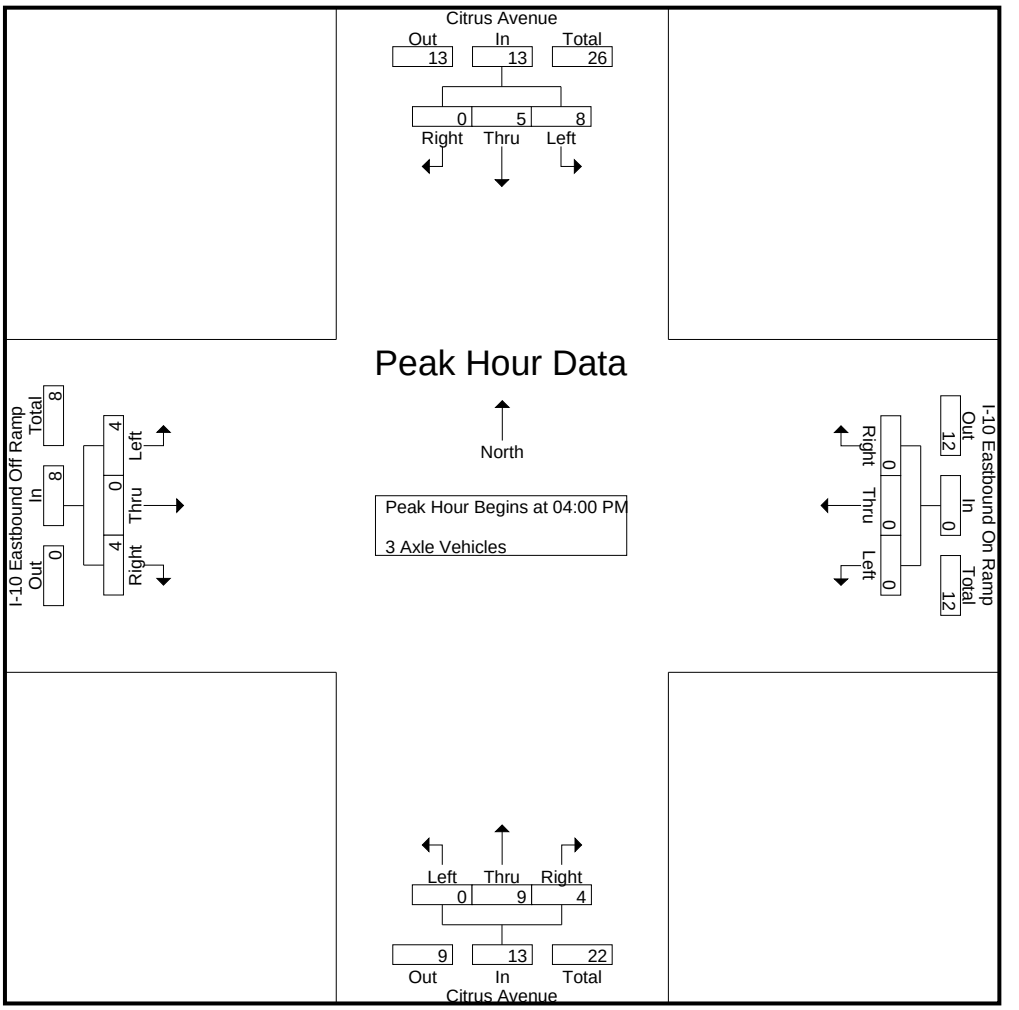

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	**3**	1	0	**4**	0	0	0	0	0	2	1	3	**2**	0	1	**3**
+15 mins.	1	**3**	0	4	0	0	0	0	0	0	**2**	2	0	0	**2**	2
+30 mins.	2	0	0	2	0	0	0	0	0	2	1	3	2	0	0	2
+45 mins.	2	1	0	3	0	0	0	0	0	**5**	0	**5**	0	0	1	1
Total Volume	8	5	0	13	0	0	0	0	0	9	4	13	4	0	4	8
% App. Total	61.5	38.5	0		0	0	0		0	69.2	30.8		50	0	50	
PHF	.667	.417	.000	.813	.000	.000	.000	.000	.000	.450	.500	.650	.500	.000	.500	.667

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E PM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- 4+ Axle Trucks

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	3	7	0	10	0	0	0	0	0	8	9	17	2	0	4	6	33
04:15 PM	3	4	0	7	0	0	0	0	0	5	5	10	0	0	4	4	21
04:30 PM	2	4	0	6	0	0	0	0	0	4	7	11	2	0	1	3	20
04:45 PM	4	6	0	10	0	0	0	0	0	2	3	5	1	0	4	5	20
Total	12	21	0	33	0	0	0	0	0	19	24	43	5	0	13	18	94
05:00 PM	2	4	0	6	0	0	0	0	0	8	4	12	2	0	6	8	26
05:15 PM	5	5	0	10	0	0	0	0	0	4	2	6	0	0	2	2	18
05:30 PM	3	5	0	8	0	0	0	0	0	4	2	6	2	0	1	3	17
05:45 PM	0	6	0	6	0	0	0	0	0	5	3	8	4	0	4	8	22
Total	10	20	0	30	0	0	0	0	0	21	11	32	8	0	13	21	83
Grand Total	22	41	0	63	0	0	0	0	0	40	35	75	13	0	26	39	177
Apprch %	34.9	65.1	0		0	0	0		0	53.3	46.7		33.3	0	66.7		
Total %	12.4	23.2	0	35.6	0	0	0	0	0	22.6	19.8	42.4	7.3	0	14.7	22	

	Citrus Avenue Southbound				I-10 Eastbound On Ramp Westbound				Citrus Avenue Northbound				I-10 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	3	**7**	0	**10**	0	0	0	0	0	**8**	**9**	**17**	**2**	0	**4**	**6**	**33**
04:15 PM	3	4	0	7	0	0	0	0	0	5	5	10	0	0	4	4	21
04:30 PM	2	4	0	6	0	0	0	0	0	4	7	11	2	0	1	3	20
04:45 PM	**4**	6	0	10	0	0	0	0	0	2	3	5	1	0	4	5	20
Total Volume	12	21	0	33	0	0	0	0	0	19	24	43	5	0	13	18	94
% App. Total	36.4	63.6	0		0	0	0		0	44.2	55.8		27.8	0	72.2		
PHF	.750	.750	.000	.825	.000	.000	.000	.000	.000	.594	.667	.632	.625	.000	.813	.750	.712

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City of Fontana
N/S: Citrus Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : 04_FON_Citrus_10E PM
Site Code : 10821516
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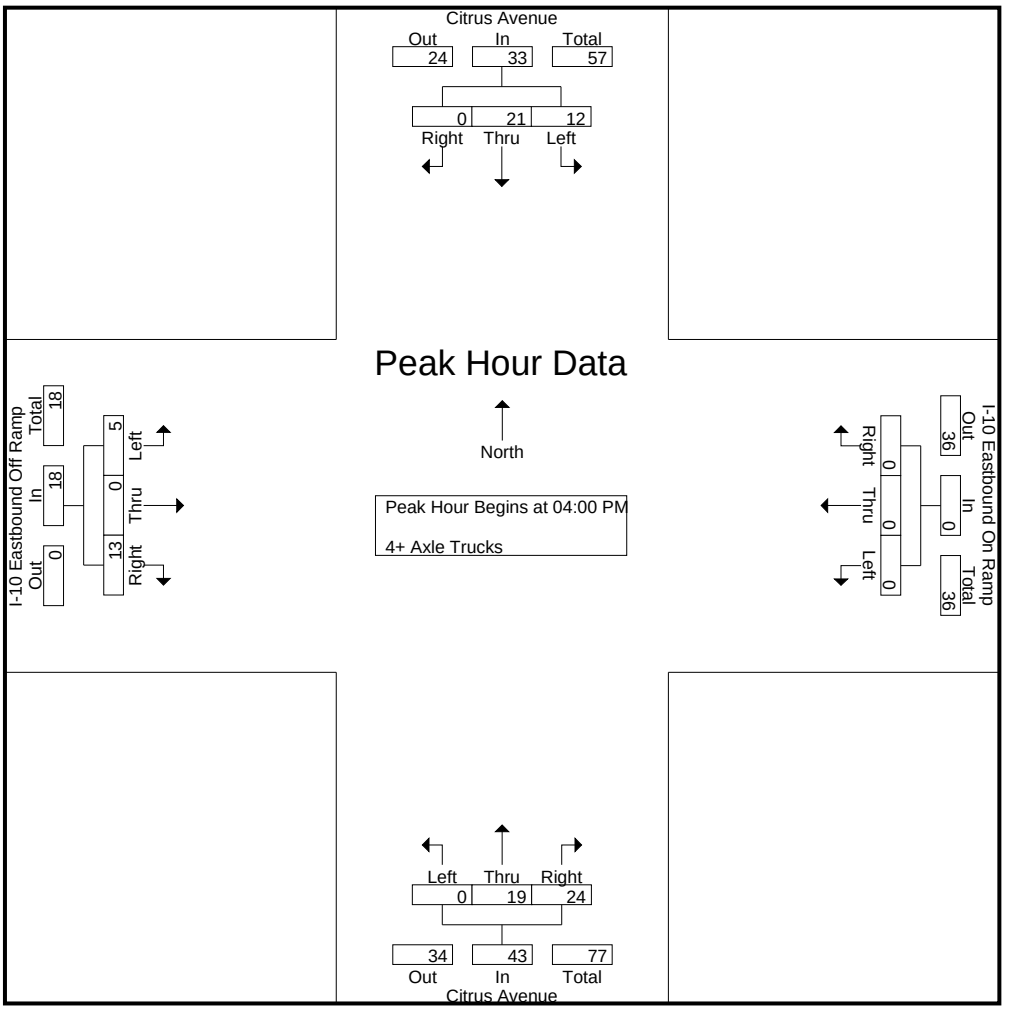

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	3	**7**	0	**10**	0	0	0	0	0	**8**	**9**	**17**	**2**	0	**4**	**6**
+15 mins.	3	4	0	7	0	0	0	0	0	5	5	10	0	0	4	4
+30 mins.	2	4	0	6	0	0	0	0	0	4	7	11	2	0	1	3
+45 mins.	**4**	6	0	10	0	0	0	0	0	2	3	5	1	0	4	5
Total Volume	12	21	0	33	0	0	0	0	0	19	24	43	5	0	13	18
% App. Total	36.4	63.6	0		0	0	0		0	44.2	55.8		27.8	0	72.2	
PHF	.750	.750	.000	.825	.000	.000	.000	.000	.000	.594	.667	.632	.625	.000	.813	.750

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City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps AM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	81	162	172	415	101	0	138	239	87	104	59	250	155	0	74	229	1133
07:15 AM	110	132	204	446	75	0	125	200	128	187	91	406	172	0	77	249	1301
07:30 AM	150	162	217	529	86	0	134	220	111	136	103	350	178	0	90	268	1367
07:45 AM	139	215	218	572	99	0	153	252	96	192	83	371	182	0	96	278	1473
Total	480	671	811	1962	361	0	550	911	422	619	336	1377	687	0	337	1024	5274
08:00 AM	104	199	172	475	109	0	135	244	82	181	74	337	236	0	105	341	1397
08:15 AM	97	154	171	422	100	0	124	224	78	201	69	348	242	0	154	396	1390
08:30 AM	89	135	188	412	57	0	138	195	95	177	70	342	202	0	76	278	1227
08:45 AM	84	147	171	402	71	0	163	234	88	196	62	346	181	0	97	278	1260
Total	374	635	702	1711	337	0	560	897	343	755	275	1373	861	0	432	1293	5274
Grand Total	854	1306	1513	3673	698	0	1110	1808	765	1374	611	2750	1548	0	769	2317	10548
Apprch %	23.3	35.6	41.2		38.6	0	61.4		27.8	50	22.2		66.8	0	33.2		
Total %	8.1	12.4	14.3	34.8	6.6	0	10.5	17.1	7.3	13	5.8	26.1	14.7	0	7.3	22	
Passenger Vehicles	829	1277	1438	3544	661	0	1092	1753	675	1347	574	2596	1510	0	683	2193	10086
% Passenger Vehicles	97.1	97.8	95	96.5	94.7	0	98.4	97	88.2	98	93.9	94.4	97.5	0	88.8	94.6	95.6
Large 2 Axle Vehicles	15	23	38	76	14	0	9	23	27	23	12	62	25	0	21	46	207
% Large 2 Axle Vehicles	1.8	1.8	2.5	2.1	2	0	0.8	1.3	3.5	1.7	2	2.3	1.6	0	2.7	2	2
3 Axle Vehicles	2	3	7	12	3	0	4	7	10	2	3	15	5	0	18	23	57
% 3 Axle Vehicles	0.2	0.2	0.5	0.3	0.4	0	0.4	0.4	1.3	0.1	0.5	0.5	0.3	0	2.3	1	0.5
4+ Axle Trucks	8	3	30	41	20	0	5	25	53	2	22	77	8	0	47	55	198
% 4+ Axle Trucks	0.9	0.2	2	1.1	2.9	0	0.5	1.4	6.9	0.1	3.6	2.8	0.5	0	6.1	2.4	1.9

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**150**	162	217	529	86	0	134	220	**111**	136	**103**	350	178	0	90	268	1367
07:45 AM	139	**215**	**218**	**572**	99	0	**153**	**252**	96	192	83	**371**	182	0	96	278	**1473**
08:00 AM	104	199	172	475	**109**	0	135	244	82	181	74	337	236	0	105	341	1397
08:15 AM	97	154	171	422	100	0	124	224	78	**201**	69	348	**242**	0	**154**	**396**	1390
Total Volume	490	730	778	1998	394	0	546	940	367	710	329	1406	838	0	445	1283	5627
% App. Total	24.5	36.5	38.9		41.9	0	58.1		26.1	50.5	23.4		65.3	0	34.7		
PHF	.817	.849	.892	.873	.904	.000	.892	.933	.827	.883	.799	.947	.866	.000	.722	.810	.955

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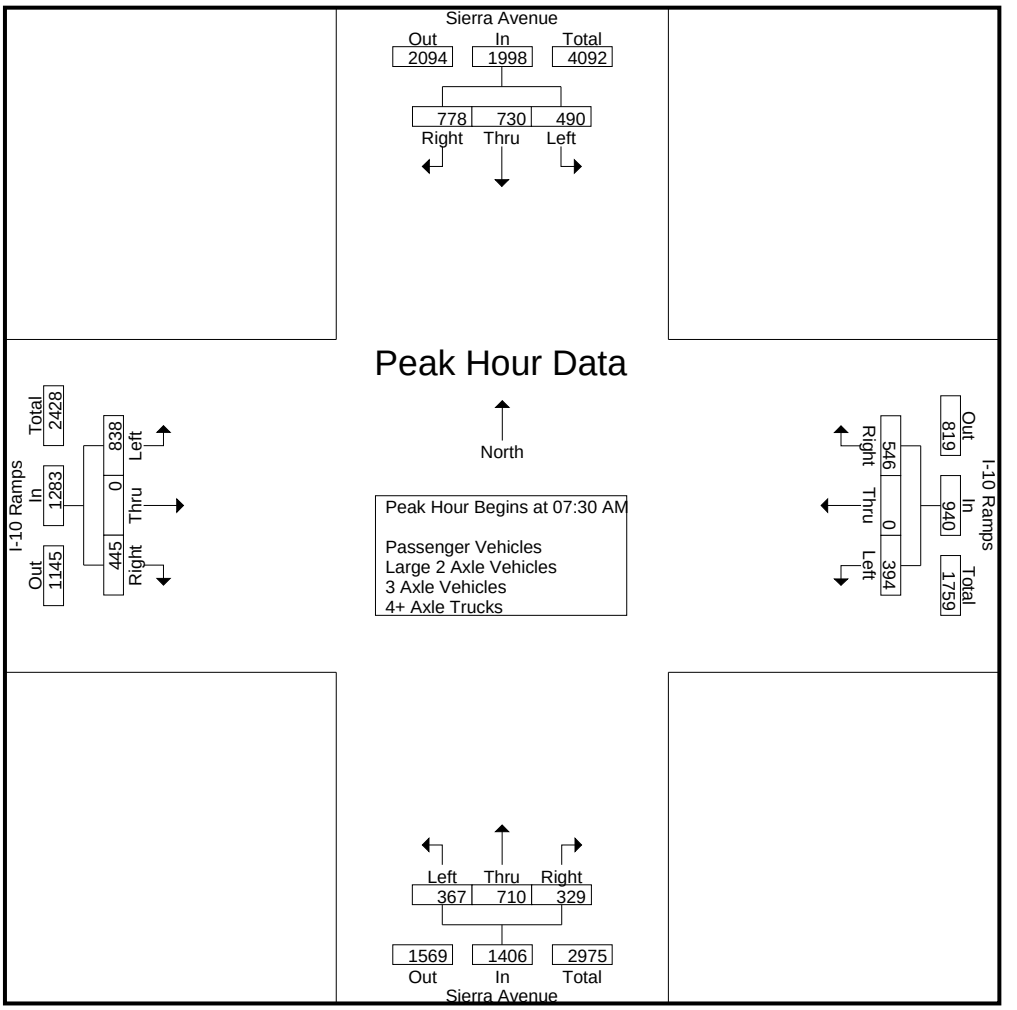
City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:30 AM				07:15 AM				07:45 AM			
+0 mins.	110	132	204	446	86	0	134	220	**128**	187	91	**406**	182	0	96	278
+15 mins.	**150**	162	217	529	99	0	**153**	**252**	111	136	**103**	350	236	0	105	341
+30 mins.	139	**215**	**218**	**572**	**109**	0	135	244	96	**192**	83	371	**242**	0	**154**	**396**
+45 mins.	104	199	172	475	100	0	124	224	82	181	74	337	202	0	76	278
Total Volume	503	708	811	2022	394	0	546	940	417	696	351	1464	862	0	431	1293
% App. Total	24.9	35	40.1		41.9	0	58.1		28.5	47.5	24		66.7	0	33.3	
PHF	.838	.823	.930	.884	.904	.000	.892	.933	.814	.906	.852	.901	.890	.000	.700	.816

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City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	79	160	171	410	91	0	136	227	73	100	54	227	150	0	59	209	1073
07:15 AM	106	131	194	431	74	0	124	198	117	183	84	384	171	0	66	237	1250
07:30 AM	146	160	211	517	81	0	132	213	100	135	97	332	174	0	74	248	1310
07:45 AM	138	212	210	560	94	0	153	247	88	191	74	353	177	0	91	268	1428
Total	469	663	786	1918	340	0	545	885	378	609	309	1296	672	0	290	962	5061
08:00 AM	101	194	160	455	106	0	134	240	73	176	72	321	233	0	102	335	1351
08:15 AM	94	148	159	401	90	0	120	210	70	197	66	333	236	0	136	372	1316
08:30 AM	86	131	171	388	55	0	135	190	79	172	67	318	196	0	70	266	1162
08:45 AM	79	141	162	382	70	0	158	228	75	193	60	328	173	0	85	258	1196
Total	360	614	652	1626	321	0	547	868	297	738	265	1300	838	0	393	1231	5025
Grand Total	829	1277	1438	3544	661	0	1092	1753	675	1347	574	2596	1510	0	683	2193	10086
Apprch %	23.4	36	40.6		37.7	0	62.3		26	51.9	22.1		68.9	0	31.1		
Total %	8.2	12.7	14.3	35.1	6.6	0	10.8	17.4	6.7	13.4	5.7	25.7	15	0	6.8	21.7	

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**146**	160	**211**	517	81	0	132	213	**100**	135	**97**	332	174	0	74	248	1310
07:45 AM	138	**212**	210	**560**	94	0	**153**	**247**	88	191	74	**353**	177	0	91	268	**1428**
08:00 AM	101	194	160	455	**106**	0	134	240	73	176	72	321	233	0	102	335	1351
08:15 AM	94	148	159	401	90	0	120	210	70	**197**	66	333	**236**	0	**136**	**372**	1316
Total Volume	479	714	740	1933	371	0	539	910	331	699	309	1339	820	0	403	1223	5405
% App. Total	24.8	36.9	38.3		40.8	0	59.2		24.7	52.2	23.1		67	0	33		
PHF	.820	.842	.877	.863	.875	.000	.881	.921	.828	.887	.796	.948	.869	.000	.741	.822	.946

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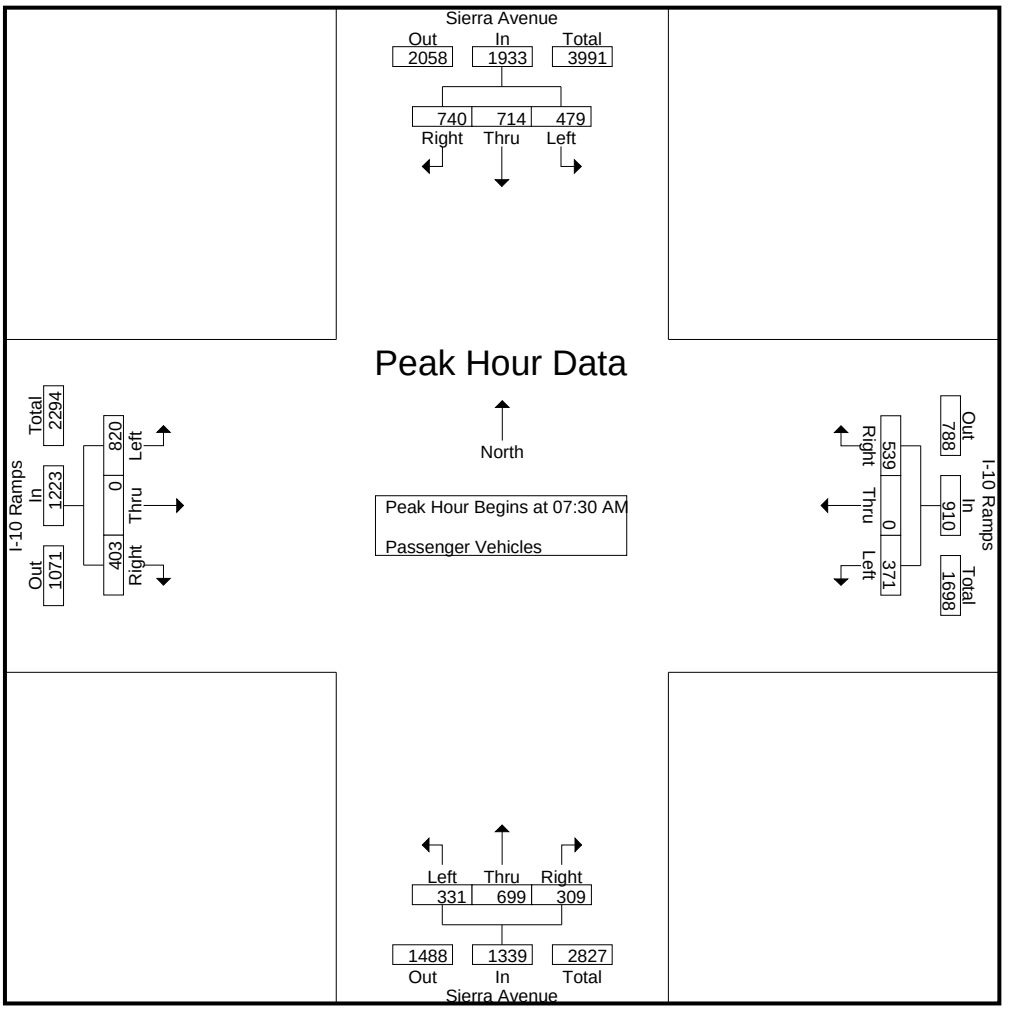
City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**146**	160	**211**	517	81	0	132	213	**100**	135	**97**	332	174	0	74	248
+15 mins.	138	**212**	210	**560**	94	0	**153**	**247**	88	191	74	**353**	177	0	91	268
+30 mins.	101	194	160	455	**106**	0	134	240	73	176	72	321	233	0	102	335
+45 mins.	94	148	159	401	90	0	120	210	70	**197**	66	333	**236**	0	**136**	**372**
Total Volume	479	714	740	1933	371	0	539	910	331	699	309	1339	820	0	403	1223
% App. Total	24.8	36.9	38.3		40.8	0	59.2		24.7	52.2	23.1		67	0	33	
PHF	.820	.842	.877	.863	.875	.000	.881	.921	.828	.887	.796	.948	.869	.000	.741	.822

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City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	1	1	6	0	0	6	6	3	1	10	3	0	6	9	26
07:15 AM	3	1	2	6	0	0	0	0	0	4	2	6	1	0	0	1	13
07:30 AM	3	2	2	7	1	0	2	3	4	1	2	7	1	0	3	4	21
07:45 AM	0	3	3	6	4	0	0	4	3	1	4	8	5	0	1	6	24
Total	6	6	8	20	11	0	2	13	13	9	9	31	10	0	10	20	84
08:00 AM	2	4	7	13	0	0	0	0	1	4	1	6	2	0	0	2	21
08:15 AM	2	5	8	15	2	0	3	5	2	3	0	5	4	0	9	13	38
08:30 AM	2	3	10	15	1	0	3	4	6	4	1	11	5	0	0	5	35
08:45 AM	3	5	5	13	0	0	1	1	5	3	1	9	4	0	2	6	29
Total	9	17	30	56	3	0	7	10	14	14	3	31	15	0	11	26	123
Grand Total	15	23	38	76	14	0	9	23	27	23	12	62	25	0	21	46	207
Apprch %	19.7	30.3	50		60.9	0	39.1		43.5	37.1	19.4		54.3	0	45.7		
Total %	7.2	11.1	18.4	36.7	6.8	0	4.3	11.1	13	11.1	5.8	30	12.1	0	10.1	22.2	

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**3**	2	2	7	1	0	2	3	**4**	1	2	7	1	0	3	4	21
07:45 AM	0	3	3	6	**4**	0	0	4	3	1	**4**	**8**	**5**	0	1	6	24
08:00 AM	2	4	7	13	0	0	0	0	1	**4**	1	6	2	0	0	2	21
08:15 AM	2	**5**	**8**	**15**	2	0	**3**	**5**	2	3	0	5	4	0	**9**	**13**	**38**
Total Volume	7	14	20	41	7	0	5	12	10	9	7	26	12	0	13	25	104
% App. Total	17.1	34.1	48.8		58.3	0	41.7		38.5	34.6	26.9		48	0	52		
PHF	.583	.700	.625	.683	.438	.000	.417	.600	.625	.563	.438	.813	.600	.000	.361	.481	.684

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City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps AM
Site Code : 10821516
Start Date : 9/28/2021
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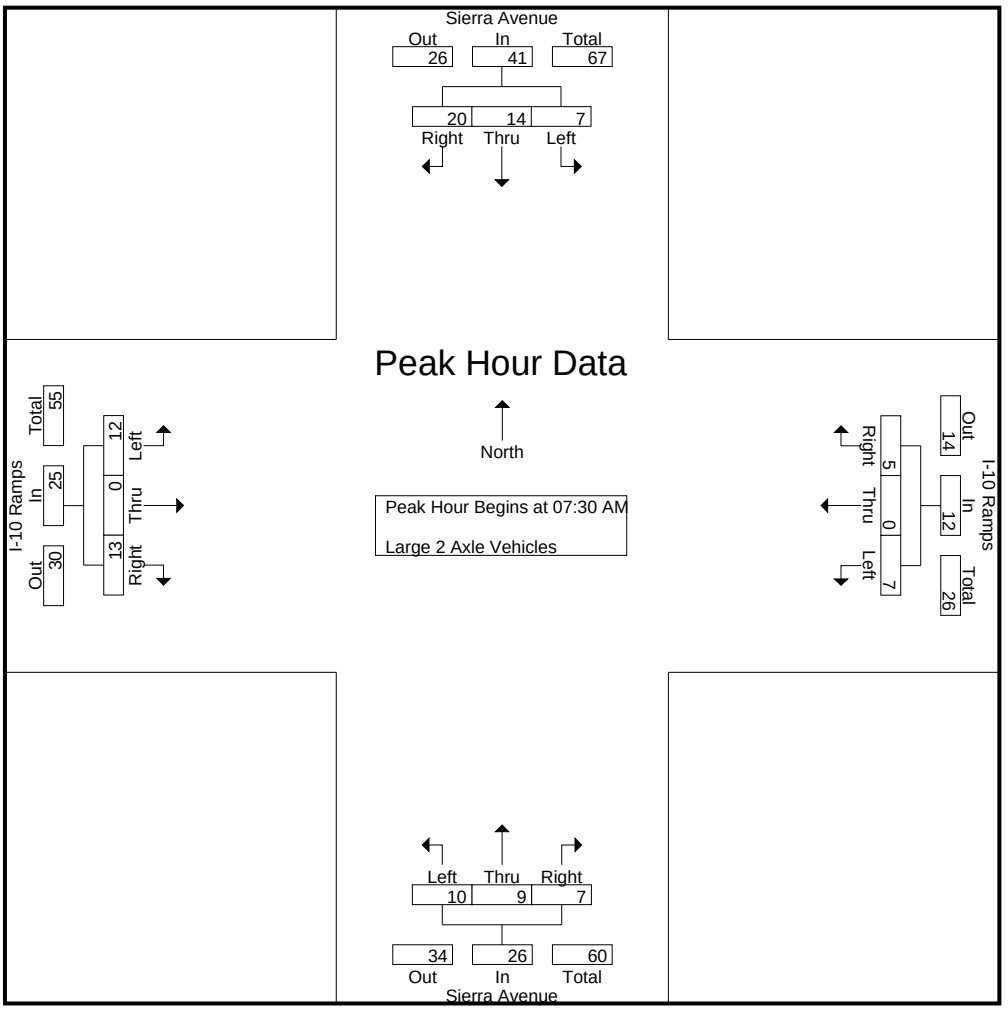

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**3**	2	2	7	1	0	2	3	**4**	1	2	7	1	0	3	4
+15 mins.	0	3	3	6	**4**	0	0	4	3	1	**4**	**8**	**5**	0	1	6
+30 mins.	2	4	7	13	0	0	0	0	1	**4**	1	6	2	0	0	2
+45 mins.	2	**5**	**8**	**15**	2	0	**3**	**5**	2	3	0	5	4	0	**9**	**13**
Total Volume	7	14	20	41	7	0	5	12	10	9	7	26	12	0	13	25
% App. Total	17.1	34.1	48.8		58.3	0	41.7		38.5	34.6	26.9		48	0	52	
PHF	.583	.700	.625	.683	.438	.000	.417	.600	.625	.563	.438	.813	.600	.000	.361	.481

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City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	2	0	2	1	0	1	2	0	0	1	1	1	0	2	3	8
07:15 AM	0	0	3	3	0	0	1	1	3	0	0	3	0	0	5	5	12
07:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	1	0	4	5	6
07:45 AM	1	0	2	3	0	0	0	0	1	0	2	3	0	0	2	2	8
Total	1	2	5	8	1	0	2	3	5	0	3	8	2	0	13	15	34
08:00 AM	0	0	1	1	0	0	0	0	2	1	0	3	0	0	0	0	4
08:15 AM	1	0	0	1	2	0	1	3	0	0	0	0	0	0	3	3	7
08:30 AM	0	1	0	1	0	0	0	0	1	1	0	2	1	0	0	1	4
08:45 AM	0	0	1	1	0	0	1	1	2	0	0	2	2	0	2	4	8
Total	1	1	2	4	2	0	2	4	5	2	0	7	3	0	5	8	23
Grand Total	2	3	7	12	3	0	4	7	10	2	3	15	5	0	18	23	57
Apprch %	16.7	25	58.3		42.9	0	57.1		66.7	13.3	20		21.7	0	78.3		
Total %	3.5	5.3	12.3	21.1	5.3	0	7	12.3	17.5	3.5	5.3	26.3	8.8	0	31.6	40.4	

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	**1**	0	**4**	**5**	6
07:45 AM	**1**	0	**2**	**3**	0	0	0	0	1	0	**2**	**3**	0	0	2	2	**8**
08:00 AM	0	0	1	1	0	0	0	0	**2**	**1**	0	3	0	0	0	0	4
08:15 AM	1	0	0	1	**2**	0	**1**	**3**	0	0	0	0	0	0	3	3	7
Total Volume	2	0	3	5	2	0	1	3	4	1	2	7	1	0	9	10	25
% App. Total	40	0	60		66.7	0	33.3		57.1	14.3	28.6		10	0	90		
PHF	.500	.000	.375	.417	.250	.000	.250	.250	.500	.250	.250	.583	.250	.000	.563	.500	.781

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City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps AM
Site Code : 10821516
Start Date : 9/28/2021
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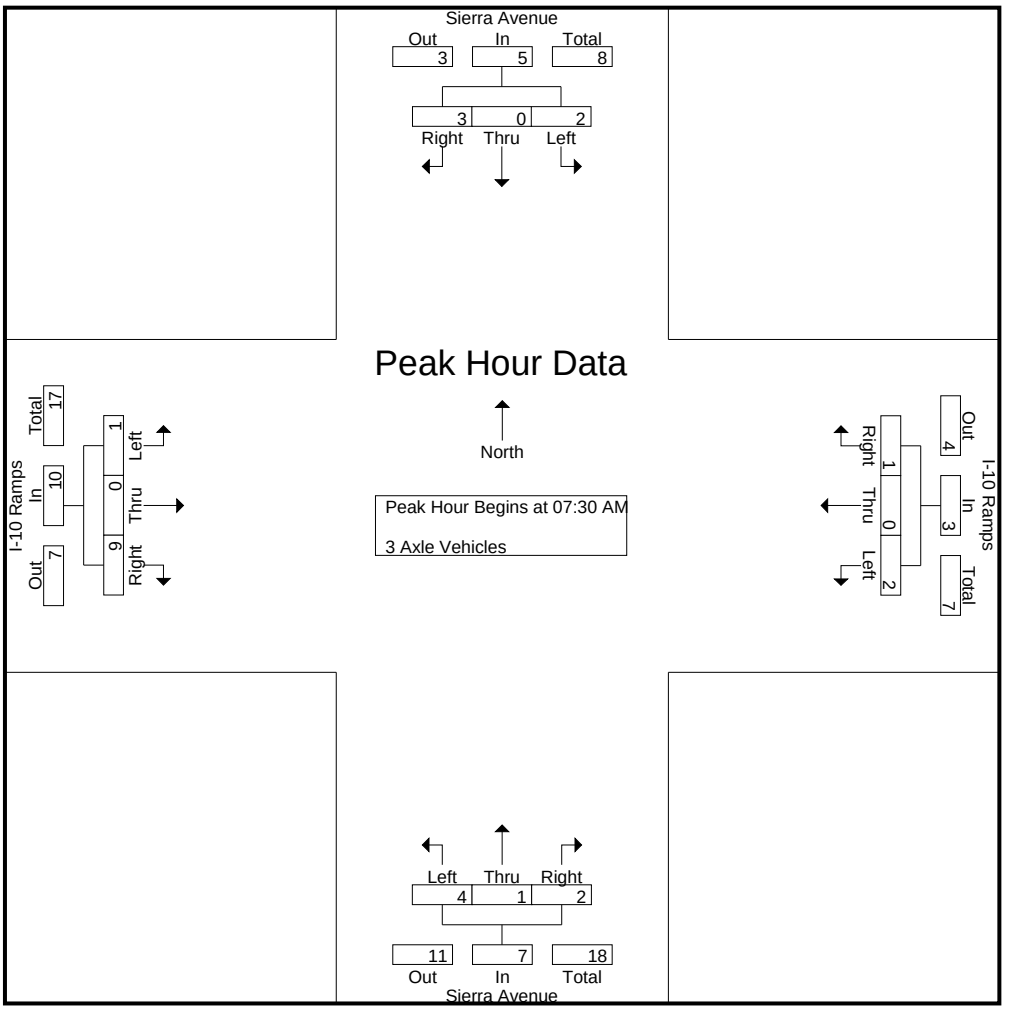

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	1	0	0	1	**1**	0	**4**	**5**
+15 mins.	**1**	0	**2**	**3**	0	0	0	0	1	0	**2**	**3**	0	0	2	2
+30 mins.	0	0	1	1	0	0	0	0	**2**	**1**	0	3	0	0	0	0
+45 mins.	1	0	0	1	**2**	0	**1**	**3**	0	0	0	0	0	0	3	3
Total Volume	2	0	3	5	2	0	1	3	4	1	2	7	1	0	9	10
% App. Total	40	0	60		66.7	0	33.3		57.1	14.3	28.6		10	0	90	
PHF	.500	.000	.375	.417	.250	.000	.250	.250	.500	.250	.250	.583	.250	.000	.563	.500

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City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps AM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- 4+ Axle Trucks

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	0	0	2	3	0	1	4	8	1	3	12	1	0	7	8	26
07:15 AM	1	0	5	6	1	0	0	1	8	0	5	13	0	0	6	6	26
07:30 AM	1	0	4	5	4	0	0	4	6	0	4	10	2	0	9	11	30
07:45 AM	0	0	3	3	1	0	0	1	4	0	3	7	0	0	2	2	13
Total	4	0	12	16	9	0	1	10	26	1	15	42	3	0	24	27	95
08:00 AM	1	1	4	6	3	0	1	4	6	0	1	7	1	0	3	4	21
08:15 AM	0	1	4	5	6	0	0	6	6	1	3	10	2	0	6	8	29
08:30 AM	1	0	7	8	1	0	0	1	9	0	2	11	0	0	6	6	26
08:45 AM	2	1	3	6	1	0	3	4	6	0	1	7	2	0	8	10	27
Total	4	3	18	25	11	0	4	15	27	1	7	35	5	0	23	28	103
Grand Total	8	3	30	41	20	0	5	25	53	2	22	77	8	0	47	55	198
Apprch %	19.5	7.3	73.2		80	0	20		68.8	2.6	28.6		14.5	0	85.5		
Total %	4	1.5	15.2	20.7	10.1	0	2.5	12.6	26.8	1	11.1	38.9	4	0	23.7	27.8	

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**1**	0	**4**	5	4	0	0	4	**6**	0	**4**	**10**	**2**	0	**9**	**11**	**30**
07:45 AM	0	0	3	3	1	0	0	1	4	0	3	7	0	0	2	2	13
08:00 AM	1	**1**	4	**6**	3	0	**1**	4	6	0	1	7	1	0	3	4	21
08:15 AM	0	1	4	5	**6**	0	0	**6**	6	**1**	3	10	2	0	6	8	29
Total Volume	2	2	15	19	14	0	1	15	22	1	11	34	5	0	20	25	93
% App. Total	10.5	10.5	78.9		93.3	0	6.7		64.7	2.9	32.4		20	0	80		
PHF	.500	.500	.938	.792	.583	.000	.250	.625	.917	.250	.688	.850	.625	.000	.556	.568	.775

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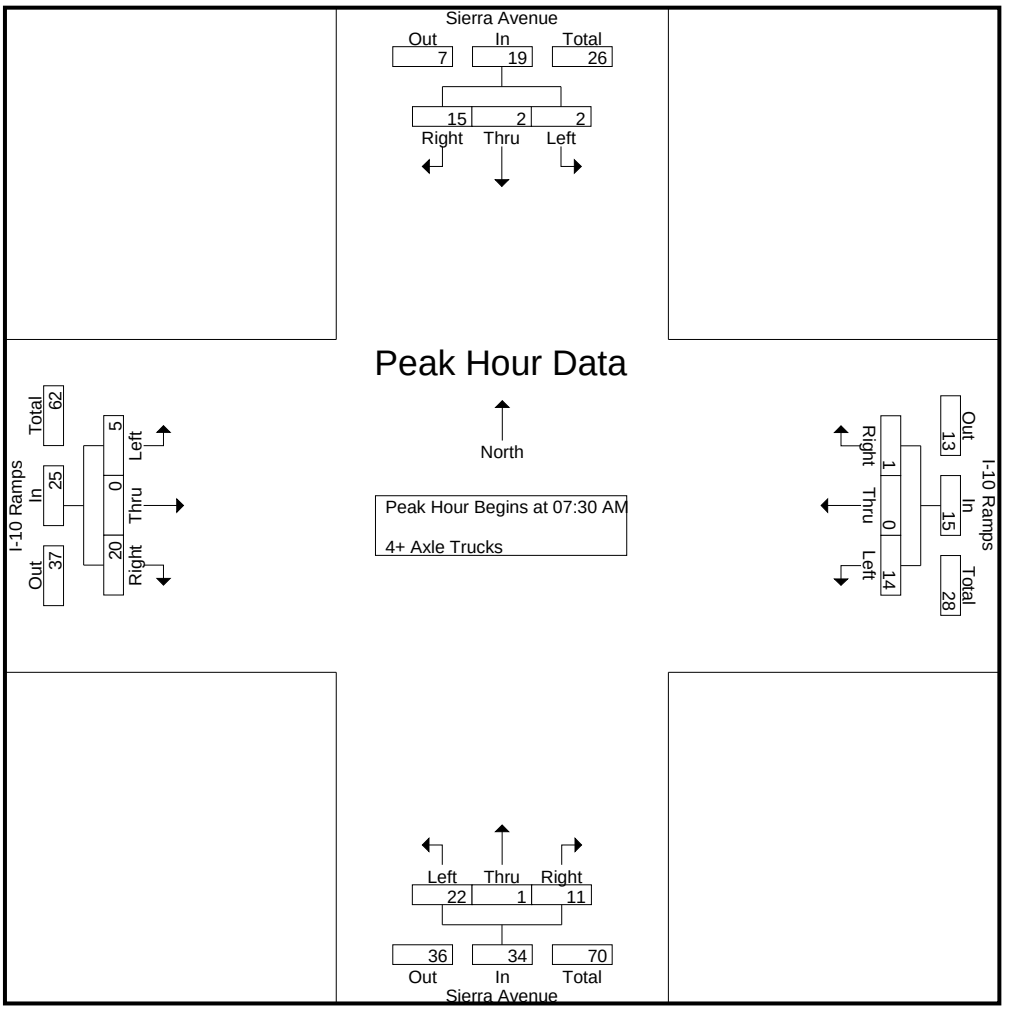
City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**1**	0	**4**	5	4	0	0	4	**6**	0	**4**	**10**	**2**	0	**9**	**11**
+15 mins.	0	0	3	3	1	0	0	1	4	0	3	7	0	0	2	2
+30 mins.	1	**1**	4	**6**	3	0	**1**	4	6	0	1	7	1	0	3	4
+45 mins.	0	1	4	5	**6**	0	0	**6**	6	**1**	3	10	2	0	6	8
Total Volume	2	2	15	19	14	0	1	15	22	1	11	34	5	0	20	25
% App. Total	10.5	10.5	78.9		93.3	0	6.7		64.7	2.9	32.4		20	0	80	
PHF	.500	.500	.938	.792	.583	.000	.250	.625	.917	.250	.688	.850	.625	.000	.556	.568

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City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps PM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	128	214	191	533	118	0	132	250	117	293	124	534	222	0	103	325	1642
04:15 PM	103	193	169	465	89	0	133	222	109	324	109	542	210	0	92	302	1531
04:30 PM	124	208	212	544	115	0	138	253	111	291	103	505	234	0	104	338	1640
04:45 PM	110	233	201	544	114	0	145	259	119	307	101	527	219	0	105	324	1654
Total	465	848	773	2086	436	0	548	984	456	1215	437	2108	885	0	404	1289	6467
05:00 PM	155	195	205	555	99	0	150	249	106	277	80	463	224	0	84	308	1575
05:15 PM	128	217	175	520	105	0	156	261	126	305	80	511	177	0	96	273	1565
05:30 PM	128	223	171	522	112	0	134	246	112	282	98	492	205	0	113	318	1578
05:45 PM	90	220	186	496	104	0	147	251	119	331	115	565	200	0	99	299	1611
Total	501	855	737	2093	420	0	587	1007	463	1195	373	2031	806	0	392	1198	6329
Grand Total	966	1703	1510	4179	856	0	1135	1991	919	2410	810	4139	1691	0	796	2487	12796
Apprch %	23.1	40.8	36.1		43	0	57		22.2	58.2	19.6		68	0	32		
Total %	7.5	13.3	11.8	32.7	6.7	0	8.9	15.6	7.2	18.8	6.3	32.3	13.2	0	6.2	19.4	
Passenger Vehicles	947	1683	1461	4091	818	0	1114	1932	841	2395	771	4007	1625	0	723	2348	12378
% Passenger Vehicles	98	98.8	96.8	97.9	95.6	0	98.1	97	91.5	99.4	95.2	96.8	96.1	0	90.8	94.4	96.7
Large 2 Axle Vehicles	6	10	29	45	14	0	9	23	17	8	13	38	49	0	22	71	177
% Large 2 Axle Vehicles	0.6	0.6	1.9	1.1	1.6	0	0.8	1.2	1.8	0.3	1.6	0.9	2.9	0	2.8	2.9	1.4
3 Axle Vehicles	5	9	11	25	5	0	6	11	14	6	7	27	7	0	11	18	81
% 3 Axle Vehicles	0.5	0.5	0.7	0.6	0.6	0	0.5	0.6	1.5	0.2	0.9	0.7	0.4	0	1.4	0.7	0.6
4+ Axle Trucks	8	1	9	18	19	0	6	25	47	1	19	67	10	0	40	50	160
% 4+ Axle Trucks	0.8	0.1	0.6	0.4	2.2	0	0.5	1.3	5.1	0	2.3	1.6	0.6	0	5	2	1.3

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**128**	214	191	533	**118**	0	132	250	117	293	**124**	534	222	0	103	325	1642
04:15 PM	103	193	169	465	89	0	133	222	109	**324**	109	**542**	210	0	92	302	1531
04:30 PM	124	208	**212**	**544**	115	0	138	253	111	291	103	505	**234**	0	104	**338**	1640
04:45 PM	110	**233**	201	544	114	0	**145**	**259**	**119**	307	101	527	219	0	**105**	324	**1654**
Total Volume	465	848	773	2086	436	0	548	984	456	1215	437	2108	885	0	404	1289	6467
% App. Total	22.3	40.7	37.1		44.3	0	55.7		21.6	57.6	20.7		68.7	0	31.3		
PHF	.908	.910	.912	.959	.924	.000	.945	.950	.958	.938	.881	.972	.946	.000	.962	.953	.977

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City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps PM
Site Code : 10821516
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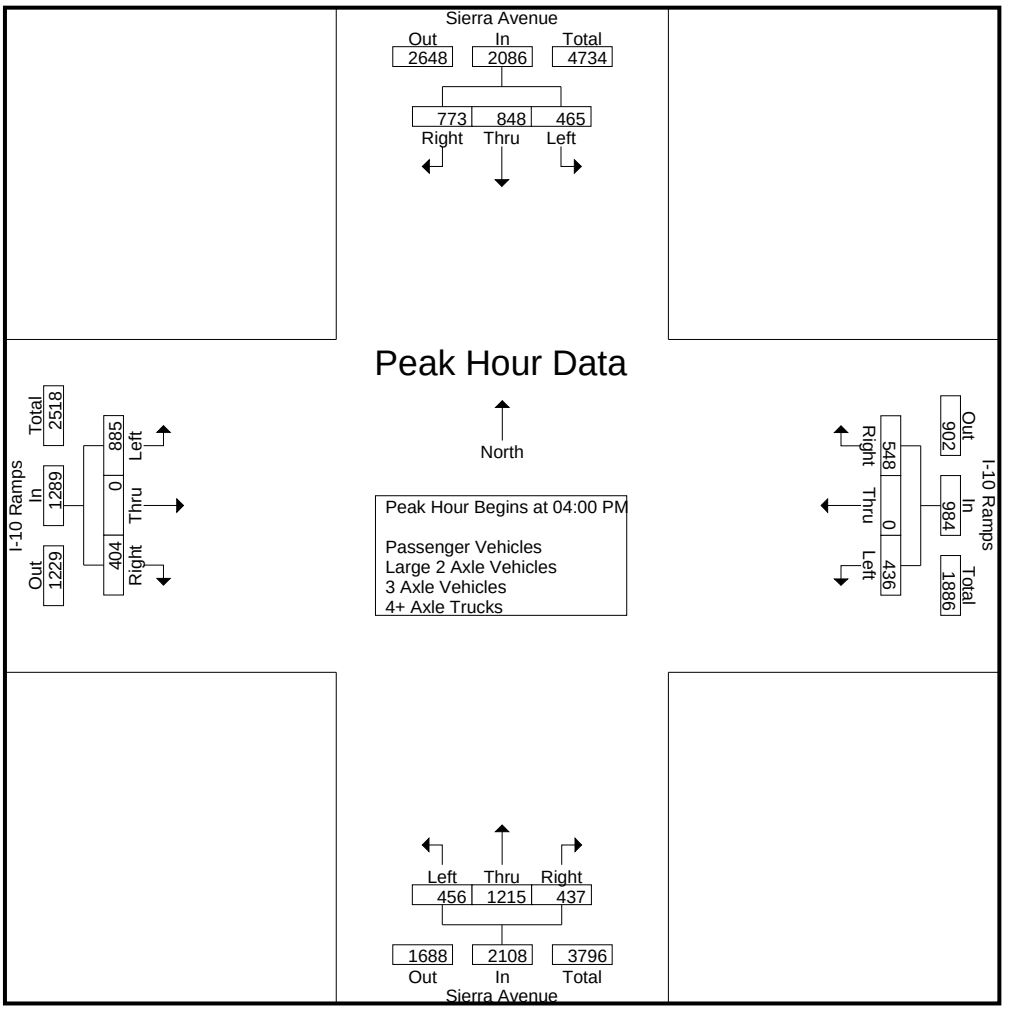

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:00 PM				04:00 PM			
+0 mins.	124	208	**212**	544	**115**	0	138	253	117	293	**124**	534	222	0	103	325
+15 mins.	110	**233**	201	544	114	0	145	259	109	**324**	109	**542**	210	0	92	302
+30 mins.	**155**	195	205	**555**	99	0	150	249	111	291	103	505	**234**	0	104	**338**
+45 mins.	128	217	175	520	105	0	**156**	**261**	**119**	307	101	527	219	0	**105**	324
Total Volume	517	853	793	2163	433	0	589	1022	456	1215	437	2108	885	0	404	1289
% App. Total	23.9	39.4	36.7		42.4	0	57.6		21.6	57.6	20.7		68.7	0	31.3	
PHF	.834	.915	.935	.974	.941	.000	.944	.979	.958	.938	.881	.972	.946	.000	.962	.953

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File Name : 01_FON_Sierra_10 Ramps PM
Site Code : 10821516
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Groups Printed- Passenger Vehicles

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	127	213	184	524	113	0	129	242	108	290	117	515	216	0	97	313	1594
04:15 PM	101	185	163	449	85	0	132	217	100	321	103	524	196	0	83	279	1469
04:30 PM	119	204	201	524	108	0	134	242	102	289	98	489	225	0	89	314	1569
04:45 PM	107	230	197	534	108	0	142	250	109	306	96	511	211	0	94	305	1600
Total	454	832	745	2031	414	0	537	951	419	1206	414	2039	848	0	363	1211	6232
05:00 PM	152	194	203	549	95	0	147	242	94	277	77	448	218	0	78	296	1535
05:15 PM	126	216	172	514	102	0	155	257	114	303	74	491	169	0	88	257	1519
05:30 PM	126	221	161	508	108	0	132	240	105	281	95	481	196	0	102	298	1527
05:45 PM	89	220	180	489	99	0	143	242	109	328	111	548	194	0	92	286	1565
Total	493	851	716	2060	404	0	577	981	422	1189	357	1968	777	0	360	1137	6146
Grand Total	947	1683	1461	4091	818	0	1114	1932	841	2395	771	4007	1625	0	723	2348	12378
Apprch %	23.1	41.1	35.7		42.3	0	57.7		21	59.8	19.2		69.2	0	30.8		
Total %	7.7	13.6	11.8	33.1	6.6	0	9	15.6	6.8	19.3	6.2	32.4	13.1	0	5.8	19	

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**127**	213	184	524	**113**	0	129	242	108	290	**117**	515	216	0	**97**	313	1594
04:15 PM	101	185	163	449	85	0	132	217	100	**321**	103	**524**	196	0	83	279	1469
04:30 PM	119	204	**201**	524	108	0	134	242	102	289	98	489	**225**	0	89	**314**	1569
04:45 PM	107	**230**	197	**534**	108	0	**142**	**250**	**109**	306	96	511	211	0	94	305	**1600**
Total Volume	454	832	745	2031	414	0	537	951	419	1206	414	2039	848	0	363	1211	6232
% App. Total	22.4	41	36.7		43.5	0	56.5		20.5	59.1	20.3		70	0	30		
PHF	.894	.904	.927	.951	.916	.000	.945	.951	.961	.939	.885	.973	.942	.000	.936	.964	.974

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City of Fontana
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File Name : 01_FON_Sierra_10 Ramps PM
Site Code : 10821516
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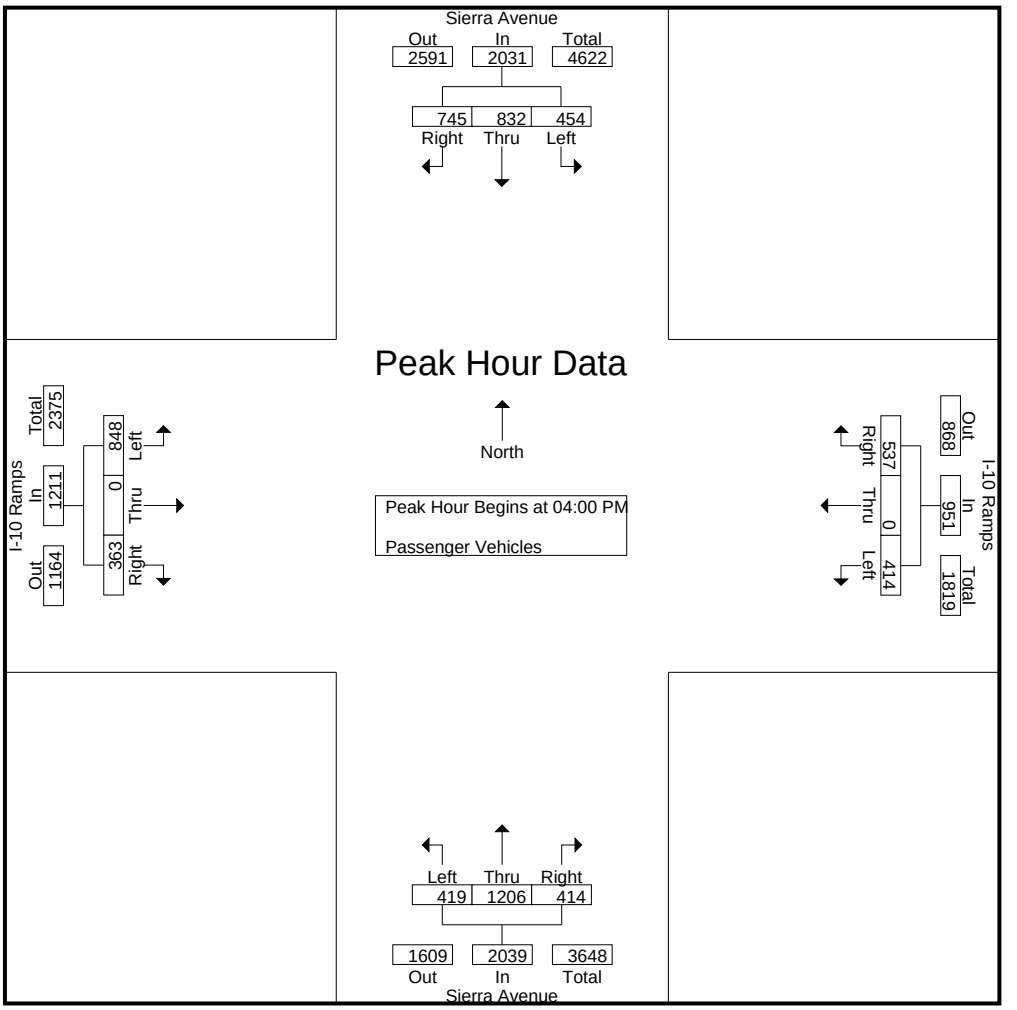

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	**127**	213	184	524	**113**	0	129	242	108	290	**117**	515	216	0	**97**	313
+15 mins.	101	185	163	449	85	0	132	217	100	**321**	103	**524**	196	0	83	279
+30 mins.	119	204	**201**	524	108	0	134	242	102	289	98	489	**225**	0	89	**314**
+45 mins.	107	**230**	197	**534**	108	0	**142**	**250**	**109**	306	96	511	211	0	94	305
Total Volume	454	832	745	2031	414	0	537	951	419	1206	414	2039	848	0	363	1211
% App. Total	22.4	41	36.7		43.5	0	56.5		20.5	59.1	20.3		70	0	30	
PHF	.894	.904	.927	.951	.916	.000	.945	.951	.961	.939	.885	.973	.942	.000	.936	.964

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File Name : 01_FON_Sierra_10 Ramps PM
Site Code : 10821516
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Groups Printed- Large 2 Axle Vehicles

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	6	6	2	0	3	5	2	2	2	6	4	0	2	6	23
04:15 PM	2	6	5	13	3	0	0	3	3	1	3	7	11	0	6	17	40
04:30 PM	0	2	5	7	1	0	1	2	1	1	1	3	6	0	3	9	21
04:45 PM	1	0	2	3	3	0	2	5	2	1	2	5	6	0	6	12	25
Total	3	8	18	29	9	0	6	15	8	5	8	21	27	0	17	44	109
05:00 PM	2	1	1	4	1	0	1	2	2	0	0	2	4	0	1	5	13
05:15 PM	0	0	3	3	2	0	1	3	3	0	3	6	6	0	3	9	21
05:30 PM	0	1	5	6	1	0	0	1	2	0	0	2	8	0	1	9	18
05:45 PM	1	0	2	3	1	0	1	2	2	3	2	7	4	0	0	4	16
Total	3	2	11	16	5	0	3	8	9	3	5	17	22	0	5	27	68
Grand Total	6	10	29	45	14	0	9	23	17	8	13	38	49	0	22	71	177
Apprch %	13.3	22.2	64.4		60.9	0	39.1		44.7	21.1	34.2		69	0	31		
Total %	3.4	5.6	16.4	25.4	7.9	0	5.1	13	9.6	4.5	7.3	21.5	27.7	0	12.4	40.1	

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	**6**	6	2	0	**3**	**5**	2	**2**	2	6	4	0	2	6	23
04:15 PM	**2**	**6**	5	**13**	**3**	0	0	3	**3**	1	**3**	**7**	**11**	0	**6**	**17**	**40**
04:30 PM	0	2	5	7	1	0	1	2	1	1	1	3	6	0	3	9	21
04:45 PM	1	0	2	3	3	0	2	5	2	1	2	5	6	0	6	12	25
Total Volume	3	8	18	29	9	0	6	15	8	5	8	21	27	0	17	44	109
% App. Total	10.3	27.6	62.1		60	0	40		38.1	23.8	38.1		61.4	0	38.6		
PHF	.375	.333	.750	.558	.750	.000	.500	.750	.667	.625	.667	.750	.614	.000	.708	.647	.681

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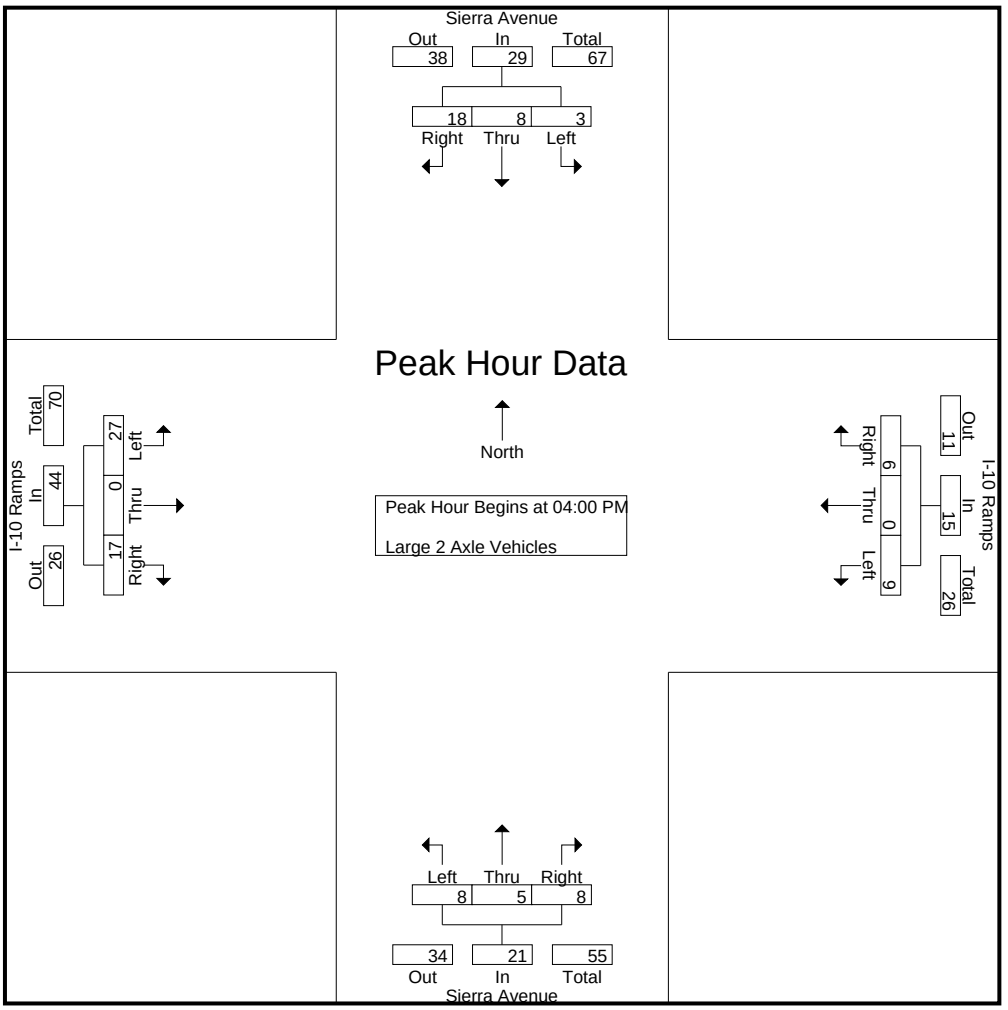

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	**6**	6	2	0	**3**	**5**	2	**2**	2	6	4	0	2	6
+15 mins.	**2**	**6**	5	**13**	**3**	0	0	3	**3**	1	**3**	**7**	**11**	0	**6**	**17**
+30 mins.	0	2	5	7	1	0	1	2	1	1	1	3	6	0	3	9
+45 mins.	1	0	2	3	3	0	2	5	2	1	2	5	6	0	6	12
Total Volume	3	8	18	29	9	0	6	15	8	5	8	21	27	0	17	44
% App. Total	10.3	27.6	62.1		60	0	40		38.1	23.8	38.1		61.4	0	38.6	
PHF	.375	.333	.750	.558	.750	.000	.500	.750	.667	.625	.667	.750	.614	.000	.708	.647

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City of Fontana
N/S: Sierra Avenue
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File Name : 01_FON_Sierra_10 Ramps PM
Site Code : 10821516
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Groups Printed- 3 Axle Vehicles

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	1	1	3	0	0	0	0	1	0	0	1	1	0	0	1	5
04:15 PM	0	2	1	3	1	0	1	2	1	2	1	4	2	0	1	3	12
04:30 PM	1	1	3	5	2	0	3	5	2	1	2	5	2	0	2	4	19
04:45 PM	1	3	1	5	1	0	0	1	2	0	1	3	0	0	1	1	10
Total	3	7	6	16	4	0	4	8	6	3	4	13	5	0	4	9	46
05:00 PM	0	0	0	0	1	0	0	1	3	0	0	3	0	0	2	2	6
05:15 PM	0	1	0	1	0	0	0	0	2	2	1	5	1	0	0	1	7
05:30 PM	2	1	3	6	0	0	1	1	2	1	1	4	0	0	1	1	12
05:45 PM	0	0	2	2	0	0	1	1	1	0	1	2	1	0	4	5	10
Total	2	2	5	9	1	0	2	3	8	3	3	14	2	0	7	9	35
Grand Total	5	9	11	25	5	0	6	11	14	6	7	27	7	0	11	18	81
Apprch %	20	36	44		45.5	0	54.5		51.9	22.2	25.9		38.9	0	61.1		
Total %	6.2	11.1	13.6	30.9	6.2	0	7.4	13.6	17.3	7.4	8.6	33.3	8.6	0	13.6	22.2	

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**1**	1	1	3	0	0	0	0	1	0	0	1	1	0	0	1	5
04:15 PM	0	2	1	3	1	0	1	2	1	**2**	1	4	**2**	0	1	3	12
04:30 PM	1	1	**3**	**5**	**2**	0	**3**	**5**	**2**	1	**2**	**5**	2	0	**2**	**4**	**19**
04:45 PM	1	**3**	1	5	1	0	0	1	2	0	1	3	0	0	1	1	10
Total Volume	3	7	6	16	4	0	4	8	6	3	4	13	5	0	4	9	46
% App. Total	18.8	43.8	37.5		50	0	50		46.2	23.1	30.8		55.6	0	44.4		
PHF	.750	.583	.500	.800	.500	.000	.333	.400	.750	.375	.500	.650	.625	.000	.500	.563	.605

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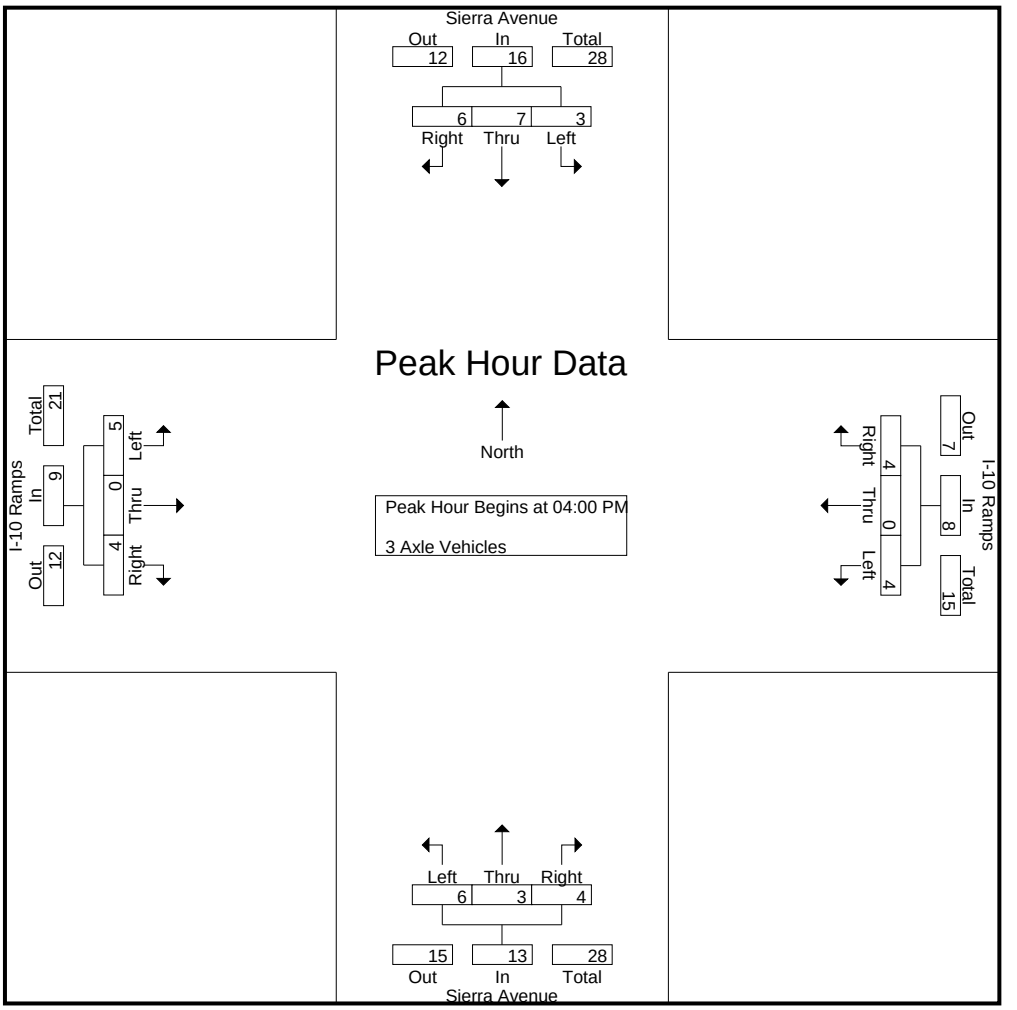
City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	**1**	1	1	3	0	0	0	0	1	0	0	1	1	0	0	1
+15 mins.	0	2	1	3	1	0	1	2	1	**2**	1	4	**2**	0	1	3
+30 mins.	1	1	**3**	**5**	**2**	0	**3**	**5**	**2**	1	**2**	**5**	2	0	**2**	**4**
+45 mins.	1	**3**	1	5	1	0	0	1	2	0	1	3	0	0	1	1
Total Volume	3	7	6	16	4	0	4	8	6	3	4	13	5	0	4	9
% App. Total	18.8	43.8	37.5		50	0	50		46.2	23.1	30.8		55.6	0	44.4	
PHF	.750	.583	.500	.800	.500	.000	.333	.400	.750	.375	.500	.650	.625	.000	.500	.563

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City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	3	0	0	3	6	1	5	12	1	0	4	5	20
04:15 PM	0	0	0	0	0	0	0	0	5	0	2	7	1	0	2	3	10
04:30 PM	4	1	3	8	4	0	0	4	6	0	2	8	1	0	10	11	31
04:45 PM	1	0	1	2	2	0	1	3	6	0	2	8	2	0	4	6	19
Total	5	1	4	10	9	0	1	10	23	1	11	35	5	0	20	25	80
05:00 PM	1	0	1	2	2	0	2	4	7	0	3	10	2	0	3	5	21
05:15 PM	2	0	0	2	1	0	0	1	7	0	2	9	1	0	5	6	18
05:30 PM	0	0	2	2	3	0	1	4	3	0	2	5	1	0	9	10	21
05:45 PM	0	0	2	2	4	0	2	6	7	0	1	8	1	0	3	4	20
Total	3	0	5	8	10	0	5	15	24	0	8	32	5	0	20	25	80
Grand Total	8	1	9	18	19	0	6	25	47	1	19	67	10	0	40	50	160
Apprch %	44.4	5.6	50		76	0	24		70.1	1.5	28.4		20	0	80		
Total %	5	0.6	5.6	11.2	11.9	0	3.8	15.6	29.4	0.6	11.9	41.9	6.2	0	25	31.2	

	Sierra Avenue Southbound				I-10 Ramps Westbound				Sierra Avenue Northbound				I-10 Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	3	0	0	3	**6**	**1**	**5**	**12**	1	0	4	5	20
04:15 PM	0	0	0	0	0	0	0	0	5	0	2	7	1	0	2	3	10
04:30 PM	**4**	**1**	**3**	**8**	**4**	0	0	**4**	6	0	2	8	1	0	**10**	**11**	**31**
04:45 PM	1	0	1	2	2	0	**1**	3	6	0	2	8	**2**	0	4	6	19
Total Volume	5	1	4	10	9	0	1	10	23	1	11	35	5	0	20	25	80
% App. Total	50	10	40		90	0	10		65.7	2.9	31.4		20	0	80		
PHF	.313	.250	.333	.313	.563	.000	.250	.625	.958	.250	.550	.729	.625	.000	.500	.568	.645

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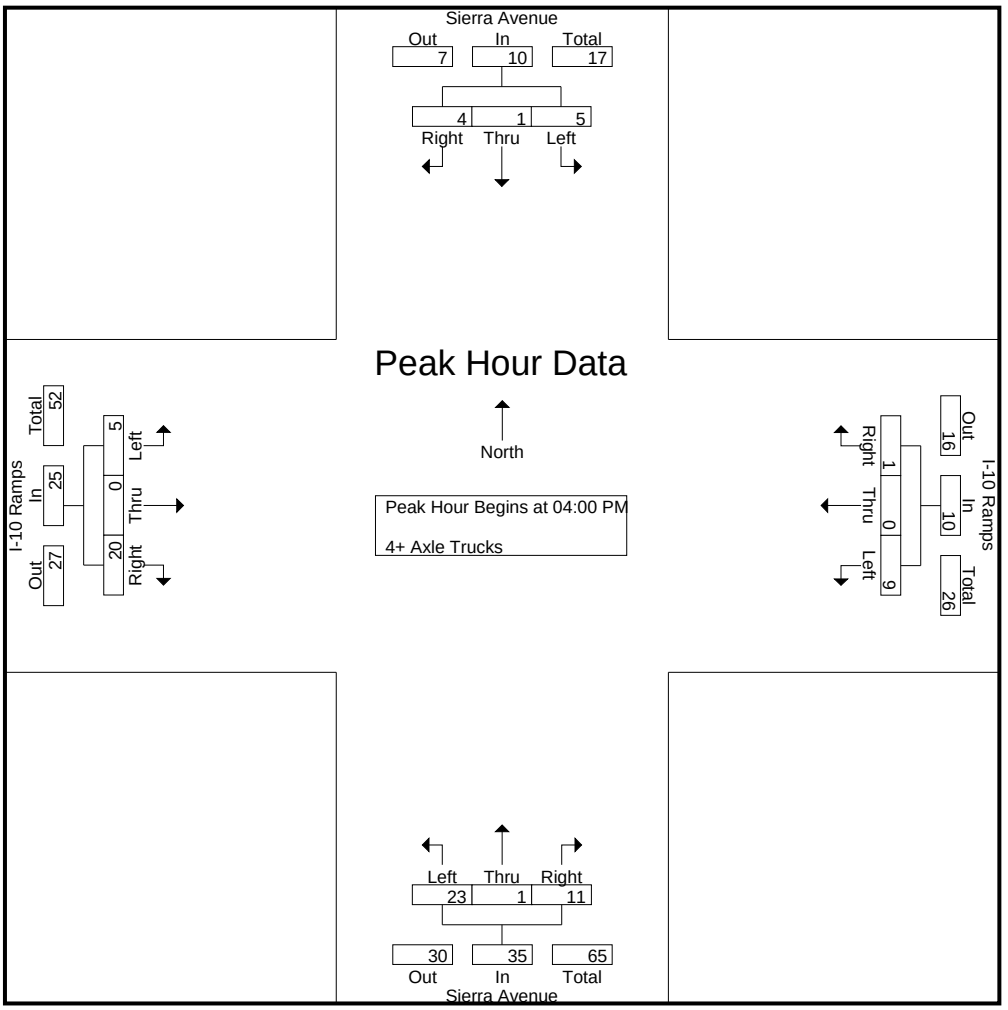
City of Fontana
N/S: Sierra Avenue
E/W: I-10 Ramps
Weather: Clear

File Name : 01_FON_Sierra_10 Ramps PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	3	0	0	3	**6**	**1**	**5**	**12**	1	0	4	5
+15 mins.	0	0	0	0	0	0	0	0	5	0	2	7	1	0	2	3
+30 mins.	**4**	**1**	**3**	**8**	**4**	0	0	**4**	6	0	2	8	1	0	**10**	**11**
+45 mins.	1	0	1	2	2	0	**1**	3	6	0	2	8	**2**	0	4	6
Total Volume	5	1	4	10	9	0	1	10	23	1	11	35	5	0	20	25
% App. Total	50	10	40		90	0	10		65.7	2.9	31.4		20	0	80	
PHF	.313	.250	.333	.313	.563	.000	.250	.625	.958	.250	.550	.729	.625	.000	.500	.568

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City of Fontana
N/S: Milliken Avenue
E/W: Arrow Route
Weather: Clear

File Name : 12_FON_Miliken_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	17	108	30	155	26	234	9	269	32	41	14	87	10	73	12	95	606
07:15 AM	22	156	34	212	22	231	7	260	24	56	15	95	3	62	20	85	652
07:30 AM	29	158	49	236	19	299	20	338	39	60	17	116	8	79	17	104	794
07:45 AM	39	208	54	301	52	286	33	371	44	71	18	133	20	115	37	172	977
Total	107	630	167	904	119	1050	69	1238	139	228	64	431	41	329	86	456	3029
08:00 AM	13	135	48	196	30	254	22	306	28	87	17	132	26	94	26	146	780
08:15 AM	20	174	48	242	44	227	20	291	43	86	12	141	20	93	16	129	803
08:30 AM	17	176	46	239	37	160	18	215	31	93	12	136	24	70	23	117	707
08:45 AM	14	138	37	189	23	180	12	215	26	86	16	128	15	83	18	116	648
Total	64	623	179	866	134	821	72	1027	128	352	57	537	85	340	83	508	2938
Grand Total	171	1253	346	1770	253	1871	141	2265	267	580	121	968	126	669	169	964	5967
Apprch %	9.7	70.8	19.5		11.2	82.6	6.2		27.6	59.9	12.5		13.1	69.4	17.5		
Total %	2.9	21	5.8	29.7	4.2	31.4	2.4	38	4.5	9.7	2	16.2	2.1	11.2	2.8	16.2	
Passenger Vehicles	163	1216	319	1698	237	1803	129	2169	246	533	96	875	119	621	142	882	5624
% Passenger Vehicles	95.3	97	92.2	95.9	93.7	96.4	91.5	95.8	92.1	91.9	79.3	90.4	94.4	92.8	84	91.5	94.3
Large 2 Axle Vehicles	3	14	13	30	6	35	5	46	6	28	11	45	3	19	7	29	150
% Large 2 Axle Vehicles	1.8	1.1	3.8	1.7	2.4	1.9	3.5	2	2.2	4.8	9.1	4.6	2.4	2.8	4.1	3	2.5
3 Axle Vehicles	0	3	4	7	2	16	3	21	2	3	3	8	2	15	4	21	57
% 3 Axle Vehicles	0	0.2	1.2	0.4	0.8	0.9	2.1	0.9	0.7	0.5	2.5	0.8	1.6	2.2	2.4	2.2	1
4+ Axle Trucks	5	20	10	35	8	17	4	29	13	16	11	40	2	14	16	32	136
% 4+ Axle Trucks	2.9	1.6	2.9	2	3.2	0.9	2.8	1.3	4.9	2.8	9.1	4.1	1.6	2.1	9.5	3.3	2.3

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	29	158	49	236	19	**299**	20	338	39	60	17	116	8	79	17	104	794
07:45 AM	**39**	**208**	**54**	**301**	**52**	286	**33**	**371**	**44**	71	**18**	133	20	**115**	**37**	**172**	**977**
08:00 AM	13	135	48	196	30	254	22	306	28	**87**	17	132	**26**	94	26	146	780
08:15 AM	20	174	48	242	44	227	20	291	43	86	12	**141**	20	93	16	129	803
Total Volume	101	675	199	975	145	1066	95	1306	154	304	64	522	74	381	96	551	3354
% App. Total	10.4	69.2	20.4		11.1	81.6	7.3		29.5	58.2	12.3		13.4	69.1	17.4		
PHF	.647	.811	.921	.810	.697	.891	.720	.880	.875	.874	.889	.926	.712	.828	.649	.801	.858

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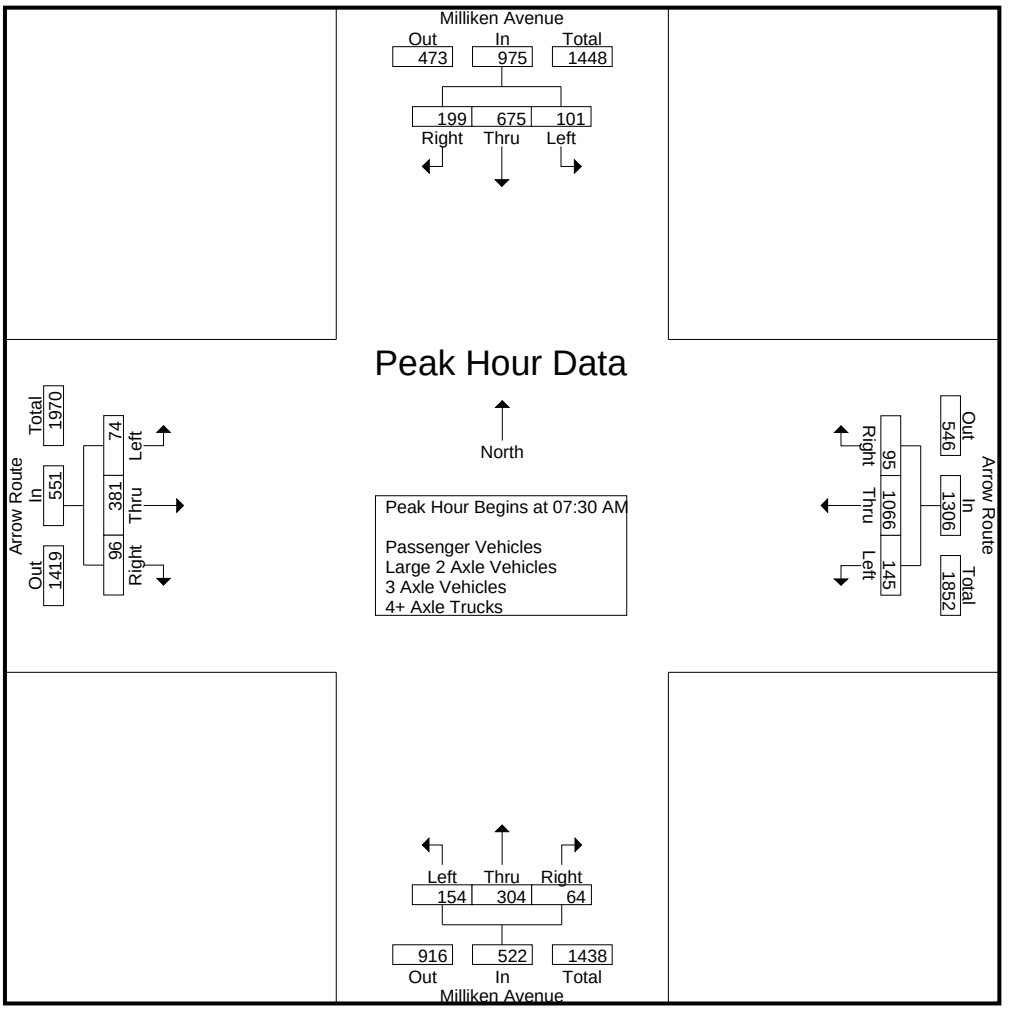
City of Fontana
N/S: Milliken Avenue
E/W: Arrow Route
Weather: Clear

File Name : 12_FON_Miliken_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				07:45 AM				07:45 AM			
+0 mins.	**39**	**208**	**54**	**301**	19	**299**	20	338	**44**	71	**18**	133	20	**115**	**37**	**172**
+15 mins.	13	135	48	196	**52**	286	**33**	**371**	28	87	17	132	**26**	94	26	146
+30 mins.	20	174	48	242	30	254	22	306	43	86	12	**141**	20	93	16	129
+45 mins.	17	176	46	239	44	227	20	291	31	**93**	12	136	24	70	23	117
Total Volume	89	693	196	978	145	1066	95	1306	146	337	59	542	90	372	102	564
% App. Total	9.1	70.9	20		11.1	81.6	7.3		26.9	62.2	10.9		16	66	18.1	
PHF	.571	.833	.907	.812	.697	.891	.720	.880	.830	.906	.819	.961	.865	.809	.689	.820

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City of Fontana
N/S: Milliken Avenue
E/W: Arrow Route
Weather: Clear

File Name : 12_FON_Miliken_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021

Groups Printed- Passenger Vehicles

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	16	104	28	148	25	223	6	254	30	37	12	79	9	68	8	85	566
07:15 AM	22	153	31	206	20	223	6	249	23	49	11	83	3	59	19	81	619
07:30 AM	28	151	47	226	17	286	18	321	36	55	13	104	8	76	13	97	748
07:45 AM	38	206	47	291	50	277	31	358	42	64	16	122	20	107	35	162	933
Total	104	614	153	871	112	1009	61	1182	131	205	52	388	40	310	75	425	2866
08:00 AM	12	127	44	183	28	248	19	295	26	79	13	118	24	85	23	132	728
08:15 AM	19	167	45	231	41	216	20	277	36	78	10	124	18	86	13	117	749
08:30 AM	17	175	42	234	33	157	17	207	28	90	10	128	23	66	16	105	674
08:45 AM	11	133	35	179	23	173	12	208	25	81	11	117	14	74	15	103	607
Total	59	602	166	827	125	794	68	987	115	328	44	487	79	311	67	457	2758
Grand Total	163	1216	319	1698	237	1803	129	2169	246	533	96	875	119	621	142	882	5624
Apprch %	9.6	71.6	18.8		10.9	83.1	5.9		28.1	60.9	11		13.5	70.4	16.1		
Total %	2.9	21.6	5.7	30.2	4.2	32.1	2.3	38.6	4.4	9.5	1.7	15.6	2.1	11	2.5	15.7	

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	28	151	**47**	226	17	**286**	18	321	36	55	13	104	8	76	13	97	748
07:45 AM	**38**	**206**	47	**291**	**50**	277	**31**	**358**	**42**	64	**16**	122	20	**107**	**35**	**162**	**933**
08:00 AM	12	127	44	183	28	248	19	295	26	**79**	13	118	**24**	85	23	132	728
08:15 AM	19	167	45	231	41	216	20	277	36	78	10	**124**	18	86	13	117	749
Total Volume	97	651	183	931	136	1027	88	1251	140	276	52	468	70	354	84	508	3158
% App. Total	10.4	69.9	19.7		10.9	82.1	7		29.9	59	11.1		13.8	69.7	16.5		
PHF	.638	.790	.973	.800	.680	.898	.710	.874	.833	.873	.813	.944	.729	.827	.600	.784	.846

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City of Fontana
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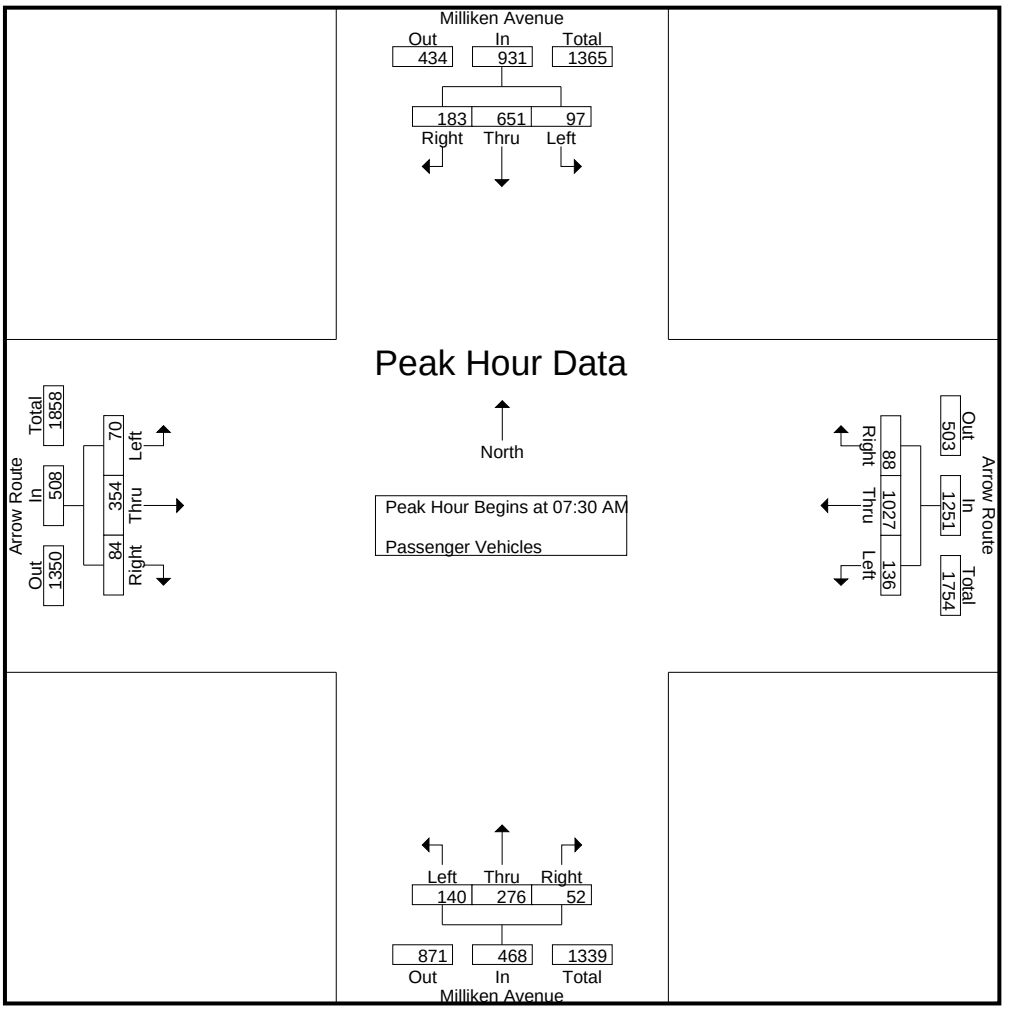
File Name : 12_FON_Miliken_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	28	151	**47**	226	17	**286**	18	321	36	55	13	104	8	76	13	97
+15 mins.	**38**	**206**	47	**291**	**50**	277	**31**	**358**	**42**	64	**16**	122	20	**107**	**35**	**162**
+30 mins.	12	127	44	183	28	248	19	295	26	**79**	13	118	**24**	85	23	132
+45 mins.	19	167	45	231	41	216	20	277	36	78	10	**124**	18	86	13	117
Total Volume	97	651	183	931	136	1027	88	1251	140	276	52	468	70	354	84	508
% App. Total	10.4	69.9	19.7		10.9	82.1	7		29.9	59	11.1		13.8	69.7	16.5	
PHF	.638	.790	.973	.800	.680	.898	.710	.874	.833	.873	.813	.944	.729	.827	.600	.784

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City of Fontana
N/S: Milliken Avenue
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File Name : 12_FON_Miliken_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	1	1	0	3	2	5	1	2	2	5	0	1	1	2	13
07:15 AM	0	0	2	2	0	4	0	4	0	4	1	5	0	0	1	1	12
07:30 AM	0	2	1	3	0	9	0	9	2	4	3	9	0	1	1	2	23
07:45 AM	0	1	4	5	2	6	1	9	0	6	0	6	0	2	0	2	22
Total	0	3	8	11	2	22	3	27	3	16	6	25	0	4	3	7	70
08:00 AM	0	3	1	4	0	3	2	5	0	3	1	4	1	6	0	7	20
08:15 AM	1	6	1	8	2	5	0	7	1	4	0	5	2	4	0	6	26
08:30 AM	0	0	2	2	2	2	0	4	1	2	2	5	0	1	2	3	14
08:45 AM	2	2	1	5	0	3	0	3	1	3	2	6	0	4	2	6	20
Total	3	11	5	19	4	13	2	19	3	12	5	20	3	15	4	22	80
Grand Total	3	14	13	30	6	35	5	46	6	28	11	45	3	19	7	29	150
Apprch %	10	46.7	43.3		13	76.1	10.9		13.3	62.2	24.4		10.3	65.5	24.1		
Total %	2	9.3	8.7	20	4	23.3	3.3	30.7	4	18.7	7.3	30	2	12.7	4.7	19.3	

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	2	1	3	0	**9**	0	**9**	**2**	4	**3**	**9**	0	1	**1**	2	23
07:45 AM	0	1	**4**	5	**2**	6	1	9	0	**6**	0	6	0	2	0	2	22
08:00 AM	0	3	1	4	0	3	**2**	5	0	3	1	4	1	**6**	0	**7**	20
08:15 AM	**1**	**6**	1	**8**	2	5	0	7	1	4	0	5	**2**	4	0	6	**26**
Total Volume	1	12	7	20	4	23	3	30	3	17	4	24	3	13	1	17	91
% App. Total	5	60	35		13.3	76.7	10		12.5	70.8	16.7		17.6	76.5	5.9		
PHF	.250	.500	.438	.625	.500	.639	.375	.833	.375	.708	.333	.667	.375	.542	.250	.607	.875

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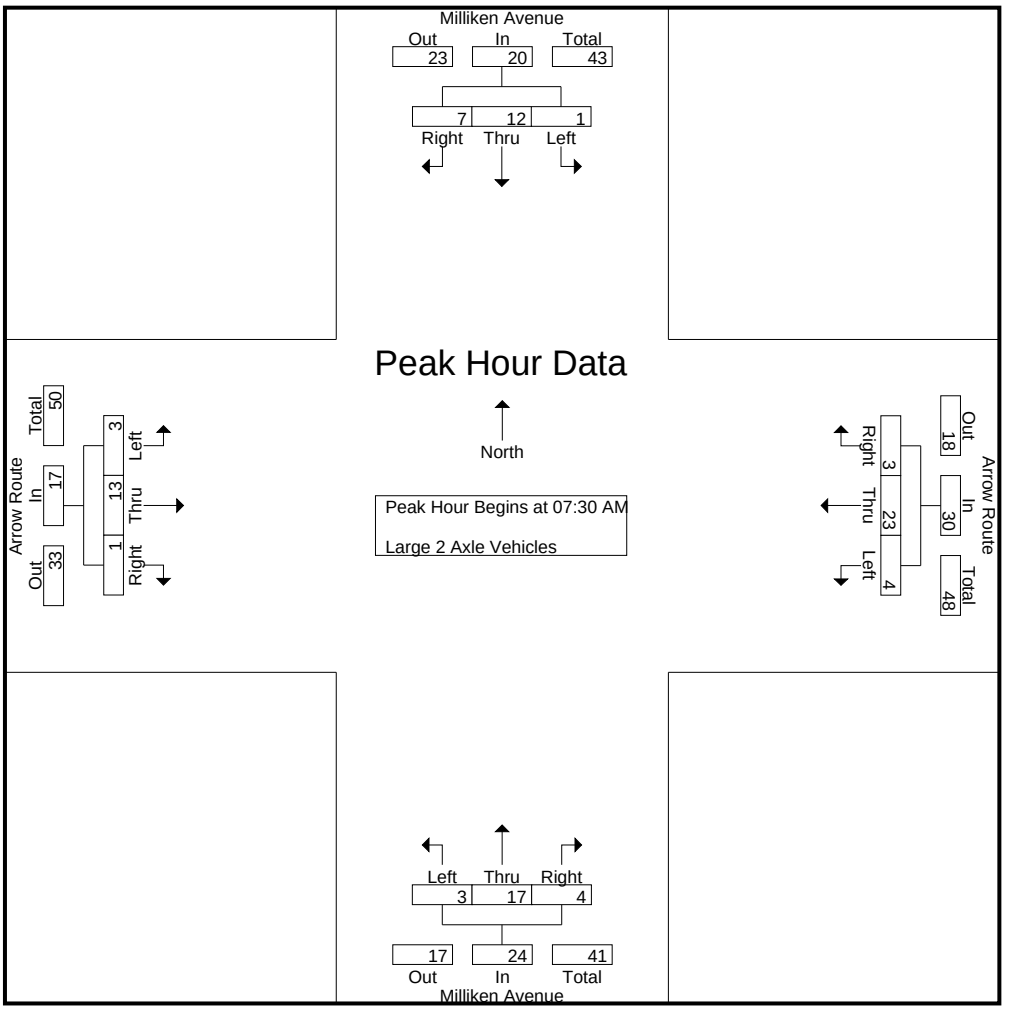
E/W: Arrow Route
Weather: Clear

File Name : 12_FON_Miliken_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	2	1	3	0	**9**	0	**9**	**2**	4	**3**	**9**	0	1	**1**	2
+15 mins.	0	1	**4**	5	**2**	6	1	9	0	**6**	0	6	0	2	0	2
+30 mins.	0	3	1	4	0	3	**2**	5	0	3	1	4	1	**6**	0	**7**
+45 mins.	**1**	**6**	1	**8**	2	5	0	7	1	4	0	5	**2**	4	0	6
Total Volume	1	12	7	20	4	23	3	30	3	17	4	24	3	13	1	17
% App. Total	5	60	35		13.3	76.7	10		12.5	70.8	16.7		17.6	76.5	5.9	
PHF	.250	.500	.438	.625	.500	.639	.375	.833	.375	.708	.333	.667	.375	.542	.250	.607

Counts Unlimited, Inc.
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City of Fontana
N/S: Milliken Avenue
E/W: Arrow Route
Weather: Clear

File Name : 12_FON_Miliken_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	2	1	3	0	3	1	4	0	0	0	0	0	1	2	3	10
07:15 AM	0	0	0	0	1	3	0	4	0	0	0	0	0	2	0	2	6
07:30 AM	0	0	0	0	1	2	1	4	1	0	1	2	0	1	0	1	7
07:45 AM	0	0	2	2	0	3	1	4	0	1	0	1	0	3	1	4	11
Total	0	2	3	5	2	11	3	16	1	1	1	3	0	7	3	10	34
08:00 AM	0	0	1	1	0	0	0	0	0	1	0	1	1	2	0	3	5
08:15 AM	0	0	0	0	0	3	0	3	1	0	1	2	0	1	0	1	6
08:30 AM	0	1	0	1	0	1	0	1	0	0	0	0	1	1	0	2	4
08:45 AM	0	0	0	0	0	1	0	1	0	1	1	2	0	4	1	5	8
Total	0	1	1	2	0	5	0	5	1	2	2	5	2	8	1	11	23
Grand Total	0	3	4	7	2	16	3	21	2	3	3	8	2	15	4	21	57
Apprch %	0	42.9	57.1		9.5	76.2	14.3		25	37.5	37.5		9.5	71.4	19		
Total %	0	5.3	7	12.3	3.5	28.1	5.3	36.8	3.5	5.3	5.3	14	3.5	26.3	7	36.8	

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	**1**	2	**1**	**4**	**1**	0	**1**	**2**	0	1	0	1	7
07:45 AM	0	0	**2**	**2**	0	**3**	1	4	0	**1**	0	1	0	**3**	**1**	**4**	**11**
08:00 AM	0	0	1	1	0	0	0	0	0	1	0	1	**1**	2	0	3	5
08:15 AM	0	0	0	0	0	3	0	3	1	0	1	2	0	1	0	1	6
Total Volume	0	0	3	3	1	8	2	11	2	2	2	6	1	7	1	9	29
% App. Total	0	0	100		9.1	72.7	18.2		33.3	33.3	33.3		11.1	77.8	11.1		
PHF	.000	.000	.375	.375	.250	.667	.500	.688	.500	.500	.500	.750	.250	.583	.250	.563	.659

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Site Code : 10821516
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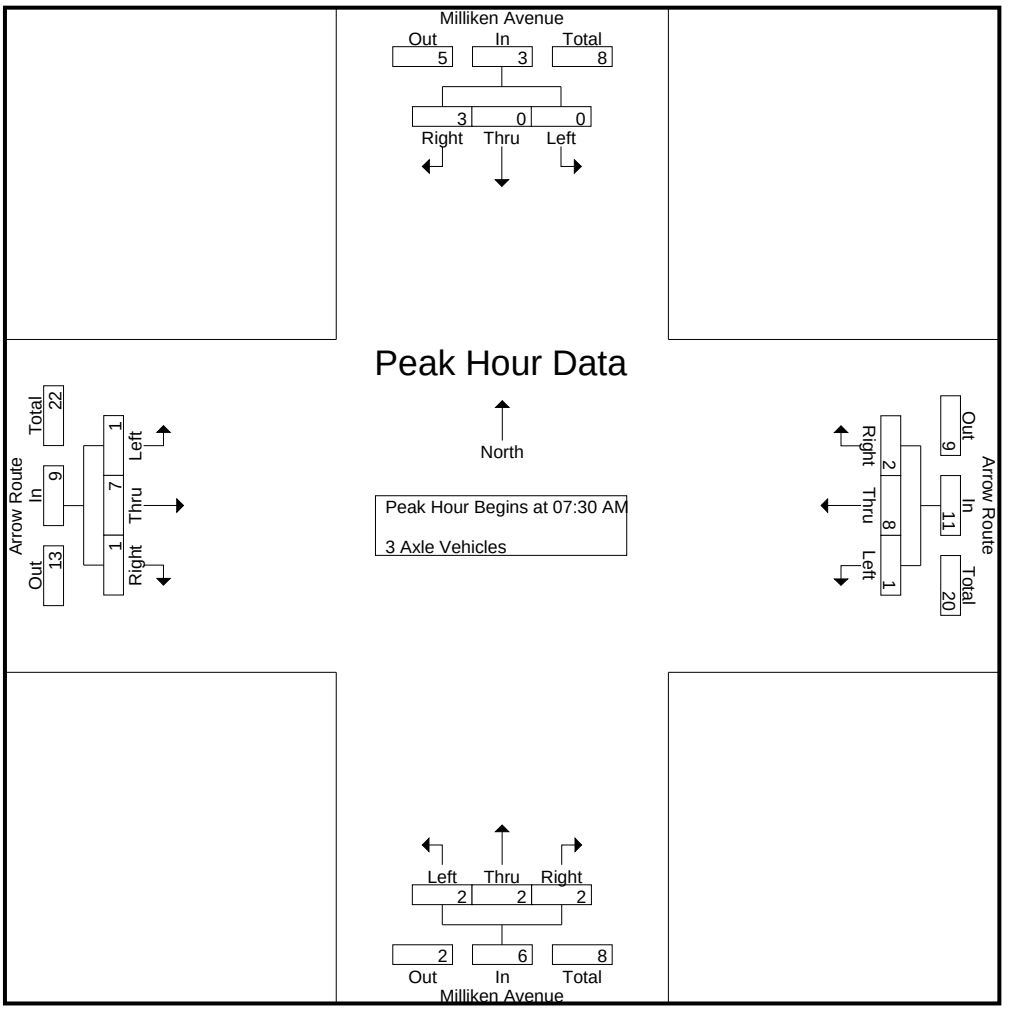

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	**1**	2	**1**	**4**	**1**	0	**1**	**2**	0	1	0	1
+15 mins.	0	0	**2**	**2**	0	**3**	1	4	0	**1**	0	1	0	**3**	**1**	**4**
+30 mins.	0	0	1	1	0	0	0	0	0	1	0	1	**1**	2	0	3
+45 mins.	0	0	0	0	0	3	0	3	1	0	1	2	0	1	0	1
Total Volume	0	0	3	3	1	8	2	11	2	2	2	6	1	7	1	9
% App. Total	0	0	100		9.1	72.7	18.2		33.3	33.3	33.3		11.1	77.8	11.1	
PHF	.000	.000	.375	.375	.250	.667	.500	.688	.500	.500	.500	.750	.250	.583	.250	.563

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City of Fontana
N/S: Milliken Avenue
E/W: Arrow Route
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File Name : 12_FON_Miliken_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	2	0	3	1	5	0	6	1	2	0	3	1	3	1	5	17
07:15 AM	0	3	1	4	1	1	1	3	1	3	3	7	0	1	0	1	15
07:30 AM	1	5	1	7	1	2	1	4	0	1	0	1	0	1	3	4	16
07:45 AM	1	1	1	3	0	0	0	0	2	0	2	4	0	3	1	4	11
Total	3	11	3	17	3	8	2	13	4	6	5	15	1	8	5	14	59
08:00 AM	1	5	2	8	2	3	1	6	2	4	3	9	0	1	3	4	27
08:15 AM	0	1	2	3	1	3	0	4	5	4	1	10	0	2	3	5	22
08:30 AM	0	0	2	2	2	0	1	3	2	1	0	3	0	2	5	7	15
08:45 AM	1	3	1	5	0	3	0	3	0	1	2	3	1	1	0	2	13
Total	2	9	7	18	5	9	2	16	9	10	6	25	1	6	11	18	77
Grand Total	5	20	10	35	8	17	4	29	13	16	11	40	2	14	16	32	136
Apprch %	14.3	57.1	28.6		27.6	58.6	13.8		32.5	40	27.5		6.2	43.8	50		
Total %	3.7	14.7	7.4	25.7	5.9	12.5	2.9	21.3	9.6	11.8	8.1	29.4	1.5	10.3	11.8	23.5	

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**1**	**5**	1	7	1	2	**1**	4	0	1	0	1	0	1	**3**	4	16
07:45 AM	1	1	1	3	0	0	0	0	2	0	2	4	0	**3**	1	4	11
08:00 AM	1	5	**2**	**8**	**2**	**3**	1	**6**	2	**4**	**3**	9	0	1	3	4	**27**
08:15 AM	0	1	2	3	1	3	0	4	**5**	4	1	**10**	0	2	3	**5**	22
Total Volume	3	12	6	21	4	8	2	14	9	9	6	24	0	7	10	17	76
% App. Total	14.3	57.1	28.6		28.6	57.1	14.3		37.5	37.5	25		0	41.2	58.8		
PHF	.750	.600	.750	.656	.500	.667	.500	.583	.450	.563	.500	.600	.000	.583	.833	.850	.704

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Site Code : 10821516
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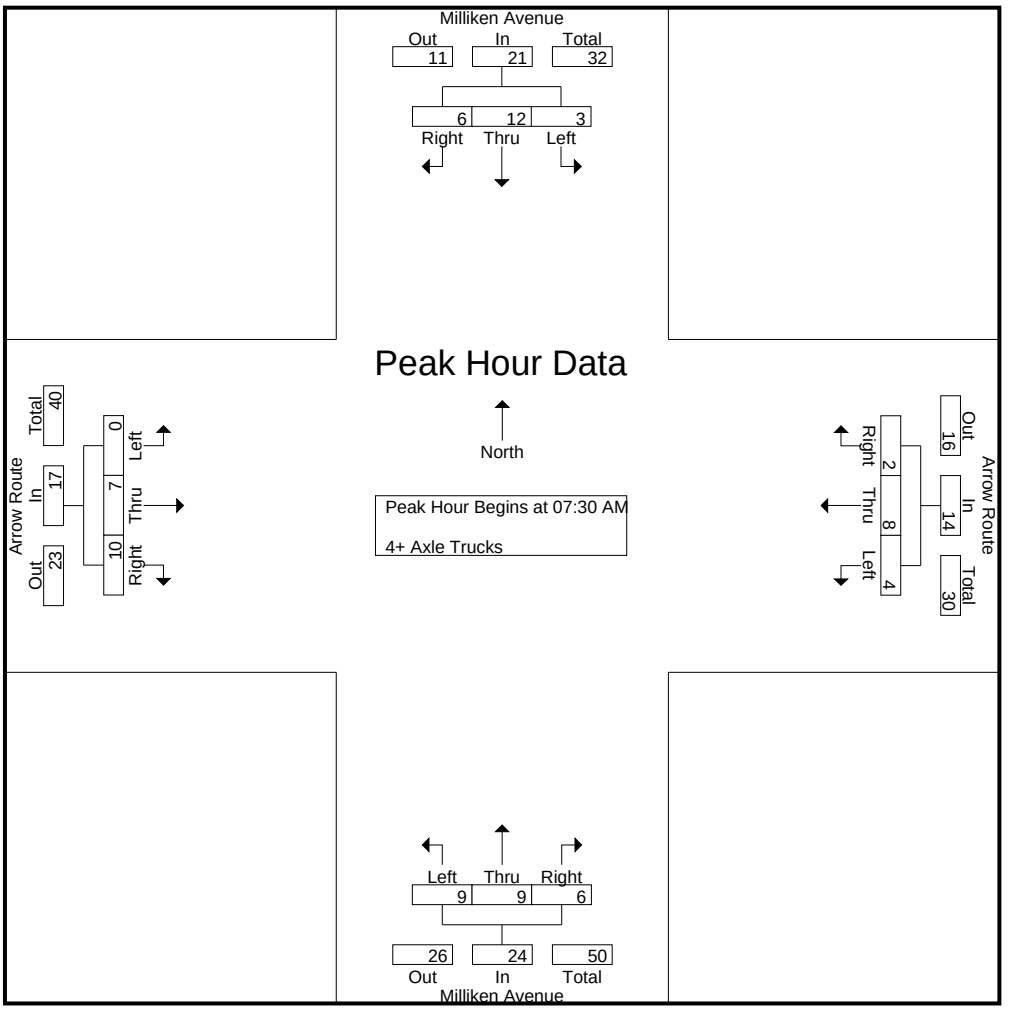

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**1**	**5**	1	7	1	2	**1**	4	0	1	0	1	0	1	**3**	4
+15 mins.	1	1	1	3	0	0	0	0	2	0	2	4	0	**3**	1	4
+30 mins.	1	5	**2**	**8**	**2**	**3**	1	**6**	2	**4**	**3**	9	0	1	3	4
+45 mins.	0	1	2	3	1	3	0	4	**5**	4	1	**10**	0	2	3	**5**
Total Volume	3	12	6	21	4	8	2	14	9	9	6	24	0	7	10	17
% App. Total	14.3	57.1	28.6		28.6	57.1	14.3		37.5	37.5	25		0	41.2	58.8	
PHF	.750	.600	.750	.656	.500	.667	.500	.583	.450	.563	.500	.600	.000	.583	.833	.850

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City of Fontana
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Weather: Clear

File Name : 12_FON_Miliken_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	8	110	29	147	28	131	22	181	44	305	73	422	45	220	40	305	1055
04:15 PM	12	117	26	155	19	114	20	153	35	295	52	382	34	209	36	279	969
04:30 PM	5	142	26	173	22	130	22	174	52	350	72	474	57	238	41	336	1157
04:45 PM	20	107	27	154	23	134	15	172	43	352	76	471	53	233	47	333	1130
Total	45	476	108	629	92	509	79	680	174	1302	273	1749	189	900	164	1253	4311
05:00 PM	18	139	34	191	21	130	38	189	35	378	77	490	65	234	47	346	1216
05:15 PM	15	116	25	156	24	118	24	166	35	372	82	489	50	227	36	313	1124
05:30 PM	13	123	26	162	23	140	18	181	35	295	72	402	64	239	36	339	1084
05:45 PM	16	116	25	157	26	125	22	173	37	328	50	415	40	170	26	236	981
Total	62	494	110	666	94	513	102	709	142	1373	281	1796	219	870	145	1234	4405
Grand Total	107	970	218	1295	186	1022	181	1389	316	2675	554	3545	408	1770	309	2487	8716
Apprch %	8.3	74.9	16.8		13.4	73.6	13		8.9	75.5	15.6		16.4	71.2	12.4		
Total %	1.2	11.1	2.5	14.9	2.1	11.7	2.1	15.9	3.6	30.7	6.4	40.7	4.7	20.3	3.5	28.5	
Passenger Vehicles	102	942	210	1254	162	977	177	1316	307	2646	524	3477	391	1687	292	2370	8417
% Passenger Vehicles	95.3	97.1	96.3	96.8	87.1	95.6	97.8	94.7	97.2	98.9	94.6	98.1	95.8	95.3	94.5	95.3	96.6
Large 2 Axle Vehicles	2	18	4	24	5	17	1	23	2	17	9	28	4	28	6	38	113
% Large 2 Axle Vehicles	1.9	1.9	1.8	1.9	2.7	1.7	0.6	1.7	0.6	0.6	1.6	0.8	1	1.6	1.9	1.5	1.3
3 Axle Vehicles	1	2	1	4	3	3	2	8	0	1	3	4	1	26	1	28	44
% 3 Axle Vehicles	0.9	0.2	0.5	0.3	1.6	0.3	1.1	0.6	0	0	0.5	0.1	0.2	1.5	0.3	1.1	0.5
4+ Axle Trucks	2	8	3	13	16	25	1	42	7	11	18	36	12	29	10	51	142
% 4+ Axle Trucks	1.9	0.8	1.4	1	8.6	2.4	0.6	3	2.2	0.4	3.2	1	2.9	1.6	3.2	2.1	1.6

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	5	**142**	26	173	22	130	22	174	**52**	350	72	474	57	**238**	41	336	1157
04:45 PM	**20**	107	27	154	23	**134**	15	172	43	352	76	471	53	233	**47**	333	1130
05:00 PM	18	139	**34**	**191**	21	130	**38**	**189**	35	**378**	77	**490**	**65**	234	47	**346**	**1216**
05:15 PM	15	116	25	156	**24**	118	24	166	35	372	**82**	489	50	227	36	313	1124
Total Volume	58	504	112	674	90	512	99	701	165	1452	307	1924	225	932	171	1328	4627
% App. Total	8.6	74.8	16.6		12.8	73	14.1		8.6	75.5	16		16.9	70.2	12.9		
PHF	.725	.887	.824	.882	.938	.955	.651	.927	.793	.960	.936	.982	.865	.979	.910	.960	.951

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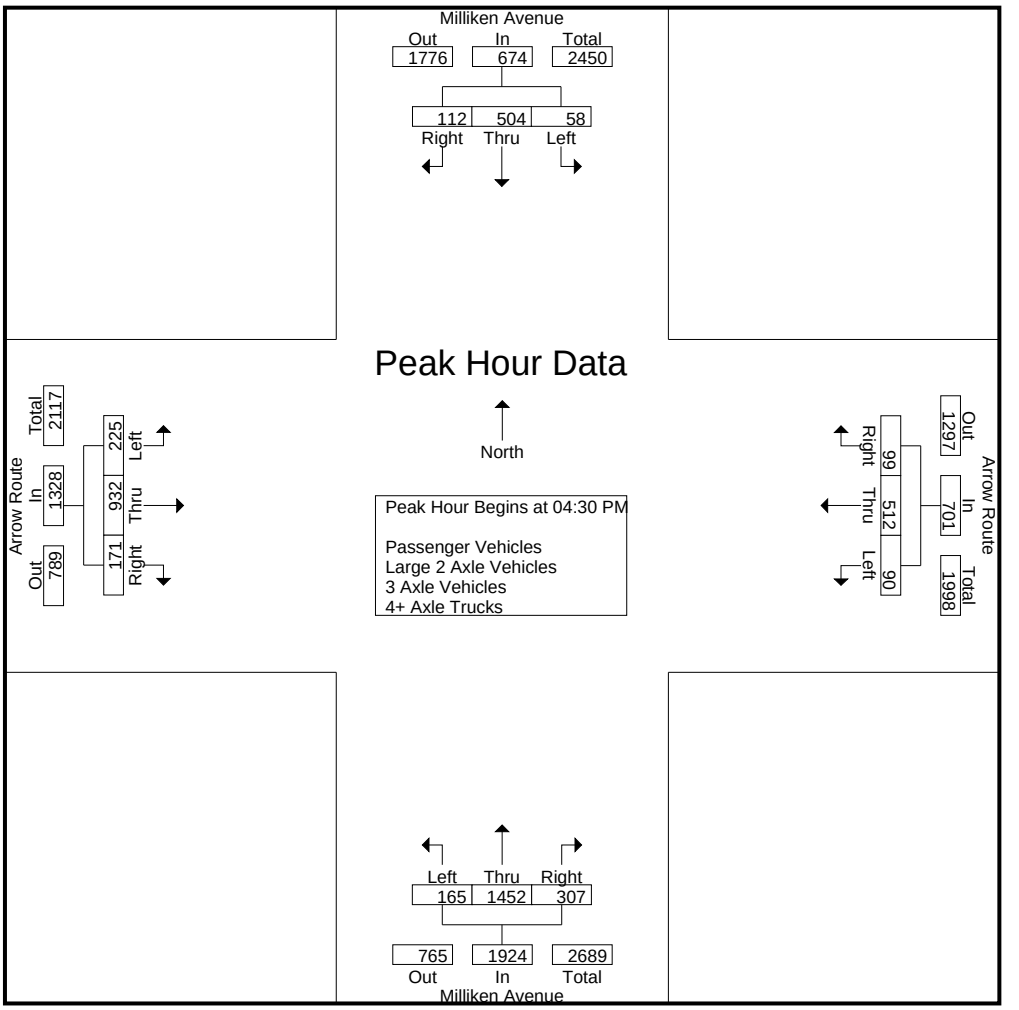

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				04:30 PM				04:45 PM			
+0 mins.	5	**142**	26	173	21	130	**38**	**189**	**52**	350	72	474	53	233	**47**	333
+15 mins.	**20**	107	27	154	24	118	24	166	43	352	76	471	**65**	234	47	**346**
+30 mins.	18	139	**34**	**191**	23	**140**	18	181	35	**378**	77	**490**	50	227	36	313
+45 mins.	15	116	25	156	**26**	125	22	173	35	372	**82**	489	64	**239**	36	339
Total Volume	58	504	112	674	94	513	102	709	165	1452	307	1924	232	933	166	1331
% App. Total	8.6	74.8	16.6		13.3	72.4	14.4		8.6	75.5	16		17.4	70.1	12.5	
PHF	.725	.887	.824	.882	.904	.916	.671	.938	.793	.960	.936	.982	.892	.976	.883	.962

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Site Code : 10821516
Start Date : 9/28/2021

Groups Printed- Passenger Vehicles

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	8	110	28	146	24	123	22	169	43	301	70	414	41	210	36	287	1016
04:15 PM	12	113	26	151	15	107	19	141	34	289	50	373	32	195	35	262	927
04:30 PM	5	139	26	170	16	126	22	164	52	347	70	469	55	224	40	319	1122
04:45 PM	18	105	25	148	23	129	15	167	43	349	72	464	52	223	44	319	1098
Total	43	467	105	615	78	485	78	641	172	1286	262	1720	180	852	155	1187	4163
05:00 PM	18	129	32	179	19	124	36	179	32	375	70	477	63	224	45	332	1167
05:15 PM	14	114	24	152	21	113	24	158	32	368	81	481	47	217	34	298	1089
05:30 PM	12	119	24	155	19	137	18	174	34	292	67	393	61	232	33	326	1048
05:45 PM	15	113	25	153	25	118	21	164	37	325	44	406	40	162	25	227	950
Total	59	475	105	639	84	492	99	675	135	1360	262	1757	211	835	137	1183	4254
Grand Total	102	942	210	1254	162	977	177	1316	307	2646	524	3477	391	1687	292	2370	8417
Apprch %	8.1	75.1	16.7		12.3	74.2	13.4		8.8	76.1	15.1		16.5	71.2	12.3		
Total %	1.2	11.2	2.5	14.9	1.9	11.6	2.1	15.6	3.6	31.4	6.2	41.3	4.6	20	3.5	28.2	

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	5	**139**	26	170	16	126	22	164	**52**	347	70	469	55	**224**	40	319	1122
04:45 PM	**18**	105	25	148	**23**	**129**	15	167	43	349	72	464	52	223	44	319	1098
05:00 PM	18	129	**32**	**179**	19	124	**36**	**179**	32	**375**	70	477	**63**	224	**45**	**332**	**1167**
05:15 PM	14	114	24	152	21	113	24	158	32	368	**81**	**481**	47	217	34	298	1089
Total Volume	55	487	107	649	79	492	97	668	159	1439	293	1891	217	888	163	1268	4476
% App. Total	8.5	75	16.5		11.8	73.7	14.5		8.4	76.1	15.5		17.1	70	12.9		
PHF	.764	.876	.836	.906	.859	.953	.674	.933	.764	.959	.904	.983	.861	.991	.906	.955	.959

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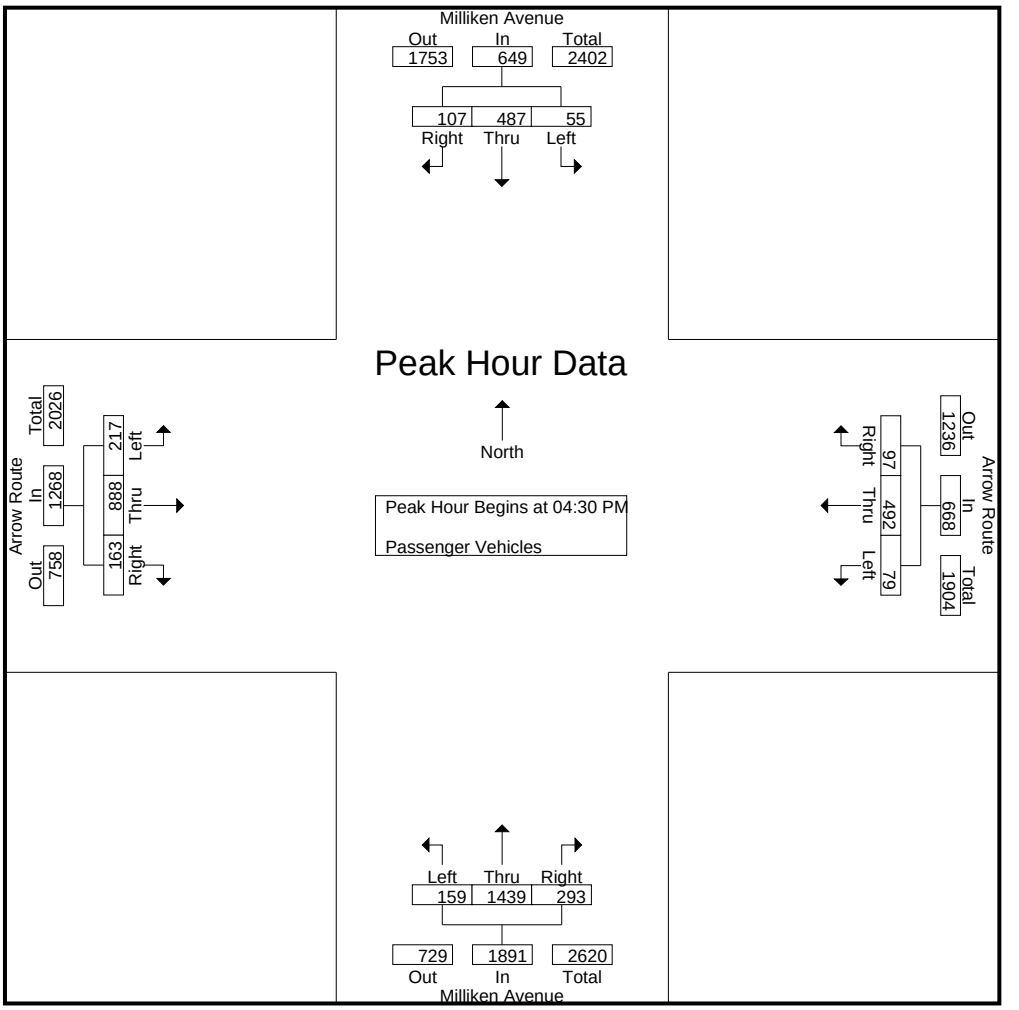

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	5	**139**	26	170	16	126	22	164	**52**	347	70	469	55	**224**	40	319
+15 mins.	**18**	105	25	148	**23**	**129**	15	167	43	349	72	464	52	223	44	319
+30 mins.	18	129	**32**	**179**	19	124	**36**	**179**	32	**375**	70	477	**63**	224	**45**	**332**
+45 mins.	14	114	24	152	21	113	24	158	32	368	**81**	**481**	47	217	34	298
Total Volume	55	487	107	649	79	492	97	668	159	1439	293	1891	217	888	163	1268
% App. Total	8.5	75	16.5		11.8	73.7	14.5		8.4	76.1	15.5		17.1	70	12.9	
PHF	.764	.876	.836	.906	.859	.953	.674	.933	.764	.959	.904	.983	.861	.991	.906	.955

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City of Fontana
N/S: Milliken Avenue
E/W: Arrow Route
Weather: Clear

File Name : 12_FON_Miliken_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	1	1	0	3	0	3	0	4	2	6	1	2	3	6	16
04:15 PM	0	3	0	3	1	4	0	5	0	3	2	5	0	2	1	3	16
04:30 PM	0	2	0	2	1	2	0	3	0	1	0	1	1	5	0	6	12
04:45 PM	1	1	1	3	0	1	0	1	0	2	1	3	0	8	1	9	16
Total	1	6	2	9	2	10	0	12	0	10	5	15	2	17	5	24	60
05:00 PM	0	7	0	7	1	3	1	5	1	1	2	4	0	4	0	4	20
05:15 PM	0	1	1	2	1	0	0	1	1	2	0	3	2	3	0	5	11
05:30 PM	0	1	1	2	0	0	0	0	0	2	1	3	0	1	1	2	7
05:45 PM	1	3	0	4	1	4	0	5	0	2	1	3	0	3	0	3	15
Total	1	12	2	15	3	7	1	11	2	7	4	13	2	11	1	14	53
Grand Total	2	18	4	24	5	17	1	23	2	17	9	28	4	28	6	38	113
Apprch %	8.3	75	16.7		21.7	73.9	4.3		7.1	60.7	32.1		10.5	73.7	15.8		
Total %	1.8	15.9	3.5	21.2	4.4	15	0.9	20.4	1.8	15	8	24.8	3.5	24.8	5.3	33.6	

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	2	0	2	**1**	2	0	3	0	1	0	1	1	5	0	6	12
04:45 PM	**1**	1	**1**	3	0	1	0	1	0	**2**	1	3	0	**8**	**1**	**9**	16
05:00 PM	0	**7**	0	**7**	1	**3**	**1**	**5**	**1**	1	**2**	**4**	0	4	0	4	**20**
05:15 PM	0	1	1	2	1	0	0	1	1	2	0	3	**2**	3	0	5	11
Total Volume	1	11	2	14	3	6	1	10	2	6	3	11	3	20	1	24	59
% App. Total	7.1	78.6	14.3		30	60	10		18.2	54.5	27.3		12.5	83.3	4.2		
PHF	.250	.393	.500	.500	.750	.500	.250	.500	.500	.750	.375	.688	.375	.625	.250	.667	.738

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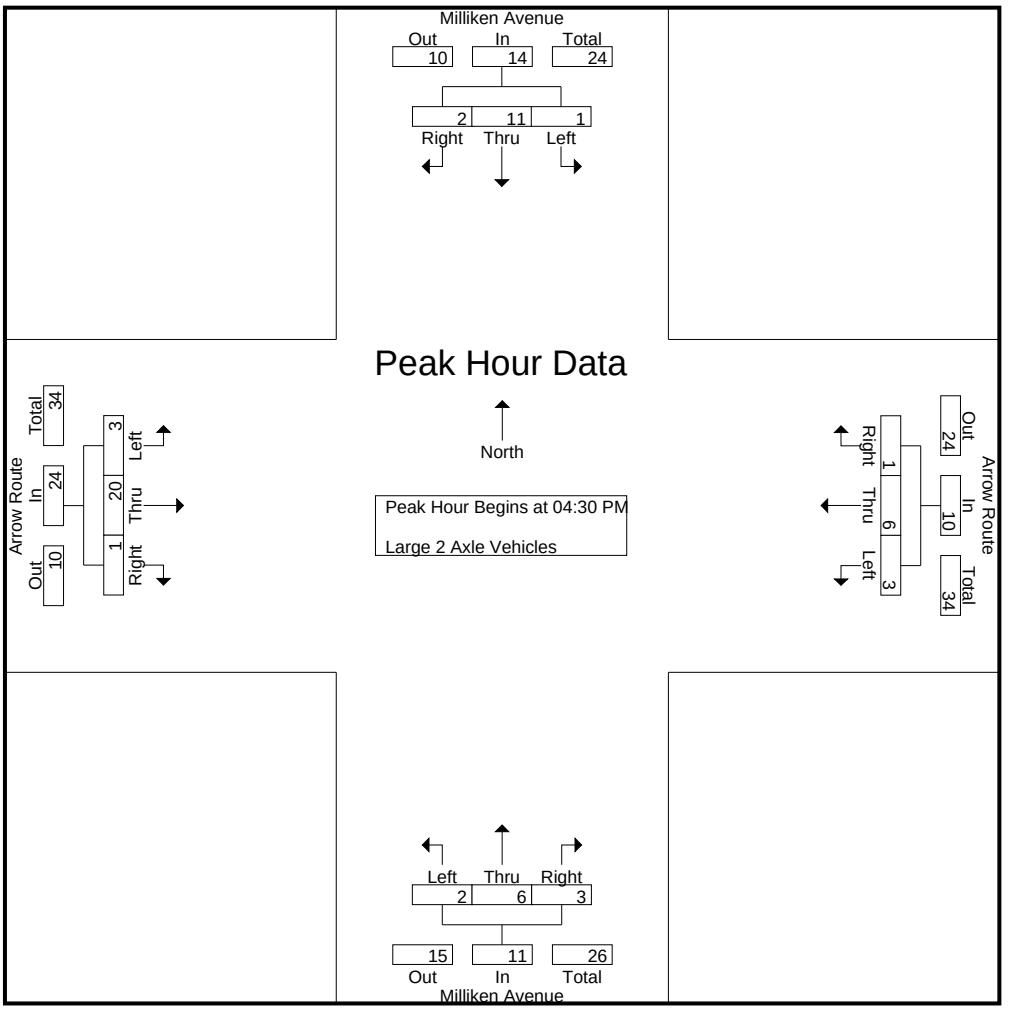
City of Fontana
N/S: Milliken Avenue
E/W: Arrow Route
Weather: Clear

File Name : 12_FON_Miliken_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	2	0	2	**1**	2	0	3	0	1	0	1	1	5	0	6
+15 mins.	**1**	1	**1**	3	0	1	0	1	0	**2**	1	3	0	**8**	**1**	**9**
+30 mins.	0	**7**	0	**7**	1	**3**	**1**	**5**	**1**	1	**2**	**4**	0	4	0	4
+45 mins.	0	1	1	2	1	0	0	1	1	2	0	3	**2**	3	0	5
Total Volume	1	11	2	14	3	6	1	10	2	6	3	11	3	20	1	24
% App. Total	7.1	78.6	14.3		30	60	10		18.2	54.5	27.3		12.5	83.3	4.2	
PHF	.250	.393	.500	.500	.750	.500	.250	.500	.500	.750	.375	.688	.375	.625	.250	.667

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City of Fontana
N/S: Milliken Avenue
E/W: Arrow Route
Weather: Clear

File Name : 12_FON_Miliken_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	4	5
04:15 PM	0	0	0	0	1	0	1	2	0	0	0	0	0	8	0	8	10
04:30 PM	0	0	0	0	1	1	0	2	0	1	0	1	0	6	0	6	9
04:45 PM	1	0	1	2	0	1	0	1	0	0	1	1	0	0	0	0	4
Total	1	0	1	2	2	3	1	6	0	1	1	2	0	18	0	18	28
05:00 PM	0	1	0	1	0	0	0	0	0	0	1	1	0	2	0	2	4
05:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	3	0	3	4
05:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1	2	1	4	5
05:45 PM	0	0	0	0	0	0	1	1	0	0	1	1	0	1	0	1	3
Total	0	2	0	2	1	0	1	2	0	0	2	2	1	8	1	10	16
Grand Total	1	2	1	4	3	3	2	8	0	1	3	4	1	26	1	28	44
Apprch %	25	50	25		37.5	37.5	25		0	25	75		3.6	92.9	3.6		
Total %	2.3	4.5	2.3	9.1	6.8	6.8	4.5	18.2	0	2.3	6.8	9.1	2.3	59.1	2.3	63.6	

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	**1**	**1**	0	**2**	0	**1**	0	**1**	0	**6**	0	**6**	**9**
04:45 PM	**1**	0	**1**	**2**	0	1	0	1	0	0	**1**	1	0	0	0	0	4
05:00 PM	0	**1**	0	1	0	0	0	0	0	0	1	1	0	2	0	2	4
05:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	3	0	3	4
Total Volume	1	2	1	4	1	2	0	3	0	1	2	3	0	11	0	11	21
% App. Total	25	50	25		33.3	66.7	0		0	33.3	66.7		0	100	0		
PHF	.250	.500	.250	.500	.250	.500	.000	.375	.000	.250	.500	.750	.000	.458	.000	.458	.583

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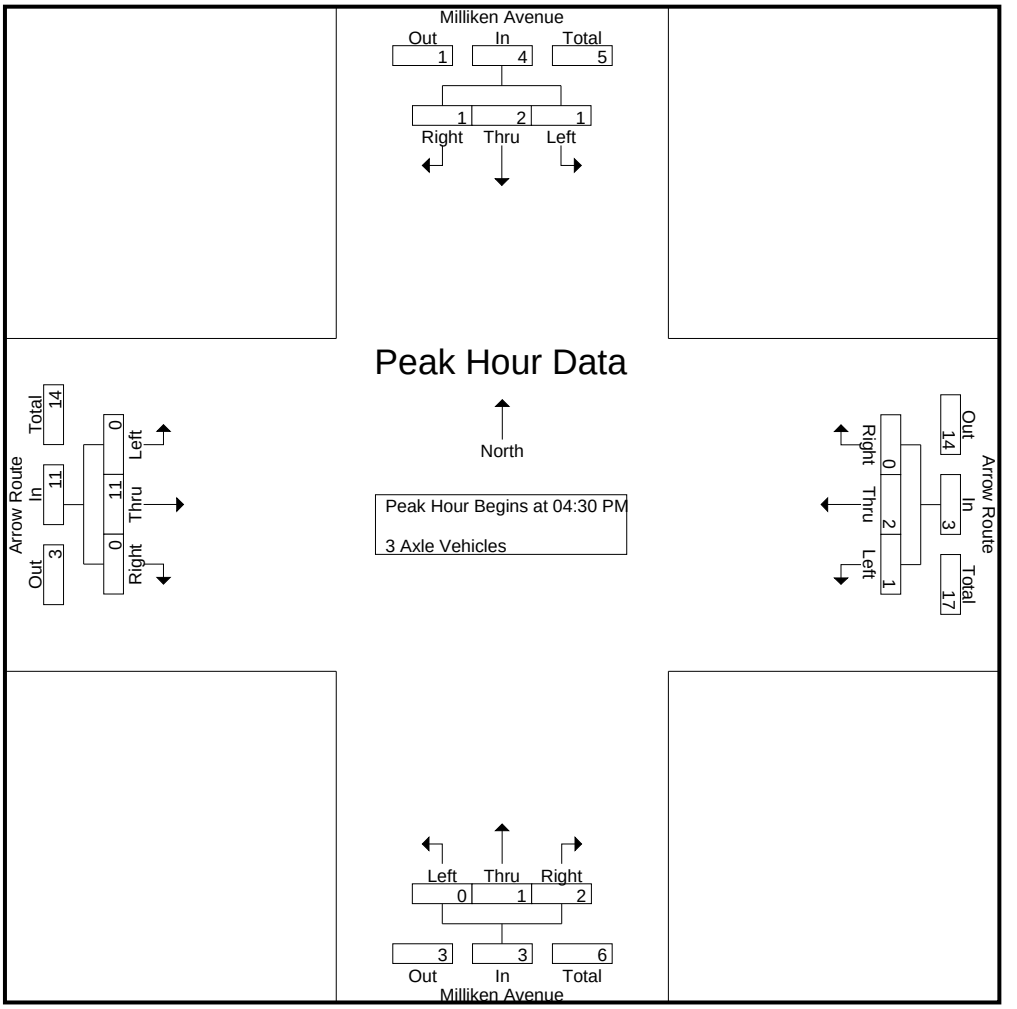
City of Fontana
N/S: Milliken Avenue
E/W: Arrow Route
Weather: Clear

File Name : 12_FON_Miliken_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	**1**	**1**	0	**2**	0	**1**	0	**1**	0	**6**	0	**6**
+15 mins.	**1**	0	**1**	**2**	0	1	0	1	0	0	**1**	1	0	0	0	0
+30 mins.	0	**1**	0	1	0	0	0	0	0	0	1	1	0	2	0	2
+45 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	3	0	3
Total Volume	1	2	1	4	1	2	0	3	0	1	2	3	0	11	0	11
% App. Total	25	50	25		33.3	66.7	0		0	33.3	66.7		0	100	0	
PHF	.250	.500	.250	.500	.250	.500	.000	.375	.000	.250	.500	.750	.000	.458	.000	.458

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City of Fontana
N/S: Milliken Avenue
E/W: Arrow Route
Weather: Clear

File Name : 12_FON_Miliken_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	4	4	0	8	1	0	1	2	3	4	1	8	18
04:15 PM	0	1	0	1	2	3	0	5	1	3	0	4	2	4	0	6	16
04:30 PM	0	1	0	1	4	1	0	5	0	1	2	3	1	3	1	5	14
04:45 PM	0	1	0	1	0	3	0	3	0	1	2	3	1	2	2	5	12
Total	0	3	0	3	10	11	0	21	2	5	5	12	7	13	4	24	60
05:00 PM	0	2	2	4	1	3	1	5	2	2	4	8	2	4	2	8	25
05:15 PM	1	0	0	1	2	5	0	7	2	2	1	5	1	4	2	7	20
05:30 PM	1	3	1	5	3	3	0	6	1	1	4	6	2	4	1	7	24
05:45 PM	0	0	0	0	0	3	0	3	0	1	4	5	0	4	1	5	13
Total	2	5	3	10	6	14	1	21	5	6	13	24	5	16	6	27	82
Grand Total	2	8	3	13	16	25	1	42	7	11	18	36	12	29	10	51	142
Apprch %	15.4	61.5	23.1		38.1	59.5	2.4		19.4	30.6	50		23.5	56.9	19.6		
Total %	1.4	5.6	2.1	9.2	11.3	17.6	0.7	29.6	4.9	7.7	12.7	25.4	8.5	20.4	7	35.9	

	Milliken Avenue Southbound				Arrow Route Westbound				Milliken Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	1	0	1	**4**	1	0	5	0	1	2	3	1	3	1	5	14
04:45 PM	0	1	0	1	0	3	0	3	0	1	2	3	1	2	**2**	5	12
05:00 PM	0	**2**	**2**	**4**	1	3	**1**	5	**2**	**2**	**4**	**8**	**2**	**4**	2	**8**	**25**
05:15 PM	**1**	0	0	1	2	**5**	0	**7**	2	2	1	5	1	4	2	7	20
Total Volume	1	4	2	7	7	12	1	20	4	6	9	19	5	13	7	25	71
% App. Total	14.3	57.1	28.6		35	60	5		21.1	31.6	47.4		20	52	28		
PHF	.250	.500	.250	.438	.438	.600	.250	.714	.500	.750	.563	.594	.625	.813	.875	.781	.710

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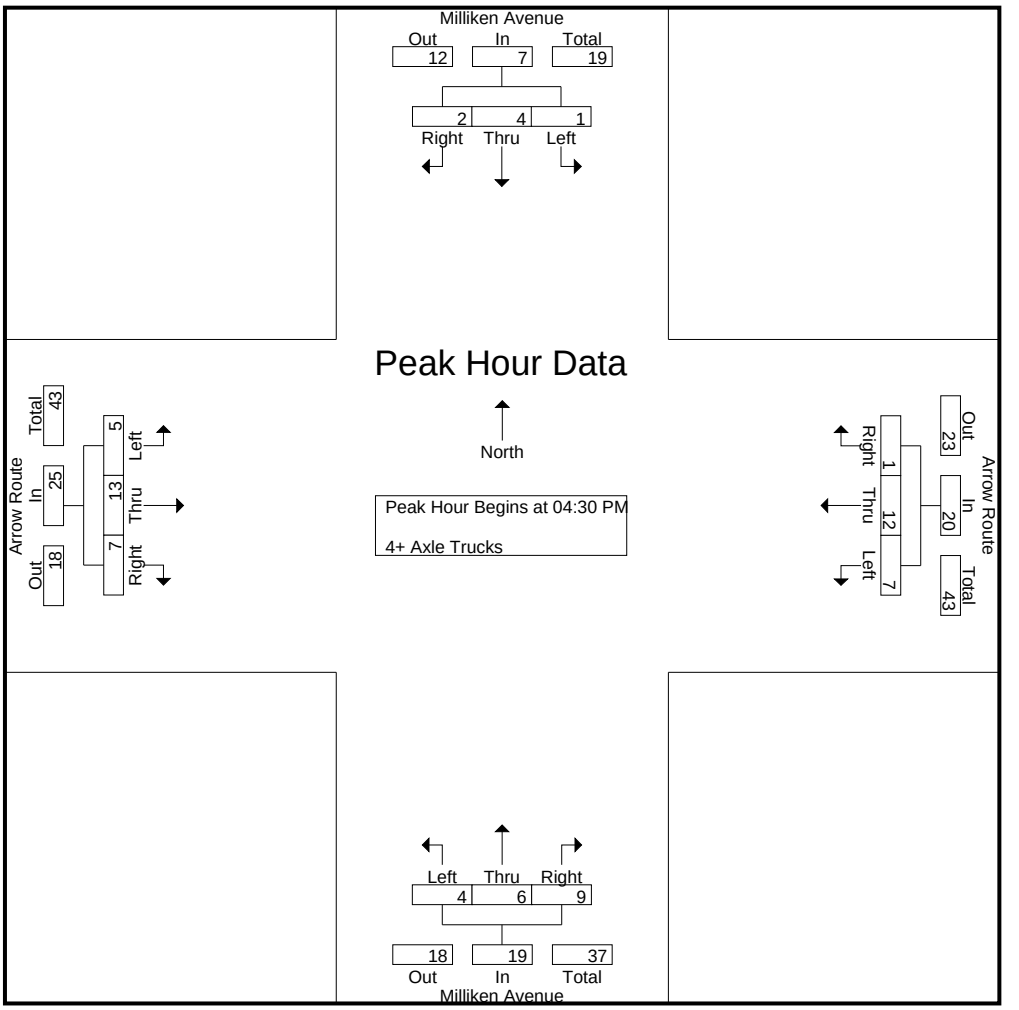
City of Fontana
N/S: Milliken Avenue
E/W: Arrow Route
Weather: Clear

File Name : 12_FON_Miliken_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	1	0	1	**4**	1	0	5	0	1	2	3	1	3	1	5
+15 mins.	0	1	0	1	0	3	0	3	0	1	2	3	1	2	**2**	5
+30 mins.	0	**2**	**2**	**4**	1	3	**1**	5	**2**	**2**	**4**	**8**	**2**	**4**	2	**8**
+45 mins.	**1**	0	0	1	2	**5**	0	**7**	2	2	1	5	1	4	2	7
Total Volume	1	4	2	7	7	12	1	20	4	6	9	19	5	13	7	25
% App. Total	14.3	57.1	28.6		35	60	5		21.1	31.6	47.4		20	52	28	
PHF	.250	.500	.250	.438	.438	.600	.250	.714	.500	.750	.563	.594	.625	.813	.875	.781

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City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	10	55	59	124	16	214	7	237	5	29	16	50	24	65	2	91	502
07:15 AM	17	70	58	145	22	227	16	265	5	27	13	45	16	63	8	87	542
07:30 AM	8	74	62	144	30	264	27	321	5	33	13	51	20	75	9	104	620
07:45 AM	40	97	57	194	54	287	44	385	12	37	21	70	34	102	20	156	805
Total	75	296	236	607	122	992	94	1208	27	126	63	216	94	305	39	438	2469
08:00 AM	29	95	71	195	41	218	32	291	10	40	16	66	31	69	9	109	661
08:15 AM	27	108	75	210	32	207	24	263	11	45	9	65	25	62	19	106	644
08:30 AM	15	77	51	143	23	171	22	216	2	36	11	49	31	65	10	106	514
08:45 AM	16	84	61	161	30	146	22	198	9	27	19	55	27	61	9	97	511
Total	87	364	258	709	126	742	100	968	32	148	55	235	114	257	47	418	2330
Grand Total	162	660	494	1316	248	1734	194	2176	59	274	118	451	208	562	86	856	4799
Apprch %	12.3	50.2	37.5		11.4	79.7	8.9		13.1	60.8	26.2		24.3	65.7	10		
Total %	3.4	13.8	10.3	27.4	5.2	36.1	4	45.3	1.2	5.7	2.5	9.4	4.3	11.7	1.8	17.8	
Passenger Vehicles	158	632	482	1272	234	1661	180	2075	44	252	102	398	198	514	73	785	4530
% Passenger Vehicles	97.5	95.8	97.6	96.7	94.4	95.8	92.8	95.4	74.6	92	86.4	88.2	95.2	91.5	84.9	91.7	94.4
Large 2 Axle Vehicles	4	19	8	31	5	36	12	53	6	10	7	23	4	18	7	29	136
% Large 2 Axle Vehicles	2.5	2.9	1.6	2.4	2	2.1	6.2	2.4	10.2	3.6	5.9	5.1	1.9	3.2	8.1	3.4	2.8
3 Axle Vehicles	0	0	0	0	5	18	1	24	1	1	5	7	0	19	1	20	51
% 3 Axle Vehicles	0	0	0	0	2	1	0.5	1.1	1.7	0.4	4.2	1.6	0	3.4	1.2	2.3	1.1
4+ Axle Trucks	0	9	4	13	4	19	1	24	8	11	4	23	6	11	5	22	82
% 4+ Axle Trucks	0	1.4	0.8	1	1.6	1.1	0.5	1.1	13.6	4	3.4	5.1	2.9	2	5.8	2.6	1.7

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	8	74	62	144	30	264	27	321	5	33	13	51	20	75	9	104	620
07:45 AM	**40**	97	57	194	**54**	**287**	**44**	**385**	**12**	37	**21**	**70**	**34**	**102**	**20**	**156**	**805**
08:00 AM	29	95	71	195	41	218	32	291	10	40	16	66	31	69	9	109	661
08:15 AM	27	**108**	**75**	**210**	32	207	24	263	11	**45**	9	65	25	62	19	106	644
Total Volume	104	374	265	743	157	976	127	1260	38	155	59	252	110	308	57	475	2730
% App. Total	14	50.3	35.7		12.5	77.5	10.1		15.1	61.5	23.4		23.2	64.8	12		
PHF	.650	.866	.883	.885	.727	.850	.722	.818	.792	.861	.702	.900	.809	.755	.713	.761	.848

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City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021
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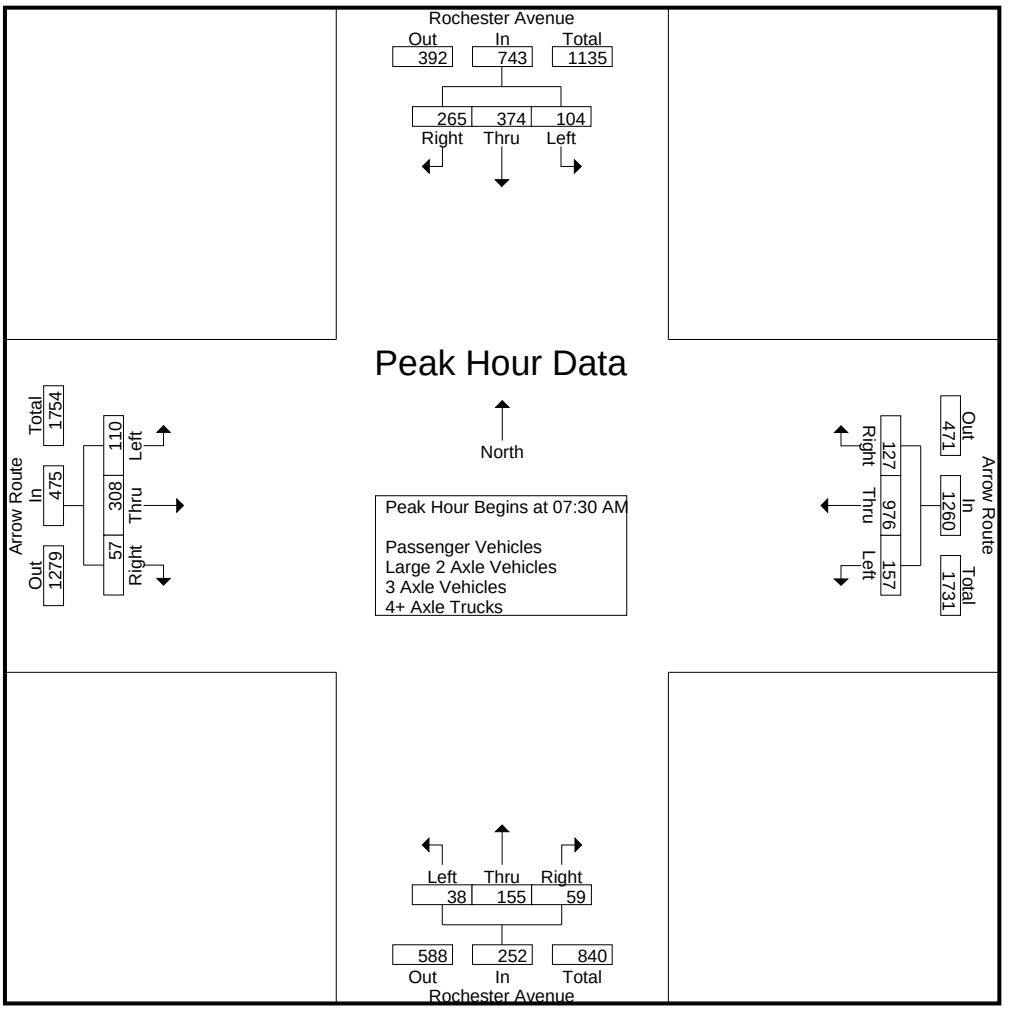

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:30 AM				07:45 AM			
+0 mins.	8	74	62	144	22	227	16	265	5	33	13	51	**34**	**102**	**20**	**156**
+15 mins.	**40**	97	57	194	30	264	27	321	**12**	37	**21**	**70**	31	69	9	109
+30 mins.	29	95	71	195	**54**	**287**	**44**	**385**	10	40	16	66	25	62	19	106
+45 mins.	27	**108**	**75**	**210**	41	218	32	291	11	**45**	9	65	31	65	10	106
Total Volume	104	374	265	743	147	996	119	1262	38	155	59	252	121	298	58	477
% App. Total	14	50.3	35.7		11.6	78.9	9.4		15.1	61.5	23.4		25.4	62.5	12.2	
PHF	.650	.866	.883	.885	.681	.868	.676	.819	.792	.861	.702	.900	.890	.730	.725	.764

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City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	10	55	59	124	15	205	7	227	2	27	15	44	23	60	2	85	480
07:15 AM	17	69	56	142	21	215	14	250	4	24	11	39	16	60	8	84	515
07:30 AM	8	72	61	141	29	251	24	304	3	29	11	43	19	71	8	98	586
07:45 AM	40	91	56	187	51	277	42	370	10	34	19	63	33	95	18	146	766
Total	75	287	232	594	116	948	87	1151	19	114	56	189	91	286	36	413	2347
08:00 AM	27	92	71	190	38	207	31	276	8	38	14	60	30	62	7	99	625
08:15 AM	27	102	71	200	30	202	21	253	8	42	8	58	22	56	14	92	603
08:30 AM	13	72	48	133	21	164	22	207	2	32	9	43	29	61	8	98	481
08:45 AM	16	79	60	155	29	140	19	188	7	26	15	48	26	49	8	83	474
Total	83	345	250	678	118	713	93	924	25	138	46	209	107	228	37	372	2183
Grand Total	158	632	482	1272	234	1661	180	2075	44	252	102	398	198	514	73	785	4530
Apprch %	12.4	49.7	37.9		11.3	80	8.7		11.1	63.3	25.6		25.2	65.5	9.3		
Total %	3.5	14	10.6	28.1	5.2	36.7	4	45.8	1	5.6	2.3	8.8	4.4	11.3	1.6	17.3	

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	8	72	61	141	29	251	24	304	3	29	11	43	19	71	8	98	586
07:45 AM	**40**	91	56	187	**51**	**277**	**42**	**370**	**10**	34	**19**	**63**	**33**	**95**	**18**	**146**	**766**
08:00 AM	27	92	**71**	190	38	207	31	276	8	38	14	60	30	62	7	99	625
08:15 AM	27	**102**	71	**200**	30	202	21	253	8	**42**	8	58	22	56	14	92	603
Total Volume	102	357	259	718	148	937	118	1203	29	143	52	224	104	284	47	435	2580
% App. Total	14.2	49.7	36.1		12.3	77.9	9.8		12.9	63.8	23.2		23.9	65.3	10.8		
PHF	.638	.875	.912	.898	.725	.846	.702	.813	.725	.851	.684	.889	.788	.747	.653	.745	.842

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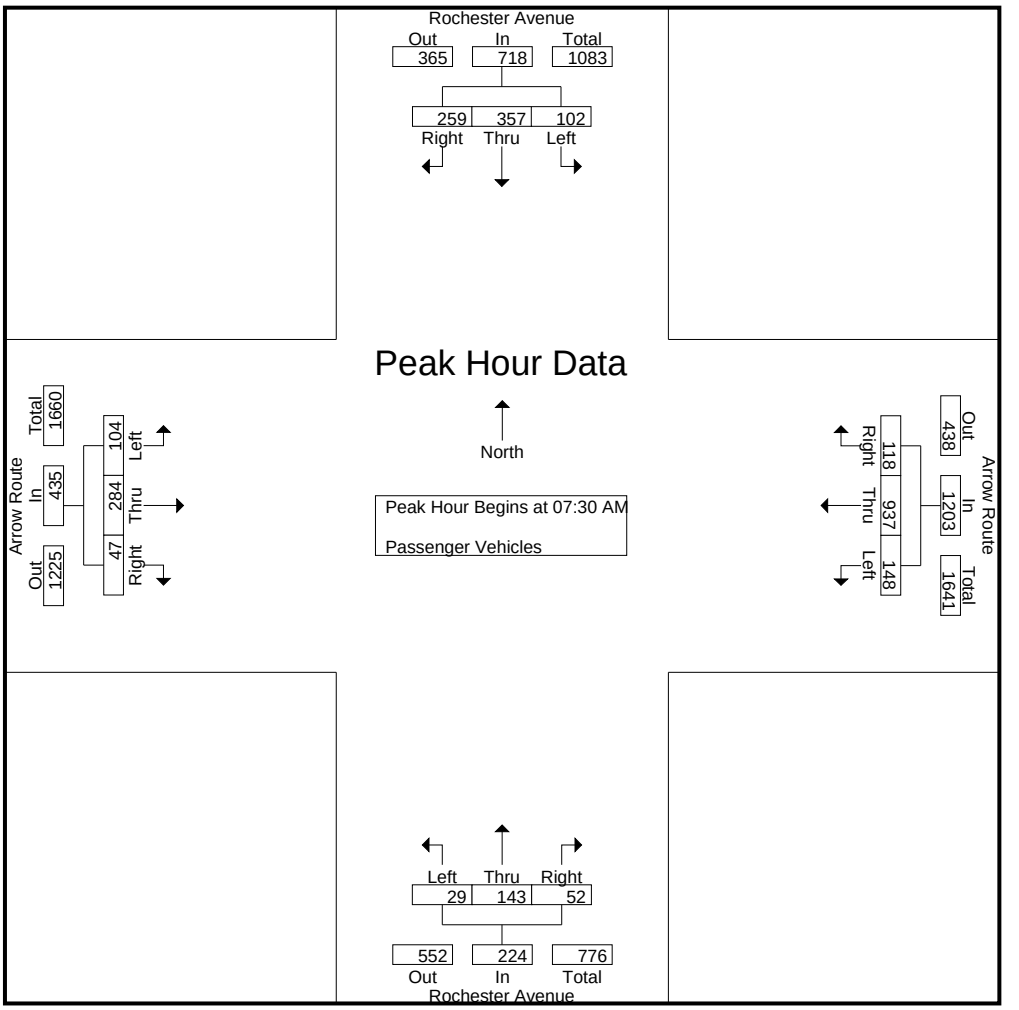
(951)268-6268

City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	8	72	61	141	29	251	24	304	3	29	11	43	19	71	8	98
+15 mins.	**40**	91	56	187	**51**	**277**	**42**	**370**	**10**	34	**19**	**63**	**33**	**95**	**18**	**146**
+30 mins.	27	92	**71**	190	38	207	31	276	8	38	14	60	30	62	7	99
+45 mins.	27	**102**	71	**200**	30	202	21	253	8	**42**	8	58	22	56	14	92
Total Volume	102	357	259	718	148	937	118	1203	29	143	52	224	104	284	47	435
% App. Total	14.2	49.7	36.1		12.3	77.9	9.8		12.9	63.8	23.2		23.9	65.3	10.8	
PHF	.638	.875	.912	.898	.725	.846	.702	.813	.725	.851	.684	.889	.788	.747	.653	.745

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City of Fontana
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Weather: Clear

File Name : 13_FON_Rochester_Arrow AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	1	3	0	4	1	1	0	2	0	1	0	1	7
07:15 AM	0	0	2	2	0	5	2	7	0	1	1	2	0	0	0	0	11
07:30 AM	0	1	1	2	0	8	2	10	0	2	1	3	1	2	0	3	18
07:45 AM	0	4	1	5	1	7	1	9	2	2	0	4	1	2	1	4	22
Total	0	5	4	9	2	23	5	30	3	6	2	11	2	5	1	8	58
08:00 AM	2	1	0	3	2	3	1	6	1	1	1	3	0	3	1	4	16
08:15 AM	0	6	3	9	1	3	3	7	2	1	1	4	1	2	3	6	26
08:30 AM	2	4	1	7	0	4	0	4	0	1	1	2	0	2	1	3	16
08:45 AM	0	3	0	3	0	3	3	6	0	1	2	3	1	6	1	8	20
Total	4	14	4	22	3	13	7	23	3	4	5	12	2	13	6	21	78
Grand Total	4	19	8	31	5	36	12	53	6	10	7	23	4	18	7	29	136
Apprch %	12.9	61.3	25.8		9.4	67.9	22.6		26.1	43.5	30.4		13.8	62.1	24.1		
Total %	2.9	14	5.9	22.8	3.7	26.5	8.8	39	4.4	7.4	5.1	16.9	2.9	13.2	5.1	21.3	

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	1	1	2	0	**8**	2	**10**	0	**2**	**1**	3	**1**	2	0	3	18
07:45 AM	0	4	1	5	1	7	1	9	**2**	2	0	**4**	1	2	1	4	22
08:00 AM	**2**	1	0	3	**2**	3	1	6	1	1	1	3	0	**3**	1	4	16
08:15 AM	0	**6**	**3**	**9**	1	3	**3**	7	2	1	1	4	1	2	**3**	**6**	**26**
Total Volume	2	12	5	19	4	21	7	32	5	6	3	14	3	9	5	17	82
% App. Total	10.5	63.2	26.3		12.5	65.6	21.9		35.7	42.9	21.4		17.6	52.9	29.4		
PHF	.250	.500	.417	.528	.500	.656	.583	.800	.625	.750	.750	.875	.750	.750	.417	.708	.788

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City of Fontana
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Site Code : 10821516
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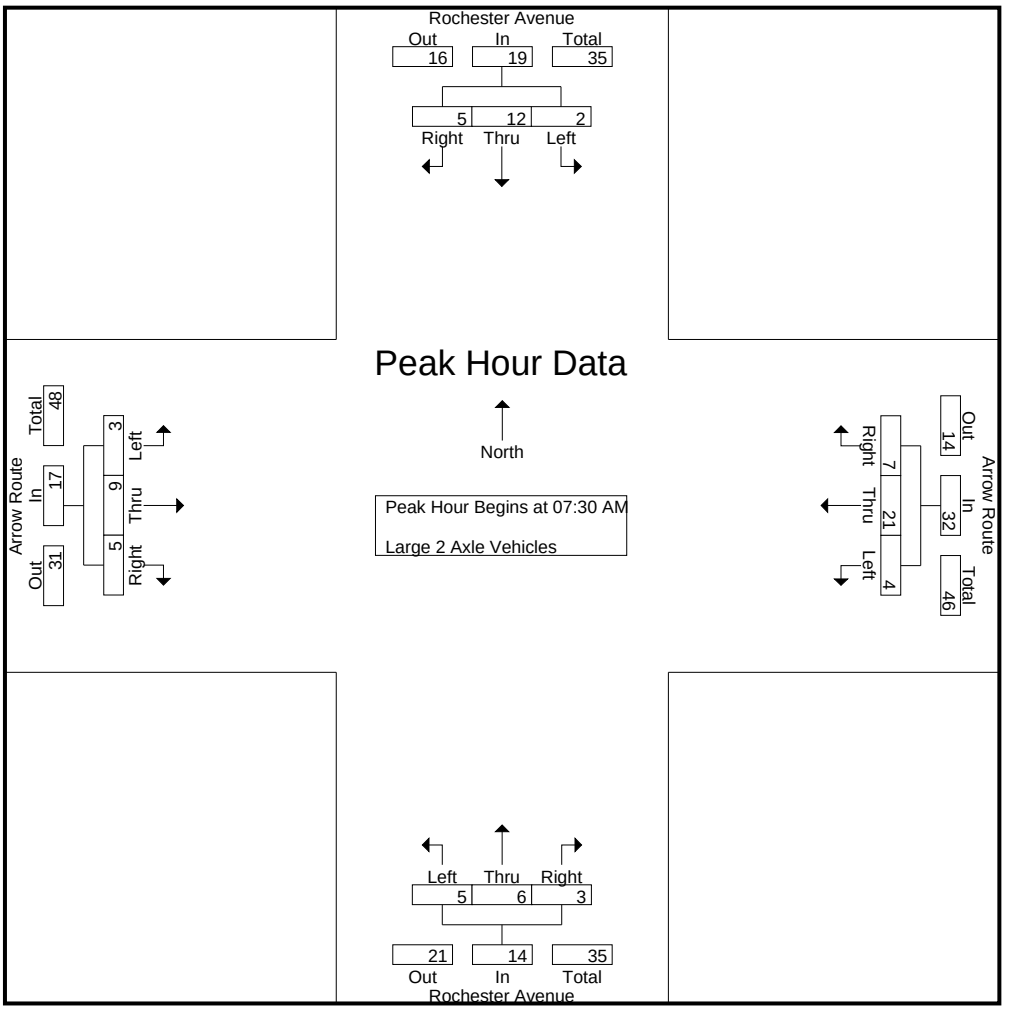

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	1	1	2	0	**8**	2	**10**	0	**2**	**1**	3	**1**	2	0	3
+15 mins.	0	4	1	5	1	7	1	9	**2**	2	0	**4**	1	2	1	4
+30 mins.	**2**	1	0	3	**2**	3	1	6	1	1	1	3	0	**3**	1	4
+45 mins.	0	**6**	**3**	**9**	1	3	**3**	7	2	1	1	4	1	2	**3**	**6**
Total Volume	2	12	5	19	4	21	7	32	5	6	3	14	3	9	5	17
% App. Total	10.5	63.2	26.3		12.5	65.6	21.9		35.7	42.9	21.4		17.6	52.9	29.4	
PHF	.250	.500	.417	.528	.500	.656	.583	.800	.625	.750	.750	.875	.750	.750	.417	.708

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File Name : 13_FON_Rochester_Arrow AM
Site Code : 10821516
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Groups Printed- 3 Axle Vehicles

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	2	0	2	0	1	0	1	0	1	0	1	4
07:15 AM	0	0	0	0	0	4	0	4	0	0	1	1	0	2	0	2	7
07:30 AM	0	0	0	0	0	3	0	3	0	0	1	1	0	0	0	0	4
07:45 AM	0	0	0	0	1	3	1	5	0	0	1	1	0	4	0	4	10
Total	0	0	0	0	1	12	1	14	0	1	3	4	0	7	0	7	25
08:00 AM	0	0	0	0	1	3	0	4	0	0	1	1	0	3	0	3	8
08:15 AM	0	0	0	0	1	1	0	2	0	0	0	0	0	3	1	4	6
08:30 AM	0	0	0	0	1	1	0	2	0	0	0	0	0	1	0	1	3
08:45 AM	0	0	0	0	1	1	0	2	1	0	1	2	0	5	0	5	9
Total	0	0	0	0	4	6	0	10	1	0	2	3	0	12	1	13	26
Grand Total	0	0	0	0	5	18	1	24	1	1	5	7	0	19	1	20	51
Apprch %	0	0	0		20.8	75	4.2		14.3	14.3	71.4		0	95	5		
Total %	0	0	0	0	9.8	35.3	2	47.1	2	2	9.8	13.7	0	37.3	2	39.2	

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	**3**	0	3	0	0	**1**	**1**	0	0	0	0	4
07:45 AM	0	0	0	0	**1**	3	**1**	**5**	0	0	1	1	0	**4**	0	**4**	**10**
08:00 AM	0	0	0	0	1	3	0	4	0	0	1	1	0	3	0	3	8
08:15 AM	0	0	0	0	1	1	0	2	0	0	0	0	0	3	**1**	4	6
Total Volume	0	0	0	0	3	10	1	14	0	0	3	3	0	10	1	11	28
% App. Total	0	0	0		21.4	71.4	7.1		0	0	100		0	90.9	9.1		
PHF	.000	.000	.000	.000	.750	.833	.250	.700	.000	.000	.750	.750	.000	.625	.250	.688	.700

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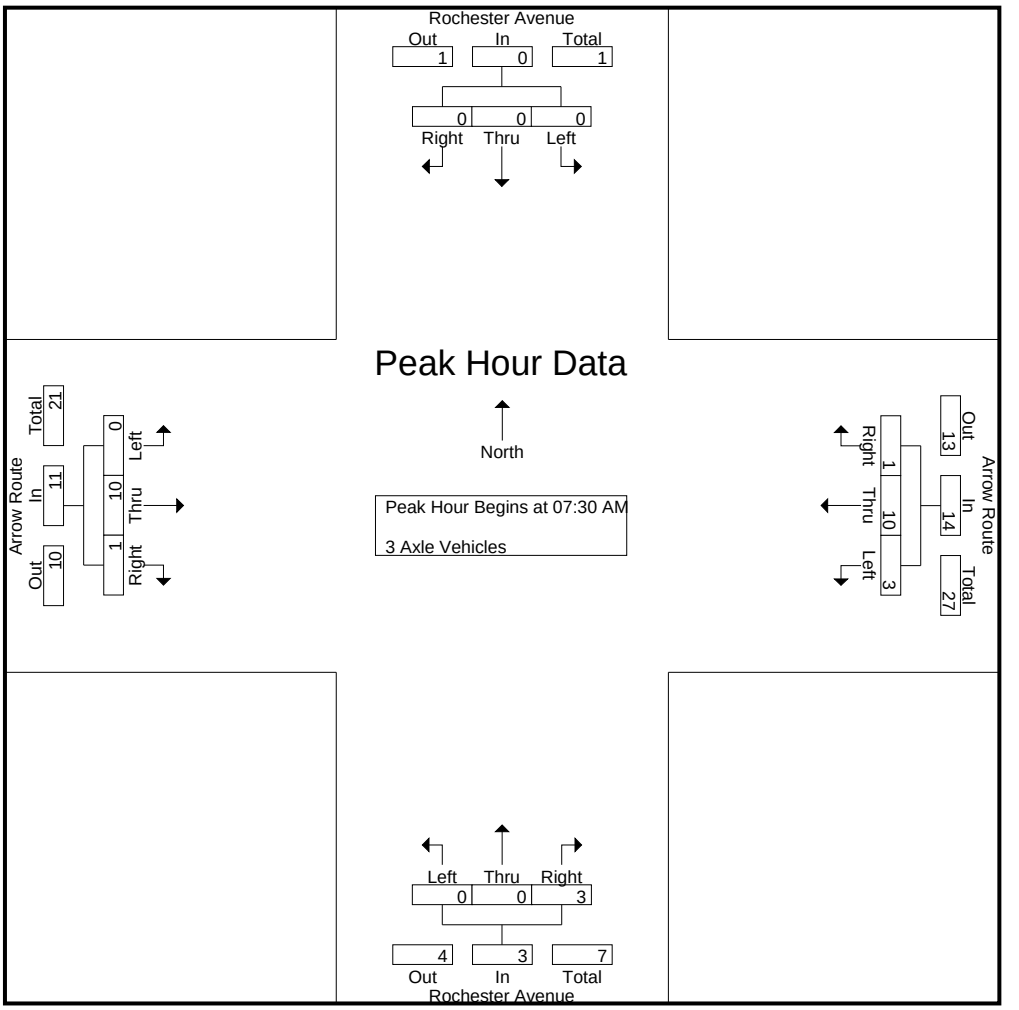

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	**3**	0	3	0	0	**1**	**1**	0	0	0	0
+15 mins.	0	0	0	0	**1**	3	**1**	**5**	0	0	1	1	0	**4**	0	**4**
+30 mins.	0	0	0	0	1	3	0	4	0	0	1	1	0	3	0	3
+45 mins.	0	0	0	0	1	1	0	2	0	0	0	0	0	3	**1**	4
Total Volume	0	0	0	0	3	10	1	14	0	0	3	3	0	10	1	11
% App. Total	0	0	0		21.4	71.4	7.1		0	0	100		0	90.9	9.1	
PHF	.000	.000	.000	.000	.750	.833	.250	.700	.000	.000	.750	.750	.000	.625	.250	.688

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File Name : 13_FON_Rochester_Arrow AM
Site Code : 10821516
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Groups Printed- 4+ Axle Trucks

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	4	0	4	2	0	1	3	1	3	0	4	11
07:15 AM	0	1	0	1	1	3	0	4	1	2	0	3	0	1	0	1	9
07:30 AM	0	1	0	1	1	2	1	4	2	2	0	4	0	2	1	3	12
07:45 AM	0	2	0	2	1	0	0	1	0	1	1	2	0	1	1	2	7
Total	0	4	0	4	3	9	1	13	5	5	2	12	1	7	2	10	39
08:00 AM	0	2	0	2	0	5	0	5	1	1	0	2	1	1	1	3	12
08:15 AM	0	0	1	1	0	1	0	1	1	2	0	3	2	1	1	4	9
08:30 AM	0	1	2	3	1	2	0	3	0	3	1	4	2	1	1	4	14
08:45 AM	0	2	1	3	0	2	0	2	1	0	1	2	0	1	0	1	8
Total	0	5	4	9	1	10	0	11	3	6	2	11	5	4	3	12	43
Grand Total	0	9	4	13	4	19	1	24	8	11	4	23	6	11	5	22	82
Apprch %	0	69.2	30.8		16.7	79.2	4.2		34.8	47.8	17.4		27.3	50	22.7		
Total %	0	11	4.9	15.9	4.9	23.2	1.2	29.3	9.8	13.4	4.9	28	7.3	13.4	6.1	26.8	

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	1	0	1	**1**	2	**1**	4	**2**	**2**	0	**4**	0	**2**	**1**	3	**12**
07:45 AM	0	**2**	0	**2**	1	0	0	1	0	1	**1**	2	0	1	1	2	7
08:00 AM	0	2	0	2	0	**5**	0	**5**	1	1	0	2	1	1	1	3	12
08:15 AM	0	0	**1**	1	0	1	0	1	1	2	0	3	**2**	1	1	**4**	9
Total Volume	0	5	1	6	2	8	1	11	4	6	1	11	3	5	4	12	40
% App. Total	0	83.3	16.7		18.2	72.7	9.1		36.4	54.5	9.1		25	41.7	33.3		
PHF	.000	.625	.250	.750	.500	.400	.250	.550	.500	.750	.250	.688	.375	.625	1.00	.750	.833

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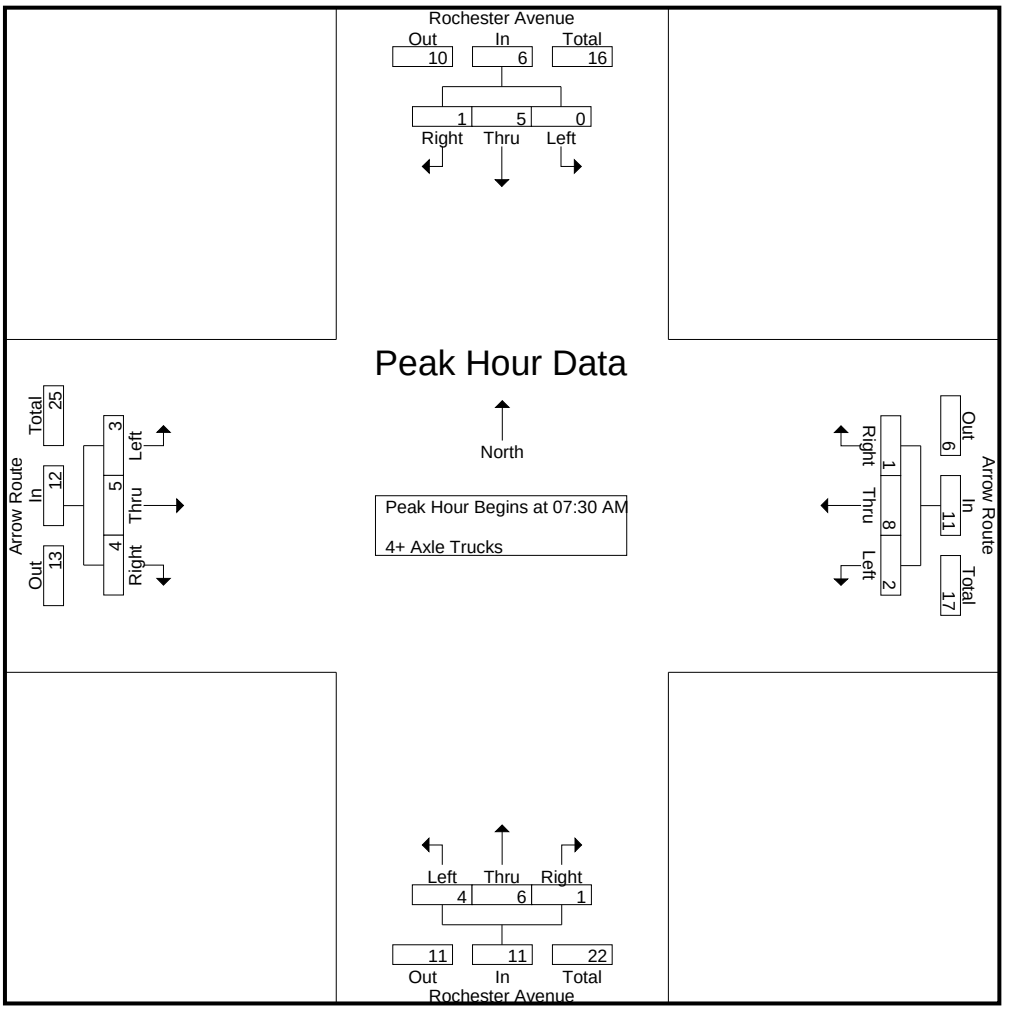

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	1	0	1	**1**	2	**1**	4	**2**	**2**	0	**4**	0	**2**	**1**	3
+15 mins.	0	**2**	0	**2**	1	0	0	1	0	1	**1**	2	0	1	1	2
+30 mins.	0	2	0	2	0	**5**	0	**5**	1	1	0	2	1	1	1	3
+45 mins.	0	0	**1**	1	0	1	0	1	1	2	0	3	**2**	1	1	**4**
Total Volume	0	5	1	6	2	8	1	11	4	6	1	11	3	5	4	12
% App. Total	0	83.3	16.7		18.2	72.7	9.1		36.4	54.5	9.1		25	41.7	33.3	
PHF	.000	.625	.250	.750	.500	.400	.250	.550	.500	.750	.250	.688	.375	.625	1.000	.750

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City of Fontana
N/S: Rochester Avenue
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File Name : 13_FON_Rochester_Arrow PM
Site Code : 10821516
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	14	56	58	128	17	91	39	147	17	191	67	275	100	186	6	292	842
04:15 PM	16	51	46	113	16	104	53	173	7	192	50	249	82	196	8	286	821
04:30 PM	14	60	47	121	19	98	32	149	17	198	60	275	82	185	9	276	821
04:45 PM	16	44	50	110	13	126	50	189	9	188	62	259	88	220	6	314	872
Total	60	211	201	472	65	419	174	658	50	769	239	1058	352	787	29	1168	3356
05:00 PM	23	48	44	115	10	108	41	159	13	203	78	294	81	193	3	277	845
05:15 PM	22	62	33	117	26	118	33	177	7	191	41	239	89	200	2	291	824
05:30 PM	23	59	44	126	12	112	45	169	14	197	64	275	86	210	8	304	874
05:45 PM	29	39	46	114	16	112	41	169	6	178	56	240	60	164	4	228	751
Total	97	208	167	472	64	450	160	674	40	769	239	1048	316	767	17	1100	3294
Grand Total	157	419	368	944	129	869	334	1332	90	1538	478	2106	668	1554	46	2268	6650
Apprch %	16.6	44.4	39		9.7	65.2	25.1		4.3	73	22.7		29.5	68.5	2		
Total %	2.4	6.3	5.5	14.2	1.9	13.1	5	20	1.4	23.1	7.2	31.7	10	23.4	0.7	34.1	
Passenger Vehicles	151	407	357	915	119	829	325	1273	77	1510	449	2036	661	1464	42	2167	6391
% Passenger Vehicles	96.2	97.1	97	96.9	92.2	95.4	97.3	95.6	85.6	98.2	93.9	96.7	99	94.2	91.3	95.5	96.1
Large 2 Axle Vehicles	3	7	7	17	4	12	4	20	3	16	13	32	3	24	2	29	98
% Large 2 Axle Vehicles	1.9	1.7	1.9	1.8	3.1	1.4	1.2	1.5	3.3	1	2.7	1.5	0.4	1.5	4.3	1.3	1.5
3 Axle Vehicles	2	0	0	2	1	7	1	9	1	2	9	12	1	28	1	30	53
% 3 Axle Vehicles	1.3	0	0	0.2	0.8	0.8	0.3	0.7	1.1	0.1	1.9	0.6	0.1	1.8	2.2	1.3	0.8
4+ Axle Trucks	1	5	4	10	5	21	4	30	9	10	7	26	3	38	1	42	108
% 4+ Axle Trucks	0.6	1.2	1.1	1.1	3.9	2.4	1.2	2.3	10	0.7	1.5	1.2	0.4	2.4	2.2	1.9	1.6

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	16	44	**50**	110	13	**126**	**50**	**189**	9	188	62	259	88	**220**	6	**314**	872
05:00 PM	**23**	48	44	115	10	108	41	159	13	**203**	**78**	**294**	81	193	3	277	845
05:15 PM	22	**62**	33	117	**26**	118	33	177	7	191	41	239	**89**	200	2	291	824
05:30 PM	23	59	44	**126**	12	112	45	169	**14**	197	64	275	86	210	**8**	304	**874**
Total Volume	84	213	171	468	61	464	169	694	43	779	245	1067	344	823	19	1186	3415
% App. Total	17.9	45.5	36.5		8.8	66.9	24.4		4	73	23		29	69.4	1.6		
PHF	.913	.859	.855	.929	.587	.921	.845	.918	.768	.959	.785	.907	.966	.935	.594	.944	.977

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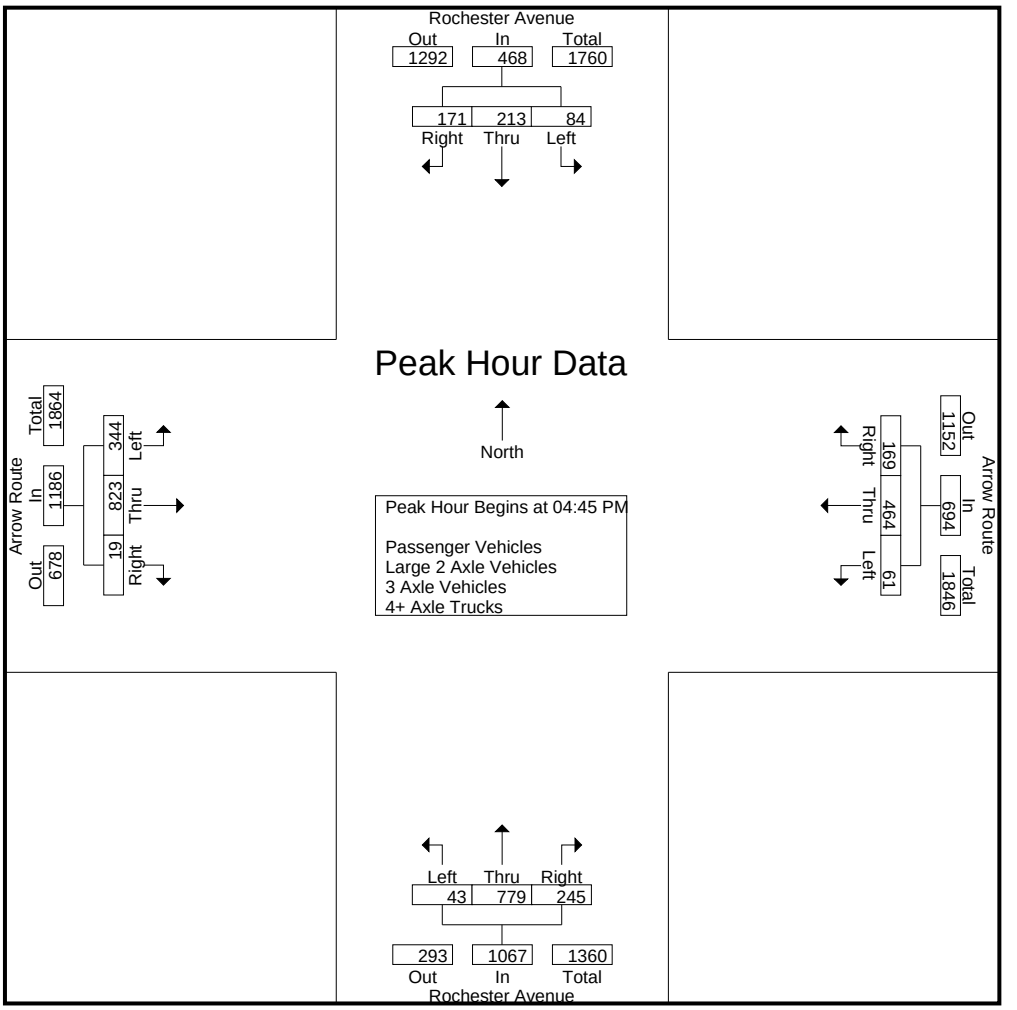
City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:15 PM				04:45 PM			
+0 mins.	14	56	**58**	**128**	13	**126**	**50**	**189**	7	192	50	249	88	**220**	6	**314**
+15 mins.	**16**	51	46	113	10	108	41	159	**17**	198	60	275	81	193	3	277
+30 mins.	14	**60**	47	121	**26**	118	33	177	9	188	62	259	**89**	200	2	291
+45 mins.	16	44	50	110	12	112	45	169	13	**203**	**78**	**294**	86	210	**8**	304
Total Volume	60	211	201	472	61	464	169	694	46	781	250	1077	344	823	19	1186
% App. Total	12.7	44.7	42.6		8.8	66.9	24.4		4.3	72.5	23.2		29	69.4	1.6	
PHF	.938	.879	.866	.922	.587	.921	.845	.918	.676	.962	.801	.916	.966	.935	.594	.944

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City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	13	55	56	124	16	87	39	142	13	190	63	266	97	181	5	283	815
04:15 PM	16	49	44	109	15	95	51	161	6	185	45	236	82	177	8	267	773
04:30 PM	12	58	47	117	16	92	29	137	17	197	55	269	82	167	7	256	779
04:45 PM	15	43	48	106	12	122	49	183	5	185	57	247	88	207	6	301	837
Total	56	205	195	456	59	396	168	623	41	757	220	1018	349	732	26	1107	3204
05:00 PM	23	48	43	114	10	103	40	153	11	199	76	286	81	182	2	265	818
05:15 PM	22	60	31	113	24	114	32	170	6	187	39	232	89	190	2	281	796
05:30 PM	22	56	43	121	11	109	44	164	13	195	62	270	84	201	8	293	848
05:45 PM	28	38	45	111	15	107	41	163	6	172	52	230	58	159	4	221	725
Total	95	202	162	459	60	433	157	650	36	753	229	1018	312	732	16	1060	3187
Grand Total	151	407	357	915	119	829	325	1273	77	1510	449	2036	661	1464	42	2167	6391
Apprch %	16.5	44.5	39		9.3	65.1	25.5		3.8	74.2	22.1		30.5	67.6	1.9		
Total %	2.4	6.4	5.6	14.3	1.9	13	5.1	19.9	1.2	23.6	7	31.9	10.3	22.9	0.7	33.9	

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	15	43	**48**	106	12	**122**	**49**	**183**	5	185	57	247	88	**207**	6	**301**	837
05:00 PM	**23**	48	43	114	10	103	40	153	11	**199**	**76**	**286**	81	182	2	265	818
05:15 PM	22	**60**	31	113	**24**	114	32	170	6	187	39	232	**89**	190	2	281	796
05:30 PM	22	56	43	**121**	11	109	44	164	**13**	195	62	270	84	201	**8**	293	**848**
Total Volume	82	207	165	454	57	448	165	670	35	766	234	1035	342	780	18	1140	3299
% App. Total	18.1	45.6	36.3		8.5	66.9	24.6		3.4	74	22.6		30	68.4	1.6		
PHF	.891	.863	.859	.938	.594	.918	.842	.915	.673	.962	.770	.905	.961	.942	.563	.947	.973

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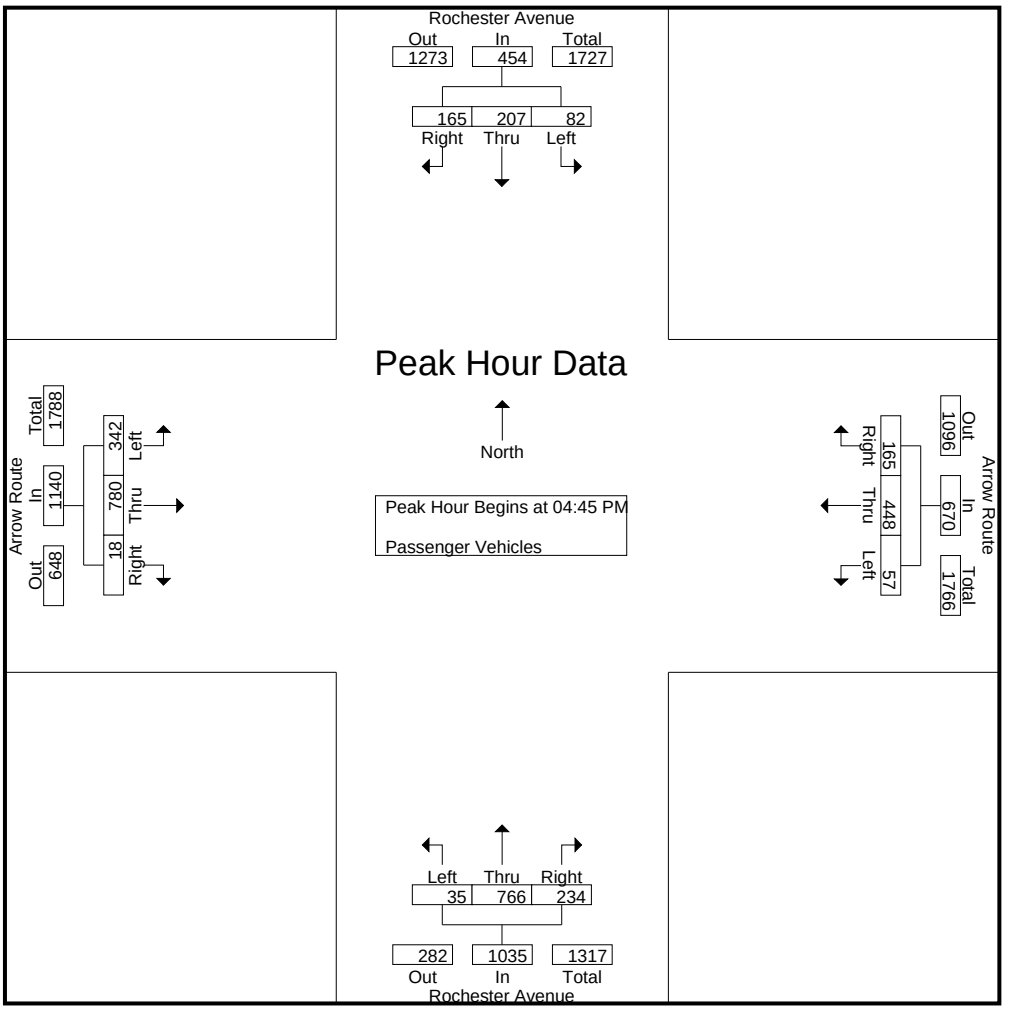
City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	15	43	**48**	106	12	**122**	**49**	**183**	5	185	57	247	88	**207**	6	**301**
+15 mins.	**23**	48	43	114	10	103	40	153	11	**199**	**76**	**286**	81	182	2	265
+30 mins.	22	**60**	31	113	**24**	114	32	170	6	187	39	232	**89**	190	2	281
+45 mins.	22	56	43	**121**	11	109	44	164	**13**	195	62	270	84	201	**8**	293
Total Volume	82	207	165	454	57	448	165	670	35	766	234	1035	342	780	18	1140
% App. Total	18.1	45.6	36.3		8.5	66.9	24.6		3.4	74	22.6		30	68.4	1.6	
PHF	.891	.863	.859	.938	.594	.918	.842	.915	.673	.962	.770	.905	.961	.942	.563	.947

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City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	1	1	3	1	1	0	2	1	1	4	6	2	0	1	3	14
04:15 PM	0	1	2	3	0	4	1	5	0	4	1	5	0	7	0	7	20
04:30 PM	1	1	0	2	2	3	0	5	0	1	0	1	0	3	1	4	12
04:45 PM	0	0	2	2	0	1	1	2	1	1	2	4	0	8	0	8	16
Total	2	3	5	10	3	9	2	14	2	7	7	16	2	18	2	22	62
05:00 PM	0	0	0	0	0	2	0	2	1	4	2	7	0	4	0	4	13
05:15 PM	0	1	0	1	0	0	1	1	0	3	0	3	0	2	0	2	7
05:30 PM	0	3	1	4	0	0	1	1	0	1	1	2	1	0	0	1	8
05:45 PM	1	0	1	2	1	1	0	2	0	1	3	4	0	0	0	0	8
Total	1	4	2	7	1	3	2	6	1	9	6	16	1	6	0	7	36
Grand Total	3	7	7	17	4	12	4	20	3	16	13	32	3	24	2	29	98
Apprch %	17.6	41.2	41.2		20	60	20		9.4	50	40.6		10.3	82.8	6.9		
Total %	3.1	7.1	7.1	17.3	4.1	12.2	4.1	20.4	3.1	16.3	13.3	32.7	3.1	24.5	2	29.6	

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	**2**	2	0	1	**1**	**2**	**1**	1	**2**	4	0	**8**	0	**8**	**16**
05:00 PM	0	0	0	0	0	**2**	0	2	1	**4**	2	**7**	0	4	0	4	13
05:15 PM	0	1	0	1	0	0	1	1	0	3	0	3	0	2	0	2	7
05:30 PM	0	**3**	1	**4**	0	0	1	1	0	1	1	2	**1**	0	0	1	8
Total Volume	0	4	3	7	0	3	3	6	2	9	5	16	1	14	0	15	44
% App. Total	0	57.1	42.9		0	50	50		12.5	56.2	31.2		6.7	93.3	0		
PHF	.000	.333	.375	.438	.000	.375	.750	.750	.500	.563	.625	.571	.250	.438	.000	.469	.688

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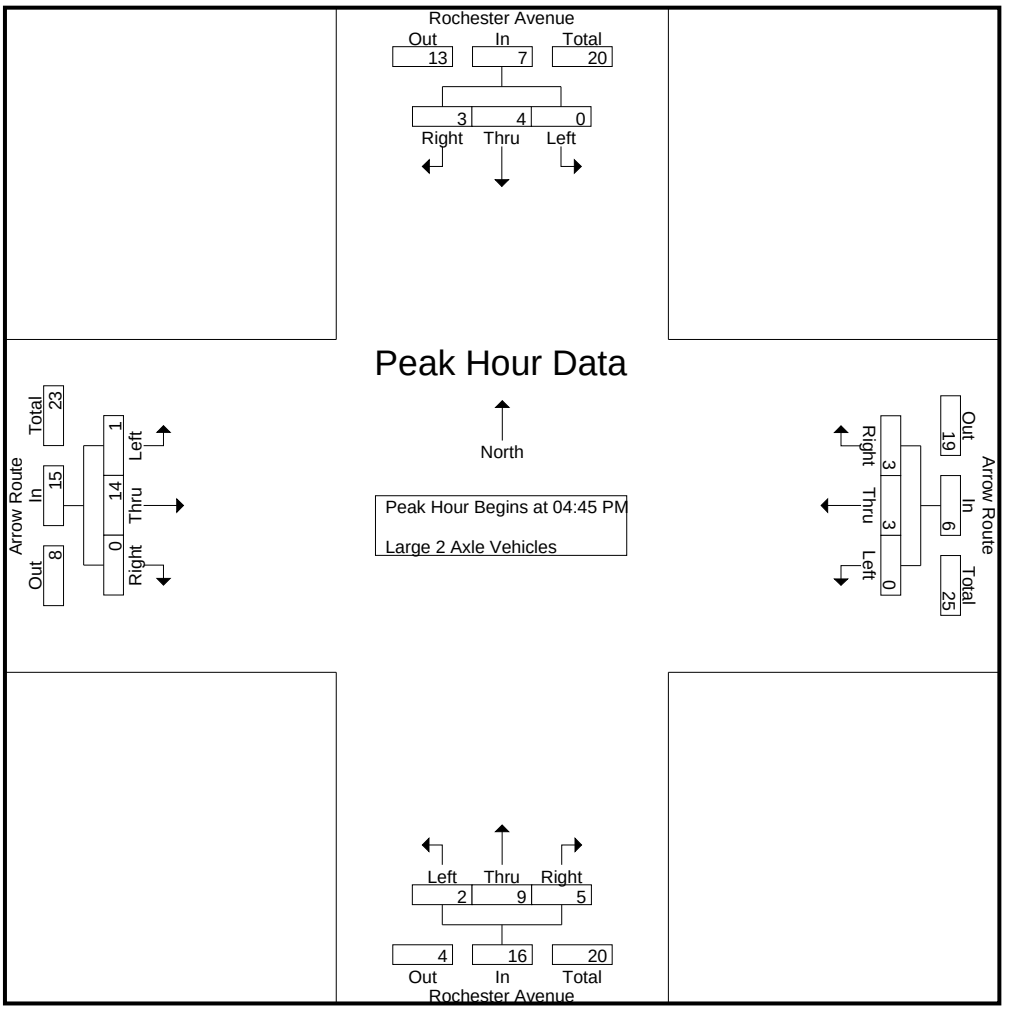
City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	**2**	2	0	1	**1**	**2**	**1**	1	**2**	4	0	**8**	0	**8**
+15 mins.	0	0	0	0	0	**2**	0	2	1	**4**	2	**7**	0	4	0	4
+30 mins.	0	1	0	1	0	0	1	1	0	3	0	3	0	2	0	2
+45 mins.	0	**3**	1	**4**	0	0	1	1	0	1	1	2	**1**	0	0	1
Total Volume	0	4	3	7	0	3	3	6	2	9	5	16	1	14	0	15
% App. Total	0	57.1	42.9		0	50	50		12.5	56.2	31.2		6.7	93.3	0	
PHF	.000	.333	.375	.438	.000	.375	.750	.750	.500	.563	.625	.571	.250	.438	.000	.469

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City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
04:15 PM	0	0	0	0	0	3	0	3	0	1	4	5	0	8	0	8	16
04:30 PM	1	0	0	1	0	1	1	2	0	0	2	2	0	8	1	9	14
04:45 PM	1	0	0	1	0	1	0	1	0	0	1	1	0	2	0	2	5
Total	2	0	0	2	0	6	1	7	0	1	7	8	0	21	1	22	39
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:15 PM	0	0	0	0	0	0	0	0	0	1	1	2	0	4	0	4	6
05:30 PM	0	0	0	0	1	1	0	2	1	0	1	2	0	2	0	2	6
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	1	1	0	2	1	1	2	4	1	7	0	8	14
Grand Total	2	0	0	2	1	7	1	9	1	2	9	12	1	28	1	30	53
Apprch %	100	0	0		11.1	77.8	11.1		8.3	16.7	75		3.3	93.3	3.3		
Total %	3.8	0	0	3.8	1.9	13.2	1.9	17	1.9	3.8	17	22.6	1.9	52.8	1.9	56.6	

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**1**	0	0	**1**	0	**1**	0	1	0	0	**1**	1	0	2	0	2	5
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:15 PM	0	0	0	0	0	0	0	0	0	**1**	1	**2**	0	**4**	0	**4**	**6**
05:30 PM	0	0	0	0	**1**	1	0	**2**	**1**	0	1	2	0	2	0	2	6
Total Volume	1	0	0	1	1	2	0	3	1	1	3	5	0	9	0	9	18
% App. Total	100	0	0		33.3	66.7	0		20	20	60		0	100	0		
PHF	.250	.000	.000	.250	.250	.500	.000	.375	.250	.250	.750	.625	.000	.563	.000	.563	.750

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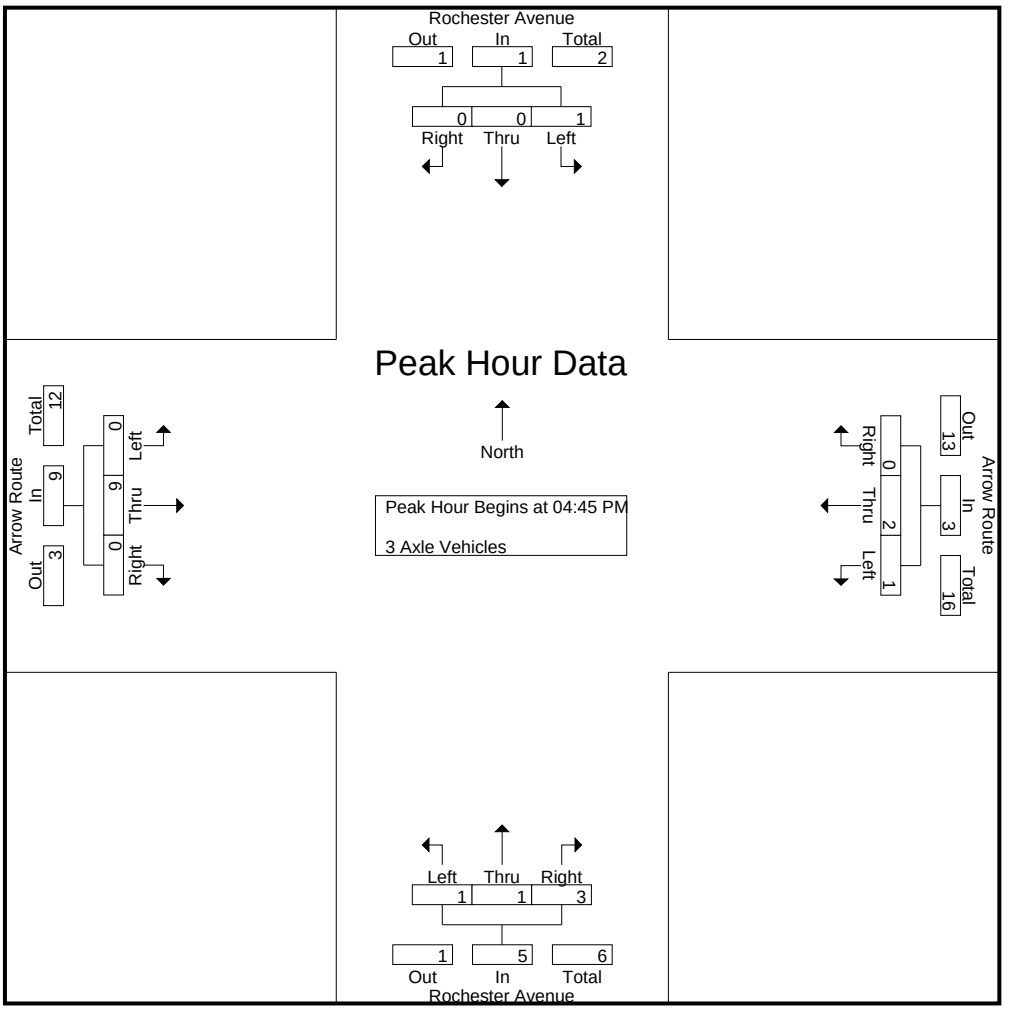
City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	**1**	0	0	**1**	0	**1**	0	1	0	0	**1**	1	0	2	0	2
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	0	0	0	0	**1**	1	**2**	0	**4**	0	**4**
+45 mins.	0	0	0	0	**1**	1	0	**2**	**1**	0	1	2	0	2	0	2
Total Volume	1	0	0	1	1	2	0	3	1	1	3	5	0	9	0	9
% App. Total	100	0	0		33.3	66.7	0		20	20	60		0	100	0	
PHF	.250	.000	.000	.250	.250	.500	.000	.375	.250	.250	.750	.625	.000	.563	.000	.563

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City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	1	1	0	2	0	2	3	0	0	3	1	2	0	3	9
04:15 PM	0	1	0	1	1	2	1	4	1	2	0	3	0	4	0	4	12
04:30 PM	0	1	0	1	1	2	2	5	0	0	3	3	0	7	0	7	16
04:45 PM	0	1	0	1	1	2	0	3	3	2	2	7	0	3	0	3	14
Total	0	3	1	4	3	8	3	14	7	4	5	16	1	16	0	17	51
05:00 PM	0	0	1	1	0	3	1	4	1	0	0	1	0	6	1	7	13
05:15 PM	0	1	2	3	2	4	0	6	1	0	1	2	0	4	0	4	15
05:30 PM	1	0	0	1	0	2	0	2	0	1	0	1	1	7	0	8	12
05:45 PM	0	1	0	1	0	4	0	4	0	5	1	6	1	5	0	6	17
Total	1	2	3	6	2	13	1	16	2	6	2	10	2	22	1	25	57
Grand Total	1	5	4	10	5	21	4	30	9	10	7	26	3	38	1	42	108
Apprch %	10	50	40		16.7	70	13.3		34.6	38.5	26.9		7.1	90.5	2.4		
Total %	0.9	4.6	3.7	9.3	4.6	19.4	3.7	27.8	8.3	9.3	6.5	24.1	2.8	35.2	0.9	38.9	

	Rochester Avenue Southbound				Arrow Route Westbound				Rochester Avenue Northbound				Arrow Route Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	**1**	0	1	1	2	0	3	**3**	**2**	**2**	**7**	0	3	0	3	14
05:00 PM	0	0	1	1	0	3	**1**	4	1	0	0	1	0	6	**1**	7	13
05:15 PM	0	1	**2**	**3**	**2**	**4**	0	**6**	1	0	1	2	0	4	0	4	**15**
05:30 PM	**1**	0	0	1	0	2	0	2	0	1	0	1	**1**	**7**	0	**8**	12
Total Volume	1	2	3	6	3	11	1	15	5	3	3	11	1	20	1	22	54
% App. Total	16.7	33.3	50		20	73.3	6.7		45.5	27.3	27.3		4.5	90.9	4.5		
PHF	.250	.500	.375	.500	.375	.688	.250	.625	.417	.375	.375	.393	.250	.714	.250	.688	.900

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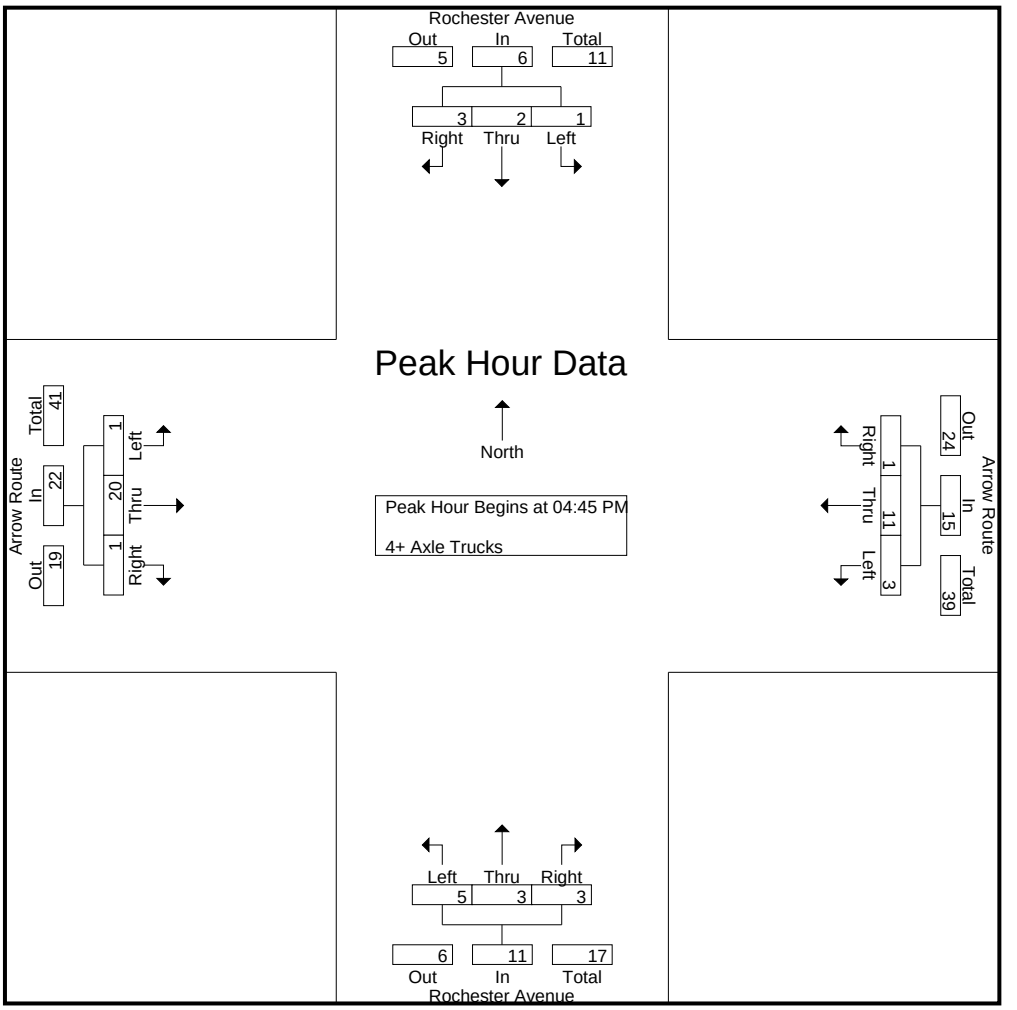
City of Fontana
N/S: Rochester Avenue
E/W: Arrow Route
Weather: Clear

File Name : 13_FON_Rochester_Arrow PM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	**1**	0	1	1	2	0	3	**3**	**2**	**2**	**7**	0	3	0	3
+15 mins.	0	0	1	1	0	3	**1**	4	1	0	0	1	0	6	**1**	7
+30 mins.	0	1	**2**	**3**	**2**	**4**	0	**6**	1	0	1	2	0	4	0	4
+45 mins.	**1**	0	0	1	0	2	0	2	0	1	0	1	**1**	**7**	0	**8**
Total Volume	1	2	3	6	3	11	1	15	5	3	3	11	1	20	1	22
% App. Total	16.7	33.3	50		20	73.3	6.7		45.5	27.3	27.3		4.5	90.9	4.5	
PHF	.250	.500	.375	.500	.375	.688	.250	.625	.417	.375	.375	.393	.250	.714	.250	.688

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City of Fontana
N/S: Cherry Avenue
E/W: Slover Avenue
Weather: Clear

File Name : 14_FON_Cherry_Slover AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	55	171	111	337	5	38	57	100	8	158	2	168	42	20	4	66	671
07:15 AM	65	206	84	355	17	47	62	126	7	191	9	207	66	20	8	94	782
07:30 AM	78	215	87	380	13	41	56	110	5	185	5	195	47	34	7	88	773
07:45 AM	76	299	74	449	10	60	66	136	5	232	17	254	51	44	8	103	942
Total	274	891	356	1521	45	186	241	472	25	766	33	824	206	118	27	351	3168
08:00 AM	75	242	99	416	12	44	45	101	6	203	11	220	68	35	9	112	849
08:15 AM	80	223	82	385	13	43	49	105	11	227	15	253	44	29	3	76	819
08:30 AM	54	153	96	303	13	33	67	113	10	224	14	248	60	39	5	104	768
08:45 AM	67	112	103	282	6	35	53	94	8	129	9	146	60	30	6	96	618
Total	276	730	380	1386	44	155	214	413	35	783	49	867	232	133	23	388	3054
Grand Total	550	1621	736	2907	89	341	455	885	60	1549	82	1691	438	251	50	739	6222
Apprch %	18.9	55.8	25.3		10.1	38.5	51.4		3.5	91.6	4.8		59.3	34	6.8		
Total %	8.8	26.1	11.8	46.7	1.4	5.5	7.3	14.2	1	24.9	1.3	27.2	7	4	0.8	11.9	
Passenger Vehicles	417	1454	524	2395	79	257	274	610	53	1406	70	1529	189	154	27	370	4904
% Passenger Vehicles	75.8	89.7	71.2	82.4	88.8	75.4	60.2	68.9	88.3	90.8	85.4	90.4	43.2	61.4	54	50.1	78.8
Large 2 Axle Vehicles	21	46	22	89	5	22	29	56	0	39	5	44	43	25	9	77	266
% Large 2 Axle Vehicles	3.8	2.8	3	3.1	5.6	6.5	6.4	6.3	0	2.5	6.1	2.6	9.8	10	18	10.4	4.3
3 Axle Vehicles	50	33	38	121	2	14	33	49	3	36	6	45	55	26	3	84	299
% 3 Axle Vehicles	9.1	2	5.2	4.2	2.2	4.1	7.3	5.5	5	2.3	7.3	2.7	12.6	10.4	6	11.4	4.8
4+ Axle Trucks	62	88	152	302	3	48	119	170	4	68	1	73	151	46	11	208	753
% 4+ Axle Trucks	11.3	5.4	20.7	10.4	3.4	14.1	26.2	19.2	6.7	4.4	1.2	4.3	34.5	18.3	22	28.1	12.1

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	78	215	87	380	**13**	41	56	110	5	185	5	195	47	34	7	88	773
07:45 AM	76	**299**	74	**449**	10	**60**	**66**	**136**	5	**232**	**17**	**254**	51	**44**	8	103	**942**
08:00 AM	75	242	**99**	416	12	44	45	101	6	203	11	220	**68**	35	**9**	**112**	849
08:15 AM	**80**	223	82	385	13	43	49	105	**11**	227	15	253	44	29	3	76	819
Total Volume	309	979	342	1630	48	188	216	452	27	847	48	922	210	142	27	379	3383
% App. Total	19	60.1	21		10.6	41.6	47.8		2.9	91.9	5.2		55.4	37.5	7.1		
PHF	.966	.819	.864	.908	.923	.783	.818	.831	.614	.913	.706	.907	.772	.807	.750	.846	.898

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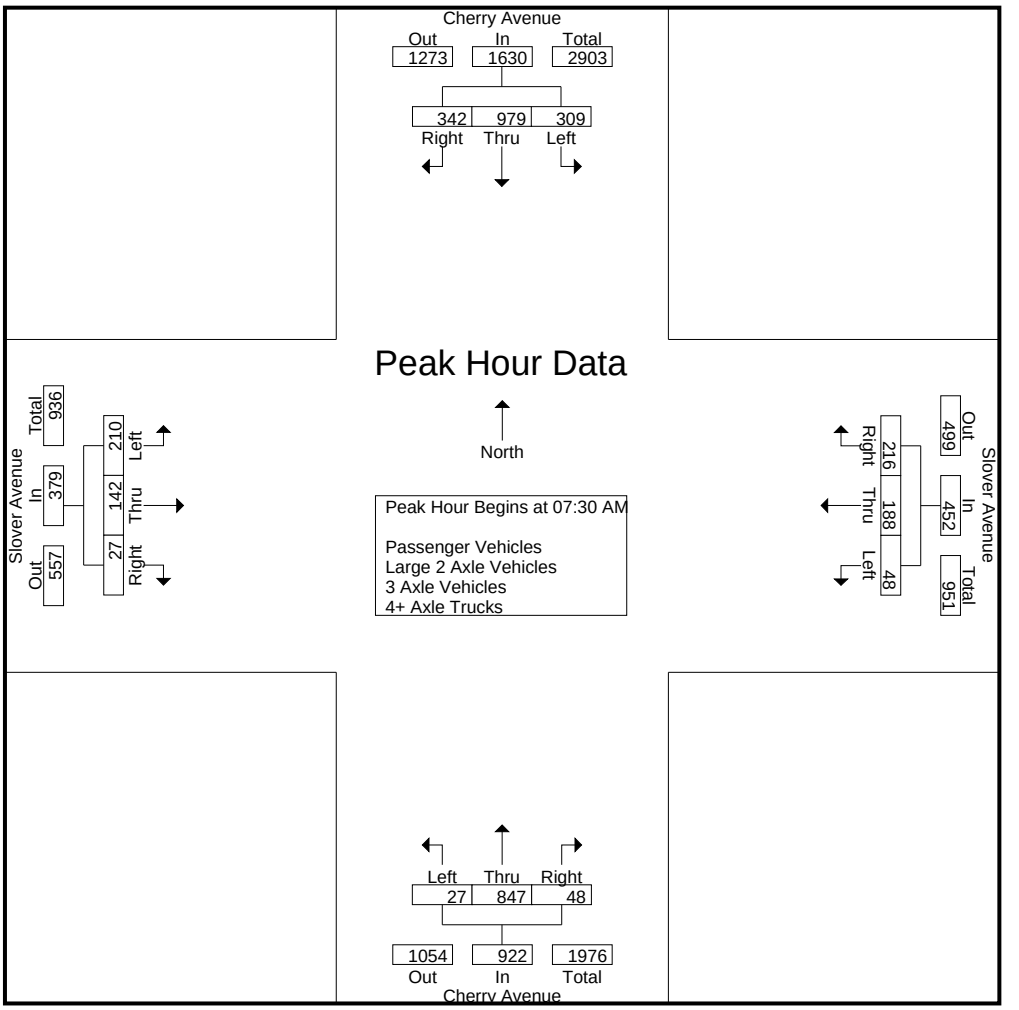
City of Fontana
N/S: Cherry Avenue
E/W: Slover Avenue
Weather: Clear

File Name : 14_FON_Cherry_Slover AM
Site Code : 10821516
Start Date : 9/28/2021



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:45 AM				07:15 AM			
+0 mins.	78	215	87	380	**17**	47	62	126	5	**232**	**17**	**254**	66	20	8	94
+15 mins.	76	**299**	74	**449**	13	41	56	110	6	203	11	220	47	34	7	88
+30 mins.	75	242	**99**	416	10	**60**	**66**	**136**	**11**	227	15	253	51	**44**	8	103
+45 mins.	**80**	223	82	385	12	44	45	101	10	224	14	248	**68**	35	**9**	**112**
Total Volume	309	979	342	1630	52	192	229	473	32	886	57	975	232	133	32	397
% App. Total	19	60.1	21		11	40.6	48.4		3.3	90.9	5.8		58.4	33.5	8.1	
PHF	.966	.819	.864	.908	.765	.800	.867	.869	.727	.955	.838	.960	.853	.756	.889	.886

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City of Fontana
N/S: Cherry Avenue
E/W: Slover Avenue
Weather: Clear

File Name : 14_FON_Cherry_Slover AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	46	153	81	280	4	33	36	73	7	137	2	146	22	12	2	36	535
07:15 AM	45	188	66	299	16	34	43	93	6	174	7	187	28	14	2	44	623
07:30 AM	61	196	61	318	11	30	36	77	5	170	5	180	17	21	1	39	614
07:45 AM	59	280	61	400	9	53	45	107	5	217	16	238	13	27	6	46	791
Total	211	817	269	1297	40	150	160	350	23	698	30	751	80	74	11	165	2563
08:00 AM	54	213	67	334	10	29	22	61	6	186	8	200	31	22	5	58	653
08:15 AM	64	199	58	321	13	29	27	69	10	207	11	228	20	16	2	38	656
08:30 AM	38	131	64	233	10	24	38	72	8	204	12	224	28	23	3	54	583
08:45 AM	50	94	66	210	6	25	27	58	6	111	9	126	30	19	6	55	449
Total	206	637	255	1098	39	107	114	260	30	708	40	778	109	80	16	205	2341
Grand Total	417	1454	524	2395	79	257	274	610	53	1406	70	1529	189	154	27	370	4904
Apprch %	17.4	60.7	21.9		13	42.1	44.9		3.5	92	4.6		51.1	41.6	7.3		
Total %	8.5	29.6	10.7	48.8	1.6	5.2	5.6	12.4	1.1	28.7	1.4	31.2	3.9	3.1	0.6	7.5	

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	61	196	61	318	11	30	36	77	5	170	5	180	17	21	1	39	614
07:45 AM	59	**280**	61	**400**	9	**53**	**45**	**107**	5	**217**	**16**	**238**	13	**27**	**6**	46	**791**
08:00 AM	54	213	**67**	334	10	29	22	61	6	186	8	200	**31**	22	5	**58**	653
08:15 AM	**64**	199	58	321	**13**	29	27	69	**10**	207	11	228	20	16	2	38	656
Total Volume	238	888	247	1373	43	141	130	314	26	780	40	846	81	86	14	181	2714
% App. Total	17.3	64.7	18		13.7	44.9	41.4		3.1	92.2	4.7		44.8	47.5	7.7		
PHF	.930	.793	.922	.858	.827	.665	.722	.734	.650	.899	.625	.889	.653	.796	.583	.780	.858

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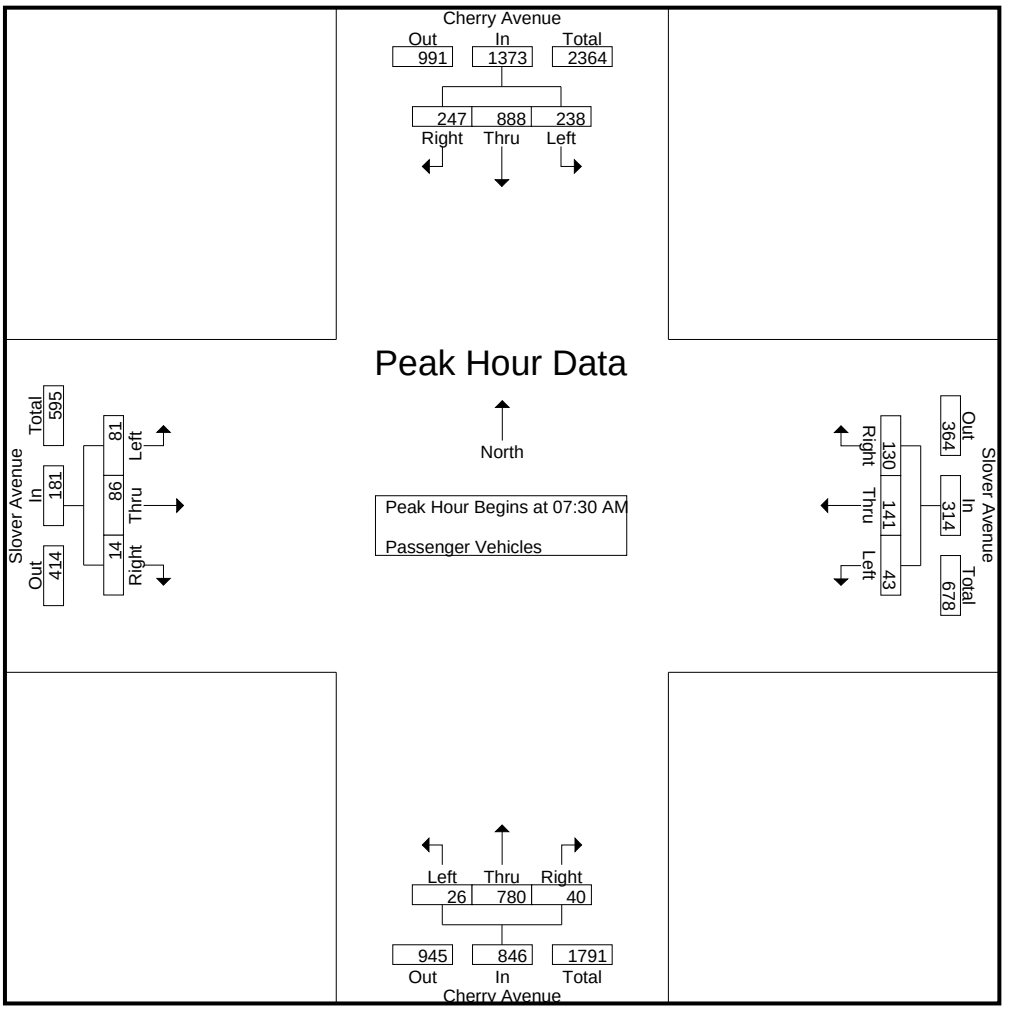
City of Fontana
N/S: Cherry Avenue
E/W: Slover Avenue
Weather: Clear

File Name : 14_FON_Cherry_Slover AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	61	196	61	318	11	30	36	77	5	170	5	180	17	21	1	39
+15 mins.	59	**280**	61	**400**	9	**53**	**45**	**107**	5	**217**	**16**	**238**	13	**27**	**6**	46
+30 mins.	54	213	**67**	334	10	29	22	61	6	186	8	200	**31**	22	5	**58**
+45 mins.	**64**	199	58	321	**13**	29	27	69	**10**	207	11	228	20	16	2	38
Total Volume	238	888	247	1373	43	141	130	314	26	780	40	846	81	86	14	181
% App. Total	17.3	64.7	18		13.7	44.9	41.4		3.1	92.2	4.7		44.8	47.5	7.7	
PHF	.930	.793	.922	.858	.827	.665	.722	.734	.650	.899	.625	.889	.653	.796	.583	.780

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City of Fontana
N/S: Cherry Avenue
E/W: Slover Avenue
Weather: Clear

File Name : 14_FON_Cherry_Slover AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	7	2	13	0	2	1	3	0	8	0	8	5	1	1	7	31
07:15 AM	1	2	2	5	1	5	4	10	0	4	1	5	7	4	1	12	32
07:30 AM	1	6	3	10	1	2	1	4	0	5	0	5	3	4	3	10	29
07:45 AM	2	3	1	6	1	2	4	7	0	5	0	5	10	5	1	16	34
Total	8	18	8	34	3	11	10	24	0	22	1	23	25	14	6	45	126
08:00 AM	2	7	2	11	1	3	4	8	0	5	2	7	4	4	1	9	35
08:15 AM	5	9	3	17	0	2	6	8	0	3	1	4	3	1	1	5	34
08:30 AM	2	7	4	13	1	3	4	8	0	7	1	8	6	3	1	10	39
08:45 AM	4	5	5	14	0	3	5	8	0	2	0	2	5	3	0	8	32
Total	13	28	14	55	2	11	19	32	0	17	4	21	18	11	3	32	140
Grand Total	21	46	22	89	5	22	29	56	0	39	5	44	43	25	9	77	266
Apprch %	23.6	51.7	24.7		8.9	39.3	51.8		0	88.6	11.4		55.8	32.5	11.7		
Total %	7.9	17.3	8.3	33.5	1.9	8.3	10.9	21.1	0	14.7	1.9	16.5	16.2	9.4	3.4	28.9	

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	6	**3**	10	**1**	2	1	4	0	**5**	0	5	3	4	**3**	10	29
07:45 AM	2	3	1	6	1	2	4	7	0	5	0	5	**10**	**5**	1	**16**	34
08:00 AM	2	7	2	11	1	**3**	4	**8**	0	5	**2**	**7**	4	4	1	9	**35**
08:15 AM	**5**	**9**	3	**17**	0	2	**6**	8	0	3	1	4	3	1	1	5	34
Total Volume	10	25	9	44	3	9	15	27	0	18	3	21	20	14	6	40	132
% App. Total	22.7	56.8	20.5		11.1	33.3	55.6		0	85.7	14.3		50	35	15		
PHF	.500	.694	.750	.647	.750	.750	.625	.844	.000	.900	.375	.750	.500	.700	.500	.625	.943

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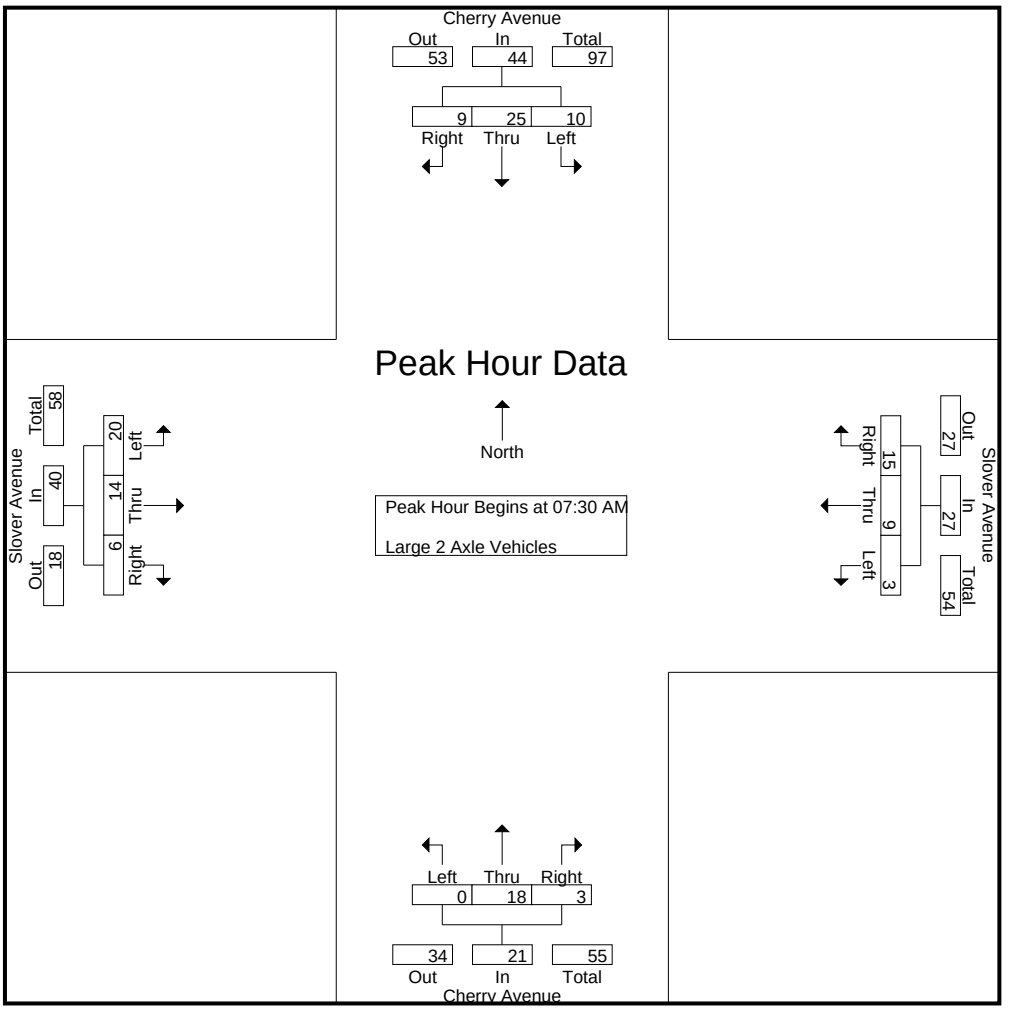
City of Fontana
N/S: Cherry Avenue
E/W: Slover Avenue
Weather: Clear

File Name : 14_FON_Cherry_Slover AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	1	6	**3**	10	**1**	2	1	4	0	**5**	0	5	3	4	**3**	10
+15 mins.	2	3	1	6	1	2	4	7	0	5	0	5	**10**	**5**	1	**16**
+30 mins.	2	7	2	11	1	**3**	4	**8**	0	5	**2**	**7**	4	4	1	9
+45 mins.	**5**	**9**	3	**17**	0	2	**6**	8	0	3	1	4	3	1	1	5
Total Volume	10	25	9	44	3	9	15	27	0	18	3	21	20	14	6	40
% App. Total	22.7	56.8	20.5		11.1	33.3	55.6		0	85.7	14.3		50	35	15	
PHF	.500	.694	.750	.647	.750	.750	.625	.844	.000	.900	.375	.750	.500	.700	.500	.625

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City of Fontana
N/S: Cherry Avenue
E/W: Slover Avenue
Weather: Clear

File Name : 14_FON_Cherry_Slover AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	4	3	9	0	1	4	5	1	5	0	6	2	3	1	6	26
07:15 AM	7	7	4	18	0	1	4	5	0	5	1	6	11	0	0	11	40
07:30 AM	9	2	6	17	0	1	5	6	0	4	0	4	7	3	2	12	39
07:45 AM	4	5	3	12	0	2	4	6	0	3	1	4	10	2	0	12	34
Total	22	18	16	56	0	5	17	22	1	17	2	20	30	8	3	41	139
08:00 AM	9	6	6	21	1	3	3	7	0	3	1	4	9	3	0	12	44
08:15 AM	5	1	2	8	0	5	3	8	1	7	3	11	5	5	0	10	37
08:30 AM	6	3	7	16	1	0	3	4	0	3	0	3	7	8	0	15	38
08:45 AM	8	5	7	20	0	1	7	8	1	6	0	7	4	2	0	6	41
Total	28	15	22	65	2	9	16	27	2	19	4	25	25	18	0	43	160
Grand Total	50	33	38	121	2	14	33	49	3	36	6	45	55	26	3	84	299
Apprch %	41.3	27.3	31.4		4.1	28.6	67.3		6.7	80	13.3		65.5	31	3.6		
Total %	16.7	11	12.7	40.5	0.7	4.7	11	16.4	1	12	2	15.1	18.4	8.7	1	28.1	

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**9**	2	**6**	17	0	1	**5**	6	0	4	0	4	7	3	**2**	**12**	39
07:45 AM	4	5	3	12	0	2	4	6	0	3	1	4	**10**	2	0	12	34
08:00 AM	9	**6**	6	**21**	**1**	3	3	7	0	3	1	4	9	3	0	12	**44**
08:15 AM	5	1	2	8	0	**5**	3	**8**	**1**	**7**	**3**	**11**	5	**5**	0	10	37
Total Volume	27	14	17	58	1	11	15	27	1	17	5	23	31	13	2	46	154
% App. Total	46.6	24.1	29.3		3.7	40.7	55.6		4.3	73.9	21.7		67.4	28.3	4.3		
PHF	.750	.583	.708	.690	.250	.550	.750	.844	.250	.607	.417	.523	.775	.650	.250	.958	.875

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City of Fontana
N/S: Cherry Avenue
E/W: Slover Avenue
Weather: Clear

File Name : 14_FON_Cherry_Slover AM
Site Code : 10821516
Start Date : 9/28/2021
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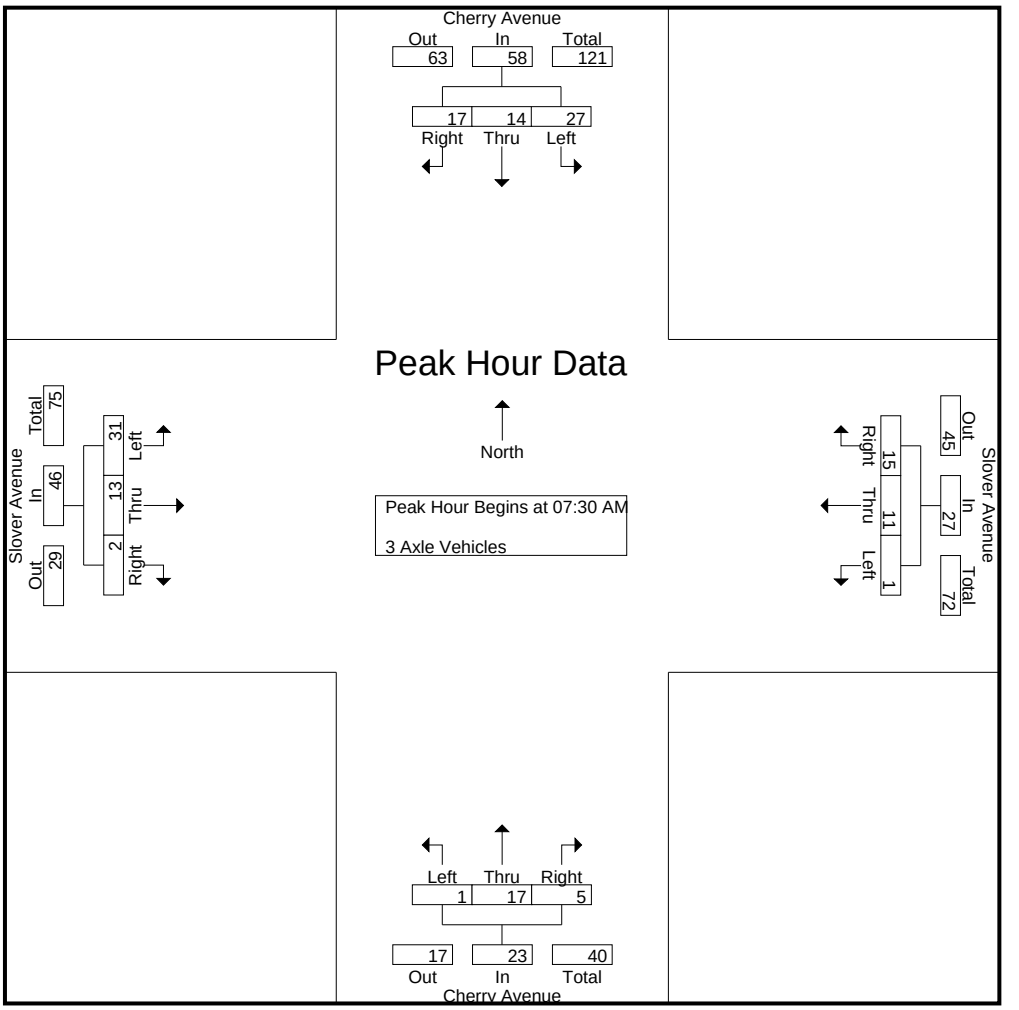

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**9**	2	**6**	17	0	1	**5**	6	0	4	0	4	7	3	**2**	**12**
+15 mins.	4	5	3	12	0	2	4	6	0	3	1	4	**10**	2	0	12
+30 mins.	9	**6**	6	**21**	**1**	3	3	7	0	3	1	4	9	3	0	12
+45 mins.	5	1	2	8	0	**5**	3	**8**	**1**	**7**	**3**	**11**	5	**5**	0	10
Total Volume	27	14	17	58	1	11	15	27	1	17	5	23	31	13	2	46
% App. Total	46.6	24.1	29.3		3.7	40.7	55.6		4.3	73.9	21.7		67.4	28.3	4.3	
PHF	.750	.583	.708	.690	.250	.550	.750	.844	.250	.607	.417	.523	.775	.650	.250	.958

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PO Box 1178
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(951)268-6268

City of Fontana
N/S: Cherry Avenue
E/W: Slover Avenue
Weather: Clear

File Name : 14_FON_Cherry_Slover AM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	7	25	35	1	2	16	19	0	8	0	8	13	4	0	17	79
07:15 AM	12	9	12	33	0	7	11	18	1	8	0	9	20	2	5	27	87
07:30 AM	7	11	17	35	1	8	14	23	0	6	0	6	20	6	1	27	91
07:45 AM	11	11	9	31	0	3	13	16	0	7	0	7	18	10	1	29	83
Total	33	38	63	134	2	20	54	76	1	29	0	30	71	22	7	100	340
08:00 AM	10	16	24	50	0	9	16	25	0	9	0	9	24	6	3	33	117
08:15 AM	6	14	19	39	0	7	13	20	0	10	0	10	16	7	0	23	92
08:30 AM	8	12	21	41	1	6	22	29	2	10	1	13	19	5	1	25	108
08:45 AM	5	8	25	38	0	6	14	20	1	10	0	11	21	6	0	27	96
Total	29	50	89	168	1	28	65	94	3	39	1	43	80	24	4	108	413
Grand Total	62	88	152	302	3	48	119	170	4	68	1	73	151	46	11	208	753
Apprch %	20.5	29.1	50.3		1.8	28.2	70		5.5	93.2	1.4		72.6	22.1	5.3		
Total %	8.2	11.7	20.2	40.1	0.4	6.4	15.8	22.6	0.5	9	0.1	9.7	20.1	6.1	1.5	27.6	

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	7	11	17	35	**1**	8	14	23	0	6	0	6	20	6	1	27	91
07:45 AM	**11**	11	9	31	0	3	13	16	0	7	0	7	18	**10**	1	29	83
08:00 AM	10	**16**	**24**	**50**	0	**9**	**16**	**25**	0	9	0	9	**24**	6	**3**	**33**	**117**
08:15 AM	6	14	19	39	0	7	13	20	0	**10**	0	**10**	16	7	0	23	92
Total Volume	34	52	69	155	1	27	56	84	0	32	0	32	78	29	5	112	383
% App. Total	21.9	33.5	44.5		1.2	32.1	66.7		0	100	0		69.6	25.9	4.5		
PHF	.773	.813	.719	.775	.250	.750	.875	.840	.000	.800	.000	.800	.813	.725	.417	.848	.818

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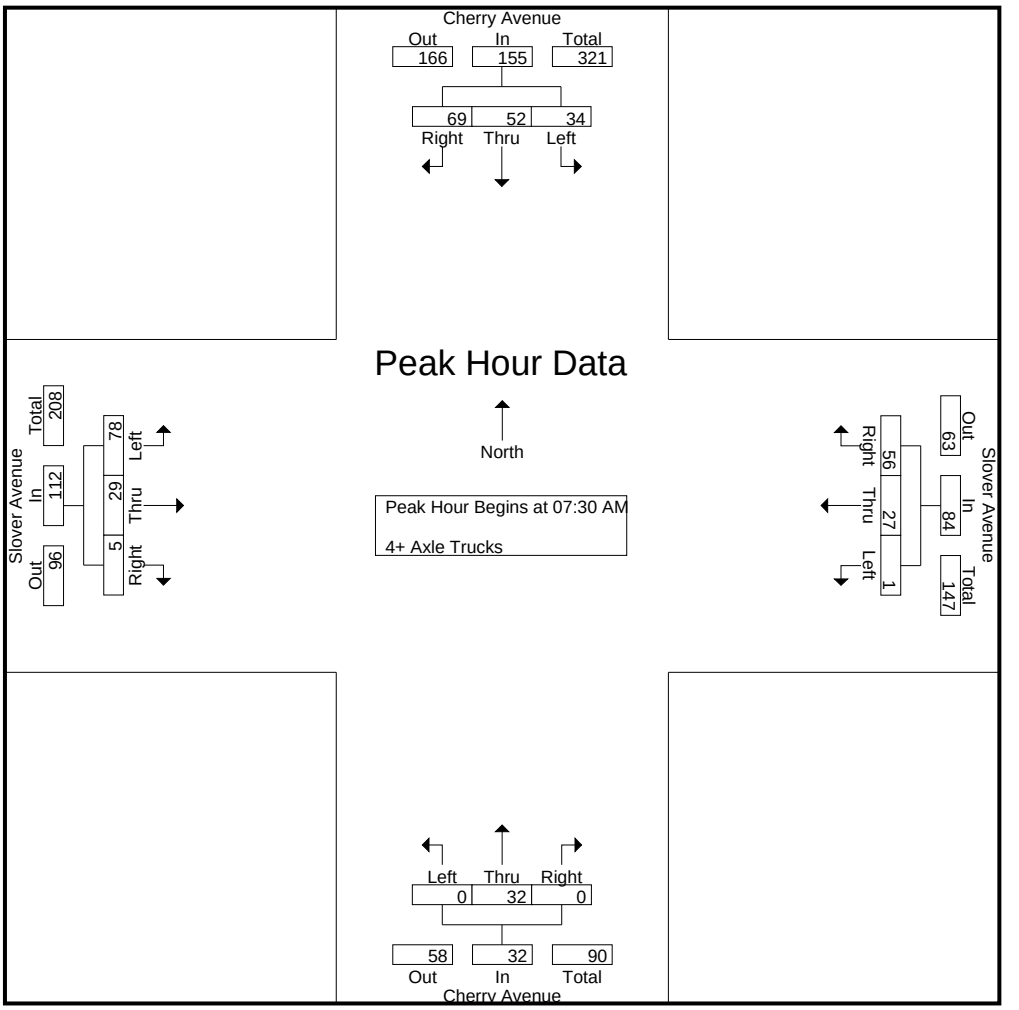
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	7	11	17	35	**1**	8	14	23	0	6	0	6	20	6	1	27
+15 mins.	**11**	11	9	31	0	3	13	16	0	7	0	7	18	**10**	1	29
+30 mins.	10	**16**	**24**	**50**	0	**9**	**16**	**25**	0	9	0	9	**24**	6	**3**	**33**
+45 mins.	6	14	19	39	0	7	13	20	0	**10**	0	**10**	16	7	0	23
Total Volume	34	52	69	155	1	27	56	84	0	32	0	32	78	29	5	112
% App. Total	21.9	33.5	44.5		1.2	32.1	66.7		0	100	0		69.6	25.9	4.5	
PHF	.773	.813	.719	.775	.250	.750	.875	.840	.000	.800	.000	.800	.813	.725	.417	.848

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City of Fontana
N/S: Cherry Avenue
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Weather: Clear

File Name : 14_FON_Cherry_Slover PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	80	166	74	320	8	42	78	128	15	170	6	191	72	148	13	233	872
04:15 PM	71	221	58	350	12	33	68	113	8	218	21	247	64	111	12	187	897
04:30 PM	71	218	55	344	16	26	81	123	7	187	18	212	68	195	3	266	945
04:45 PM	72	230	50	352	8	33	79	120	8	183	11	202	75	141	13	229	903
Total	294	835	237	1366	44	134	306	484	38	758	56	852	279	595	41	915	3617
05:00 PM	60	224	71	355	17	34	70	121	8	190	9	207	101	101	19	221	904
05:15 PM	52	202	56	310	13	50	73	136	7	188	23	218	103	98	17	218	882
05:30 PM	60	218	75	353	11	26	70	107	3	179	12	194	70	63	19	152	806
05:45 PM	55	198	53	306	3	23	55	81	3	143	11	157	59	69	17	145	689
Total	227	842	255	1324	44	133	268	445	21	700	55	776	333	331	72	736	3281
Grand Total	521	1677	492	2690	88	267	574	929	59	1458	111	1628	612	926	113	1651	6898
Apprch %	19.4	62.3	18.3		9.5	28.7	61.8		3.6	89.6	6.8		37.1	56.1	6.8		
Total %	7.6	24.3	7.1	39	1.3	3.9	8.3	13.5	0.9	21.1	1.6	23.6	8.9	13.4	1.6	23.9	
Passenger Vehicles	377	1550	249	2176	79	198	467	744	48	1366	101	1515	442	795	41	1278	5713
% Passenger Vehicles	72.4	92.4	50.6	80.9	89.8	74.2	81.4	80.1	81.4	93.7	91	93.1	72.2	85.9	36.3	77.4	82.8
Large 2 Axle Vehicles	28	33	24	85	3	9	18	30	2	21	5	28	29	25	1	55	198
% Large 2 Axle Vehicles	5.4	2	4.9	3.2	3.4	3.4	3.1	3.2	3.4	1.4	4.5	1.7	4.7	2.7	0.9	3.3	2.9
3 Axle Vehicles	37	24	60	121	4	23	39	66	3	24	2	29	37	24	60	121	337
% 3 Axle Vehicles	7.1	1.4	12.2	4.5	4.5	8.6	6.8	7.1	5.1	1.6	1.8	1.8	6	2.6	53.1	7.3	4.9
4+ Axle Trucks	79	70	159	308	2	37	50	89	6	47	3	56	104	82	11	197	650
% 4+ Axle Trucks	15.2	4.2	32.3	11.4	2.3	13.9	8.7	9.6	10.2	3.2	2.7	3.4	17	8.9	9.7	11.9	9.4

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	71	221	58	350	12	33	68	113	**8**	**218**	**21**	**247**	64	111	12	187	897
04:30 PM	71	218	55	344	16	26	**81**	**123**	7	187	18	212	68	**195**	3	**266**	**945**
04:45 PM	**72**	**230**	50	352	8	33	79	120	8	183	11	202	75	141	13	229	903
05:00 PM	60	224	**71**	**355**	**17**	**34**	70	121	8	190	9	207	**101**	101	**19**	221	904
Total Volume	274	893	234	1401	53	126	298	477	31	778	59	868	308	548	47	903	3649
% App. Total	19.6	63.7	16.7		11.1	26.4	62.5		3.6	89.6	6.8		34.1	60.7	5.2		
PHF	.951	.971	.824	.987	.779	.926	.920	.970	.969	.892	.702	.879	.762	.703	.618	.849	.965

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City of Fontana
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Weather: Clear

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Site Code : 10821516
Start Date : 9/28/2021
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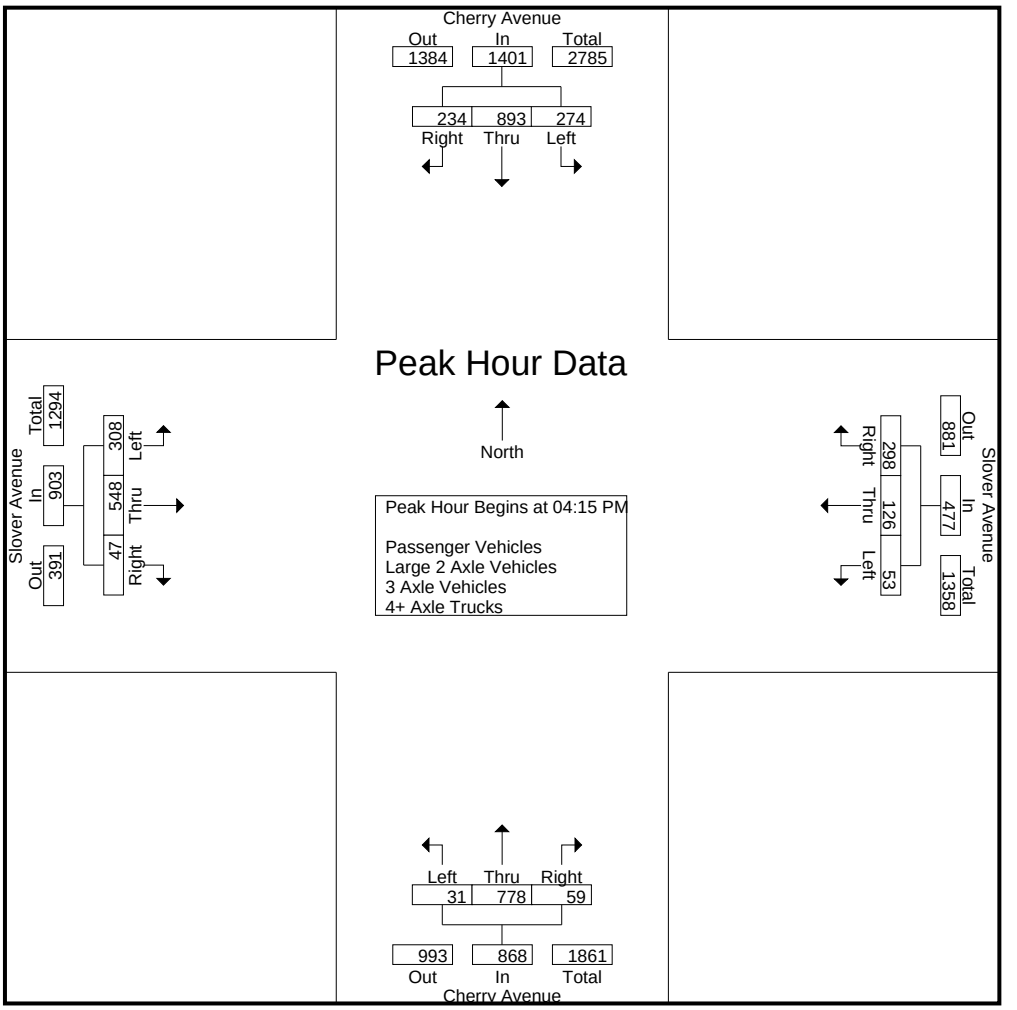

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:30 PM				04:15 PM				04:30 PM			
+0 mins.	71	221	58	350	16	26	**81**	123	**8**	**218**	**21**	**247**	68	**195**	3	**266**
+15 mins.	71	218	55	344	8	33	79	120	7	187	18	212	75	141	13	229
+30 mins.	**72**	**230**	50	352	**17**	34	70	121	8	183	11	202	101	101	**19**	221
+45 mins.	60	224	**71**	**355**	13	**50**	73	**136**	8	190	9	207	**103**	98	17	218
Total Volume	274	893	234	1401	54	143	303	500	31	778	59	868	347	535	52	934
% App. Total	19.6	63.7	16.7		10.8	28.6	60.6		3.6	89.6	6.8		37.2	57.3	5.6	
PHF	.951	.971	.824	.987	.794	.715	.935	.919	.969	.892	.702	.879	.842	.686	.684	.878

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City of Fontana
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Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- Passenger Vehicles

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	60	150	36	246	8	32	58	98	10	157	6	173	51	132	6	189	706
04:15 PM	52	203	37	292	9	24	59	92	8	198	20	226	41	88	5	134	744
04:30 PM	43	199	31	273	15	21	69	105	7	175	14	196	45	176	0	221	795
04:45 PM	60	216	33	309	8	22	64	94	7	173	11	191	48	115	6	169	763
Total	215	768	137	1120	40	99	250	389	32	703	51	786	185	511	17	713	3008
05:00 PM	45	210	29	284	15	25	60	100	6	176	8	190	84	90	5	179	753
05:15 PM	36	186	26	248	11	38	59	108	5	182	22	209	80	80	6	166	731
05:30 PM	41	204	36	281	10	18	57	85	3	171	9	183	51	53	6	110	659
05:45 PM	40	182	21	243	3	18	41	62	2	134	11	147	42	61	7	110	562
Total	162	782	112	1056	39	99	217	355	16	663	50	729	257	284	24	565	2705
Grand Total	377	1550	249	2176	79	198	467	744	48	1366	101	1515	442	795	41	1278	5713
Apprch %	17.3	71.2	11.4		10.6	26.6	62.8		3.2	90.2	6.7		34.6	62.2	3.2		
Total %	6.6	27.1	4.4	38.1	1.4	3.5	8.2	13	0.8	23.9	1.8	26.5	7.7	13.9	0.7	22.4	

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	52	203	**37**	292	9	24	59	92	**8**	**198**	**20**	**226**	41	88	5	134	744
04:30 PM	43	199	31	273	**15**	21	**69**	**105**	7	175	14	196	45	**176**	0	**221**	**795**
04:45 PM	**60**	**216**	33	**309**	8	22	64	94	7	173	11	191	48	115	**6**	169	763
05:00 PM	45	210	29	284	15	**25**	60	100	6	176	8	190	**84**	90	5	179	753
Total Volume	200	828	130	1158	47	92	252	391	28	722	53	803	218	469	16	703	3055
% App. Total	17.3	71.5	11.2		12	23.5	64.5		3.5	89.9	6.6		31	66.7	2.3		
PHF	.833	.958	.878	.937	.783	.920	.913	.931	.875	.912	.663	.888	.649	.666	.667	.795	.961

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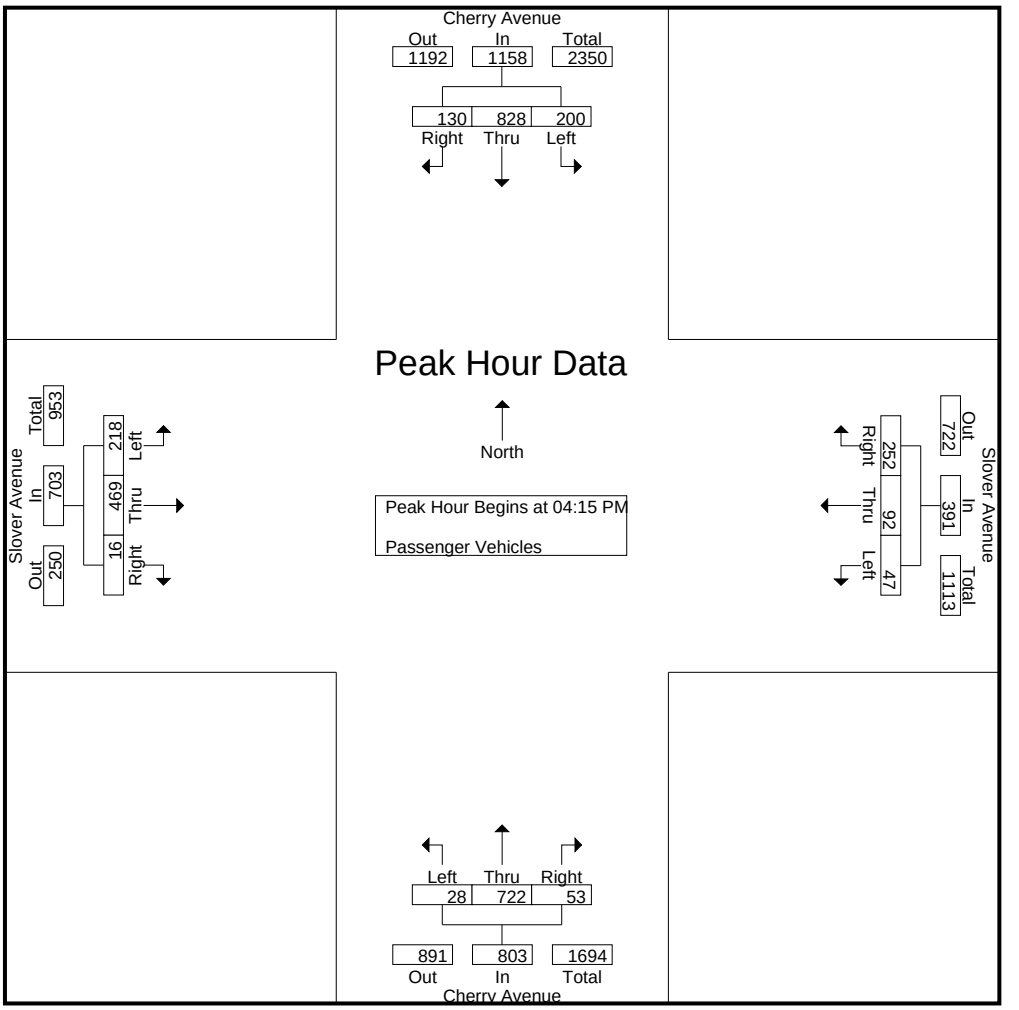

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	52	203	**37**	292	9	24	59	92	**8**	**198**	**20**	**226**	41	88	5	134
+15 mins.	43	199	31	273	**15**	21	**69**	**105**	7	175	14	196	45	**176**	0	**221**
+30 mins.	**60**	**216**	33	**309**	8	22	64	94	7	173	11	191	48	115	**6**	169
+45 mins.	45	210	29	284	15	**25**	60	100	6	176	8	190	**84**	90	5	179
Total Volume	200	828	130	1158	47	92	252	391	28	722	53	803	218	469	16	703
% App. Total	17.3	71.5	11.2		12	23.5	64.5		3.5	89.9	6.6		31	66.7	2.3	
PHF	.833	.958	.878	.937	.783	.920	.913	.931	.875	.912	.663	.888	.649	.666	.667	.795

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Groups Printed- Large 2 Axle Vehicles

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	5	5	7	17	0	1	1	2	1	4	0	5	1	7	1	9	33
04:15 PM	3	5	2	10	1	3	2	6	0	4	0	4	5	3	0	8	28
04:30 PM	6	4	2	12	0	0	2	2	0	4	1	5	4	6	0	10	29
04:45 PM	3	3	1	7	0	1	1	2	0	3	0	3	5	5	0	10	22
Total	17	17	12	46	1	5	6	12	1	15	1	17	15	21	1	37	112
05:00 PM	4	7	3	14	1	1	1	3	1	2	1	4	4	1	0	5	26
05:15 PM	2	2	3	7	1	2	3	6	0	1	1	2	4	1	0	5	20
05:30 PM	4	3	2	9	0	1	4	5	0	1	2	3	4	0	0	4	21
05:45 PM	1	4	4	9	0	0	4	4	0	2	0	2	2	2	0	4	19
Total	11	16	12	39	2	4	12	18	1	6	4	11	14	4	0	18	86
Grand Total	28	33	24	85	3	9	18	30	2	21	5	28	29	25	1	55	198
Apprch %	32.9	38.8	28.2		10	30	60		7.1	75	17.9		52.7	45.5	1.8		
Total %	14.1	16.7	12.1	42.9	1.5	4.5	9.1	15.2	1	10.6	2.5	14.1	14.6	12.6	0.5	27.8	

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	3	5	2	10	**1**	**3**	**2**	**6**	0	**4**	0	4	**5**	3	0	8	28
04:30 PM	**6**	4	2	12	0	0	2	2	0	4	**1**	**5**	4	**6**	0	**10**	**29**
04:45 PM	3	3	1	7	0	1	1	2	0	3	0	3	5	5	0	10	22
05:00 PM	4	**7**	**3**	**14**	1	1	1	3	**1**	2	1	4	4	1	0	5	26
Total Volume	16	19	8	43	2	5	6	13	1	13	2	16	18	15	0	33	105
% App. Total	37.2	44.2	18.6		15.4	38.5	46.2		6.2	81.2	12.5		54.5	45.5	0		
PHF	.667	.679	.667	.768	.500	.417	.750	.542	.250	.813	.500	.800	.900	.625	.000	.825	.905

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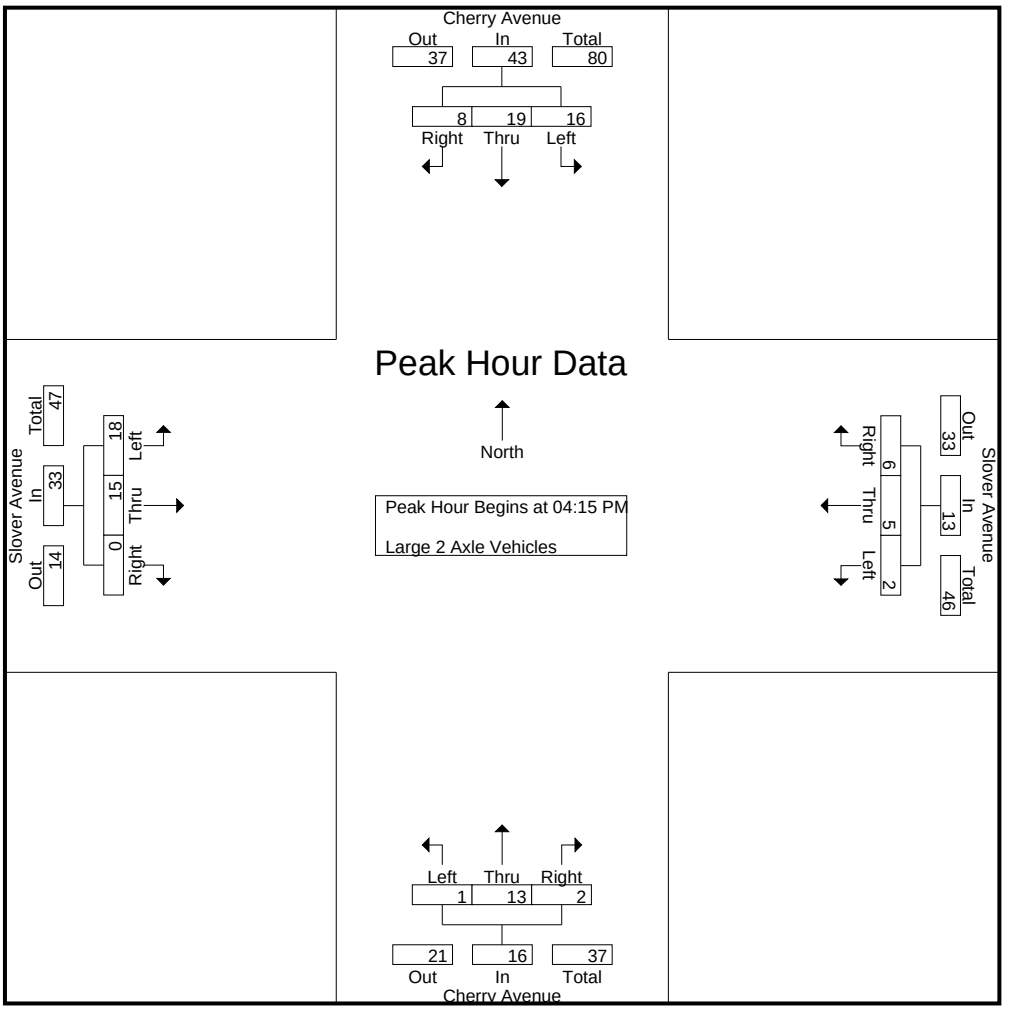

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	3	5	2	10	**1**	**3**	**2**	**6**	0	**4**	0	4	**5**	3	0	8
+15 mins.	**6**	4	2	12	0	0	2	2	0	4	**1**	**5**	4	**6**	0	**10**
+30 mins.	3	3	1	7	0	1	1	2	0	3	0	3	5	5	0	10
+45 mins.	4	**7**	**3**	**14**	1	1	1	3	**1**	2	1	4	4	1	0	5
Total Volume	16	19	8	43	2	5	6	13	1	13	2	16	18	15	0	33
% App. Total	37.2	44.2	18.6		15.4	38.5	46.2		6.2	81.2	12.5		54.5	45.5	0	
PHF	.667	.679	.667	.768	.500	.417	.750	.542	.250	.813	.500	.800	.900	.625	.000	.825

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City of Fontana
N/S: Cherry Avenue
E/W: Slover Avenue
Weather: Clear

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Groups Printed- 3 Axle Vehicles

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	6	3	6	15	0	3	7	10	2	5	0	7	6	3	6	15	47
04:15 PM	7	2	6	15	2	2	2	6	0	5	1	6	7	2	6	15	42
04:30 PM	5	5	3	13	0	0	5	5	0	3	1	4	5	5	3	13	35
04:45 PM	5	4	3	12	0	5	8	13	0	1	0	1	5	4	3	12	38
Total	23	14	18	55	2	10	22	34	2	14	2	18	23	14	18	55	162
05:00 PM	4	1	13	18	0	3	2	5	1	5	0	6	4	1	13	18	47
05:15 PM	3	6	10	19	1	4	4	9	0	2	0	2	3	6	10	19	49
05:30 PM	4	1	11	16	1	4	3	8	0	0	0	0	4	1	11	16	40
05:45 PM	3	2	8	13	0	2	8	10	0	3	0	3	3	2	8	13	39
Total	14	10	42	66	2	13	17	32	1	10	0	11	14	10	42	66	175
Grand Total	37	24	60	121	4	23	39	66	3	24	2	29	37	24	60	121	337
Apprch %	30.6	19.8	49.6		6.1	34.8	59.1		10.3	82.8	6.9		30.6	19.8	49.6		
Total %	11	7.1	17.8	35.9	1.2	6.8	11.6	19.6	0.9	7.1	0.6	8.6	11	7.1	17.8	35.9	

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**7**	2	6	15	**2**	2	2	6	0	**5**	**1**	**6**	**7**	2	6	15	42
04:30 PM	5	**5**	3	13	0	0	5	5	0	3	1	4	5	**5**	3	13	35
04:45 PM	5	4	3	12	0	**5**	**8**	**13**	0	1	0	1	5	4	3	12	38
05:00 PM	4	1	**13**	**18**	0	3	2	5	**1**	5	0	6	4	1	**13**	**18**	**47**
Total Volume	21	12	25	58	2	10	17	29	1	14	2	17	21	12	25	58	162
% App. Total	36.2	20.7	43.1		6.9	34.5	58.6		5.9	82.4	11.8		36.2	20.7	43.1		
PHF	.750	.600	.481	.806	.250	.500	.531	.558	.250	.700	.500	.708	.750	.600	.481	.806	.862

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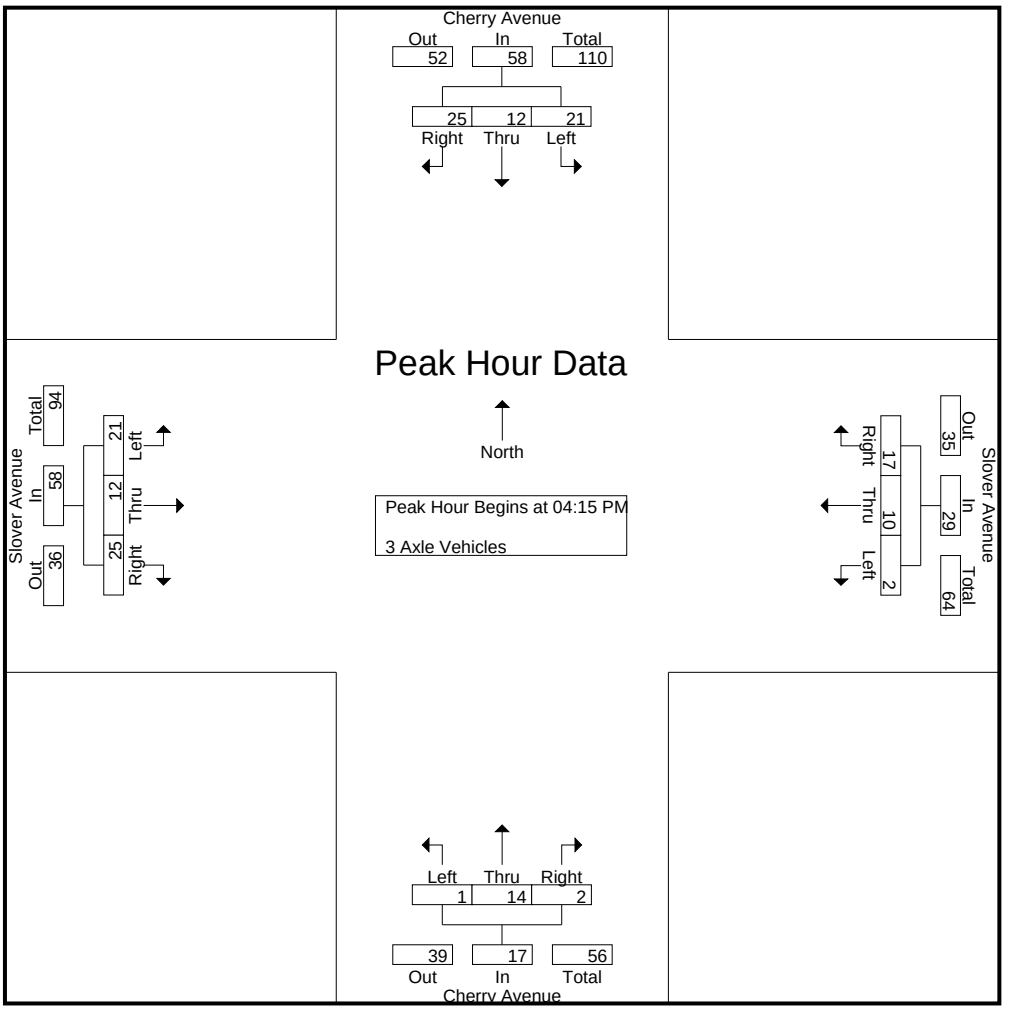

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	**7**	2	6	15	**2**	2	2	6	0	**5**	**1**	**6**	**7**	2	6	15
+15 mins.	5	**5**	3	13	0	0	5	5	0	3	1	4	5	**5**	3	13
+30 mins.	5	4	3	12	0	**5**	**8**	**13**	0	1	0	1	5	4	3	12
+45 mins.	4	1	**13**	**18**	0	3	2	5	**1**	5	0	6	4	1	**13**	**18**
Total Volume	21	12	25	58	2	10	17	29	1	14	2	17	21	12	25	58
% App. Total	36.2	20.7	43.1		6.9	34.5	58.6		5.9	82.4	11.8		36.2	20.7	43.1	
PHF	.750	.600	.481	.806	.250	.500	.531	.558	.250	.700	.500	.708	.750	.600	.481	.806

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City of Fontana
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Groups Printed- 4+ Axle Trucks

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	9	8	25	42	0	6	12	18	2	4	0	6	14	6	0	20	86
04:15 PM	9	11	13	33	0	4	5	9	0	11	0	11	11	18	1	30	83
04:30 PM	17	10	19	46	1	5	5	11	0	5	2	7	14	8	0	22	86
04:45 PM	4	7	13	24	0	5	6	11	1	6	0	7	17	17	4	38	80
Total	39	36	70	145	1	20	28	49	3	26	2	31	56	49	5	110	335
05:00 PM	7	6	26	39	1	5	7	13	0	7	0	7	9	9	1	19	78
05:15 PM	11	8	17	36	0	6	7	13	2	3	0	5	16	11	1	28	82
05:30 PM	11	10	26	47	0	3	6	9	0	7	1	8	11	9	2	22	86
05:45 PM	11	10	20	41	0	3	2	5	1	4	0	5	12	4	2	18	69
Total	40	34	89	163	1	17	22	40	3	21	1	25	48	33	6	87	315
Grand Total	79	70	159	308	2	37	50	89	6	47	3	56	104	82	11	197	650
Apprch %	25.6	22.7	51.6		2.2	41.6	56.2		10.7	83.9	5.4		52.8	41.6	5.6		
Total %	12.2	10.8	24.5	47.4	0.3	5.7	7.7	13.7	0.9	7.2	0.5	8.6	16	12.6	1.7	30.3	

	Cherry Avenue Southbound				Slover Avenue Westbound				Cherry Avenue Northbound				Slover Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	9	**11**	13	33	0	4	5	9	0	**11**	0	**11**	11	**18**	1	30	83
04:30 PM	**17**	10	19	**46**	**1**	**5**	5	11	0	5	**2**	7	14	8	0	22	**86**
04:45 PM	4	7	13	24	0	5	6	11	**1**	6	0	7	**17**	17	**4**	**38**	80
05:00 PM	7	6	**26**	39	1	5	**7**	**13**	0	7	0	7	9	9	1	19	78
Total Volume	37	34	71	142	2	19	23	44	1	29	2	32	51	52	6	109	327
% App. Total	26.1	23.9	50		4.5	43.2	52.3		3.1	90.6	6.2		46.8	47.7	5.5		
PHF	.544	.773	.683	.772	.500	.950	.821	.846	.250	.659	.250	.727	.750	.722	.375	.717	.951

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City of Fontana
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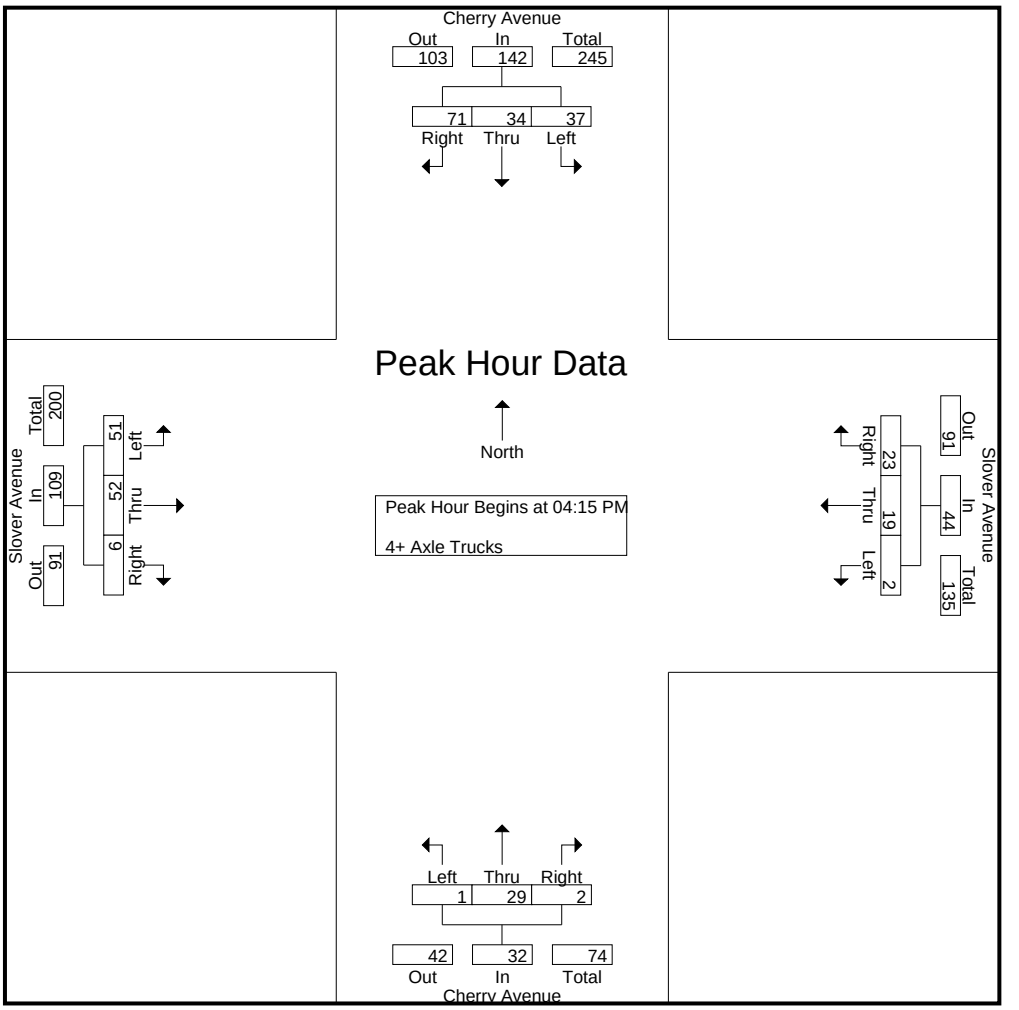

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	9	**11**	13	33	0	4	5	9	0	**11**	0	**11**	11	**18**	1	30
+15 mins.	**17**	10	19	**46**	**1**	**5**	5	11	0	5	**2**	7	14	8	0	22
+30 mins.	4	7	13	24	0	5	6	11	**1**	6	0	7	**17**	17	**4**	**38**
+45 mins.	7	6	**26**	39	1	5	**7**	**13**	0	7	0	7	9	9	1	19
Total Volume	37	34	71	142	2	19	23	44	1	29	2	32	51	52	6	109
% App. Total	26.1	23.9	50		4.5	43.2	52.3		3.1	90.6	6.2		46.8	47.7	5.5	
PHF	.544	.773	.683	.772	.500	.950	.821	.846	.250	.659	.250	.727	.750	.722	.375	.717

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City of Fontana
N/S: Cherry Avenue
E/W: Santa Ana Avenue
Weather: Clear

File Name : 15_FON_Cherry_Santa Ana AM
Site Code : 10821516
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	9	127	40	176	4	1	7	12	1	153	4	158	26	6	1	33	379
07:15 AM	11	165	67	243	3	6	7	16	2	161	4	167	32	0	2	34	460
07:30 AM	18	173	40	231	4	6	7	17	7	179	1	187	22	6	4	32	467
07:45 AM	16	181	79	276	1	4	9	14	5	184	5	194	58	13	18	89	573
Total	54	646	226	926	12	17	30	59	15	677	14	706	138	25	25	188	1879
08:00 AM	15	178	100	293	2	4	10	16	5	162	4	171	69	7	30	106	586
08:15 AM	14	127	82	223	0	3	12	15	10	159	1	170	79	6	22	107	515
08:30 AM	5	114	52	171	2	4	4	10	2	156	2	160	66	9	11	86	427
08:45 AM	11	89	34	134	5	1	5	11	8	126	2	136	24	3	5	32	313
Total	45	508	268	821	9	12	31	52	25	603	9	637	238	25	68	331	1841
Grand Total	99	1154	494	1747	21	29	61	111	40	1280	23	1343	376	50	93	519	3720
Apprch %	5.7	66.1	28.3		18.9	26.1	55		3	95.3	1.7		72.4	9.6	17.9		
Total %	2.7	31	13.3	47	0.6	0.8	1.6	3	1.1	34.4	0.6	36.1	10.1	1.3	2.5	14	
Passenger Vehicles	61	1064	430	1555	12	24	34	70	30	1174	21	1225	331	39	84	454	3304
% Passenger Vehicles	61.6	92.2	87	89	57.1	82.8	55.7	63.1	75	91.7	91.3	91.2	88	78	90.3	87.5	88.8
Large 2 Axle Vehicles	6	36	24	66	6	2	5	13	2	26	0	28	17	3	3	23	130
% Large 2 Axle Vehicles	6.1	3.1	4.9	3.8	28.6	6.9	8.2	11.7	5	2	0	2.1	4.5	6	3.2	4.4	3.5
3 Axle Vehicles	0	16	15	31	1	0	9	10	1	21	1	23	10	5	6	21	85
% 3 Axle Vehicles	0	1.4	3	1.8	4.8	0	14.8	9	2.5	1.6	4.3	1.7	2.7	10	6.5	4	2.3
4+ Axle Trucks	32	38	25	95	2	3	13	18	7	59	1	67	18	3	0	21	201
% 4+ Axle Trucks	32.3	3.3	5.1	5.4	9.5	10.3	21.3	16.2	17.5	4.6	4.3	5	4.8	6	0	4	5.4

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**18**	173	40	231	**4**	**6**	7	**17**	7	179	1	187	22	6	4	32	467
07:45 AM	16	**181**	79	276	1	4	9	14	5	**184**	**5**	**194**	58	**13**	18	89	573
08:00 AM	15	178	**100**	**293**	2	4	10	16	5	162	4	171	69	7	**30**	106	**586**
08:15 AM	14	127	82	223	0	3	**12**	15	**10**	159	1	170	**79**	6	22	**107**	515
Total Volume	63	659	301	1023	7	17	38	62	27	684	11	722	228	32	74	334	2141
% App. Total	6.2	64.4	29.4		11.3	27.4	61.3		3.7	94.7	1.5		68.3	9.6	22.2		
PHF	.875	.910	.753	.873	.438	.708	.792	.912	.675	.929	.550	.930	.722	.615	.617	.780	.913

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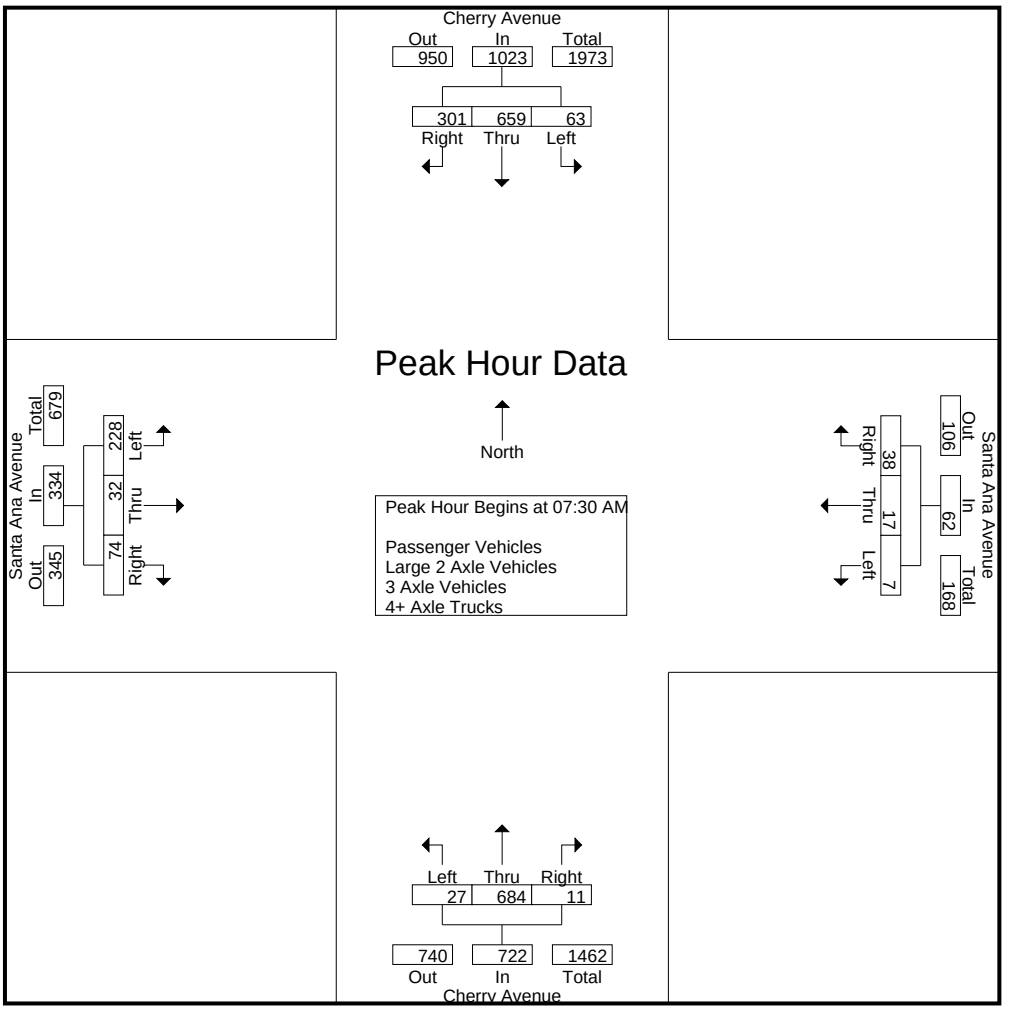

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:30 AM				07:45 AM			
+0 mins.	11	165	67	243	3	**6**	7	16	7	179	1	187	58	**13**	18	89
+15 mins.	**18**	173	40	231	**4**	6	7	**17**	5	**184**	**5**	**194**	69	7	**30**	106
+30 mins.	16	**181**	79	276	1	4	9	14	5	162	4	171	**79**	6	22	**107**
+45 mins.	15	178	**100**	**293**	2	4	**10**	16	**10**	159	1	170	66	9	11	86
Total Volume	60	697	286	1043	10	20	33	63	27	684	11	722	272	35	81	388
% App. Total	5.8	66.8	27.4		15.9	31.7	52.4		3.7	94.7	1.5		70.1	9	20.9	
PHF	.833	.963	.715	.890	.625	.833	.825	.926	.675	.929	.550	.930	.861	.673	.675	.907

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Groups Printed- Passenger Vehicles

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	9	119	30	158	1	1	5	7	1	137	3	141	21	5	1	27	333
07:15 AM	11	153	54	218	1	5	6	12	1	149	4	154	26	0	1	27	411
07:30 AM	8	161	34	203	1	5	5	11	6	166	1	173	20	4	3	27	414
07:45 AM	10	170	75	255	1	4	6	11	3	176	5	184	52	11	16	79	529
Total	38	603	193	834	4	15	22	41	11	628	13	652	119	20	21	160	1687
08:00 AM	8	163	94	265	2	4	4	10	4	150	4	158	66	5	28	99	532
08:15 AM	7	118	74	199	0	2	3	5	8	138	1	147	75	5	20	100	451
08:30 AM	1	98	42	141	2	3	1	6	1	147	2	150	58	7	11	76	373
08:45 AM	7	82	27	116	4	0	4	8	6	111	1	118	13	2	4	19	261
Total	23	461	237	721	8	9	12	29	19	546	8	573	212	19	63	294	1617
Grand Total	61	1064	430	1555	12	24	34	70	30	1174	21	1225	331	39	84	454	3304
Apprch %	3.9	68.4	27.7		17.1	34.3	48.6		2.4	95.8	1.7		72.9	8.6	18.5		
Total %	1.8	32.2	13	47.1	0.4	0.7	1	2.1	0.9	35.5	0.6	37.1	10	1.2	2.5	13.7	

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	8	161	34	203	1	**5**	5	**11**	6	166	1	173	20	4	3	27	414
07:45 AM	**10**	**170**	75	255	1	4	**6**	11	3	**176**	**5**	**184**	52	**11**	16	79	529
08:00 AM	8	163	**94**	**265**	**2**	4	4	10	4	150	4	158	66	5	**28**	99	**532**
08:15 AM	7	118	74	199	0	2	3	5	**8**	138	1	147	**75**	5	20	**100**	451
Total Volume	33	612	277	922	4	15	18	37	21	630	11	662	213	25	67	305	1926
% App. Total	3.6	66.4	30		10.8	40.5	48.6		3.2	95.2	1.7		69.8	8.2	22		
PHF	.825	.900	.737	.870	.500	.750	.750	.841	.656	.895	.550	.899	.710	.568	.598	.763	.905

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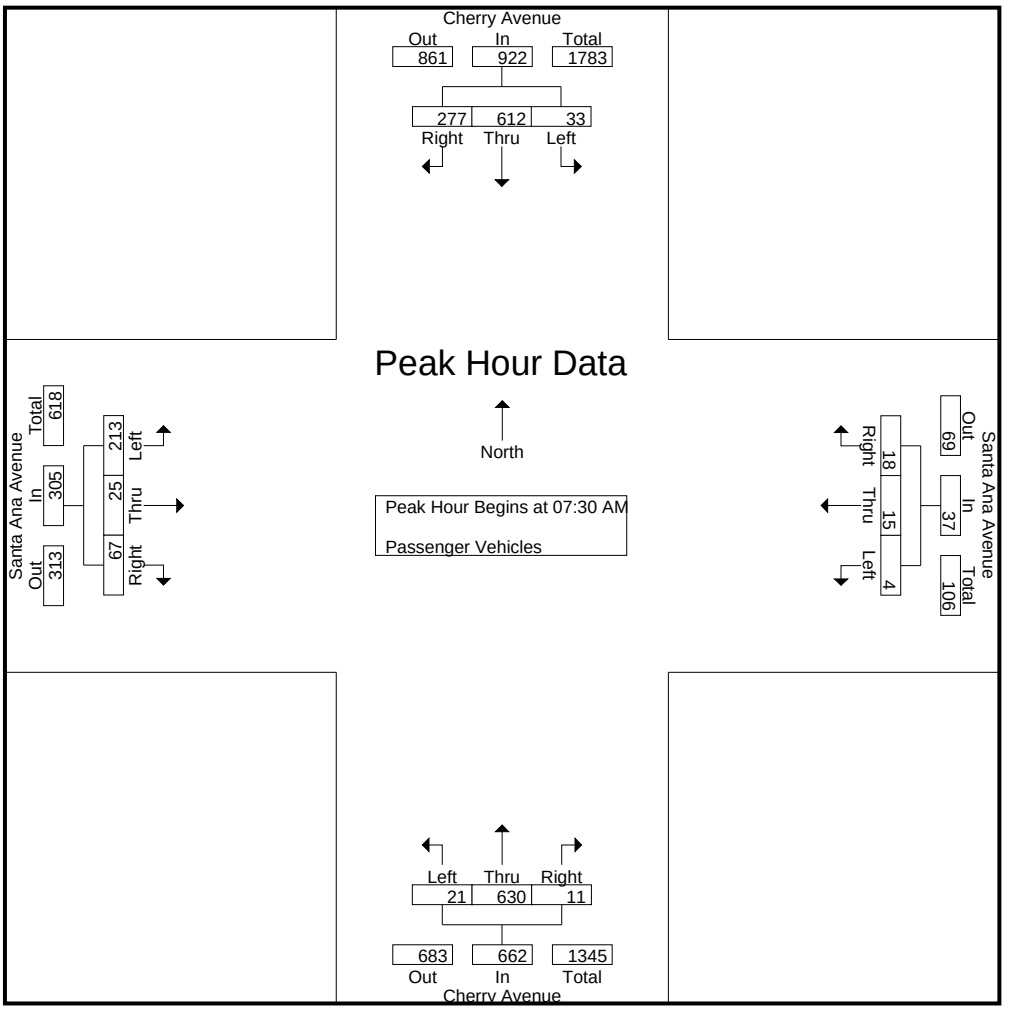

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	8	161	34	203	1	**5**	5	**11**	6	166	1	173	20	4	3	27
+15 mins.	**10**	**170**	75	255	1	4	**6**	11	3	**176**	**5**	**184**	52	**11**	16	79
+30 mins.	8	163	**94**	**265**	**2**	4	4	10	4	150	4	158	66	5	**28**	99
+45 mins.	7	118	74	199	0	2	3	5	**8**	138	1	147	**75**	5	20	**100**
Total Volume	33	612	277	922	4	15	18	37	21	630	11	662	213	25	67	305
% App. Total	3.6	66.4	30		10.8	40.5	48.6		3.2	95.2	1.7		69.8	8.2	22	
PHF	.825	.900	.737	.870	.500	.750	.750	.841	.656	.895	.550	.899	.710	.568	.598	.763

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City of Fontana
N/S: Cherry Avenue
E/W: Santa Ana Avenue
Weather: Clear

File Name : 15_FON_Cherry_Santa Ana AM
Site Code : 10821516
Start Date : 9/28/2021
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Groups Printed- Large 2 Axle Vehicles

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	6	3	9	3	0	0	3	0	8	0	8	1	0	0	1	21
07:15 AM	0	4	4	8	1	1	0	2	0	2	0	2	1	0	1	2	14
07:30 AM	3	4	4	11	2	0	0	2	1	5	0	6	1	1	0	2	21
07:45 AM	0	4	0	4	0	0	0	0	0	2	0	2	2	1	0	3	9
Total	3	18	11	32	6	1	0	7	1	17	0	18	5	2	1	8	65
08:00 AM	2	4	2	8	0	0	1	1	0	5	0	5	2	0	1	3	17
08:15 AM	1	5	3	9	0	0	3	3	1	1	0	2	3	0	1	4	18
08:30 AM	0	7	5	12	0	1	1	2	0	1	0	1	4	0	0	4	19
08:45 AM	0	2	3	5	0	0	0	0	0	2	0	2	3	1	0	4	11
Total	3	18	13	34	0	1	5	6	1	9	0	10	12	1	2	15	65
Grand Total	6	36	24	66	6	2	5	13	2	26	0	28	17	3	3	23	130
Apprch %	9.1	54.5	36.4		46.2	15.4	38.5		7.1	92.9	0		73.9	13	13		
Total %	4.6	27.7	18.5	50.8	4.6	1.5	3.8	10	1.5	20	0	21.5	13.1	2.3	2.3	17.7	

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**3**	4	**4**	**11**	**2**	0	0	2	**1**	**5**	0	**6**	1	**1**	0	2	**21**
07:45 AM	0	4	0	4	0	0	0	0	0	2	0	2	2	1	0	3	9
08:00 AM	2	4	2	8	0	0	1	1	0	5	0	5	2	0	**1**	3	17
08:15 AM	1	**5**	3	9	0	0	**3**	**3**	1	1	0	2	**3**	0	1	**4**	18
Total Volume	6	17	9	32	2	0	4	6	2	13	0	15	8	2	2	12	65
% App. Total	18.8	53.1	28.1		33.3	0	66.7		13.3	86.7	0		66.7	16.7	16.7		
PHF	.500	.850	.563	.727	.250	.000	.333	.500	.500	.650	.000	.625	.667	.500	.500	.750	.774

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City of Fontana
N/S: Cherry Avenue
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Weather: Clear

File Name : 15_FON_Cherry_Santa Ana AM
Site Code : 10821516
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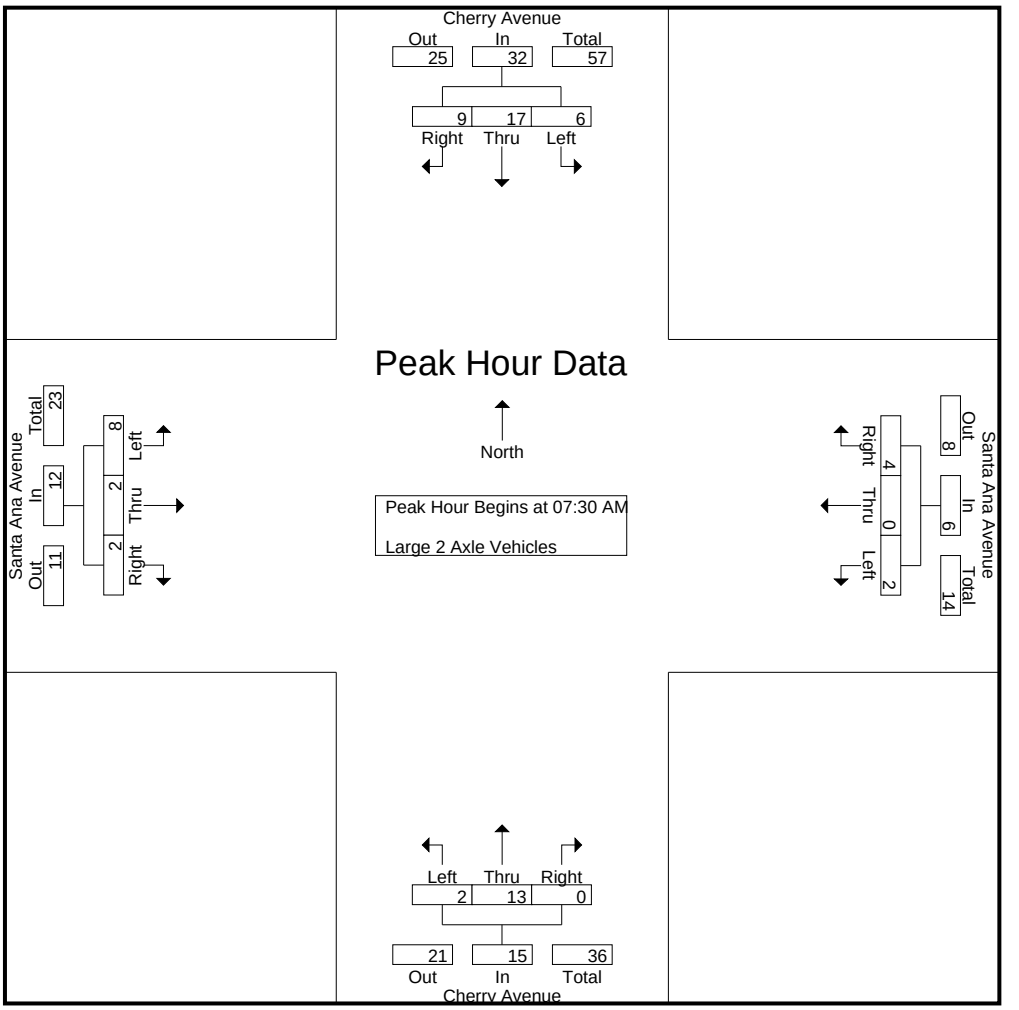

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**3**	4	**4**	**11**	**2**	0	0	2	**1**	**5**	0	**6**	1	**1**	0	2
+15 mins.	0	4	0	4	0	0	0	0	0	2	0	2	2	1	0	3
+30 mins.	2	4	2	8	0	0	1	1	0	5	0	5	2	0	**1**	3
+45 mins.	1	**5**	3	9	0	0	**3**	**3**	1	1	0	2	**3**	0	1	**4**
Total Volume	6	17	9	32	2	0	4	6	2	13	0	15	8	2	2	12
% App. Total	18.8	53.1	28.1		33.3	0	66.7		13.3	86.7	0		66.7	16.7	16.7	
PHF	.500	.850	.563	.727	.250	.000	.333	.500	.500	.650	.000	.625	.667	.500	.500	.750

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City of Fontana
N/S: Cherry Avenue
E/W: Santa Ana Avenue
Weather: Clear

File Name : 15_FON_Cherry_Santa Ana AM
Site Code : 10821516
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Groups Printed- 3 Axle Vehicles

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	2	2	0	0	1	1	0	4	1	5	1	0	0	1	9
07:15 AM	0	1	5	6	0	0	1	1	0	2	0	2	4	0	0	4	13
07:30 AM	0	2	2	4	1	0	1	2	0	1	0	1	0	1	1	2	9
07:45 AM	0	2	1	3	0	0	3	3	0	0	0	0	1	1	2	4	10
Total	0	5	10	15	1	0	6	7	0	7	1	8	6	2	3	11	41
08:00 AM	0	4	2	6	0	0	1	1	0	2	0	2	0	1	1	2	11
08:15 AM	0	0	0	0	0	0	1	1	0	8	0	8	0	1	1	2	11
08:30 AM	0	4	1	5	0	0	0	0	0	2	0	2	1	1	0	2	9
08:45 AM	0	3	2	5	0	0	1	1	1	2	0	3	3	0	1	4	13
Total	0	11	5	16	0	0	3	3	1	14	0	15	4	3	3	10	44
Grand Total	0	16	15	31	1	0	9	10	1	21	1	23	10	5	6	21	85
Apprch %	0	51.6	48.4		10	0	90		4.3	91.3	4.3		47.6	23.8	28.6		
Total %	0	18.8	17.6	36.5	1.2	0	10.6	11.8	1.2	24.7	1.2	27.1	11.8	5.9	7.1	24.7	

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	2	**2**	4	**1**	0	1	2	0	1	0	1	0	**1**	1	2	9
07:45 AM	0	2	1	3	0	0	**3**	**3**	0	0	0	0	**1**	1	**2**	**4**	10
08:00 AM	0	**4**	2	**6**	0	0	1	1	0	2	0	2	0	1	1	2	**11**
08:15 AM	0	0	0	0	0	0	1	1	0	**8**	0	**8**	0	1	1	2	11
Total Volume	0	8	5	13	1	0	6	7	0	11	0	11	1	4	5	10	41
% App. Total	0	61.5	38.5		14.3	0	85.7		0	100	0		10	40	50		
PHF	.000	.500	.625	.542	.250	.000	.500	.583	.000	.344	.000	.344	.250	1.00	.625	.625	.932

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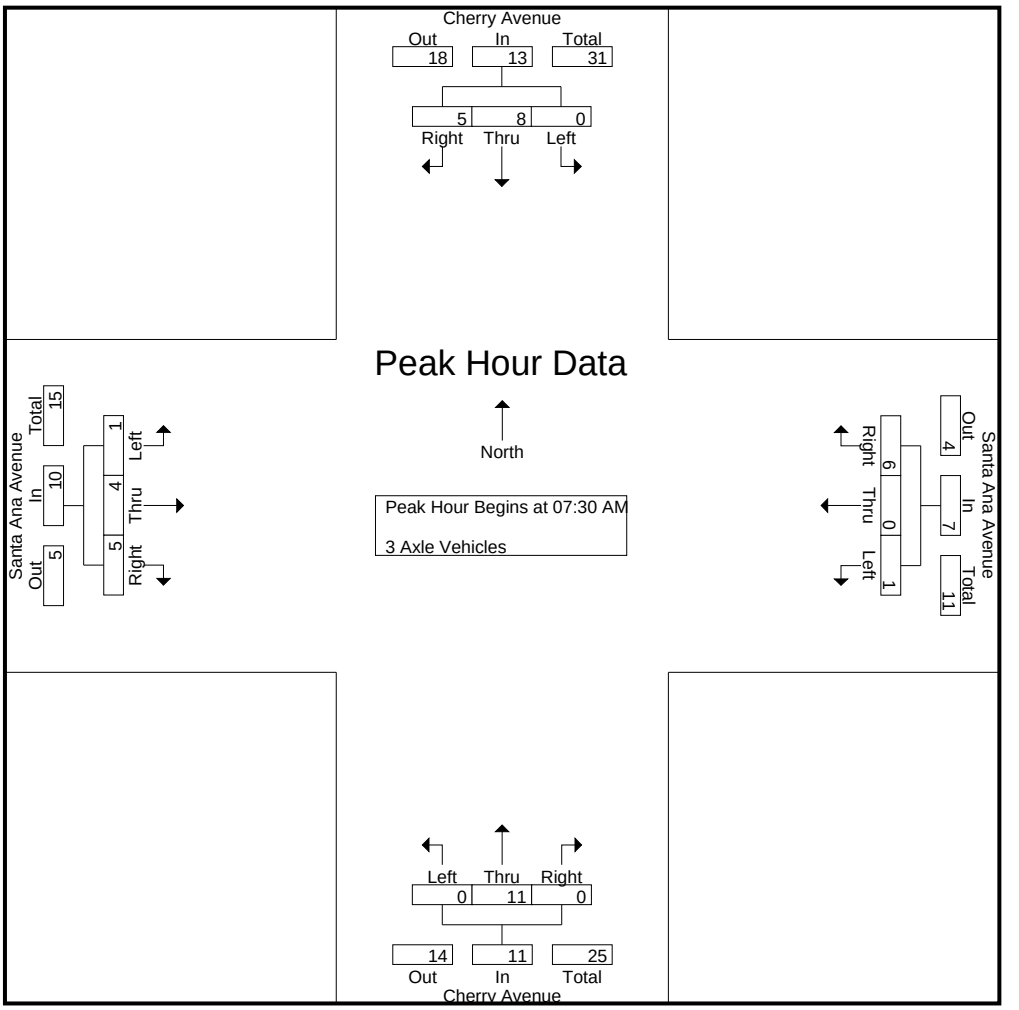

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	2	**2**	4	**1**	0	1	2	0	1	0	1	0	**1**	1	2
+15 mins.	0	2	1	3	0	0	**3**	**3**	0	0	0	0	**1**	1	**2**	**4**
+30 mins.	0	**4**	2	**6**	0	0	1	1	0	2	0	2	0	1	1	2
+45 mins.	0	0	0	0	0	0	1	1	0	**8**	0	**8**	0	1	1	2
Total Volume	0	8	5	13	1	0	6	7	0	11	0	11	1	4	5	10
% App. Total	0	61.5	38.5		14.3	0	85.7		0	100	0		10	40	50	
PHF	.000	.500	.625	.542	.250	.000	.500	.583	.000	.344	.000	.344	.250	1.000	.625	.625

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City of Fontana
N/S: Cherry Avenue
E/W: Santa Ana Avenue
Weather: Clear

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Site Code : 10821516
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Groups Printed- 4+ Axle Trucks

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	2	5	7	0	0	1	1	0	4	0	4	3	1	0	4	16
07:15 AM	0	7	4	11	1	0	0	1	1	8	0	9	1	0	0	1	22
07:30 AM	7	6	0	13	0	1	1	2	0	7	0	7	1	0	0	1	23
07:45 AM	6	5	3	14	0	0	0	0	2	6	0	8	3	0	0	3	25
Total	13	20	12	45	1	1	2	4	3	25	0	28	8	1	0	9	86
08:00 AM	5	7	2	14	0	0	4	4	1	5	0	6	1	1	0	2	26
08:15 AM	6	4	5	15	0	1	5	6	1	12	0	13	1	0	0	1	35
08:30 AM	4	5	4	13	0	0	2	2	1	6	0	7	3	1	0	4	26
08:45 AM	4	2	2	8	1	1	0	2	1	11	1	13	5	0	0	5	28
Total	19	18	13	50	1	2	11	14	4	34	1	39	10	2	0	12	115
Grand Total	32	38	25	95	2	3	13	18	7	59	1	67	18	3	0	21	201
Apprch %	33.7	40	26.3		11.1	16.7	72.2		10.4	88.1	1.5		85.7	14.3	0		
Total %	15.9	18.9	12.4	47.3	1	1.5	6.5	9	3.5	29.4	0.5	33.3	9	1.5	0	10.4	

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**7**	6	0	13	0	**1**	1	2	0	7	0	7	1	0	0	1	23
07:45 AM	6	5	3	14	0	0	0	0	**2**	6	0	8	**3**	0	0	**3**	25
08:00 AM	5	**7**	2	14	0	0	4	4	1	5	0	6	1	**1**	0	2	26
08:15 AM	6	4	**5**	**15**	0	1	**5**	**6**	1	**12**	0	**13**	1	0	0	1	**35**
Total Volume	24	22	10	56	0	2	10	12	4	30	0	34	6	1	0	7	109
% App. Total	42.9	39.3	17.9		0	16.7	83.3		11.8	88.2	0		85.7	14.3	0		
PHF	.857	.786	.500	.933	.000	.500	.500	.500	.500	.625	.000	.654	.500	.250	.000	.583	.779

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City of Fontana
N/S: Cherry Avenue
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File Name : 15_FON_Cherry_Santa Ana AM
Site Code : 10821516
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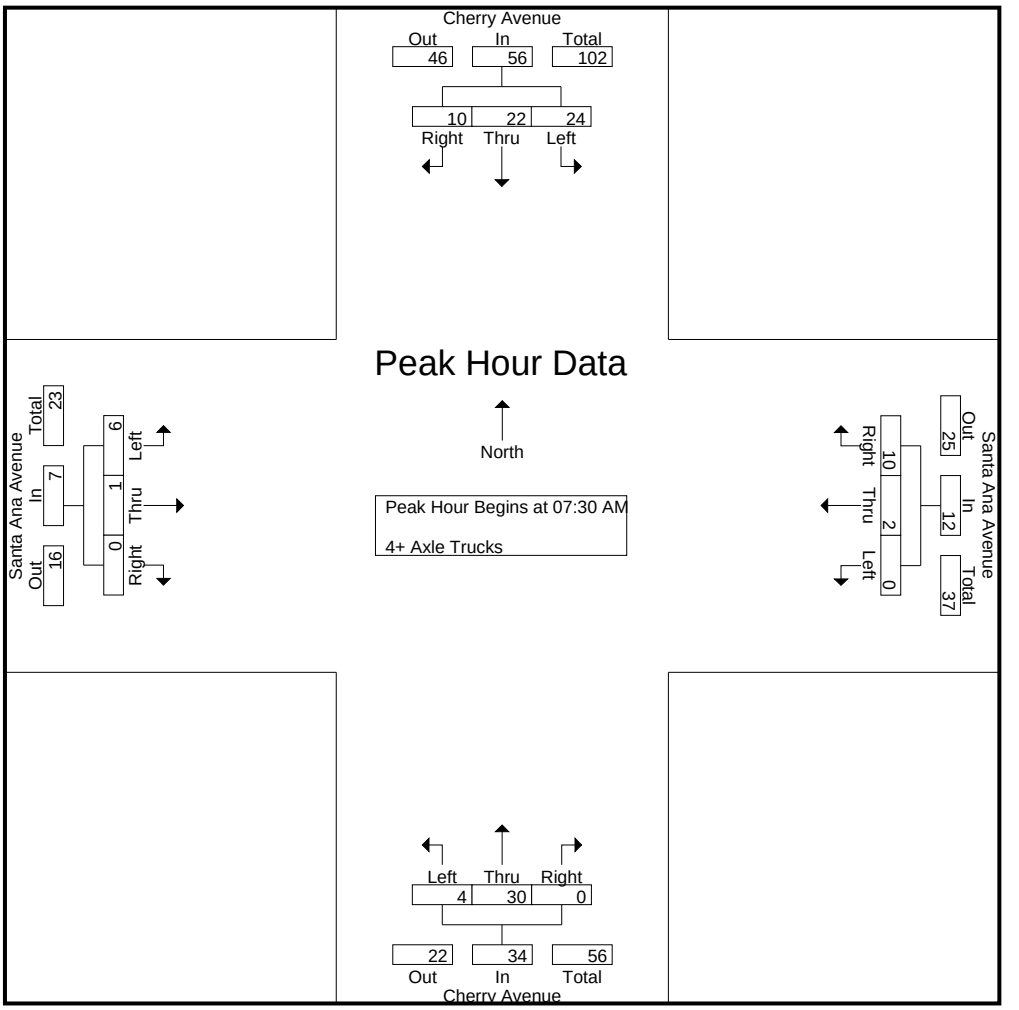

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**7**	6	0	13	0	**1**	1	2	0	7	0	7	1	0	0	1
+15 mins.	6	5	3	14	0	0	0	0	**2**	6	0	8	**3**	0	0	**3**
+30 mins.	5	**7**	2	14	0	0	4	4	1	5	0	6	1	**1**	0	2
+45 mins.	6	4	**5**	**15**	0	1	**5**	**6**	1	**12**	0	**13**	1	0	0	1
Total Volume	24	22	10	56	0	2	10	12	4	30	0	34	6	1	0	7
% App. Total	42.9	39.3	17.9		0	16.7	83.3		11.8	88.2	0		85.7	14.3	0	
PHF	.857	.786	.500	.933	.000	.500	.500	.500	.500	.625	.000	.654	.500	.250	.000	.583

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City of Fontana
N/S: Cherry Avenue
E/W: Santa Ana Avenue
Weather: Clear

File Name : 15_FON_Cherry_Santa Ana PM
Site Code : 10821516
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	11	163	30	204	2	4	11	17	4	134	6	144	36	16	4	56	421
04:15 PM	6	194	35	235	3	4	13	20	5	136	2	143	32	8	4	44	442
04:30 PM	12	199	35	246	3	4	11	18	1	149	3	153	59	14	8	81	498
04:45 PM	11	220	28	259	3	4	5	12	1	124	2	127	69	9	5	83	481
Total	40	776	128	944	11	16	40	67	11	543	13	567	196	47	21	264	1842
05:00 PM	7	243	20	270	4	4	11	19	1	133	5	139	51	16	10	77	505
05:15 PM	15	188	14	217	1	4	15	20	2	154	7	163	40	5	4	49	449
05:30 PM	9	205	14	228	7	1	7	15	3	144	3	150	40	7	6	53	446
05:45 PM	13	213	19	245	5	1	5	11	1	130	1	132	17	1	3	21	409
Total	44	849	67	960	17	10	38	65	7	561	16	584	148	29	23	200	1809
Grand Total	84	1625	195	1904	28	26	78	132	18	1104	29	1151	344	76	44	464	3651
Apprch %	4.4	85.3	10.2		21.2	19.7	59.1		1.6	95.9	2.5		74.1	16.4	9.5		
Total %	2.3	44.5	5.3	52.2	0.8	0.7	2.1	3.6	0.5	30.2	0.8	31.5	9.4	2.1	1.2	12.7	
Passenger Vehicles	58	1562	145	1765	25	19	72	116	14	1039	20	1073	309	69	41	419	3373
% Passenger Vehicles	69	96.1	74.4	92.7	89.3	73.1	92.3	87.9	77.8	94.1	69	93.2	89.8	90.8	93.2	90.3	92.4
Large 2 Axle Vehicles	3	24	15	42	0	3	0	3	1	19	3	23	10	1	1	12	80
% Large 2 Axle Vehicles	3.6	1.5	7.7	2.2	0	11.5	0	2.3	5.6	1.7	10.3	2	2.9	1.3	2.3	2.6	2.2
3 Axle Vehicles	3	14	9	26	3	2	2	7	3	16	0	19	8	3	1	12	64
% 3 Axle Vehicles	3.6	0.9	4.6	1.4	10.7	7.7	2.6	5.3	16.7	1.4	0	1.7	2.3	3.9	2.3	2.6	1.8
4+ Axle Trucks	20	25	26	71	0	2	4	6	0	30	6	36	17	3	1	21	134
% 4+ Axle Trucks	23.8	1.5	13.3	3.7	0	7.7	5.1	4.5	0	2.7	20.7	3.1	4.9	3.9	2.3	4.5	3.7

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	12	199	**35**	246	3	**4**	11	18	1	149	3	153	59	14	8	81	498
04:45 PM	11	220	28	259	3	4	5	12	1	124	2	127	**69**	9	5	**83**	481
05:00 PM	7	**243**	20	**270**	**4**	4	11	19	1	133	5	139	51	**16**	**10**	77	**505**
05:15 PM	**15**	188	14	217	1	4	**15**	**20**	**2**	**154**	**7**	**163**	40	5	4	49	449
Total Volume	45	850	97	992	11	16	42	69	5	560	17	582	219	44	27	290	1933
% App. Total	4.5	85.7	9.8		15.9	23.2	60.9		0.9	96.2	2.9		75.5	15.2	9.3		
PHF	.750	.874	.693	.919	.688	1.00	.700	.863	.625	.909	.607	.893	.793	.688	.675	.873	.957

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City of Fontana
N/S: Cherry Avenue
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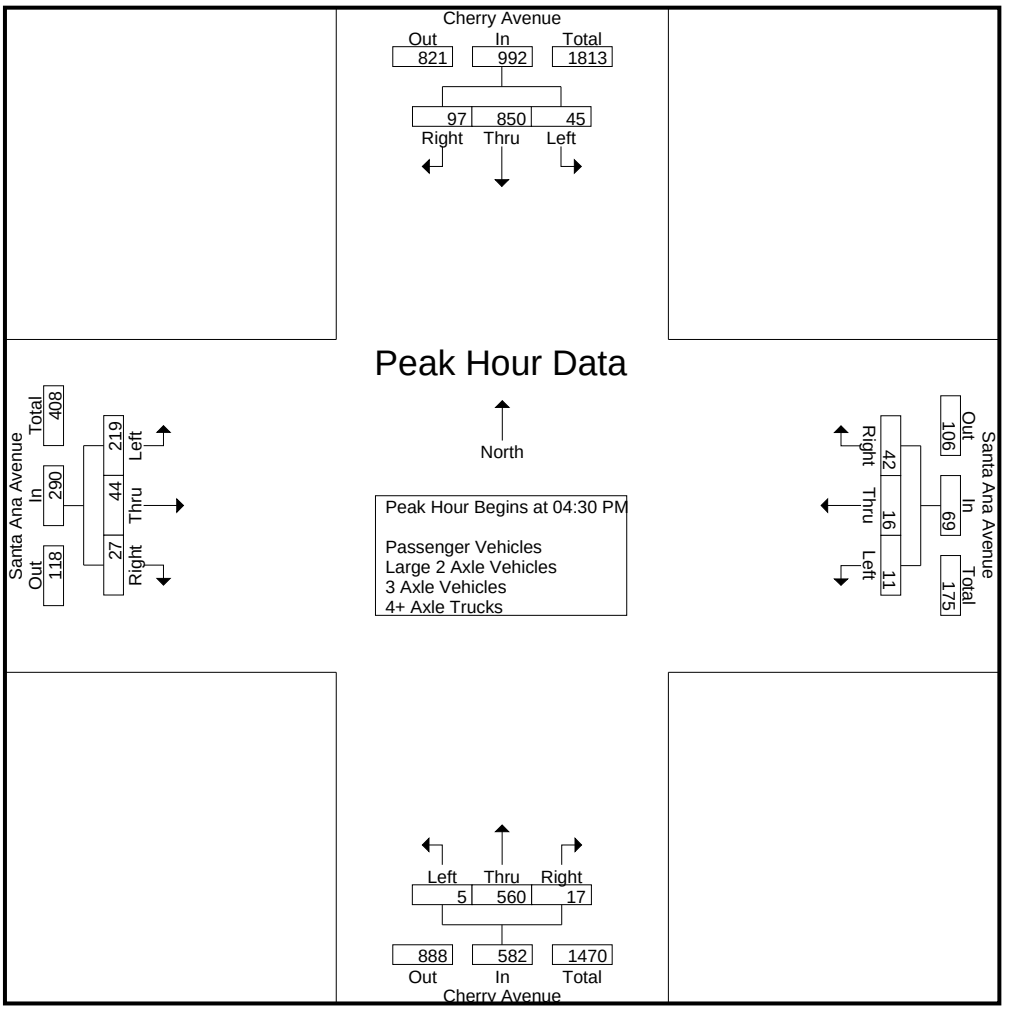

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				05:00 PM				04:30 PM			
+0 mins.	6	194	**35**	235	3	**4**	**13**	**20**	1	133	5	139	59	14	8	81
+15 mins.	**12**	199	35	246	3	4	11	18	2	**154**	**7**	**163**	**69**	9	5	**83**
+30 mins.	11	220	28	259	3	4	5	12	**3**	144	3	150	51	**16**	**10**	77
+45 mins.	7	**243**	20	**270**	**4**	4	11	19	1	130	1	132	40	5	4	49
Total Volume	36	856	118	1010	13	16	40	69	7	561	16	584	219	44	27	290
% App. Total	3.6	84.8	11.7		18.8	23.2	58		1.2	96.1	2.7		75.5	15.2	9.3	
PHF	.750	.881	.843	.935	.813	1.000	.769	.863	.583	.911	.571	.896	.793	.688	.675	.873

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City of Fontana
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Weather: Clear

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Groups Printed- Passenger Vehicles

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	8	158	19	185	2	3	10	15	4	126	6	136	30	15	4	49	385
04:15 PM	2	185	29	216	3	4	12	19	5	124	2	131	26	7	4	37	403
04:30 PM	8	193	28	229	3	3	11	17	0	140	3	143	56	14	7	77	466
04:45 PM	9	215	19	243	1	3	5	9	0	116	1	117	64	8	4	76	445
Total	27	751	95	873	9	13	38	60	9	506	12	527	176	44	19	239	1699
05:00 PM	5	234	16	255	4	2	10	16	0	126	1	127	44	14	10	68	466
05:15 PM	11	173	10	194	1	3	15	19	2	147	4	153	37	4	4	45	411
05:30 PM	4	199	12	215	6	1	5	12	2	135	3	140	37	6	5	48	415
05:45 PM	11	205	12	228	5	0	4	9	1	125	0	126	15	1	3	19	382
Total	31	811	50	892	16	6	34	56	5	533	8	546	133	25	22	180	1674
Grand Total	58	1562	145	1765	25	19	72	116	14	1039	20	1073	309	69	41	419	3373
Apprch %	3.3	88.5	8.2		21.6	16.4	62.1		1.3	96.8	1.9		73.7	16.5	9.8		
Total %	1.7	46.3	4.3	52.3	0.7	0.6	2.1	3.4	0.4	30.8	0.6	31.8	9.2	2	1.2	12.4	

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	8	193	**28**	229	3	**3**	11	17	0	140	3	143	56	**14**	7	**77**	**466**
04:45 PM	9	215	19	243	1	3	5	9	0	116	1	117	**64**	8	4	76	445
05:00 PM	5	**234**	16	**255**	**4**	2	10	16	0	126	1	127	44	14	**10**	68	466
05:15 PM	**11**	173	10	194	1	3	**15**	**19**	**2**	**147**	**4**	**153**	37	4	4	45	411
Total Volume	33	815	73	921	9	11	41	61	2	529	9	540	201	40	25	266	1788
% App. Total	3.6	88.5	7.9		14.8	18	67.2		0.4	98	1.7		75.6	15	9.4		
PHF	.750	.871	.652	.903	.563	.917	.683	.803	.250	.900	.563	.882	.785	.714	.625	.864	.959

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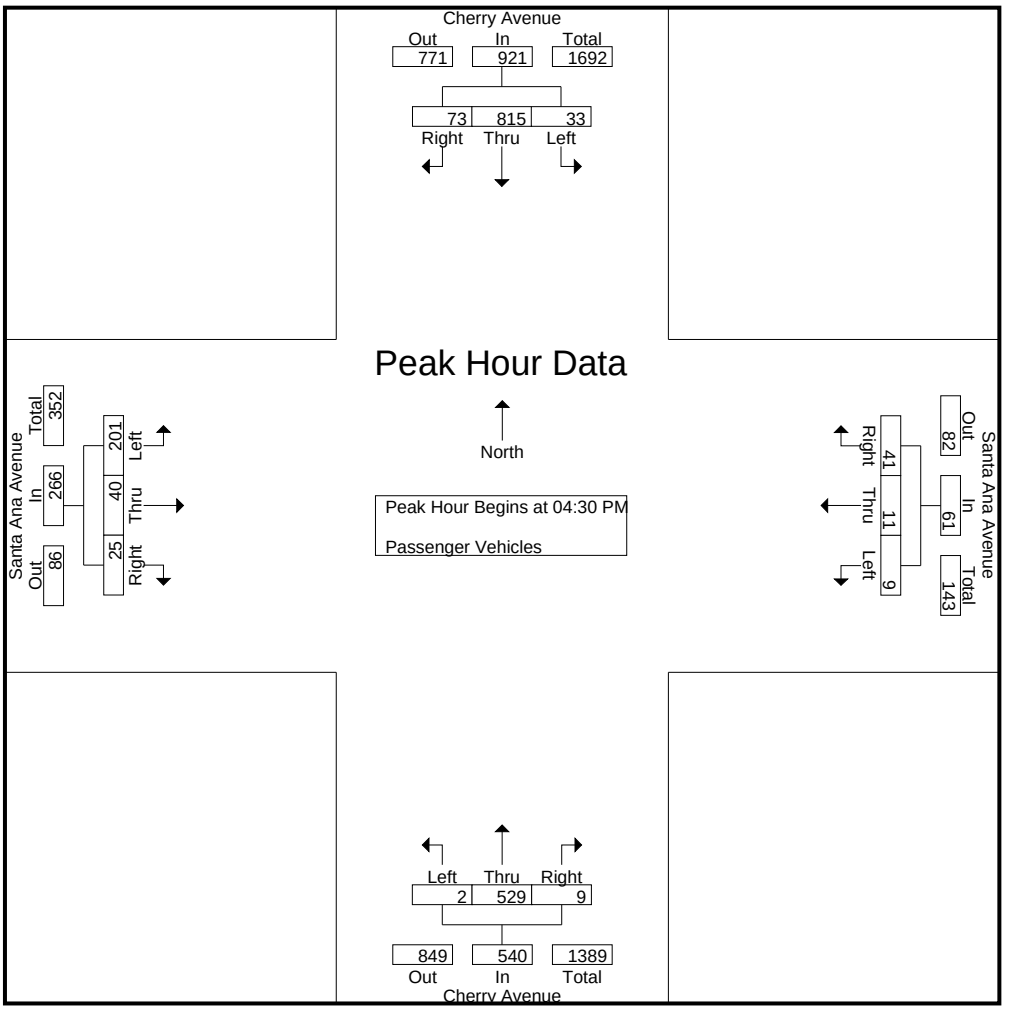
City of Fontana
N/S: Cherry Avenue
E/W: Santa Ana Avenue
Weather: Clear

File Name : 15_FON_Cherry_Santa Ana PM
Site Code : 10821516
Start Date : 9/28/2021
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	8	193	**28**	229	3	**3**	11	17	0	140	3	143	56	**14**	7	**77**
+15 mins.	9	215	19	243	1	3	5	9	0	116	1	117	**64**	8	4	76
+30 mins.	5	**234**	16	**255**	**4**	2	10	16	0	126	1	127	44	14	**10**	68
+45 mins.	**11**	173	10	194	1	3	**15**	**19**	**2**	**147**	**4**	**153**	37	4	4	45
Total Volume	33	815	73	921	9	11	41	61	2	529	9	540	201	40	25	266
% App. Total	3.6	88.5	7.9		14.8	18	67.2		0.4	98	1.7		75.6	15	9.4	
PHF	.750	.871	.652	.903	.563	.917	.683	.803	.250	.900	.563	.882	.785	.714	.625	.864

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City of Fontana
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E/W: Santa Ana Avenue
Weather: Clear

File Name : 15_FON_Cherry_Santa Ana PM
Site Code : 10821516
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Groups Printed- Large 2 Axle Vehicles

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	3	3	6	0	1	0	1	0	3	0	3	2	0	0	2	12
04:15 PM	2	3	2	7	0	0	0	0	0	3	0	3	1	0	0	1	11
04:30 PM	0	3	2	5	0	1	0	1	0	3	0	3	1	0	0	1	10
04:45 PM	0	1	2	3	0	1	0	1	0	1	0	1	3	1	0	4	9
Total	2	10	9	21	0	3	0	3	0	10	0	10	7	1	0	8	42
05:00 PM	0	6	2	8	0	0	0	0	1	2	3	6	1	0	0	1	15
05:15 PM	1	3	2	6	0	0	0	0	0	2	0	2	1	0	0	1	9
05:30 PM	0	2	2	4	0	0	0	0	0	3	0	3	1	0	1	2	9
05:45 PM	0	3	0	3	0	0	0	0	0	2	0	2	0	0	0	0	5
Total	1	14	6	21	0	0	0	0	1	9	3	13	3	0	1	4	38
Grand Total	3	24	15	42	0	3	0	3	1	19	3	23	10	1	1	12	80
Apprch %	7.1	57.1	35.7		0	100	0		4.3	82.6	13		83.3	8.3	8.3		
Total %	3.8	30	18.8	52.5	0	3.8	0	3.8	1.2	23.8	3.8	28.8	12.5	1.2	1.2	15	

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	3	**2**	5	0	**1**	0	**1**	0	**3**	0	3	1	0	0	1	10
04:45 PM	0	1	2	3	0	1	0	1	0	1	0	1	**3**	**1**	0	**4**	9
05:00 PM	0	**6**	2	**8**	0	0	0	0	**1**	2	**3**	**6**	1	0	0	1	**15**
05:15 PM	**1**	3	2	6	0	0	0	0	0	2	0	2	1	0	0	1	9
Total Volume	1	13	8	22	0	2	0	2	1	8	3	12	6	1	0	7	43
% App. Total	4.5	59.1	36.4		0	100	0		8.3	66.7	25		85.7	14.3	0		
PHF	.250	.542	1.00	.688	.000	.500	.000	.500	.250	.667	.250	.500	.500	.250	.000	.438	.717

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City of Fontana
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File Name : 15_FON_Cherry_Santa Ana PM
Site Code : 10821516
Start Date : 9/28/2021
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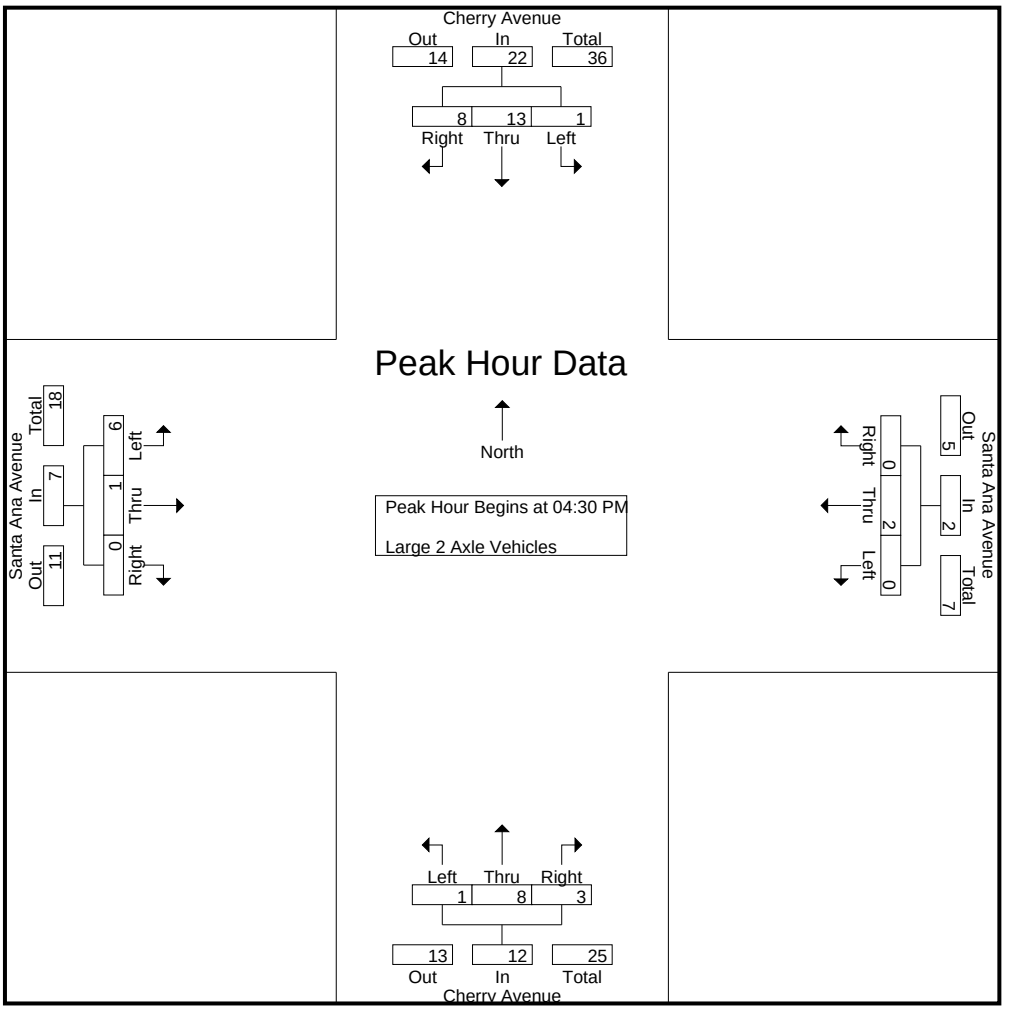

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	3	**2**	5	0	**1**	0	**1**	0	**3**	0	3	1	0	0	1
+15 mins.	0	1	2	3	0	1	0	1	0	1	0	1	**3**	**1**	0	**4**
+30 mins.	0	**6**	2	**8**	0	0	0	0	**1**	2	**3**	**6**	1	0	0	1
+45 mins.	**1**	3	2	6	0	0	0	0	0	2	0	2	1	0	0	1
Total Volume	1	13	8	22	0	2	0	2	1	8	3	12	6	1	0	7
% App. Total	4.5	59.1	36.4		0	100	0		8.3	66.7	25		85.7	14.3	0	
PHF	.250	.542	1.000	.688	.000	.500	.000	.500	.250	.667	.250	.500	.500	.250	.000	.438

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City of Fontana
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E/W: Santa Ana Avenue
Weather: Clear

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Groups Printed- 3 Axle Vehicles

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	0	2	3	0	0	1	1	0	2	0	2	3	0	0	3	9
04:15 PM	0	2	1	3	0	0	0	0	0	2	0	2	2	1	0	3	8
04:30 PM	1	1	0	2	0	0	0	0	1	4	0	5	0	0	1	1	8
04:45 PM	0	3	2	5	2	0	0	2	1	0	0	1	1	0	0	1	9
Total	2	6	5	13	2	0	1	3	2	8	0	10	6	1	1	8	34
05:00 PM	0	0	0	0	0	1	1	2	0	3	0	3	2	1	0	3	8
05:15 PM	0	7	1	8	0	1	0	1	0	2	0	2	0	1	0	1	12
05:30 PM	1	1	0	2	1	0	0	1	1	2	0	3	0	0	0	0	6
05:45 PM	0	0	3	3	0	0	0	0	0	1	0	1	0	0	0	0	4
Total	1	8	4	13	1	2	1	4	1	8	0	9	2	2	0	4	30
Grand Total	3	14	9	26	3	2	2	7	3	16	0	19	8	3	1	12	64
Apprch %	11.5	53.8	34.6		42.9	28.6	28.6		15.8	84.2	0		66.7	25	8.3		
Total %	4.7	21.9	14.1	40.6	4.7	3.1	3.1	10.9	4.7	25	0	29.7	12.5	4.7	1.6	18.8	

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**1**	1	0	2	0	0	0	0	**1**	**4**	0	**5**	0	0	**1**	1	8
04:45 PM	0	3	**2**	5	**2**	0	0	**2**	1	0	0	1	1	0	0	1	9
05:00 PM	0	0	0	0	0	**1**	**1**	2	0	3	0	3	**2**	**1**	0	**3**	8
05:15 PM	0	**7**	1	**8**	0	1	0	1	0	2	0	2	0	1	0	1	**12**
Total Volume	1	11	3	15	2	2	1	5	2	9	0	11	3	2	1	6	37
% App. Total	6.7	73.3	20		40	40	20		18.2	81.8	0		50	33.3	16.7		
PHF	.250	.393	.375	.469	.250	.500	.250	.625	.500	.563	.000	.550	.375	.500	.250	.500	.771

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File Name : 15_FON_Cherry_Santa Ana PM
Site Code : 10821516
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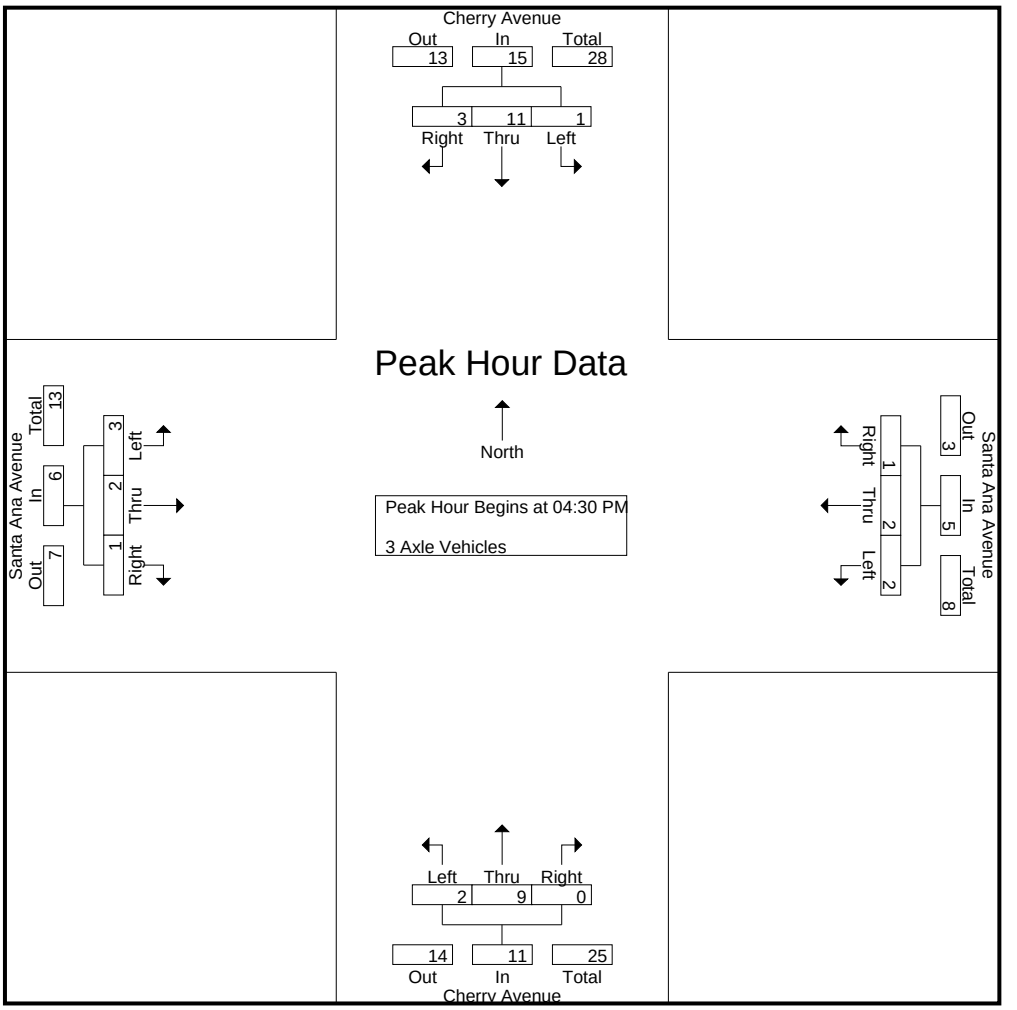

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	**1**	1	0	2	0	0	0	0	**1**	**4**	0	**5**	0	0	**1**	1
+15 mins.	0	3	**2**	5	**2**	0	0	**2**	1	0	0	1	1	0	0	1
+30 mins.	0	0	0	0	0	**1**	**1**	2	0	3	0	3	**2**	**1**	0	**3**
+45 mins.	0	**7**	1	**8**	0	1	0	1	0	2	0	2	0	1	0	1
Total Volume	1	11	3	15	2	2	1	5	2	9	0	11	3	2	1	6
% App. Total	6.7	73.3	20		40	40	20		18.2	81.8	0		50	33.3	16.7	
PHF	.250	.393	.375	.469	.250	.500	.250	.625	.500	.563	.000	.550	.375	.500	.250	.500

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City of Fontana
N/S: Cherry Avenue
E/W: Santa Ana Avenue
Weather: Clear

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Groups Printed- 4+ Axle Trucks

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	2	2	6	10	0	0	0	0	0	3	0	3	1	1	0	2	15
04:15 PM	2	4	3	9	0	0	1	1	0	7	0	7	3	0	0	3	20
04:30 PM	3	2	5	10	0	0	0	0	0	2	0	2	2	0	0	2	14
04:45 PM	2	1	5	8	0	0	0	0	0	7	1	8	1	0	1	2	18
Total	9	9	19	37	0	0	1	1	0	19	1	20	7	1	1	9	67
05:00 PM	2	3	2	7	0	1	0	1	0	2	1	3	4	1	0	5	16
05:15 PM	3	5	1	9	0	0	0	0	0	3	3	6	2	0	0	2	17
05:30 PM	4	3	0	7	0	0	2	2	0	4	0	4	2	1	0	3	16
05:45 PM	2	5	4	11	0	1	1	2	0	2	1	3	2	0	0	2	18
Total	11	16	7	34	0	2	3	5	0	11	5	16	10	2	0	12	67
Grand Total	20	25	26	71	0	2	4	6	0	30	6	36	17	3	1	21	134
Apprch %	28.2	35.2	36.6		0	33.3	66.7		0	83.3	16.7		81	14.3	4.8		
Total %	14.9	18.7	19.4	53	0	1.5	3	4.5	0	22.4	4.5	26.9	12.7	2.2	0.7	15.7	

	Cherry Avenue Southbound				Santa Ana Avenue Westbound				Cherry Avenue Northbound				Santa Ana Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**3**	2	**5**	**10**	0	0	0	0	0	2	0	2	2	0	0	2	14
04:45 PM	2	1	5	8	0	0	0	0	0	**7**	1	**8**	1	0	**1**	2	**18**
05:00 PM	2	3	2	7	0	**1**	0	**1**	0	2	1	3	**4**	**1**	0	**5**	16
05:15 PM	3	**5**	1	9	0	0	0	0	0	3	**3**	6	2	0	0	2	17
Total Volume	10	11	13	34	0	1	0	1	0	14	5	19	9	1	1	11	65
% App. Total	29.4	32.4	38.2		0	100	0		0	73.7	26.3		81.8	9.1	9.1		
PHF	.833	.550	.650	.850	.000	.250	.000	.250	.000	.500	.417	.594	.563	.250	.250	.550	.903

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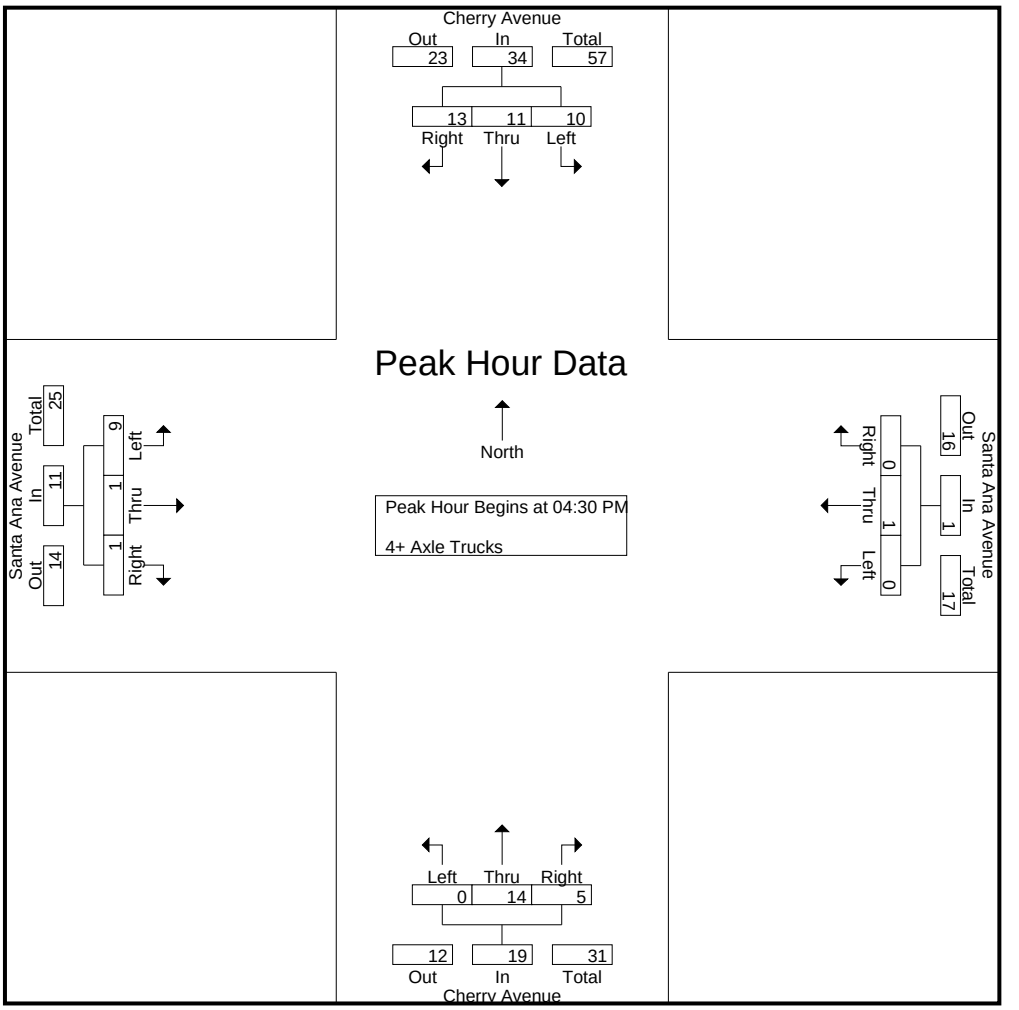


Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	**3**	2	**5**	**10**	0	0	0	0	0	2	0	2	2	0	0	2
+15 mins.	2	1	5	8	0	0	0	0	0	**7**	1	**8**	1	0	**1**	2
+30 mins.	2	3	2	7	0	**1**	0	**1**	0	2	1	3	**4**	**1**	0	**5**
+45 mins.	3	**5**	1	9	0	0	0	0	0	3	**3**	6	2	0	0	2
Total Volume	10	11	13	34	0	1	0	1	0	14	5	19	9	1	1	11
% App. Total	29.4	32.4	38.2		0	100	0		0	73.7	26.3		81.8	9.1	9.1	
PHF	.833	.550	.650	.850	.000	.250	.000	.250	.000	.500	.417	.594	.563	.250	.250	.550

APPENDIX C

PCE WORKSHEETS

Existing Peak Hour Volumes - Classification Counts

1 Cherry Ave at SR-210 WB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	150	2	2	3	7	4.5%	16	2.3	166	285	1	0	5	6	2.1%	17	2.8	302
NT	265	10	4	5	19	6.7%	38	2.0	303	515	8	4	12	24	4.5%	56	2.3	571
NR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	632	12	7	16	35	5.2%	80	2.3	712	416	3	8	8	19	4.4%	45	2.4	461
SR	197	0	0	1	1	0.5%	3	3.0	200	141	0	1	1	2	1.4%	5	2.5	146
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	299	6	5	14	25	7.7%	61	2.4	360	263	4	3	4	11	4.0%	24	2.2	287
WT	4	0	0	0	0	0.0%	0	0.0	4	0	0	0	0	0	0.0%	0	0.0	0
WR	238	8	1	0	9	3.6%	14	1.6	252	124	4	1	1	6	4.6%	11	1.8	135
									1,997									1,902
North Leg Volumes																		
Approach	829	12	7	17	36		83		912	557	3	9	9	21		50		607
Depart	503	18	5	5	28		52		555	639	12	5	13	30		67		706
Total	1,332	30	12	22	64	4.6%	135	2.1	1,467	1,196	15	14	22	51	4.1%	117	2.3	1,313
South Leg Volumes																		
Approach	415	12	6	8	26		54		469	800	9	4	17	30		73		873
Depart	931	18	12	30	60		141		1,072	679	7	11	12	30		69		748
Total	1,346	30	18	38	86	6.0%	195	2.3	1,541	1,479	16	15	29	60	3.9%	142	2.4	1,621
East Leg Volumes																		
Approach	541	14	6	14	34		75		616	387	8	4	5	17		35		422
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	541	14	6	14	34	5.9%	75	2.2	616	387	8	4	5	17	4.2%	35	2.1	422
West Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	351	2	2	4	8		19		370	426	1	1	6	8		22		448
Total	351	2	2	4	8	2.2%	19	2.4	370	426	1	1	6	8	1.8%	22	2.8	448
All Legs																		
Approach	1,785	38	19	39	96		212		1,997	1,744	20	17	31	68		158		1,902
Depart	1,785	38	19	39	96		212		1,997	1,744	20	17	31	68		158		1,902
Total	3,570	76	38	78	192	5.1%	424	2.2	3,994	3,488	40	34	62	136	3.8%	316	2.3	3,804

Existing Peak Hour Volumes - Classification Counts

2 Citrus Ave at SR-210 WB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	267	5	0	9	14	5.0%	35	2.5	302	311	2	0	3	5	1.6%	12	2.4	323
NT	865	13	3	5	21	2.4%	41	2.0	906	1,028	2	2	1	5	0.5%	10	2.0	1,038
NR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	789	5	2	7	14	1.7%	33	2.4	822	708	8	3	2	13	1.8%	24	1.8	732
SR	340	4	0	3	7	2.0%	15	2.1	355	380	6	0	2	8	2.1%	15	1.9	395
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	377	7	0	11	18	4.6%	44	2.4	421	324	3	3	2	8	2.4%	17	2.1	341
WT	1	0	0	0	0	0.0%	0	0.0	1	0	0	0	0	0	0.0%	0	0.0	0
WR	291	2	0	5	7	2.3%	18	2.6	309	329	2	0	0	2	0.6%	3	1.5	332
									3,116									3,161
North Leg Volumes																		
Approach	1,129	9	2	10	21		48		1,177	1,088	14	3	4	21		39		1,127
Depart	1,156	15	3	10	28		59		1,215	1,357	4	2	1	7		13		1,370
Total	2,285	24	5	20	49	2.1%	107	2.2	2,392	2,445	18	5	5	28	1.1%	52	1.9	2,497
South Leg Volumes																		
Approach	1,132	18	3	14	35		76		1,208	1,339	4	2	4	10		22		1,361
Depart	1,166	12	2	18	32		77		1,243	1,032	11	6	4	21		41		1,073
Total	2,298	30	5	32	67	2.8%	153	2.3	2,451	2,371	15	8	8	31	1.3%	63	2.0	2,434
East Leg Volumes																		
Approach	669	9	0	16	25		62		731	653	5	3	2	10		20		673
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	669	9	0	16	25	3.6%	62	2.5	731	653	5	3	2	10	1.5%	20	2.0	673
West Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	608	9	0	12	21		50		658	691	8	0	5	13		27		718
Total	608	9	0	12	21	3.3%	50	2.4	658	691	8	0	5	13	1.8%	27	2.1	718
All Legs																		
Approach	2,930	36	5	40	81		186		3,116	3,080	23	8	10	41		81		3,161
Depart	2,930	36	5	40	81		186		3,116	3,080	23	8	10	41		81		3,161
Total	5,860	72	10	80	162	2.7%	372	2.3	6,232	6,160	46	16	20	82	1.3%	162	2.0	6,322

Existing Peak Hour Volumes - Classification Counts

3 Sierra Ave at SR-210 WB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	726	12	6	12	30	4.0%	66	2.2	792	1,067	7	3	16	26	2.4%	65	2.5	1,132
NR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	1,022	15	2	10	27	2.6%	57	2.1	1,079	1,147	8	2	3	13	1.1%	25	1.9	1,172
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	485	3	1	6	10	2.0%	25	2.5	510	284	3	1	2	6	2.1%	13	2.2	297
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	278	4	2	1	7	2.5%	13	1.9	291	393	3	1	0	4	1.0%	7	1.8	400
									2,672									3,001
North Leg Volumes																		
Approach	1,022	15	2	10	27		57		1,079	1,147	8	2	3	13		25		1,172
Depart	1,004	16	8	13	37		79		1,083	1,460	10	4	16	30		72		1,532
Total	2,026	31	10	23	64	3.1%	136	2.1	2,162	2,607	18	6	19	43	1.6%	97	2.3	2,704
South Leg Volumes																		
Approach	726	12	6	12	30		66		792	1,067	7	3	16	26		65		1,132
Depart	1,507	18	3	16	37		82		1,589	1,431	11	3	5	19		38		1,469
Total	2,233	30	9	28	67	2.9%	148	2.2	2,381	2,498	18	6	21	45	1.8%	103	2.3	2,601
East Leg Volumes																		
Approach	763	7	3	7	17		38		801	677	6	2	2	10		20		697
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	763	7	3	7	17	2.2%	38	2.2	801	677	6	2	2	10	1.5%	20	2.0	697
West Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
All Legs																		
Approach	2,511	34	11	29	74		161		2,672	2,891	21	7	21	49		110		3,001
Depart	2,511	34	11	29	74		161		2,672	2,891	21	7	21	49		110		3,001
Total	5,022	68	22	58	148	2.9%	322	2.2	5,344	5,782	42	14	42	98	1.7%	220	2.2	6,002

Existing Peak Hour Volumes - Classification Counts

4 Cherry Ave at SR-210 EB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	352	15	11	10	36	9.3%	75	2.1	427	620	5	4	17	26	4.0%	67	2.6	687
NR	272	10	4	8	22	7.5%	47	2.1	319	274	5	2	7	14	4.9%	33	2.4	307
SL	154	2	0	1	3	1.9%	6	2.0	160	72	0	0	0	0	0.0%	0	0.0	72
ST	678	16	8	29	53	7.3%	127	2.4	805	606	9	10	11	30	4.7%	67	2.2	673
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	148	2	1	0	3	2.0%	5	1.7	153	187	4	0	0	4	2.1%	6	1.5	193
ET	5	0	0	0	0	0.0%	0	0.0	5	2	0	0	0	0	0.0%	0	0.0	2
ER	232	10	2	15	27	10.4%	64	2.4	296	316	6	2	10	18	5.4%	43	2.4	359
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
									2,165									2,293
North Leg Volumes																		
Approach	832	18	8	30	56		133		965	678	9	10	11	30		67		745
Depart	500	17	12	10	39		80		580	807	9	4	17	30		73		880
Total	1,332	35	20	40	95	6.7%	213	2.2	1,545	1,485	18	14	28	60	3.9%	140	2.3	1,625
South Leg Volumes																		
Approach	624	25	15	18	58		122		746	894	10	6	24	40		100		994
Depart	910	26	10	44	80		191		1,101	922	15	12	21	48		110		1,032
Total	1,534	51	25	62	138	8.3%	313	2.3	1,847	1,816	25	18	45	88	4.6%	210	2.4	2,026
East Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	431	12	4	9	25		53		484	348	5	2	7	14		33		381
Total	431	12	4	9	25	5.5%	53	2.1	484	348	5	2	7	14	3.9%	33	2.4	381
West Leg Volumes																		
Approach	385	12	3	15	30		69		454	505	10	2	10	22		49		554
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	385	12	3	15	30	7.2%	69	2.3	454	505	10	2	10	22	4.2%	49	2.2	554
All Legs																		
Approach	1,841	55	26	63	144		324		2,165	2,077	29	18	45	92		216		2,293
Depart	1,841	55	26	63	144		324		2,165	2,077	29	18	45	92		216		2,293
Total	3,682	110	52	126	288	7.3%	648	2.3	4,330	4,154	58	36	90	184	4.2%	432	2.3	4,586

Existing Peak Hour Volumes - Classification Counts

5 Citrus Ave at SR-210 EB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	754	17	2	11	30	3.8%	63	2.1	817	1,021	7	1	3	11	1.1%	22	2.0	1,043
NR	380	5	4	4	13	3.3%	28	2.2	408	260	1	2	1	4	1.5%	9	2.3	269
SL	290	4	0	2	6	2.0%	12	2.0	302	201	2	0	0	2	1.0%	3	1.5	204
ST	868	9	2	15	26	2.9%	63	2.4	931	666	1	1	4	6	0.9%	16	2.7	682
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	396	1	2	3	6	1.5%	15	2.5	411	493	2	0	0	2	0.4%	3	1.5	496
ET	3	0	0	0	0	0.0%	0	0.0	3	3	0	0	0	0	0.0%	0	0.0	3
ER	374	4	2	6	12	3.1%	28	2.3	402	332	5	2	0	7	2.1%	12	1.7	344
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
									3,274									3,041
North Leg Volumes																		
Approach	1,158	13	2	17	32		75		1,233	867	3	1	4	8		19		886
Depart	1,150	18	4	14	36		78		1,228	1,514	9	1	3	13		25		1,539
Total	2,308	31	6	31	68	2.9%	153	2.3	2,461	2,381	12	2	7	21	0.9%	44	2.1	2,425
South Leg Volumes																		
Approach	1,134	22	6	15	43		91		1,225	1,281	8	3	4	15		31		1,312
Depart	1,242	13	4	21	38		91		1,333	998	6	3	4	13		28		1,026
Total	2,376	35	10	36	81	3.3%	182	2.2	2,558	2,279	14	6	8	28	1.2%	59	2.1	2,338
East Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	673	9	4	6	19		40		713	464	3	2	1	6		12		476
Total	673	9	4	6	19	2.7%	40	2.1	713	464	3	2	1	6	1.3%	12	2.0	476
West Leg Volumes																		
Approach	773	5	4	9	18		43		816	828	7	2	0	9		15		843
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	773	5	4	9	18	2.3%	43	2.4	816	828	7	2	0	9	1.1%	15	1.7	843
All Legs																		
Approach	3,065	40	12	41	93		209		3,274	2,976	18	6	8	32		65		3,041
Depart	3,065	40	12	41	93		209		3,274	2,976	18	6	8	32		65		3,041
Total	6,130	80	24	82	186	2.9%	418	2.2	6,548	5,952	36	12	16	64	1.1%	130	2.0	6,082

Existing Peak Hour Volumes - Classification Counts

6 Sierra Ave at SR-210 EB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	894	11	4	9	24	2.6%	52	2.2	946	1,370	11	3	8	22	1.6%	47	2.1	1,417
NR	453	5	1	0	6	1.3%	10	1.7	463	635	5	0	0	5	0.8%	8	1.6	643
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	1,218	15	6	4	25	2.0%	47	1.9	1,265	1,157	10	1	5	16	1.4%	32	2.0	1,189
SR	0	8	4	2	14	100.0%	26	1.9	26	0	8	1	9	18	100.0%	41	2.3	41
EL	118	4	3	10	17	12.6%	42	2.5	160	163	2	3	7	12	6.9%	30	2.5	193
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	511	11	2	7	20	3.8%	42	2.1	553	398	6	1	0	7	1.7%	11	1.6	409
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
									3,413									3,892
North Leg Volumes																		
Approach	1,218	23	10	6	39		73		1,291	1,157	18	2	14	34		73		1,230
Depart	1,012	15	7	19	41		94		1,106	1,533	13	6	15	34		77		1,610
Total	2,230	38	17	25	80	3.5%	167	2.1	2,397	2,690	31	8	29	68	2.5%	150	2.2	2,840
South Leg Volumes																		
Approach	1,347	16	5	9	30		62		1,409	2,005	16	3	8	27		55		2,060
Depart	1,729	26	8	11	45		89		1,818	1,555	16	2	5	23		43		1,598
Total	3,076	42	13	20	75	2.4%	151	2.0	3,227	3,560	32	5	13	50	1.4%	98	2.0	3,658
East Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	453	5	1	0	6		10		463	635	5	0	0	5		8		643
Total	453	5	1	0	6	1.3%	10	1.7	463	635	5	0	0	5	0.8%	8	1.6	643
West Leg Volumes																		
Approach	629	15	5	17	37		84		713	561	8	4	7	19		41		602
Depart	0	8	4	2	14		26		26	0	8	1	9	18		41		41
Total	629	23	9	19	51	7.5%	110	2.2	739	561	16	5	16	37	6.2%	82	2.2	643
All Legs																		
Approach	3,194	54	20	32	106		219		3,413	3,723	42	9	29	80		169		3,892
Depart	3,194	54	20	32	106		219		3,413	3,723	42	9	29	80		169		3,892
Total	6,388	108	40	64	212	3.2%	438	2.1	6,826	7,446	84	18	58	160	2.1%	338	2.1	7,784

Existing Peak Hour Volumes - Classification Counts

7 Beech Ave at Highland Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	34	2	0	0	2	5.6%	3	1.5	37	26	0	0	0	0	0.0%	0	0.0	26
NT	561	6	0	0	6	1.1%	9	1.5	570	384	0	0	0	0	0.0%	0	0.0	384
NR	65	0	1	0	1	1.5%	2	2.0	67	85	1	0	0	1	1.2%	2	2.0	87
SL	53	1	0	0	1	1.9%	2	2.0	55	98	1	0	0	1	1.0%	2	2.0	100
ST	497	2	1	0	3	0.6%	5	1.7	502	383	2	0	0	2	0.5%	3	1.5	386
SR	87	2	0	1	3	3.3%	6	2.0	93	52	1	0	0	1	1.9%	2	2.0	54
EL	117	0	0	0	0	0.0%	0	0.0	117	65	0	0	0	0	0.0%	0	0.0	65
ET	193	4	0	0	4	2.0%	6	1.5	199	322	1	0	0	1	0.3%	2	2.0	324
ER	75	0	0	0	0	0.0%	0	0.0	75	60	0	0	0	0	0.0%	0	0.0	60
WL	88	1	0	0	1	1.1%	2	2.0	90	68	0	0	0	0	0.0%	0	0.0	68
WT	196	2	0	3	5	2.5%	12	2.4	208	181	1	1	0	2	1.1%	4	2.0	185
WR	59	1	0	0	1	1.7%	2	2.0	61	82	0	0	0	0	0.0%	0	0.0	82
									2,074									1,821
North Leg Volumes																		
Approach	637	5	1	1	7		13		650	533	4	0	0	4		7		540
Depart	737	7	0	0	7		11		748	531	0	0	0	0		0		531
Total	1,374	12	1	1	14	1.0%	24	1.7	1,398	1,064	4	0	0	4	0.4%	7	1.8	1,071
South Leg Volumes																		
Approach	660	8	1	0	9		14		674	495	1	0	0	1		2		497
Depart	660	3	1	0	4		7		667	511	2	0	0	2		3		514
Total	1,320	11	2	0	13	1.0%	21	1.6	1,341	1,006	3	0	0	3	0.3%	5	1.7	1,011
East Leg Volumes																		
Approach	343	4	0	3	7		16		359	331	1	1	0	2		4		335
Depart	311	5	1	0	6		10		321	505	3	0	0	3		6		511
Total	654	9	1	3	13	1.9%	26	2.0	680	836	4	1	0	5	0.6%	10	2.0	846
West Leg Volumes																		
Approach	385	4	0	0	4		6		391	447	1	0	0	1		2		449
Depart	317	6	0	4	10		21		338	259	2	1	0	3		6		265
Total	702	10	0	4	14	2.0%	27	1.9	729	706	3	1	0	4	0.6%	8	2.0	714
All Legs																		
Approach	2,025	21	2	4	27		49		2,074	1,806	7	1	0	8		15		1,821
Depart	2,025	21	2	4	27		49		2,074	1,806	7	1	0	8		15		1,821
Total	4,050	42	4	8	54	1.3%	98	1.8	4,148	3,612	14	2	0	16	0.4%	30	1.9	3,642

Existing Peak Hour Volumes - Classification Counts

8 Citrus Ave at Highland Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	75	0	0	0	0	0.0%	0	0.0	75	59	0	0	1	1	1.7%	3	3.0	62
NT	650	18	3	14	35	5.1%	75	2.1	725	729	6	3	2	11	1.5%	21	1.9	750
NR	69	2	0	0	2	2.8%	3	1.5	72	73	0	1	0	1	1.4%	2	2.0	75
SL	329	2	1	1	4	1.2%	8	2.0	337	289	2	1	0	3	1.0%	5	1.7	294
ST	854	11	4	21	36	4.0%	88	2.4	942	607	3	2	3	8	1.3%	18	2.3	625
SR	145	1	0	1	2	1.4%	5	2.5	150	106	0	0	0	0	0.0%	0	0.0	106
EL	211	1	1	0	2	0.9%	4	2.0	215	192	0	0	0	0	0.0%	0	0.0	192
ET	192	0	0	0	0	0.0%	0	0.0	192	295	3	0	0	3	1.0%	5	1.7	300
ER	50	0	0	1	1	2.0%	3	3.0	53	54	0	0	0	0	0.0%	0	0.0	54
WL	83	3	0	1	4	4.6%	8	2.0	91	116	2	1	1	4	3.3%	8	2.0	124
WT	194	0	0	1	1	0.5%	3	3.0	197	294	0	1	0	1	0.3%	2	2.0	296
WR	237	2	0	2	4	1.7%	9	2.3	246	355	1	0	2	3	0.8%	8	2.7	363
									3,295									3,241
North Leg Volumes																		
Approach	1,328	14	5	23	42		101		1,429	1,002	5	3	3	11		23		1,025
Depart	1,098	21	4	16	41		88		1,186	1,276	7	3	4	14		29		1,305
Total	2,426	35	9	39	83	3.3%	189	2.3	2,615	2,278	12	6	7	25	1.1%	52	2.1	2,330
South Leg Volumes																		
Approach	794	20	3	14	37		78		872	861	6	4	3	13		26		887
Depart	987	14	4	23	41		99		1,086	777	5	3	4	12		26		803
Total	1,781	34	7	37	78	4.2%	177	2.3	1,958	1,638	11	7	7	25	1.5%	52	2.1	1,690
East Leg Volumes																		
Approach	514	5	0	4	9		20		534	765	3	2	3	8		18		783
Depart	590	4	1	1	6		11		601	657	5	2	0	7		12		669
Total	1,104	9	1	5	15	1.3%	31	2.1	1,135	1,422	8	4	3	15	1.0%	30	2.0	1,452
West Leg Volumes																		
Approach	453	1	1	1	3		7		460	541	3	0	0	3		5		546
Depart	414	1	0	2	3		8		422	459	0	1	1	2		5		464
Total	867	2	1	3	6	0.7%	15	2.5	882	1,000	3	1	1	5	0.5%	10	2.0	1,010
All Legs																		
Approach	3,089	40	9	42	91		206		3,295	3,169	17	9	9	35		72		3,241
Depart	3,089	40	9	42	91		206		3,295	3,169	17	9	9	35		72		3,241
Total	6,178	80	18	84	182	2.9%	412	2.3	6,590	6,338	34	18	18	70	1.1%	144	2.1	6,482

Existing Peak Hour Volumes - Classification Counts

9 Sierra Ave at Highland Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	157	2	0	0	2	1.3%	3	1.5	160	59	0	0	0	0	0.0%	0	0.0	59
NT	875	15	3	5	23	2.6%	44	1.9	919	1,275	9	3	7	19	1.5%	41	2.2	1,316
NR	36	1	0	0	1	2.7%	2	2.0	38	63	0	1	0	1	1.6%	2	2.0	65
SL	192	4	0	7	11	5.4%	27	2.5	219	348	0	0	3	3	0.9%	9	3.0	357
ST	1,142	19	4	4	27	2.3%	49	1.8	1,191	936	14	2	4	20	2.1%	37	1.9	973
SR	395	4	1	0	5	1.3%	8	1.6	403	236	3	0	0	3	1.3%	5	1.7	241
EL	285	2	0	1	3	1.0%	6	2.0	291	412	5	0	2	7	1.7%	14	2.0	426
ET	248	1	1	0	2	0.8%	4	2.0	252	249	1	0	0	1	0.4%	2	2.0	251
ER	168	1	0	1	2	1.2%	5	2.5	173	48	2	0	0	2	4.0%	3	1.5	51
WL	16	0	0	0	0	0.0%	0	0.0	16	66	2	0	0	2	2.9%	3	1.5	69
WT	249	0	0	1	1	0.4%	3	3.0	252	166	2	1	0	3	1.8%	5	1.7	171
WR	185	0	1	4	5	2.6%	14	2.8	199	351	0	0	1	1	0.3%	3	3.0	354
									4,113									4,333
North Leg Volumes																		
Approach	1,729	27	5	11	43		84		1,813	1,520	17	2	7	26		51		1,571
Depart	1,345	17	4	10	31		64		1,409	2,038	14	3	10	27		58		2,096
Total	3,074	44	9	21	74	2.4%	148	2.0	3,222	3,558	31	5	17	53	1.5%	109	2.1	3,667
South Leg Volumes																		
Approach	1,068	18	3	5	26		49		1,117	1,397	9	4	7	20		43		1,440
Depart	1,326	20	4	5	29		54		1,380	1,050	18	2	4	24		43		1,093
Total	2,394	38	7	10	55	2.2%	103	1.9	2,497	2,447	27	6	11	44	1.8%	86	2.0	2,533
East Leg Volumes																		
Approach	450	0	1	5	6		17		467	583	4	1	1	6		11		594
Depart	476	6	1	7	14		33		509	660	1	1	3	5		13		673
Total	926	6	2	12	20	2.1%	50	2.5	976	1,243	5	2	4	11	0.9%	24	2.2	1,267
West Leg Volumes																		
Approach	701	4	1	2	7		15		716	709	8	0	2	10		19		728
Depart	801	6	1	1	8		14		815	461	5	1	0	6		10		471
Total	1,502	10	2	3	15	1.0%	29	1.9	1,531	1,170	13	1	2	16	1.3%	29	1.8	1,199
All Legs																		
Approach	3,948	49	10	23	82		165		4,113	4,209	38	7	17	62		124		4,333
Depart	3,948	49	10	23	82		165		4,113	4,209	38	7	17	62		124		4,333
Total	7,896	98	20	46	164	2.0%	330	2.0	8,226	8,418	76	14	34	124	1.5%	248	2.0	8,666

Existing Peak Hour Volumes - Classification Counts

10 Etiwanda Ave at Base Line Rd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	105	1	3	0	4	3.7%	8	2.0	113	102	0	0	0	0	0.0%	0	0.0	102
NT	266	0	1	0	1	0.4%	2	2.0	268	161	1	0	0	1	0.6%	2	2.0	163
NR	99	2	0	0	2	2.0%	3	1.5	102	201	1	0	1	2	1.0%	5	2.5	206
SL	144	2	0	0	2	1.4%	3	1.5	147	45	1	1	0	2	4.3%	4	2.0	49
ST	286	0	0	0	0	0.0%	0	0.0	286	81	0	5	1	6	6.9%	13	2.2	94
SR	257	0	0	0	0	0.0%	0	0.0	257	59	1	0	0	1	1.7%	2	2.0	61
EL	107	0	0	0	0	0.0%	0	0.0	107	74	0	0	0	0	0.0%	0	0.0	74
ET	492	2	3	2	7	1.4%	15	2.1	507	971	5	0	4	9	0.9%	20	2.2	991
ER	76	0	1	0	1	1.3%	2	2.0	78	105	0	5	0	5	4.5%	10	2.0	115
WL	169	0	0	1	1	0.6%	3	3.0	172	126	1	0	0	1	0.8%	2	2.0	128
WT	1,076	10	3	5	18	1.6%	36	2.0	1,112	614	4	0	0	4	0.6%	6	1.5	620
WR	232	1	1	0	2	0.9%	4	2.0	236	44	0	1	0	1	2.2%	2	2.0	46
									3,385									2,649
North Leg Volumes																		
Approach	687	2	0	0	2		3		690	185	2	6	1	9		19		204
Depart	605	1	2	0	3		6		611	279	1	1	0	2		4		283
Total	1,292	3	2	0	5	0.4%	9	1.8	1,301	464	3	7	1	11	2.3%	23	2.1	487
South Leg Volumes																		
Approach	470	3	4	0	7		13		483	464	2	0	1	3		7		471
Depart	531	0	1	1	2		5		536	312	1	10	1	12		25		337
Total	1,001	3	5	1	9	0.9%	18	2.0	1,019	776	3	10	2	15	1.9%	32	2.1	808
East Leg Volumes																		
Approach	1,477	11	4	6	21		43		1,520	784	5	1	0	6		10		794
Depart	735	6	3	2	11		21		756	1,217	7	1	5	13		29		1,246
Total	2,212	17	7	8	32	1.4%	64	2.0	2,276	2,001	12	2	5	19	0.9%	39	2.1	2,040
West Leg Volumes																		
Approach	675	2	4	2	8		17		692	1,150	5	5	4	14		30		1,180
Depart	1,438	11	6	5	22		44		1,482	775	5	0	0	5		8		783
Total	2,113	13	10	7	30	1.4%	61	2.0	2,174	1,925	10	5	4	19	1.0%	38	2.0	1,963
All Legs																		
Approach	3,309	18	12	8	38		76		3,385	2,583	14	12	6	32		66		2,649
Depart	3,309	18	12	8	38		76		3,385	2,583	14	12	6	32		66		2,649
Total	6,618	36	24	16	76	1.1%	152	2.0	6,770	5,166	28	24	12	64	1.2%	132	2.1	5,298

Existing Peak Hour Volumes - Classification Counts

11 I-15 SB Ramps at Base Line Rd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SL	353	0	1	4	5	1.4%	14	2.8	367	245	3	1	2	6	2.4%	13	2.2	258
ST	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SR	551	3	1	3	7	1.3%	16	2.3	567	250	0	0	0	0	0.0%	0	0.0	250
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	524	3	1	2	6	1.1%	13	2.2	537	1,024	6	1	4	11	1.1%	23	2.1	1,047
ER	231	3	0	0	3	1.3%	5	1.7	236	166	2	0	0	2	1.2%	3	1.5	169
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	916	10	3	3	16	1.7%	30	1.9	946	546	5	2	0	7	1.3%	12	1.7	558
WR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
									2,653									2,282
North Leg Volumes																		
Approach	904	3	2	7	12		30		934	495	3	1	2	6		13		508
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	904	3	2	7	12	1.3%	30	2.5	934	495	3	1	2	6	1.2%	13	2.2	508
South Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	231	3	0	0	3		5		236	166	2	0	0	2		3		169
Total	231	3	0	0	3	1.3%	5	1.7	236	166	2	0	0	2	1.2%	3	1.5	169
East Leg Volumes																		
Approach	916	10	3	3	16		30		946	546	5	2	0	7		12		558
Depart	877	3	2	6	11		27		904	1,269	9	2	6	17		36		1,305
Total	1,793	13	5	9	27	1.5%	57	2.1	1,850	1,815	14	4	6	24	1.3%	48	2.0	1,863
West Leg Volumes																		
Approach	755	6	1	2	9		18		773	1,190	8	1	4	13		26		1,216
Depart	1,467	13	4	6	23		46		1,513	796	5	2	0	7		12		808
Total	2,222	19	5	8	32	1.4%	64	2.0	2,286	1,986	13	3	4	20	1.0%	38	1.9	2,024
All Legs																		
Approach	2,575	19	6	12	37		78		2,653	2,231	16	4	6	26		51		2,282
Depart	2,575	19	6	12	37		78		2,653	2,231	16	4	6	26		51		2,282
Total	5,150	38	12	24	74	1.4%	156	2.1	5,306	4,462	32	8	12	52	1.2%	102	2.0	4,564

Existing Peak Hour Volumes - Classification Counts

12 I-15 NB Ramps at Baseline Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	260	4	0	4	8	3.0%	18	2.3	278	270	1	2	0	3	1.1%	6	2.0	276
NT	2	0	0	0	0	0.0%	0	0.0	2	0	0	0	0	0	0.0%	0	0.0	0
NR	286	7	0	3	10	3.4%	20	2.0	306	506	4	1	0	5	1.0%	8	1.6	514
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	339	2	3	2	7	2.0%	15	2.1	354	431	1	0	2	3	0.7%	8	2.7	439
ET	551	3	0	3	6	1.1%	14	2.3	565	897	6	0	2	8	0.9%	15	1.9	912
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	1,552	14	5	4	23	1.5%	43	1.9	1,595	767	11	4	2	17	2.2%	31	1.8	798
WR	159	3	0	5	8	4.8%	20	2.5	179	147	2	0	4	6	3.9%	15	2.5	162
									3,279									3,101
North Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	500	5	3	7	15		35		535	578	3	0	6	9		23		601
Total	500	5	3	7	15	2.9%	35	2.3	535	578	3	0	6	9	1.5%	23	2.6	601
South Leg Volumes																		
Approach	548	11	0	7	18		38		586	776	5	3	0	8		14		790
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	548	11	0	7	18	3.2%	38	2.1	586	776	5	3	0	8	1.0%	14	1.8	790
East Leg Volumes																		
Approach	1,711	17	5	9	31		63		1,774	914	13	4	6	23		46		960
Depart	837	10	0	6	16		34		871	1,403	10	1	2	13		23		1,426
Total	2,548	27	5	15	47	1.8%	97	2.1	2,645	2,317	23	5	8	36	1.5%	69	1.9	2,386
West Leg Volumes																		
Approach	890	5	3	5	13		29		919	1,328	7	0	4	11		23		1,351
Depart	1,812	18	5	8	31		61		1,873	1,037	12	6	2	20		37		1,074
Total	2,702	23	8	13	44	1.6%	90	2.0	2,792	2,365	19	6	6	31	1.3%	60	1.9	2,425
All Legs																		
Approach	3,149	33	8	21	62		130		3,279	3,018	25	7	10	42		83		3,101
Depart	3,149	33	8	21	62		130		3,279	3,018	25	7	10	42		83		3,101
Total	6,298	66	16	42	124	1.9%	260	2.1	6,558	6,036	50	14	20	84	1.4%	166	2.0	6,202

Existing Peak Hour Volumes - Classification Counts

13 Cherry Ave at Baseline Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	43	4	1	4	9	17.3%	20	2.2	63	132	3	1	5	9	6.4%	22	2.4	154
NT	438	20	8	15	43	8.9%	91	2.1	529	852	2	10	17	29	3.3%	74	2.6	926
NR	136	5	1	3	9	6.2%	19	2.1	155	316	1	1	6	8	2.5%	22	2.8	338
SL	67	0	1	0	1	1.5%	2	2.0	69	105	1	0	0	1	0.9%	2	2.0	107
ST	658	15	12	41	68	9.4%	170	2.5	828	372	4	12	11	27	6.8%	63	2.3	435
SR	400	5	1	0	6	1.5%	10	1.7	410	83	2	0	0	2	2.4%	3	1.5	86
EL	227	3	0	0	3	1.3%	5	1.7	232	303	1	0	0	1	0.3%	2	2.0	305
ET	480	7	1	3	11	2.2%	22	2.0	502	1,048	6	0	1	7	0.7%	12	1.7	1,060
ER	125	2	1	3	6	4.6%	14	2.3	139	79	0	1	0	1	1.3%	2	2.0	81
WL	392	4	2	4	10	2.5%	22	2.2	414	276	3	4	1	8	2.8%	16	2.0	292
WT	1,311	7	1	4	12	0.9%	25	2.1	1,336	565	10	2	2	14	2.4%	25	1.8	590
WR	66	0	0	0	0	0.0%	0	0.0	66	58	0	0	1	1	1.7%	3	3.0	61
									4,743									4,435
North Leg Volumes																		
Approach	1,125	20	14	41	75		182		1,307	560	7	12	11	30		68		628
Depart	731	23	8	15	46		96		827	1,213	3	10	18	31		79		1,292
Total	1,856	43	22	56	121	6.1%	278	2.3	2,134	1,773	10	22	29	61	3.3%	147	2.4	1,920
South Leg Volumes																		
Approach	617	29	10	22	61		130		747	1,300	6	12	28	46		118		1,418
Depart	1,175	21	15	48	84		206		1,381	727	7	17	12	36		81		808
Total	1,792	50	25	70	145	7.5%	336	2.3	2,128	2,027	13	29	40	82	3.9%	199	2.4	2,226
East Leg Volumes																		
Approach	1,769	11	3	8	22		47		1,816	899	13	6	4	23		44		943
Depart	683	12	3	6	21		43		726	1,469	8	1	7	16		36		1,505
Total	2,452	23	6	14	43	1.7%	90	2.1	2,542	2,368	21	7	11	39	1.6%	80	2.1	2,448
West Leg Volumes																		
Approach	832	12	2	6	20		41		873	1,430	7	1	1	9		16		1,446
Depart	1,754	16	3	8	27		55		1,809	780	15	3	7	25		50		830
Total	2,586	28	5	14	47	1.8%	96	2.0	2,682	2,210	22	4	8	34	1.5%	66	1.9	2,276
All Legs																		
Approach	4,343	72	29	77	178		400		4,743	4,189	33	31	44	108		246		4,435
Depart	4,343	72	29	77	178		400		4,743	4,189	33	31	44	108		246		4,435
Total	8,686	144	58	154	356	3.9%	800	2.2	9,486	8,378	66	62	88	216	2.5%	492	2.3	8,870

Existing Peak Hour Volumes - Classification Counts

14 Beech Ave at Baseline Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	63	1	0	0	1	1.6%	2	2.0	65	94	0	0	0	0	0.0%	0	0.0	94
NT	239	0	0	0	0	0.0%	0	0.0	239	247	2	0	0	2	0.8%	3	1.5	250
NR	13	0	0	0	0	0.0%	0	0.0	13	22	1	0	0	1	4.3%	2	2.0	24
SL	92	1	0	0	1	1.1%	2	2.0	94	128	2	0	0	2	1.5%	3	1.5	131
ST	236	2	0	0	2	0.8%	3	1.5	239	188	0	0	1	1	0.5%	3	3.0	191
SR	190	2	2	0	4	2.1%	7	1.8	197	90	0	0	0	0	0.0%	0	0.0	90
EL	130	1	0	0	1	0.8%	2	2.0	132	211	0	0	0	0	0.0%	0	0.0	211
ET	389	3	2	7	12	3.0%	30	2.5	419	953	4	1	6	11	1.1%	26	2.4	979
ER	37	0	0	0	0	0.0%	0	0.0	37	71	1	0	0	1	1.4%	2	2.0	73
WL	45	0	0	0	0	0.0%	0	0.0	45	61	1	1	0	2	3.2%	4	2.0	65
WT	547	7	2	9	18	3.2%	42	2.3	589	525	5	2	5	12	2.2%	27	2.3	552
WR	82	0	0	0	0	0.0%	0	0.0	82	121	0	0	0	0	0.0%	0	0.0	121
									2,151									2,781
North Leg Volumes																		
Approach	518	5	2	0	7		12		530	406	2	0	1	3		6		412
Depart	451	1	0	0	1		2		453	579	2	0	0	2		3		582
Total	969	6	2	0	8	0.8%	14	1.8	983	985	4	0	1	5	0.5%	9	1.8	994
South Leg Volumes																		
Approach	315	1	0	0	1		2		317	363	3	0	0	3		5		368
Depart	318	2	0	0	2		3		321	320	2	1	1	4		9		329
Total	633	3	0	0	3	0.5%	5	1.7	638	683	5	1	1	7	1.0%	14	2.0	697
East Leg Volumes																		
Approach	674	7	2	9	18		42		716	707	6	3	5	14		31		738
Depart	494	4	2	7	13		32		526	1,103	7	1	6	14		31		1,134
Total	1,168	11	4	16	31	2.6%	74	2.4	1,242	1,810	13	4	11	28	1.5%	62	2.2	1,872
West Leg Volumes																		
Approach	556	4	2	7	13		32		588	1,235	5	1	6	12		28		1,263
Depart	800	10	4	9	23		51		851	709	5	2	5	12		27		736
Total	1,356	14	6	16	36	2.6%	83	2.3	1,439	1,944	10	3	11	24	1.2%	55	2.3	1,999
All Legs																		
Approach	2,063	17	6	16	39		88		2,151	2,711	16	4	12	32		70		2,781
Depart	2,063	17	6	16	39		88		2,151	2,711	16	4	12	32		70		2,781
Total	4,126	34	12	32	78	1.9%	176	2.3	4,302	5,422	32	8	24	64	1.2%	140	2.2	5,562

Existing Peak Hour Volumes - Classification Counts

15 Citrus Ave at Baseline Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	111	4	0	1	5	4.3%	9	1.8	120	95	0	0	0	0	0.0%	0	0.0	95
NT	522	7	1	12	20	3.7%	49	2.5	571	589	4	3	2	9	1.5%	18	2.0	607
NR	733	0	0	0	0	0.0%	0	0.0	733	63	0	0	2	2	3.1%	6	3.0	69
SL	112	2	3	1	6	5.1%	12	2.0	124	124	2	0	0	2	1.6%	3	1.5	127
ST	708	7	5	14	26	3.5%	63	2.4	771	422	1	2	5	8	1.9%	21	2.6	443
SR	225	4	0	2	6	2.6%	12	2.0	237	95	2	1	2	5	5.0%	11	2.2	106
EL	263	4	1	1	6	2.2%	11	1.8	274	291	3	0	1	4	1.4%	8	2.0	299
ET	328	3	2	3	8	2.4%	18	2.3	346	689	5	1	7	13	1.9%	31	2.4	720
ER	104	0	1	1	2	1.9%	5	2.5	109	115	0	0	0	0	0.0%	0	0.0	115
WL	134	3	1	5	9	6.3%	22	2.4	156	146	0	4	2	6	3.9%	14	2.3	160
WT	623	6	3	7	16	2.5%	36	2.3	659	496	3	5	5	13	2.6%	30	2.3	526
WR	92	4	2	0	6	6.1%	10	1.7	102	58	0	0	0	0	0.0%	0	0.0	58
									4,202									3,325
North Leg Volumes																		
Approach	1,045	13	8	17	38		87		1,132	641	5	3	7	15		35		676
Depart	877	15	4	13	32		70		947	938	7	3	3	13		26		964
Total	1,922	28	12	30	70	3.5%	157	2.2	2,079	1,579	12	6	10	28	1.7%	61	2.2	1,640
South Leg Volumes																		
Approach	1,366	11	1	13	25		58		1,424	747	4	3	4	11		24		771
Depart	946	10	7	20	37		90		1,036	683	1	6	7	14		35		718
Total	2,312	21	8	33	62	2.6%	148	2.4	2,460	1,430	5	9	11	25	1.7%	59	2.4	1,489
East Leg Volumes																		
Approach	849	13	6	12	31		68		917	700	3	9	7	19		44		744
Depart	1,173	5	5	4	14		30		1,203	876	7	1	9	17		40		916
Total	2,022	18	11	16	45	2.2%	98	2.2	2,120	1,576	10	10	16	36	2.2%	84	2.3	1,660
West Leg Volumes																		
Approach	695	7	4	5	16		34		729	1,095	8	1	8	17		39		1,134
Depart	959	14	3	10	27		57		1,016	686	5	6	7	18		41		727
Total	1,654	21	7	15	43	2.5%	91	2.1	1,745	1,781	13	7	15	35	1.9%	80	2.3	1,861
All Legs																		
Approach	3,955	44	19	47	110		247		4,202	3,183	20	16	26	62		142		3,325
Depart	3,955	44	19	47	110		247		4,202	3,183	20	16	26	62		142		3,325
Total	7,910	88	38	94	220	2.7%	494	2.2	8,404	6,366	40	32	52	124	1.9%	284	2.3	6,650

Existing Peak Hour Volumes - Classification Counts

16 Sierra Ave at Baseline Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	155	0	1	0	1	0.6%	2	2.0	157	104	0	0	0	0	0.0%	0	0.0	104
NT	585	8	1	10	19	3.1%	44	2.3	629	952	7	1	3	11	1.1%	22	2.0	974
NR	49	1	1	1	3	5.8%	7	2.3	56	61	0	0	0	0	0.0%	0	0.0	61
SL	213	2	2	0	4	1.8%	7	1.8	220	223	2	0	0	2	0.9%	3	1.5	226
ST	1,015	9	2	7	18	1.7%	39	2.2	1,054	490	6	1	3	10	2.0%	20	2.0	510
SR	95	2	3	0	5	5.0%	9	1.8	104	55	0	0	0	0	0.0%	0	0.0	55
EL	90	1	1	0	2	2.2%	4	2.0	94	134	0	1	0	1	0.7%	2	2.0	136
ET	393	1	2	2	5	1.3%	12	2.4	405	565	4	1	8	13	2.2%	32	2.5	597
ER	106	2	0	0	2	1.9%	3	1.5	109	90	0	0	0	0	0.0%	0	0.0	90
WL	83	0	2	1	3	3.5%	7	2.3	90	89	0	0	1	1	1.1%	3	3.0	92
WT	424	9	6	14	29	6.4%	68	2.3	492	588	5	10	8	23	3.8%	52	2.3	640
WR	127	2	0	3	5	3.8%	12	2.4	139	215	4	1	4	9	4.0%	20	2.2	235
									3,549									3,720
North Leg Volumes																		
Approach	1,323	13	7	7	27		55		1,378	768	8	1	3	12		23		791
Depart	802	11	2	13	26		60		862	1,301	11	3	7	21		44		1,345
Total	2,125	24	9	20	53	2.4%	115	2.2	2,240	2,069	19	4	10	33	1.6%	67	2.0	2,136
South Leg Volumes																		
Approach	789	9	3	11	23		53		842	1,117	7	1	3	11		22		1,139
Depart	1,204	11	4	8	23		49		1,253	669	6	1	4	11		23		692
Total	1,993	20	7	19	46	2.3%	102	2.2	2,095	1,786	13	2	7	22	1.2%	45	2.0	1,831
East Leg Volumes																		
Approach	634	11	8	18	37		87		721	892	9	11	13	33		75		967
Depart	655	4	5	3	12		26		681	849	6	1	8	15		35		884
Total	1,289	15	13	21	49	3.7%	113	2.3	1,402	1,741	15	12	21	48	2.7%	110	2.3	1,851
West Leg Volumes																		
Approach	589	4	3	2	9		19		608	789	4	2	8	14		34		823
Depart	674	11	10	14	35		79		753	747	5	10	8	23		52		799
Total	1,263	15	13	16	44	3.4%	98	2.2	1,361	1,536	9	12	16	37	2.4%	86	2.3	1,622
All Legs																		
Approach	3,335	37	21	38	96		214		3,549	3,566	28	15	27	70		154		3,720
Depart	3,335	37	21	38	96		214		3,549	3,566	28	15	27	70		154		3,720
Total	6,670	74	42	76	192	2.8%	428	2.2	7,098	7,132	56	30	54	140	1.9%	308	2.2	7,440

Existing Peak Hour Volumes - Classification Counts

1 Etiwanda Ave at Church St/Miller Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	141	0	0	0	0	0.0%	0	0.0	141	126	3	1	0	4	3.1%	7	1.8	133
NT	234	2	1	0	3	1.3%	5	1.7	239	254	1	0	0	1	0.4%	2	2.0	256
NR	142	2	0	0	2	1.4%	3	1.5	145	93	3	0	0	3	3.1%	5	1.7	98
SL	74	1	0	0	1	1.3%	2	2.0	76	23	0	0	0	0	0.0%	0	0.0	23
ST	280	1	0	0	1	0.4%	2	2.0	282	187	2	17	0	19	9.2%	37	1.9	224
SR	121	0	0	0	0	0.0%	0	0.0	121	93	0	0	0	0	0.0%	0	0.0	93
EL	84	2	0	0	2	2.3%	3	1.5	87	137	0	0	0	0	0.0%	0	0.0	137
ET	247	1	0	0	1	0.4%	2	2.0	249	435	1	1	0	2	0.5%	4	2.0	439
ER	106	1	0	0	1	0.9%	2	2.0	108	163	0	2	0	2	1.2%	4	2.0	167
WL	91	2	0	0	2	2.2%	3	1.5	94	42	0	0	0	0	0.0%	0	0.0	42
WT	462	1	0	0	1	0.2%	2	2.0	464	254	1	0	0	1	0.4%	2	2.0	256
WR	67	1	0	0	1	1.5%	2	2.0	69	30	0	0	0	0	0.0%	0	0.0	30
									2,075									1,898
North Leg Volumes																		
Approach	475	2	0	0	2		4		479	303	2	17	0	19		37		340
Depart	385	5	1	0	6		10		395	421	1	0	0	1		2		423
Total	860	7	1	0	8	0.9%	14	1.8	874	724	3	17	0	20	2.7%	39	2.0	763
South Leg Volumes																		
Approach	517	4	1	0	5		8		525	473	7	1	0	8		14		487
Depart	477	4	0	0	4		7		484	392	2	19	0	21		41		433
Total	994	8	1	0	9	0.9%	15	1.7	1,009	865	9	20	0	29	3.2%	55	1.9	920
East Leg Volumes																		
Approach	620	4	0	0	4		7		627	326	1	0	0	1		2		328
Depart	463	4	0	0	4		7		470	551	4	1	0	5		9		560
Total	1,083	8	0	0	8	0.7%	14	1.8	1,097	877	5	1	0	6	0.7%	11	1.8	888
West Leg Volumes																		
Approach	437	4	0	0	4		7		444	735	1	3	0	4		8		743
Depart	724	1	0	0	1		2		726	473	4	1	0	5		9		482
Total	1,161	5	0	0	5	0.4%	9	1.8	1,170	1,208	5	4	0	9	0.7%	17	1.9	1,225
All Legs																		
Approach	2,049	14	1	0	15		26		2,075	1,837	11	21	0	32		61		1,898
Depart	2,049	14	1	0	15		26		2,075	1,837	11	21	0	32		61		1,898
Total	4,098	28	2	0	30	0.7%	52	1.7	4,150	3,674	22	42	0	64	1.7%	122	1.9	3,796

Existing Peak Hour Volumes - Classification Counts

2 I-15 SB Ramps at Foothill Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SL	109	3	3	10	16	12.8%	41	2.6	150	118	2	2	14	18	13.2%	49	2.7	167
ST	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SR	795	3	2	15	20	2.5%	54	2.7	849	513	1	0	7	8	1.5%	23	2.9	536
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	468	9	7	8	24	4.9%	52	2.2	520	1,828	13	4	14	31	1.7%	70	2.3	1,898
ER	743	12	2	11	25	3.3%	55	2.2	798	905	10	1	4	15	1.6%	29	1.9	934
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	1,340	28	7	13	48	3.5%	95	2.0	1,435	1,321	6	3	4	13	1.0%	27	2.1	1,348
WR	579	13	6	12	31	5.1%	68	2.2	647	419	4	0	12	16	3.7%	42	2.6	461
									4,399									5,344
North Leg Volumes																		
Approach	904	6	5	25	36		95		999	631	3	2	21	26		72		703
Depart	579	13	6	12	31		68		647	419	4	0	12	16		42		461
Total	1,483	19	11	37	67	4.3%	163	2.4	1,646	1,050	7	2	33	42	3.8%	114	2.7	1,164
South Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	743	12	2	11	25		55		798	905	10	1	4	15		29		934
Total	743	12	2	11	25	3.3%	55	2.2	798	905	10	1	4	15	1.6%	29	1.9	934
East Leg Volumes																		
Approach	1,919	41	13	25	79		163		2,082	1,740	10	3	16	29		69		1,809
Depart	577	12	10	18	40		93		670	1,946	15	6	28	49		119		2,065
Total	2,496	53	23	43	119	4.6%	256	2.2	2,752	3,686	25	9	44	78	2.1%	188	2.4	3,874
West Leg Volumes																		
Approach	1,211	21	9	19	49		107		1,318	2,733	23	5	18	46		99		2,832
Depart	2,135	31	9	28	68		149		2,284	1,834	7	3	11	21		50		1,884
Total	3,346	52	18	47	117	3.4%	256	2.2	3,602	4,567	30	8	29	67	1.4%	149	2.2	4,716
All Legs																		
Approach	4,034	68	27	69	164		365		4,399	5,104	36	10	55	101		240		5,344
Depart	4,034	68	27	69	164		365		4,399	5,104	36	10	55	101		240		5,344
Total	8,068	136	54	138	328	3.9%	730	2.2	8,798	10,208	72	20	110	202	1.9%	480	2.4	10,688

Existing Peak Hour Volumes - Classification Counts

3 I-15 NB Ramps at Foothill Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	811	17	3	10	30	3.6%	62	2.1	873	711	2	4	3	9	1.3%	20	2.2	731
NT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NR	389	20	6	21	47	10.8%	105	2.2	494	417	9	2	10	21	4.8%	48	2.3	465
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	358	15	9	14	38	9.6%	83	2.2	441	1,008	14	6	17	37	3.5%	84	2.3	1,092
ER	234	5	1	5	11	4.5%	25	2.3	259	950	6	0	9	15	1.6%	36	2.4	986
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	1,127	23	9	13	45	3.8%	92	2.0	1,219	1,059	7	4	12	23	2.1%	55	2.4	1,114
WR	137	6	0	17	23	14.4%	60	2.6	197	255	7	1	8	16	5.9%	37	2.3	292
									3,483									4,680
North Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	137	6	0	17	23		60		197	255	7	1	8	16		37		292
Total	137	6	0	17	23	14.4%	60	2.6	197	255	7	1	8	16	5.9%	37	2.3	292
South Leg Volumes																		
Approach	1,200	37	9	31	77		167		1,367	1,128	11	6	13	30		68		1,196
Depart	234	5	1	5	11		25		259	950	6	0	9	15		36		986
Total	1,434	42	10	36	88	5.8%	192	2.2	1,626	2,078	17	6	22	45	2.1%	104	2.3	2,182
East Leg Volumes																		
Approach	1,264	29	9	30	68		152		1,416	1,314	14	5	20	39		92		1,406
Depart	747	35	15	35	85		188		935	1,425	23	8	27	58		132		1,557
Total	2,011	64	24	65	153	7.1%	340	2.2	2,351	2,739	37	13	47	97	3.4%	224	2.3	2,963
West Leg Volumes																		
Approach	592	20	10	19	49		108		700	1,958	20	6	26	52		120		2,078
Depart	1,938	40	12	23	75		154		2,092	1,770	9	8	15	32		75		1,845
Total	2,530	60	22	42	124	4.7%	262	2.1	2,792	3,728	29	14	41	84	2.2%	195	2.3	3,923
All Legs																		
Approach	3,056	86	28	80	194		427		3,483	4,400	45	17	59	121		280		4,680
Depart	3,056	86	28	80	194		427		3,483	4,400	45	17	59	121		280		4,680
Total	6,112	172	56	160	388	6.0%	854	2.2	6,966	8,800	90	34	118	242	2.7%	560	2.3	9,360

Existing Peak Hour Volumes - Classification Counts

4 Etiwanda Ave at Foothill Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	109	3	6	9	18	14.2%	44	2.4	153	216	1	3	12	16	6.9%	44	2.8	260
NT	188	1	3	1	5	2.6%	11	2.2	199	343	2	1	0	3	0.9%	5	1.7	348
NR	59	3	0	1	4	6.3%	8	2.0	67	189	0	0	0	0	0.0%	0	0.0	189
SL	48	1	0	0	1	2.0%	2	2.0	50	60	0	1	0	1	1.6%	2	2.0	62
ST	331	3	1	1	5	1.5%	10	2.0	341	164	4	18	1	23	12.3%	45	2.0	209
SR	225	1	0	1	2	0.9%	5	2.5	230	150	0	1	1	2	1.3%	5	2.5	155
EL	96	0	2	0	2	2.0%	4	2.0	100	236	0	0	0	0	0.0%	0	0.0	236
ET	364	12	0	22	34	8.5%	84	2.5	448	888	8	2	9	19	2.1%	43	2.3	931
ER	120	7	5	23	35	22.6%	90	2.6	210	132	2	4	11	17	11.4%	44	2.6	176
WL	333	0	0	3	3	0.9%	9	3.0	342	95	0	3	1	4	4.0%	9	2.3	104
WT	1,129	6	7	16	29	2.5%	71	2.4	1,200	701	10	1	10	21	2.9%	47	2.2	748
WR	113	0	1	0	1	0.9%	2	2.0	115	47	0	0	0	0	0.0%	0	0.0	47
									3,455									3,465
North Leg Volumes																		
Approach	604	5	1	2	8		17		621	374	4	20	2	26		52		426
Depart	397	1	6	1	8		17		414	626	2	1	0	3		5		631
Total	1,001	6	7	3	16	1.6%	34	2.1	1,035	1,000	6	21	2	29	2.8%	57	2.0	1,057
South Leg Volumes																		
Approach	356	7	9	11	27		63		419	748	3	4	12	19		49		797
Depart	784	10	6	27	43		109		893	391	6	25	13	44		98		489
Total	1,140	17	15	38	70	5.8%	172	2.5	1,312	1,139	9	29	25	63	5.2%	147	2.3	1,286
East Leg Volumes																		
Approach	1,575	6	8	19	33		82		1,657	843	10	4	11	25		56		899
Depart	471	16	0	23	39		94		565	1,137	8	3	9	20		45		1,182
Total	2,046	22	8	42	72	3.4%	176	2.4	2,222	1,980	18	7	20	45	2.2%	101	2.2	2,081
West Leg Volumes																		
Approach	580	19	7	45	71		178		758	1,256	10	6	20	36		87		1,343
Depart	1,463	10	13	26	49		120		1,583	1,067	11	5	23	39		96		1,163
Total	2,043	29	20	71	120	5.5%	298	2.5	2,341	2,323	21	11	43	75	3.1%	183	2.4	2,506
All Legs																		
Approach	3,115	37	25	77	139		340		3,455	3,221	27	34	45	106		244		3,465
Depart	3,115	37	25	77	139		340		3,455	3,221	27	34	45	106		244		3,465
Total	6,230	74	50	154	278	4.3%	680	2.4	6,910	6,442	54	68	90	212	3.2%	488	2.3	6,930

Existing Peak Hour Volumes - Classification Counts

5 Cherry Ave at Foothill Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	200	5	0	2	7	3.4%	14	2.0	214	251	3	4	4	11	4.2%	25	2.3	276
NT	319	14	5	18	37	10.4%	85	2.3	404	712	14	13	23	50	6.6%	116	2.3	828
NR	98	4	1	3	8	7.5%	17	2.1	115	200	3	5	5	13	6.1%	30	2.3	230
SL	159	0	1	1	2	1.2%	5	2.5	164	261	5	0	4	9	3.3%	20	2.2	281
ST	655	15	14	29	58	8.1%	138	2.4	793	465	17	22	33	72	13.4%	169	2.3	634
SR	175	2	2	7	11	5.9%	28	2.5	203	159	0	3	10	13	7.6%	36	2.8	195
EL	158	3	1	6	10	6.0%	25	2.5	183	239	0	1	2	3	1.2%	8	2.7	247
ET	370	10	1	9	20	5.1%	44	2.2	414	814	15	4	5	24	2.9%	46	1.9	860
ER	145	3	0	1	4	2.7%	8	2.0	153	94	2	0	1	3	3.1%	6	2.0	100
WL	250	4	5	6	15	5.7%	34	2.3	284	113	4	2	4	10	8.1%	22	2.2	135
WT	1,091	7	3	10	20	1.8%	47	2.4	1,138	533	13	1	4	18	3.3%	34	1.9	567
WR	80	2	0	5	7	8.0%	18	2.6	98	114	4	0	1	5	4.2%	9	1.8	123
									4,163									4,476
North Leg Volumes																		
Approach	989	17	17	37	71		171		1,160	885	22	25	47	94		225		1,110
Depart	557	19	6	29	54		128		685	1,065	18	14	26	58		133		1,198
Total	1,546	36	23	66	125	7.5%	299	2.4	1,845	1,950	40	39	73	152	7.2%	358	2.4	2,308
South Leg Volumes																		
Approach	617	23	6	23	52		116		733	1,163	20	22	32	74		171		1,334
Depart	1,050	22	19	36	77		180		1,230	672	23	24	38	85		197		869
Total	1,667	45	25	59	129	7.2%	296	2.3	1,963	1,835	43	46	70	159	8.0%	368	2.3	2,203
East Leg Volumes																		
Approach	1,421	13	8	21	42		99		1,520	760	21	3	9	33		65		825
Depart	627	14	3	13	30		66		693	1,275	23	9	14	46		96		1,371
Total	2,048	27	11	34	72	3.4%	165	2.3	2,213	2,035	44	12	23	79	3.7%	161	2.0	2,196
West Leg Volumes																		
Approach	673	16	2	16	34		77		750	1,147	17	5	8	30		60		1,207
Depart	1,466	14	5	19	38		89		1,555	943	16	8	18	42		95		1,038
Total	2,139	30	7	35	72	3.3%	166	2.3	2,305	2,090	33	13	26	72	3.3%	155	2.2	2,245
All Legs																		
Approach	3,700	69	33	97	199		463		4,163	3,955	80	55	96	231		521		4,476
Depart	3,700	69	33	97	199		463		4,163	3,955	80	55	96	231		521		4,476
Total	7,400	138	66	194	398	5.1%	926	2.3	8,326	7,910	160	110	192	462	5.5%	1,042	2.3	8,952

Existing Peak Hour Volumes - Classification Counts

6 Beech Ave at Foothill Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	19	1	0	0	1	5.0%	2	2.0	21	57	0	0	1	1	1.7%	3	3.0	60
NT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NR	89	5	1	1	7	7.3%	13	1.9	102	118	0	0	0	0	0.0%	0	0.0	118
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	567	17	2	8	27	4.5%	54	2.0	621	1,255	24	7	7	38	2.9%	71	1.9	1,326
ER	31	1	0	1	2	6.1%	5	2.5	36	49	3	0	0	3	5.8%	5	1.7	54
WL	190	5	0	0	5	2.6%	8	1.6	198	99	3	0	0	3	2.9%	5	1.7	104
WT	1,478	10	3	9	22	1.5%	48	2.2	1,526	719	14	4	4	22	3.0%	41	1.9	760
WR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
									2,504									2,422
North Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
South Leg Volumes																		
Approach	108	6	1	1	8		15		123	175	0	0	1	1		3		178
Depart	221	6	0	1	7		13		234	148	6	0	0	6		10		158
Total	329	12	1	2	15	4.4%	28	1.9	357	323	6	0	1	7	2.1%	13	1.9	336
East Leg Volumes																		
Approach	1,668	15	3	9	27		56		1,724	818	17	4	4	25		46		864
Depart	656	22	3	9	34		67		723	1,373	24	7	7	38		71		1,444
Total	2,324	37	6	18	61	2.6%	123	2.0	2,447	2,191	41	11	11	63	2.8%	117	1.9	2,308
West Leg Volumes																		
Approach	598	18	2	9	29		59		657	1,304	27	7	7	41		76		1,380
Depart	1,497	11	3	9	23		50		1,547	776	14	4	5	23		44		820
Total	2,095	29	5	18	52	2.4%	109	2.1	2,204	2,080	41	11	12	64	3.0%	120	1.9	2,200
All Legs																		
Approach	2,374	39	6	19	64		130		2,504	2,297	44	11	12	67		125		2,422
Depart	2,374	39	6	19	64		130		2,504	2,297	44	11	12	67		125		2,422
Total	4,748	78	12	38	128	2.6%	260	2.0	5,008	4,594	88	22	24	134	2.8%	250	1.9	4,844

Existing Peak Hour Volumes - Classification Counts

7 Citrus Ave at Foothill Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	138	3	0	0	3	2.1%	5	1.7	143	133	2	1	0	3	2.2%	5	1.7	138
NT	474	10	1	8	19	3.9%	41	2.2	515	632	8	7	5	20	3.1%	41	2.1	673
NR	63	4	3	1	8	11.3%	15	1.9	78	83	1	1	0	2	2.4%	4	2.0	87
SL	122	3	1	1	5	3.9%	10	2.0	132	129	1	0	0	1	0.8%	2	2.0	131
ST	652	10	6	15	31	4.5%	72	2.3	724	503	7	8	7	22	4.2%	48	2.2	551
SR	148	0	1	4	5	3.3%	14	2.8	162	61	1	1	2	4	6.2%	10	2.5	71
EL	135	5	0	2	7	4.9%	14	2.0	149	254	1	0	0	1	0.4%	2	2.0	256
ET	391	18	2	2	22	5.3%	37	1.7	428	812	9	4	1	14	1.7%	25	1.8	837
ER	112	1	0	0	1	0.9%	2	2.0	114	171	2	0	1	3	1.7%	6	2.0	177
WL	223	4	0	2	6	2.6%	12	2.0	235	280	2	2	0	4	1.4%	7	1.8	287
WT	764	8	3	5	16	2.1%	33	2.1	797	533	11	0	1	12	2.2%	20	1.7	553
WR	75	2	0	0	2	2.6%	3	1.5	78	117	1	0	0	1	0.8%	2	2.0	119
									3,555									3,880
North Leg Volumes																		
Approach	922	13	8	20	41		96		1,018	693	9	9	9	27		60		753
Depart	684	17	1	10	28		58		742	1,003	10	7	5	22		45		1,048
Total	1,606	30	9	30	69	4.1%	154	2.2	1,760	1,696	19	16	14	49	2.8%	105	2.1	1,801
South Leg Volumes																		
Approach	675	17	4	9	30		61		736	848	11	9	5	25		50		898
Depart	987	15	6	17	38		86		1,073	954	11	10	8	29		61		1,015
Total	1,662	32	10	26	68	3.9%	147	2.2	1,809	1,802	22	19	13	54	2.9%	111	2.1	1,913
East Leg Volumes																		
Approach	1,062	14	3	7	24		48		1,110	930	14	2	1	17		29		959
Depart	576	25	6	4	35		62		638	1,024	11	5	1	17		31		1,055
Total	1,638	39	9	11	59	3.5%	110	1.9	1,748	1,954	25	7	2	34	1.7%	60	1.8	2,014
West Leg Volumes																		
Approach	638	24	2	4	30		53		691	1,237	12	4	2	18		33		1,270
Depart	1,050	11	4	9	24		52		1,102	727	14	2	3	19		35		762
Total	1,688	35	6	13	54	3.1%	105	1.9	1,793	1,964	26	6	5	37	1.8%	68	1.8	2,032
All Legs																		
Approach	3,297	68	17	40	125		258		3,555	3,708	46	24	17	87		172		3,880
Depart	3,297	68	17	40	125		258		3,555	3,708	46	24	17	87		172		3,880
Total	6,594	136	34	80	250	3.7%	516	2.1	7,110	7,416	92	48	34	174	2.3%	344	2.0	7,760

Existing Peak Hour Volumes - Classification Counts

8 Sierra Ave at Foothill Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	74	3	0	0	3	3.9%	5	1.7	79	103	0	0	0	0	0.0%	0	0.0	103
NT	392	5	3	10	18	4.4%	44	2.4	436	780	10	0	1	11	1.4%	18	1.6	798
NR	73	4	0	0	4	5.2%	6	1.5	79	127	5	0	0	5	3.8%	8	1.6	135
SL	180	2	3	1	6	3.2%	12	2.0	192	139	2	1	3	6	4.1%	14	2.3	153
ST	783	9	1	5	15	1.9%	31	2.1	814	480	3	0	1	4	0.8%	8	2.0	488
SR	117	0	0	3	3	2.5%	9	3.0	126	113	2	0	1	3	2.6%	6	2.0	119
EL	195	3	1	3	7	3.5%	16	2.3	211	194	1	2	0	3	1.5%	6	2.0	200
ET	351	14	0	1	15	4.1%	24	1.6	375	676	5	1	1	7	1.0%	13	1.9	689
ER	89	4	1	1	6	6.3%	11	1.8	100	129	3	0	0	3	2.3%	5	1.7	134
WL	145	4	0	0	4	2.7%	6	1.5	151	191	4	0	1	5	2.6%	9	1.8	200
WT	579	5	3	6	14	2.4%	32	2.3	611	490	6	1	0	7	1.4%	11	1.6	501
WR	121	1	1	0	2	1.6%	4	2.0	125	159	0	0	1	1	0.6%	3	3.0	162
									3,299									3,682
North Leg Volumes																		
Approach	1,080	11	4	9	24		52		1,132	732	7	1	5	13		28		760
Depart	708	9	5	13	27		64		772	1,133	11	2	2	15		27		1,160
Total	1,788	20	9	22	51	2.8%	116	2.3	1,904	1,865	18	3	7	28	1.5%	55	2.0	1,920
South Leg Volumes																		
Approach	539	12	3	10	25		55		594	1,010	15	0	1	16		26		1,036
Depart	1,017	17	2	6	25		48		1,065	800	10	0	2	12		22		822
Total	1,556	29	5	16	50	3.1%	103	2.1	1,659	1,810	25	0	3	28	1.5%	48	1.7	1,858
East Leg Volumes																		
Approach	845	10	4	6	20		42		887	840	10	1	2	13		23		863
Depart	604	20	3	2	25		42		646	942	12	2	4	18		35		977
Total	1,449	30	7	8	45	3.0%	84	1.9	1,533	1,782	22	3	6	31	1.7%	58	1.9	1,840
West Leg Volumes																		
Approach	635	21	2	5	28		51		686	999	9	3	1	13		24		1,023
Depart	770	8	3	9	20		46		816	706	8	1	1	10		17		723
Total	1,405	29	5	14	48	3.3%	97	2.0	1,502	1,705	17	4	2	23	1.3%	41	1.8	1,746
All Legs																		
Approach	3,099	54	13	30	97		200		3,299	3,581	41	5	9	55		101		3,682
Depart	3,099	54	13	30	97		200		3,299	3,581	41	5	9	55		101		3,682
Total	6,198	108	26	60	194	3.0%	400	2.1	6,598	7,162	82	10	18	110	1.5%	202	1.8	7,364

Existing Peak Hour Volumes - Classification Counts

9 Etiwanda Ave at Arrow Rte

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	244	6	9	18	33	11.9%	81	2.5	325	122	5	3	9	17	12.2%	41	2.4	163
NT	117	2	4	11	17	12.7%	44	2.6	161	461	7	9	10	26	5.3%	59	2.3	520
NR	24	0	6	0	6	20.0%	12	2.0	36	107	2	0	2	4	3.6%	9	2.3	116
SL	109	1	0	3	4	3.5%	11	2.8	120	105	0	2	6	8	7.1%	22	2.8	127
ST	278	5	1	12	18	6.1%	46	2.6	324	163	19	8	9	36	18.1%	72	2.0	235
SR	343	1	1	15	17	4.7%	49	2.9	392	111	0	0	1	1	0.9%	3	3.0	114
EL	64	2	1	8	11	14.7%	29	2.6	93	335	3	0	3	6	1.8%	14	2.3	349
ET	215	4	6	4	14	6.1%	30	2.1	245	587	6	4	6	16	2.7%	35	2.2	622
ER	84	3	16	9	28	25.0%	64	2.3	148	292	15	9	18	42	12.6%	95	2.3	387
WL	101	1	4	10	15	12.9%	40	2.7	141	86	3	3	1	7	7.5%	14	2.0	100
WT	656	9	4	7	20	3.0%	43	2.2	699	339	5	2	3	10	2.9%	21	2.1	360
WR	104	1	0	9	10	8.8%	29	2.9	133	138	0	0	2	2	1.4%	6	3.0	144
									2,817									3,237
North Leg Volumes																		
Approach	730	7	2	30	39		106		836	379	19	10	16	45		97		476
Depart	285	5	5	28	38		102		387	934	10	9	15	34		79		1,013
Total	1,015	12	7	58	77	7.1%	208	2.7	1,223	1,313	29	19	31	79	5.7%	176	2.2	1,489
South Leg Volumes																		
Approach	385	8	19	29	56		137		522	690	14	12	21	47		109		799
Depart	463	9	21	31	61		150		613	541	37	20	28	85		181		722
Total	848	17	40	60	117	12.1%	287	2.5	1,135	1,231	51	32	49	132	9.7%	290	2.2	1,521
East Leg Volumes																		
Approach	861	11	8	26	45		112		973	563	8	5	6	19		41		604
Depart	348	5	12	7	24		53		401	799	8	6	14	28		66		865
Total	1,209	16	20	33	69	5.4%	165	2.4	1,374	1,362	16	11	20	47	3.3%	107	2.3	1,469
West Leg Volumes																		
Approach	363	9	23	21	53		123		486	1,214	24	13	27	64		144		1,358
Depart	1,243	16	14	40	70		173		1,416	572	10	5	13	28		65		637
Total	1,606	25	37	61	123	7.1%	296	2.4	1,902	1,786	34	18	40	92	4.9%	209	2.3	1,995
All Legs																		
Approach	2,339	35	52	106	193		478		2,817	2,846	65	40	70	175		391		3,237
Depart	2,339	35	52	106	193		478		2,817	2,846	65	40	70	175		391		3,237
Total	4,678	70	104	212	386	7.6%	956	2.5	5,634	5,692	130	80	140	350	5.8%	782	2.2	6,474

Existing Peak Hour Volumes - Classification Counts

10 Cherry Ave at Arrow Rte

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	84	3	1	4	8	8.7%	19	2.4	103	114	2	0	7	9	7.3%	24	2.7	138
NT	564	19	6	22	47	7.7%	107	2.3	671	881	24	13	42	79	8.2%	188	2.4	1,069
NR	107	3	2	2	7	6.1%	15	2.1	122	201	2	6	1	9	4.3%	18	2.0	219
SL	45	0	1	2	3	6.3%	8	2.7	53	64	0	1	1	2	3.0%	5	2.5	69
ST	791	17	19	51	87	9.9%	217	2.5	1,008	619	21	18	30	69	10.0%	158	2.3	777
SR	65	11	2	3	16	19.8%	30	1.9	95	77	4	2	2	8	9.4%	16	2.0	93
EL	55	3	2	2	7	11.3%	15	2.1	70	70	2	1	3	6	7.9%	14	2.3	84
ET	334	8	7	10	25	7.0%	56	2.2	390	567	9	5	5	19	3.2%	39	2.1	606
ER	67	4	4	4	12	15.2%	26	2.2	93	82	2	2	3	7	7.9%	16	2.3	98
WL	129	6	2	4	12	8.5%	25	2.1	154	105	2	1	2	5	4.5%	11	2.2	116
WT	548	12	4	9	25	4.4%	53	2.1	601	491	9	8	7	24	4.7%	51	2.1	542
WR	53	1	2	0	3	5.4%	6	2.0	59	46	1	1	3	5	9.8%	13	2.6	59
									3,419									3,870
North Leg Volumes																		
Approach	901	28	22	56	106		255		1,156	760	25	21	33	79		179		939
Depart	672	23	10	24	57		128		800	997	27	15	48	90		215		1,212
Total	1,573	51	32	80	163	9.4%	383	2.3	1,956	1,757	52	36	81	169	8.8%	394	2.3	2,151
South Leg Volumes																		
Approach	755	25	9	28	62		141		896	1,196	28	19	50	97		230		1,426
Depart	987	27	25	59	111		268		1,255	806	25	21	35	81		185		991
Total	1,742	52	34	87	173	9.0%	409	2.4	2,151	2,002	53	40	85	178	8.2%	415	2.3	2,417
East Leg Volumes																		
Approach	730	19	8	13	40		84		814	642	12	10	12	34		75		717
Depart	486	11	10	14	35		79		565	832	11	12	7	30		62		894
Total	1,216	30	18	27	75	5.8%	163	2.2	1,379	1,474	23	22	19	64	4.2%	137	2.1	1,611
West Leg Volumes																		
Approach	456	15	13	16	44		97		553	719	13	8	11	32		69		788
Depart	697	26	7	16	49		102		799	682	15	10	16	41		91		773
Total	1,153	41	20	32	93	7.5%	199	2.1	1,352	1,401	28	18	27	73	5.0%	160	2.2	1,561
All Legs																		
Approach	2,842	87	52	113	252		577		3,419	3,317	78	58	106	242		553		3,870
Depart	2,842	87	52	113	252		577		3,419	3,317	78	58	106	242		553		3,870
Total	5,684	174	104	226	504	8.1%	1,154	2.3	6,838	6,634	156	116	212	484	6.8%	1,106	2.3	7,740

Existing Peak Hour Volumes - Classification Counts

11 Beech Ave at Arrow Rte

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	81	1	0	0	1	1.2%	2	2.0	83	91	3	0	0	3	3.2%	5	1.7	96
NT	120	2	2	0	4	3.2%	7	1.8	127	149	1	0	0	1	0.7%	2	2.0	151
NR	99	3	2	2	7	6.6%	15	2.1	114	207	1	3	1	5	2.4%	11	2.2	218
SL	9	0	1	1	2	18.2%	5	2.5	14	13	1	0	1	2	13.3%	5	2.5	18
ST	148	2	0	1	3	2.0%	6	2.0	154	128	4	2	1	7	5.2%	13	1.9	141
SR	64	7	0	3	10	13.5%	20	2.0	84	20	0	1	0	1	4.8%	2	2.0	22
EL	30	4	1	1	6	16.7%	11	1.8	41	24	2	2	0	4	14.3%	7	1.8	31
ET	296	9	6	5	20	6.3%	41	2.1	337	615	4	3	3	10	1.6%	21	2.1	636
ER	50	3	0	1	4	7.4%	8	2.0	58	59	1	2	0	3	4.8%	6	2.0	65
WL	124	5	1	2	8	6.1%	16	2.0	140	87	0	0	1	1	1.1%	3	3.0	90
WT	547	12	3	9	24	4.2%	51	2.1	598	393	5	5	6	16	3.9%	36	2.3	429
WR	18	1	1	0	2	10.0%	4	2.0	22	27	0	0	0	0	0.0%	0	0.0	27
									1,772									1,924
North Leg Volumes																		
Approach	221	9	1	5	15		31		252	161	5	3	2	10		20		181
Depart	168	7	4	1	12		22		190	200	3	2	0	5		9		209
Total	389	16	5	6	27	6.5%	53	2.0	442	361	8	5	2	15	4.0%	29	1.9	390
South Leg Volumes																		
Approach	300	6	4	2	12		24		324	447	5	3	1	9		18		465
Depart	322	10	1	4	15		30		352	274	5	4	2	11		22		296
Total	622	16	5	6	27	4.2%	54	2.0	676	721	10	7	3	20	2.7%	40	2.0	761
East Leg Volumes																		
Approach	689	18	5	11	34		71		760	507	5	5	7	17		39		546
Depart	404	12	9	8	29		61		465	835	6	6	5	17		37		872
Total	1,093	30	14	19	63	5.4%	132	2.1	1,225	1,342	11	11	12	34	2.5%	76	2.2	1,418
West Leg Volumes																		
Approach	376	16	7	7	30		60		436	698	7	7	3	17		34		732
Depart	692	20	3	12	35		73		765	504	8	6	6	20		43		547
Total	1,068	36	10	19	65	5.7%	133	2.0	1,201	1,202	15	13	9	37	3.0%	77	2.1	1,279
All Legs																		
Approach	1,586	49	17	25	91		186		1,772	1,813	22	18	13	53		111		1,924
Depart	1,586	49	17	25	91		186		1,772	1,813	22	18	13	53		111		1,924
Total	3,172	98	34	50	182	5.4%	372	2.0	3,544	3,626	44	36	26	106	2.8%	222	2.1	3,848

Existing Peak Hour Volumes - Classification Counts

12 Citrus Ave at Arrow Rte

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	184	3	2	5	10	5.2%	24	2.4	208	160	1	2	3	6	3.6%	15	2.5	175
NT	581	13	2	4	19	3.2%	36	1.9	617	809	13	7	6	26	3.1%	52	2.0	861
NR	173	2	1	9	12	6.5%	32	2.7	205	164	1	0	1	2	1.2%	5	2.5	169
SL	93	2	0	0	2	2.1%	3	1.5	96	136	1	0	0	1	0.7%	2	2.0	138
ST	721	13	4	14	31	4.1%	70	2.3	791	672	14	6	8	28	4.0%	57	2.0	729
SR	128	2	2	2	6	4.5%	13	2.2	141	55	1	5	0	6	9.8%	12	2.0	67
EL	55	5	2	2	9	14.1%	18	2.0	73	76	0	1	0	1	1.3%	2	2.0	78
ET	242	3	1	2	6	2.4%	13	2.2	255	546	6	2	2	10	1.8%	19	1.9	565
ER	86	3	1	4	8	8.5%	19	2.4	105	156	2	0	3	5	3.1%	12	2.4	168
WL	213	3	1	2	6	2.7%	13	2.2	226	139	3	0	0	3	2.1%	5	1.7	144
WT	427	4	2	0	6	1.4%	10	1.7	437	298	4	1	1	6	2.0%	11	1.8	309
WR	116	4	0	3	7	5.7%	15	2.1	131	88	1	1	0	2	2.2%	4	2.0	92
									3,285									3,495
North Leg Volumes																		
Approach	942	17	6	16	39		86		1,028	863	16	11	8	35		71		934
Depart	752	22	4	9	35		69		821	973	14	9	6	29		58		1,031
Total	1,694	39	10	25	74	4.2%	155	2.1	1,849	1,836	30	20	14	64	3.4%	129	2.0	1,965
South Leg Volumes																		
Approach	938	18	5	18	41		92		1,030	1,133	15	9	10	34		72		1,205
Depart	1,020	19	6	20	45		102		1,122	967	19	6	11	36		74		1,041
Total	1,958	37	11	38	86	4.2%	194	2.3	2,152	2,100	34	15	21	70	3.2%	146	2.1	2,246
East Leg Volumes																		
Approach	756	11	3	5	19		38		794	525	8	2	1	11		20		545
Depart	508	7	2	11	20		48		556	846	8	2	3	13		26		872
Total	1,264	18	5	16	39	3.0%	86	2.2	1,350	1,371	16	4	4	24	1.7%	46	1.9	1,417
West Leg Volumes																		
Approach	383	11	4	8	23		50		433	778	8	3	5	16		33		811
Depart	739	9	6	7	22		47		786	513	6	8	4	18		38		551
Total	1,122	20	10	15	45	3.9%	97	2.2	1,219	1,291	14	11	9	34	2.6%	71	2.1	1,362
All Legs																		
Approach	3,019	57	18	47	122		266		3,285	3,299	47	25	24	96		196		3,495
Depart	3,019	57	18	47	122		266		3,285	3,299	47	25	24	96		196		3,495
Total	6,038	114	36	94	244	3.9%	532	2.2	6,570	6,598	94	50	48	192	2.8%	392	2.0	6,990

Existing Peak Hour Volumes - Classification Counts

13 Sierra Ave at Arrow Rte

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	80	2	2	0	4	4.8%	7	1.8	87	83	1	0	0	1	1.2%	2	2.0	85
NT	474	15	1	4	20	4.0%	37	1.9	511	745	13	1	1	15	2.0%	25	1.7	770
NR	32	0	0	1	1	3.0%	3	3.0	35	51	1	0	1	2	3.8%	5	2.5	56
SL	55	2	0	0	2	3.5%	3	1.5	58	106	1	0	0	1	0.9%	2	2.0	108
ST	670	16	1	7	24	3.5%	47	2.0	717	485	9	1	2	12	2.4%	22	1.8	507
SR	66	2	0	0	2	2.9%	3	1.5	69	73	1	1	0	2	2.7%	4	2.0	77
EL	37	2	0	9	11	22.9%	30	2.7	67	101	0	0	0	0	0.0%	0	0.0	101
ET	377	8	2	3	13	3.3%	25	1.9	402	460	4	0	3	7	1.5%	15	2.1	475
ER	82	0	0	0	0	0.0%	0	0.0	82	87	1	0	0	1	1.1%	2	2.0	89
WL	61	5	0	0	5	7.6%	8	1.6	69	62	1	0	0	1	1.6%	2	2.0	64
WT	510	5	3	1	9	1.7%	17	1.9	527	295	7	1	1	9	3.0%	16	1.8	311
WR	50	1	0	1	2	3.8%	5	2.5	55	51	1	0	0	1	1.9%	2	2.0	53
									2,679									2,696
North Leg Volumes																		
Approach	791	20	1	7	28		53		844	664	11	2	2	15		28		692
Depart	561	18	1	14	33		72		633	897	14	1	1	16		27		924
Total	1,352	38	2	21	61	4.3%	125	2.0	1,477	1,561	25	3	3	31	1.9%	55	1.8	1,616
South Leg Volumes																		
Approach	586	17	3	5	25		47		633	879	15	1	2	18		32		911
Depart	813	21	1	7	29		55		868	634	11	1	2	14		26		660
Total	1,399	38	4	12	54	3.7%	102	1.9	1,501	1,513	26	2	4	32	2.1%	58	1.8	1,571
East Leg Volumes																		
Approach	621	11	3	2	16		30		651	408	9	1	1	11		20		428
Depart	464	10	2	4	16		31		495	617	6	0	4	10		22		639
Total	1,085	21	5	6	32	2.9%	61	1.9	1,146	1,025	15	1	5	21	2.0%	42	2.0	1,067
West Leg Volumes																		
Approach	496	10	2	12	24		55		551	648	5	0	3	8		17		665
Depart	656	9	5	1	15		27		683	451	9	2	1	12		22		473
Total	1,152	19	7	13	39	3.3%	82	2.1	1,234	1,099	14	2	4	20	1.8%	39	2.0	1,138
All Legs																		
Approach	2,494	58	9	26	93		185		2,679	2,599	40	4	8	52		97		2,696
Depart	2,494	58	9	26	93		185		2,679	2,599	40	4	8	52		97		2,696
Total	4,988	116	18	52	186	3.6%	370	2.0	5,358	5,198	80	8	16	104	2.0%	194	1.9	5,392

Existing Peak Hour Volumes - Classification Counts

14 Etiwanda Ave at Whittram Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	292	7	26	21	54	15.6%	126	2.3	418	574	8	9	20	37	6.1%	90	2.4	664
NR	85	4	12	12	28	24.8%	66	2.4	151	187	4	12	22	38	16.9%	96	2.5	283
SL	44	1	2	5	8	15.4%	21	2.6	65	172	0	3	6	9	5.0%	24	2.7	196
ST	431	14	15	30	59	12.0%	141	2.4	572	345	13	42	22	77	18.2%	170	2.2	515
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	133	6	16	20	42	24.0%	101	2.4	234	115	4	28	8	40	25.8%	86	2.2	201
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	130	0	2	1	3	2.3%	7	2.3	137	72	1	4	2	7	8.9%	16	2.3	88
									1,577									1,947
North Leg Volumes																		
Approach	475	15	17	35	67		162		637	517	13	45	28	86		194		711
Depart	422	7	28	22	57		133		555	646	9	13	22	44		106		752
Total	897	22	45	57	124	12.1%	295	2.4	1,192	1,163	22	58	50	130	10.1%	300	2.3	1,463
South Leg Volumes																		
Approach	377	11	38	33	82		192		569	761	12	21	42	75		186		947
Depart	564	20	31	50	101		242		806	460	17	70	30	117		256		716
Total	941	31	69	83	183	16.3%	434	2.4	1,375	1,221	29	91	72	192	13.6%	442	2.3	1,663
East Leg Volumes																		
Approach	263	6	18	21	45		108		371	187	5	32	10	47		102		289
Depart	129	5	14	17	36		87		216	359	4	15	28	47		120		479
Total	392	11	32	38	81	17.1%	195	2.4	587	546	9	47	38	94	14.7%	222	2.4	768
West Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
All Legs																		
Approach	1,115	32	73	89	194		462		1,577	1,465	30	98	80	208		482		1,947
Depart	1,115	32	73	89	194		462		1,577	1,465	30	98	80	208		482		1,947
Total	2,230	64	146	178	388	14.8%	924	2.4	3,154	2,930	60	196	160	416	12.4%	964	2.3	3,894

Existing Peak Hour Volumes - Classification Counts

15 Cherry Ave at Whittram Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	125	5	10	11	26	17.2%	61	2.3	186	84	0	7	15	22	20.8%	59	2.7	143
NT	666	24	13	26	63	8.6%	140	2.2	806	1,187	30	16	34	80	6.3%	179	2.2	1,366
NR	102	6	3	5	14	12.1%	30	2.1	132	78	6	2	7	15	16.1%	34	2.3	112
SL	26	2	0	2	4	13.3%	9	2.3	35	30	4	1	0	5	14.3%	8	1.6	38
ST	853	21	21	47	89	9.4%	215	2.4	1,068	589	17	14	15	46	7.2%	99	2.2	688
SR	76	0	5	1	6	7.3%	13	2.2	89	31	2	5	4	11	26.2%	25	2.3	56
EL	13	3	0	4	7	35.0%	17	2.4	30	63	1	5	4	10	13.7%	24	2.4	87
ET	30	0	0	0	0	0.0%	0	0.0	30	128	1	1	3	5	3.8%	13	2.6	141
ER	122	6	12	15	33	21.3%	78	2.4	200	216	5	11	16	32	12.9%	78	2.4	294
WL	96	5	11	8	24	20.0%	54	2.3	150	84	5	9	4	18	17.6%	38	2.1	122
WT	132	1	1	0	2	1.5%	4	2.0	136	51	1	4	2	7	12.1%	16	2.3	67
WR	60	1	0	2	3	4.8%	8	2.7	68	59	1	0	4	5	7.8%	14	2.8	73
									2,930									3,187
North Leg Volumes																		
Approach	955	23	26	50	99		237		1,192	650	23	20	19	62		132		782
Depart	739	28	13	32	73		165		904	1,309	32	21	42	95		217		1,526
Total	1,694	51	39	82	172	9.2%	402	2.3	2,096	1,959	55	41	61	157	7.4%	349	2.2	2,308
South Leg Volumes																		
Approach	893	35	26	42	103		231		1,124	1,349	36	25	56	117		272		1,621
Depart	1,071	32	44	70	146		347		1,418	889	27	34	35	96		215		1,104
Total	1,964	67	70	112	249	11.3%	578	2.3	2,542	2,238	63	59	91	213	8.7%	487	2.3	2,725
East Leg Volumes																		
Approach	288	7	12	10	29		66		354	194	7	13	10	30		68		262
Depart	158	8	3	7	18		39		197	236	11	4	10	25		55		291
Total	446	15	15	17	47	9.5%	105	2.2	551	430	18	17	20	55	11.3%	123	2.2	553
West Leg Volumes																		
Approach	165	9	12	19	40		95		260	407	7	17	23	47		115		522
Depart	333	6	16	12	34		78		411	166	3	16	21	40		100		266
Total	498	15	28	31	74	12.9%	173	2.3	671	573	10	33	44	87	13.2%	215	2.5	788
All Legs																		
Approach	2,301	74	76	121	271		629		2,930	2,600	73	75	108	256		587		3,187
Depart	2,301	74	76	121	271		629		2,930	2,600	73	75	108	256		587		3,187
Total	4,602	148	152	242	542	10.5%	1,258	2.3	5,860	5,200	146	150	216	512	9.0%	1,174	2.3	6,374

Existing Peak Hour Volumes - Classification Counts

16 Beech Ave at Wittram Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	132	1	0	0	1	0.8%	2	2.0	134	68	8	1	2	11	13.9%	20	1.8	88
NT	282	4	1	0	5	1.7%	8	1.6	290	383	3	3	2	8	2.0%	17	2.1	400
NR	1	0	0	2	2	66.7%	6	3.0	7	0	0	1	0	1	100.0%	2	2.0	2
SL	0	0	0	0	0	0.0%	0	0.0	0	1	0	0	0	0	0.0%	0	0.0	1
ST	240	6	0	4	10	4.0%	21	2.1	261	287	5	2	5	12	4.0%	27	2.3	314
SR	84	6	6	2	14	14.3%	27	1.9	111	31	1	3	0	4	11.4%	8	2.0	39
EL	39	6	3	1	10	20.4%	18	1.8	57	77	0	0	1	1	1.3%	3	3.0	80
ET	2	0	0	1	1	33.3%	3	3.0	5	0	0	0	1	1	100.0%	3	3.0	3
ER	60	4	0	0	4	6.3%	6	1.5	66	149	8	2	0	10	6.3%	16	1.6	165
WL	0	0	0	0	0	0.0%	0	0.0	0	3	0	0	1	1	25.0%	3	3.0	6
WT	0	0	0	1	1	100.0%	3	3.0	3	1	1	0	1	2	66.7%	5	2.5	6
WR	1	0	0	0	0	0.0%	0	0.0	1	3	0	0	0	0	0.0%	0	0.0	3
									935									1,107
North Leg Volumes																		
Approach	324	12	6	6	24		48		372	319	6	5	5	16		35		354
Depart	322	10	4	1	15		26		348	463	3	3	3	9		20		483
Total	646	22	10	7	39	5.7%	74	1.9	720	782	9	8	8	25	3.1%	55	2.2	837
South Leg Volumes																		
Approach	415	5	1	2	8		16		431	451	11	5	4	20		39		490
Depart	300	10	0	4	14		27		327	439	13	4	6	23		46		485
Total	715	15	1	6	22	3.0%	43	2.0	758	890	24	9	10	43	4.6%	85	2.0	975
East Leg Volumes																		
Approach	1	0	0	1	1		3		4	7	1	0	2	3		8		15
Depart	3	0	0	3	3		9		12	1	0	1	1	2		5		6
Total	4	0	0	4	4	50.0%	12	3.0	16	8	1	1	3	5	38.5%	13	2.6	21
West Leg Volumes																		
Approach	101	10	3	2	15		27		128	226	8	2	2	12		22		248
Depart	216	7	6	3	16		32		248	100	10	4	3	17		33		133
Total	317	17	9	5	31	8.9%	59	1.9	376	326	18	6	5	29	8.2%	55	1.9	381
All Legs																		
Approach	841	27	10	11	48		94		935	1,003	26	12	13	51		104		1,107
Depart	841	27	10	11	48		94		935	1,003	26	12	13	51		104		1,107
Total	1,682	54	20	22	96	5.4%	188	2.0	1,870	2,006	52	24	26	102	4.8%	208	2.0	2,214

Existing Peak Hour Volumes - Classification Counts

1 Etiwanda Ave at Napa St

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	1	0	0	0	0	0.0%	0	0.0	1	0	0	0	0	0	0.0%	0	0.0	0
NT	365	17	20	40	77	17.4%	186	2.4	551	690	4	29	51	84	10.9%	217	2.6	907
NR	30	7	29	34	70	70.0%	171	2.4	201	6	0	18	6	24	80.0%	54	2.3	60
SL	14	2	7	6	15	51.7%	35	2.3	49	10	1	37	3	41	80.4%	85	2.1	95
ST	517	18	22	55	95	15.5%	236	2.5	753	443	8	13	30	51	10.3%	128	2.5	571
SR	1	0	0	0	0	0.0%	0	0.0	1	0	0	0	0	0	0.0%	0	0.0	0
EL	0	0	0	0	0	0.0%	0	0.0	0	3	1	0	0	1	25.0%	2	2.0	5
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	2	0	0	0	0	0.0%	0	0.0	2	30	0	0	0	0	0.0%	0	0.0	30
WL	10	3	36	29	68	87.2%	164	2.4	174	29	1	65	10	76	72.4%	162	2.1	191
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	12	4	5	4	13	52.0%	28	2.2	40	26	3	3	4	10	27.8%	23	2.3	49
									1,772									1,908
North Leg Volumes																		
Approach	532	20	29	61	110		271		803	453	9	50	33	92		213		666
Depart	377	21	25	44	90		214		591	719	8	32	55	95		242		961
Total	909	41	54	105	200	18.0%	485	2.4	1,394	1,172	17	82	88	187	13.8%	455	2.4	1,627
South Leg Volumes																		
Approach	396	24	49	74	147		357		753	696	4	47	57	108		271		967
Depart	529	21	58	84	163		400		929	502	9	78	40	127		290		792
Total	925	45	107	158	310	25.1%	757	2.4	1,682	1,198	13	125	97	235	16.4%	561	2.4	1,759
East Leg Volumes																		
Approach	22	7	41	33	81		192		214	55	4	68	14	86		185		240
Depart	44	9	36	40	85		206		250	16	1	55	9	65		139		155
Total	66	16	77	73	166	71.6%	398	2.4	464	71	5	123	23	151	68.0%	324	2.1	395
West Leg Volumes																		
Approach	2	0	0	0	0		0		2	33	1	0	0	1		2		35
Depart	2	0	0	0	0		0		2	0	0	0	0	0		0		0
Total	4	0	0	0	0	0.0%	0	0.0	4	33	1	0	0	1	2.9%	2	2.0	35
All Legs																		
Approach	952	51	119	168	338		820		1,772	1,237	18	165	104	287		671		1,908
Depart	952	51	119	168	338		820		1,772	1,237	18	165	104	287		671		1,908
Total	1,904	102	238	336	676	26.2%	1,640	2.4	3,544	2,474	36	330	208	574	18.8%	1,342	2.3	3,816

Existing Peak Hour Volumes - Classification Counts

2 Cherry Ave at Merrill Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	1	1	100.0%	3	3.0	3	1	0	0	0	0	0.0%	0	0.0	1
NT	617	25	31	32	88	12.5%	196	2.2	813	1,199	27	31	52	110	8.4%	259	2.4	1,458
NR	90	0	3	7	10	10.0%	27	2.7	117	168	2	4	7	13	7.2%	32	2.5	200
SL	118	5	2	0	7	5.6%	12	1.7	130	181	0	0	6	6	3.2%	18	3.0	199
ST	972	31	40	46	117	10.7%	265	2.3	1,237	645	17	37	32	86	11.8%	196	2.3	841
SR	0	0	0	0	0	0.0%	0	0.0	0	1	0	0	0	0	0.0%	0	0.0	1
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	0	0	0	0	0	0.0%	0	0.0	0	1	0	0	0	0	0.0%	0	0.0	1
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	124	3	2	4	9	6.8%	21	2.3	145	77	1	2	8	11	12.5%	30	2.7	107
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	238	6	0	2	8	3.3%	15	1.9	253	201	3	0	0	3	1.5%	5	1.7	206
									2,698									3,014
North Leg Volumes																		
Approach	1,090	36	42	46	124		277		1,367	827	17	37	38	92		214		1,041
Depart	855	31	31	34	96		211		1,066	1,400	30	31	52	113		264		1,664
Total	1,945	67	73	80	220	10.2%	488	2.2	2,433	2,227	47	68	90	205	8.4%	478	2.3	2,705
South Leg Volumes																		
Approach	707	25	34	40	99		226		933	1,368	29	35	59	123		291		1,659
Depart	1,096	34	42	50	126		286		1,382	722	18	39	40	97		226		948
Total	1,803	59	76	90	225	11.1%	512	2.3	2,315	2,090	47	74	99	220	9.5%	517	2.4	2,607
East Leg Volumes																		
Approach	362	9	2	6	17		36		398	278	4	2	8	14		35		313
Depart	208	5	5	7	17		39		247	350	2	4	13	19		50		400
Total	570	14	7	13	34	5.6%	75	2.2	645	628	6	6	21	33	5.0%	85	2.6	713
West Leg Volumes																		
Approach	0	0	0	0	0		0		0	1	0	0	0	0		0		1
Depart	0	0	0	1	1		3		3	2	0	0	0	0		0		2
Total	0	0	0	1	1	100.0%	3	3.0	3	3	0	0	0	0	0.0%	0	0.0	3
All Legs																		
Approach	2,159	70	78	92	240		539		2,698	2,474	50	74	105	229		540		3,014
Depart	2,159	70	78	92	240		539		2,698	2,474	50	74	105	229		540		3,014
Total	4,318	140	156	184	480	10.0%	1,078	2.2	5,396	4,948	100	148	210	458	8.5%	1,080	2.4	6,028

Existing Peak Hour Volumes - Classification Counts

3 Beech Ave at Merrill Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	51	0	0	0	0	0.0%	0	0.0	51	26	1	1	0	2	7.1%	4	2.0	30
NT	145	3	0	4	7	4.6%	17	2.4	162	207	2	1	1	4	1.9%	8	2.0	215
NR	56	1	0	0	1	1.8%	2	2.0	58	48	0	0	0	0	0.0%	0	0.0	48
SL	49	3	1	0	4	7.5%	7	1.8	56	113	3	0	0	3	2.6%	5	1.7	118
ST	126	5	1	3	9	6.7%	19	2.1	145	154	5	2	2	9	5.5%	18	2.0	172
SR	66	3	1	1	5	7.0%	10	2.0	76	36	1	1	0	2	5.3%	4	2.0	40
EL	94	2	0	2	4	4.1%	9	2.3	103	129	0	0	0	0	0.0%	0	0.0	129
ET	121	5	0	0	5	4.0%	8	1.6	129	218	2	0	1	3	1.4%	6	2.0	224
ER	54	1	0	0	1	1.8%	2	2.0	56	33	0	0	0	0	0.0%	0	0.0	33
WL	67	0	0	0	0	0.0%	0	0.0	67	32	0	0	0	0	0.0%	0	0.0	32
WT	222	4	1	0	5	2.2%	8	1.6	230	140	1	3	0	4	2.8%	8	2.0	148
WR	144	3	2	0	5	3.4%	9	1.8	153	119	3	1	1	5	4.0%	10	2.0	129
									1,286									1,318
North Leg Volumes																		
Approach	241	11	3	4	18		36		277	303	9	3	2	14		27		330
Depart	383	8	2	6	16		35		418	455	5	2	2	9		18		473
Total	624	19	5	10	34	5.2%	71	2.1	695	758	14	5	4	23	2.9%	45	2.0	803
South Leg Volumes																		
Approach	252	4	0	4	8		19		271	281	3	2	1	6		12		293
Depart	247	6	1	3	10		21		268	219	5	2	2	9		18		237
Total	499	10	1	7	18	3.5%	40	2.2	539	500	8	4	3	15	2.9%	30	2.0	530
East Leg Volumes																		
Approach	433	7	3	0	10		17		450	291	4	4	1	9		18		309
Depart	226	9	1	0	10		17		243	379	5	0	1	6		11		390
Total	659	16	4	0	20	2.9%	34	1.7	693	670	9	4	2	15	2.2%	29	1.9	699
West Leg Volumes																		
Approach	269	8	0	2	10		19		288	380	2	0	1	3		6		386
Depart	339	7	2	1	10		18		357	202	3	5	0	8		16		218
Total	608	15	2	3	20	3.2%	37	1.9	645	582	5	5	1	11	1.9%	22	2.0	604
All Legs																		
Approach	1,195	30	6	10	46		91		1,286	1,255	18	9	5	32		63		1,318
Depart	1,195	30	6	10	46		91		1,286	1,255	18	9	5	32		63		1,318
Total	2,390	60	12	20	92	3.7%	182	2.0	2,572	2,510	36	18	10	64	2.5%	126	2.0	2,636

Existing Peak Hour Volumes - Classification Counts

4 Citrus Ave at Merrill Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	45	4	0	0	4	8.2%	6	1.5	51	37	1	0	2	3	7.5%	8	2.7	45
NT	610	16	6	10	32	5.0%	66	2.1	676	887	5	3	7	15	1.7%	35	2.3	922
NR	25	1	0	0	1	3.8%	2	2.0	27	34	0	0	0	0	0.0%	0	0.0	34
SL	58	2	0	0	2	3.3%	3	1.5	61	78	0	0	0	0	0.0%	0	0.0	78
ST	793	18	5	24	47	5.6%	109	2.3	902	680	9	7	9	25	3.5%	55	2.2	735
SR	90	0	1	0	1	1.1%	2	2.0	92	96	1	1	0	2	2.0%	4	2.0	100
EL	141	4	0	0	4	2.8%	6	1.5	147	137	1	0	0	1	0.7%	2	2.0	139
ET	150	4	0	0	4	2.6%	6	1.5	156	250	0	0	0	0	0.0%	0	0.0	250
ER	42	1	2	0	3	6.7%	6	2.0	48	53	0	0	0	0	0.0%	0	0.0	53
WL	41	1	0	0	1	2.4%	2	2.0	43	26	2	0	0	2	7.1%	3	1.5	29
WT	200	4	0	0	4	2.0%	6	1.5	206	192	2	0	0	2	1.0%	3	1.5	195
WR	94	1	2	1	4	4.1%	9	2.3	103	131	1	0	1	2	1.5%	5	2.5	136
									2,512									2,716
North Leg Volumes																		
Approach	941	20	6	24	50		114		1,055	854	10	8	9	27		59		913
Depart	845	21	8	11	40		81		926	1,155	7	3	8	18		42		1,197
Total	1,786	41	14	35	90	4.8%	195	2.2	1,981	2,009	17	11	17	45	2.2%	101	2.2	2,110
South Leg Volumes																		
Approach	680	21	6	10	37		74		754	958	6	3	9	18		43		1,001
Depart	876	20	7	24	51		117		993	759	11	7	9	27		58		817
Total	1,556	41	13	34	88	5.4%	191	2.2	1,747	1,717	17	10	18	45	2.6%	101	2.2	1,818
East Leg Volumes																		
Approach	335	6	2	1	9		17		352	349	5	0	1	6		11		360
Depart	233	7	0	0	7		11		244	362	0	0	0	0		0		362
Total	568	13	2	1	16	2.7%	28	1.8	596	711	5	0	1	6	0.8%	11	1.8	722
West Leg Volumes																		
Approach	333	9	2	0	11		18		351	440	1	0	0	1		2		442
Depart	335	8	1	0	9		14		349	325	4	1	2	7		15		340
Total	668	17	3	0	20	2.9%	32	1.6	700	765	5	1	2	8	1.0%	17	2.1	782
All Legs																		
Approach	2,289	56	16	35	107		223		2,512	2,601	22	11	19	52		115		2,716
Depart	2,289	56	16	35	107		223		2,512	2,601	22	11	19	52		115		2,716
Total	4,578	112	32	70	214	4.5%	446	2.1	5,024	5,202	44	22	38	104	2.0%	230	2.2	5,432

Existing Peak Hour Volumes - Classification Counts

5 Sierra Ave at Merrill Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	52	2	1	0	3	5.5%	5	1.7	57	108	3	0	0	3	2.7%	5	1.7	113
NT	545	13	0	1	14	2.5%	23	1.6	568	819	7	0	1	8	1.0%	14	1.8	833
NR	89	1	0	0	1	1.1%	2	2.0	91	159	3	0	0	3	1.9%	5	1.7	164
SL	31	1	0	0	1	3.1%	2	2.0	33	62	1	0	0	1	1.6%	2	2.0	64
ST	848	15	0	2	17	2.0%	29	1.7	877	667	11	0	4	15	2.2%	29	1.9	696
SR	39	2	0	0	2	4.9%	3	1.5	42	56	0	0	0	0	0.0%	0	0.0	56
EL	45	3	0	0	3	6.3%	5	1.7	50	75	0	0	0	0	0.0%	0	0.0	75
ET	332	5	0	0	5	1.5%	8	1.6	340	442	2	1	2	5	1.1%	11	2.2	453
ER	89	1	1	0	2	2.2%	4	2.0	93	96	1	0	1	2	2.0%	5	2.5	101
WL	132	1	0	0	1	0.8%	2	2.0	134	106	3	0	0	3	2.8%	5	1.7	111
WT	359	3	3	0	6	1.6%	11	1.8	370	259	5	0	1	6	2.3%	11	1.8	270
WR	38	3	0	0	3	7.3%	5	1.7	43	40	4	0	0	4	9.1%	6	1.5	46
									2,698									2,982
North Leg Volumes																		
Approach	918	18	0	2	20		34		952	785	12	0	4	16		31		816
Depart	628	19	0	1	20		33		661	934	11	0	1	12		20		954
Total	1,546	37	0	3	40	2.5%	67	1.7	1,613	1,719	23	0	5	28	1.6%	51	1.8	1,770
South Leg Volumes																		
Approach	686	16	1	1	18		30		716	1,086	13	0	1	14		24		1,110
Depart	1,069	17	1	2	20		35		1,104	869	15	0	5	20		39		908
Total	1,755	33	2	3	38	2.1%	65	1.7	1,820	1,955	28	0	6	34	1.7%	63	1.9	2,018
East Leg Volumes																		
Approach	529	7	3	0	10		18		547	405	12	0	1	13		22		427
Depart	452	7	0	0	7		12		464	663	6	1	2	9		18		681
Total	981	14	3	0	17	1.7%	30	1.8	1,011	1,068	18	1	3	22	2.0%	40	1.8	1,108
West Leg Volumes																		
Approach	466	9	1	0	10		17		483	613	3	1	3	7		16		629
Depart	450	7	4	0	11		19		469	423	8	0	1	9		16		439
Total	916	16	5	0	21	2.2%	36	1.7	952	1,036	11	1	4	16	1.5%	32	2.0	1,068
All Legs																		
Approach	2,599	50	5	3	58		99		2,698	2,889	40	1	9	50		93		2,982
Depart	2,599	50	5	3	58		99		2,698	2,889	40	1	9	50		93		2,982
Total	5,198	100	10	6	116	2.2%	198	1.7	5,396	5,778	80	2	18	100	1.7%	186	1.9	5,964

Existing Peak Hour Volumes - Classification Counts

6 Citrus Ave at Fontana Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	20	0	0	0	0	0.0%	0	0.0	20	18	0	0	0	0	0.0%	0	0.0	18
NT	592	11	3	10	24	3.9%	53	2.2	645	830	6	1	9	16	1.9%	38	2.4	868
NR	70	3	0	0	3	4.1%	5	1.7	75	69	0	0	0	0	0.0%	0	0.0	69
SL	20	2	0	0	2	9.1%	3	1.5	23	32	1	0	0	1	3.0%	2	2.0	34
ST	776	14	7	20	41	5.0%	95	2.3	871	632	7	7	8	22	3.4%	49	2.2	681
SR	107	4	0	3	7	6.1%	15	2.1	122	100	2	0	1	3	2.9%	6	2.0	106
EL	96	3	1	0	4	4.0%	7	1.8	103	129	2	2	0	4	3.0%	7	1.8	136
ET	88	1	0	0	1	1.1%	2	2.0	90	171	3	1	0	4	2.3%	7	1.8	178
ER	11	0	0	0	0	0.0%	0	0.0	11	7	1	0	0	1	12.5%	2	2.0	9
WL	69	3	0	0	3	4.2%	5	1.7	74	42	0	0	0	0	0.0%	0	0.0	42
WT	76	0	1	0	1	1.3%	2	2.0	78	80	2	0	0	2	2.4%	3	1.5	83
WR	21	5	1	0	6	22.2%	10	1.7	31	20	0	0	0	0	0.0%	0	0.0	20
									2,143									2,244
North Leg Volumes																		
Approach	903	20	7	23	50		113		1,016	764	10	7	9	26		57		821
Depart	709	19	5	10	34		70		779	979	8	3	9	20		45		1,024
Total	1,612	39	12	33	84	5.0%	183	2.2	1,795	1,743	18	10	18	46	2.6%	102	2.2	1,845
South Leg Volumes																		
Approach	682	14	3	10	27		58		740	917	6	1	9	16		38		955
Depart	856	17	7	20	44		100		956	681	8	7	8	23		51		732
Total	1,538	31	10	30	71	4.4%	158	2.2	1,696	1,598	14	8	17	39	2.4%	89	2.3	1,687
East Leg Volumes																		
Approach	166	8	2	0	10		17		183	142	2	0	0	2		3		145
Depart	178	6	0	0	6		10		188	272	4	1	0	5		9		281
Total	344	14	2	0	16	4.4%	27	1.7	371	414	6	1	0	7	1.7%	12	1.7	426
West Leg Volumes																		
Approach	195	4	1	0	5		9		204	307	6	3	0	9		16		323
Depart	203	4	1	3	8		17		220	198	4	0	1	5		9		207
Total	398	8	2	3	13	3.2%	26	2.0	424	505	10	3	1	14	2.7%	25	1.8	530
All Legs																		
Approach	1,946	46	13	33	92		197		2,143	2,130	24	11	18	53		114		2,244
Depart	1,946	46	13	33	92		197		2,143	2,130	24	11	18	53		114		2,244
Total	3,892	92	26	66	184	4.5%	394	2.1	4,286	4,260	48	22	36	106	2.4%	228	2.2	4,488

Existing Peak Hour Volumes - Classification Counts

7 Cherry Ave at Randall Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	8	0	1	0	1	11.1%	2	2.0	10	13	0	0	1	1	7.1%	3	3.0	16
NT	626	32	31	34	97	13.4%	212	2.2	838	1,209	24	27	54	105	8.0%	252	2.4	1,461
NR	87	1	6	1	8	8.4%	17	2.1	104	140	3	6	2	11	7.3%	23	2.1	163
SL	151	3	0	0	3	1.9%	5	1.7	156	141	5	1	3	9	6.0%	19	2.1	160
ST	888	30	29	72	131	12.9%	319	2.4	1,207	666	28	21	44	93	12.3%	216	2.3	882
SR	9	0	0	0	0	0.0%	0	0.0	9	0	1	0	0	1	100.0%	2	2.0	2
EL	0	0	0	0	0	0.0%	0	0.0	0	5	0	0	0	0	0.0%	0	0.0	5
ET	1	0	0	0	0	0.0%	0	0.0	1	0	1	0	0	1	100.0%	2	2.0	2
ER	0	0	0	0	0	0.0%	0	0.0	0	5	0	0	0	0	0.0%	0	0.0	5
WL	180	6	2	7	15	7.7%	34	2.3	214	131	1	10	4	15	10.3%	34	2.3	165
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	103	0	0	2	2	1.9%	6	3.0	109	115	4	0	1	5	4.2%	9	1.8	124
									2,648									2,985
North Leg Volumes																		
Approach	1,048	33	29	72	134		324		1,372	807	34	22	47	103		237		1,044
Depart	729	32	31	36	99		218		947	1,329	28	27	55	110		261		1,590
Total	1,777	65	60	108	233	11.6%	542	2.3	2,319	2,136	62	49	102	213	9.1%	498	2.3	2,634
South Leg Volumes																		
Approach	721	33	38	35	106		231		952	1,362	27	33	57	117		278		1,640
Depart	1,068	36	31	79	146		353		1,421	802	29	31	48	108		250		1,052
Total	1,789	69	69	114	252	12.3%	584	2.3	2,373	2,164	56	64	105	225	9.4%	528	2.3	2,692
East Leg Volumes																		
Approach	283	6	2	9	17		40		323	246	5	10	5	20		43		289
Depart	239	4	6	1	11		22		261	281	9	7	5	21		44		325
Total	522	10	8	10	28	5.1%	62	2.2	584	527	14	17	10	41	7.2%	87	2.1	614
West Leg Volumes																		
Approach	1	0	0	0	0		0		1	10	1	0	0	1		2		12
Depart	17	0	1	0	1		2		19	13	1	0	1	2		5		18
Total	18	0	1	0	1	5.3%	2	2.0	20	23	2	0	1	3	11.5%	7	2.3	30
All Legs																		
Approach	2,053	72	69	116	257		595		2,648	2,425	67	65	109	241		560		2,985
Depart	2,053	72	69	116	257		595		2,648	2,425	67	65	109	241		560		2,985
Total	4,106	144	138	232	514	11.1%	1,190	2.3	5,296	4,850	134	130	218	482	9.0%	1,120	2.3	5,970

Existing Peak Hour Volumes - Classification Counts

8 Beech Ave at Randall Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	17	0	0	0	0	0.0%	0	0.0	17	15	0	0	0	0	0.0%	0	0.0	15
NT	179	1	0	4	5	2.7%	14	2.8	193	207	0	0	2	2	1.0%	6	3.0	213
NR	40	1	0	0	1	2.4%	2	2.0	42	12	0	0	0	0	0.0%	0	0.0	12
SL	4	0	1	0	1	20.0%	2	2.0	6	34	0	0	0	0	0.0%	0	0.0	34
ST	180	3	0	3	6	3.2%	14	2.3	194	150	3	2	1	6	3.8%	12	2.0	162
SR	82	0	0	0	0	0.0%	0	0.0	82	29	0	1	0	1	3.3%	2	2.0	31
EL	50	1	0	1	2	3.8%	5	2.5	55	62	0	0	0	0	0.0%	0	0.0	62
ET	109	4	0	0	4	3.5%	6	1.5	115	169	0	1	0	1	0.6%	2	2.0	171
ER	18	0	0	0	0	0.0%	0	0.0	18	20	1	0	0	1	4.8%	2	2.0	22
WL	31	0	0	0	0	0.0%	0	0.0	31	10	0	0	0	0	0.0%	0	0.0	10
WT	166	3	1	0	4	2.4%	7	1.8	173	109	1	1	0	2	1.8%	4	2.0	113
WR	39	0	0	0	0	0.0%	0	0.0	39	38	1	1	0	2	5.0%	4	2.0	42
									965									887
North Leg Volumes																		
Approach	266	3	1	3	7		16		282	213	3	3	1	7		14		227
Depart	268	2	0	5	7		19		287	307	1	1	2	4		10		317
Total	534	5	1	8	14	2.6%	35	2.5	569	520	4	4	3	11	2.1%	24	2.2	544
South Leg Volumes																		
Approach	236	2	0	4	6		16		252	234	0	0	2	2		6		240
Depart	229	3	0	3	6		14		243	180	4	2	1	7		14		194
Total	465	5	0	7	12	2.5%	30	2.5	495	414	4	2	3	9	2.1%	20	2.2	434
East Leg Volumes																		
Approach	236	3	1	0	4		7		243	157	2	2	0	4		8		165
Depart	153	5	1	0	6		10		163	215	0	1	0	1		2		217
Total	389	8	2	0	10	2.5%	17	1.7	406	372	2	3	0	5	1.3%	10	2.0	382
West Leg Volumes																		
Approach	177	5	0	1	6		11		188	251	1	1	0	2		4		255
Depart	265	3	1	0	4		7		272	153	1	2	0	3		6		159
Total	442	8	1	1	10	2.2%	18	1.8	460	404	2	3	0	5	1.2%	10	2.0	414
All Legs																		
Approach	915	13	2	8	23		50		965	855	6	6	3	15		32		887
Depart	915	13	2	8	23		50		965	855	6	6	3	15		32		887
Total	1,830	26	4	16	46	2.5%	100	2.2	1,930	1,710	12	12	6	30	1.7%	64	2.1	1,774

Existing Peak Hour Volumes - Classification Counts

9 Fontana Ave/Catawba Ave at Randall Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
									0									0
North Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
South Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
East Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
West Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
All Legs																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0

Existing Peak Hour Volumes - Classification Counts

10 Citrus Ave at Randall Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	111	0	1	0	1	0.9%	2	2.0	113	48	0	1	0	1	2.0%	2	2.0	50
NT	537	12	3	10	25	4.4%	54	2.2	591	822	10	5	9	24	2.8%	52	2.2	874
NR	194	1	0	0	1	0.5%	2	2.0	196	82	0	0	0	0	0.0%	0	0.0	82
SL	100	2	0	0	2	2.0%	3	1.5	103	64	1	0	0	1	1.5%	2	2.0	66
ST	747	16	9	20	45	5.7%	102	2.3	849	592	5	8	6	19	3.1%	42	2.2	634
SR	48	1	0	0	1	2.0%	2	2.0	50	13	0	0	0	0	0.0%	0	0.0	13
EL	78	1	0	0	1	1.3%	2	2.0	80	20	0	0	0	0	0.0%	0	0.0	20
ET	107	2	0	0	2	1.8%	3	1.5	110	160	3	0	0	3	1.8%	5	1.7	165
ER	133	1	0	0	1	0.7%	2	2.0	135	33	1	2	0	3	8.3%	6	2.0	39
WL	121	1	0	0	1	0.8%	2	2.0	123	57	0	0	0	0	0.0%	0	0.0	57
WT	103	2	1	0	3	2.8%	5	1.7	108	141	2	2	0	4	2.8%	7	1.8	148
WR	65	1	0	0	1	1.5%	2	2.0	67	63	0	0	0	0	0.0%	0	0.0	63
									2,525									2,211
North Leg Volumes																		
Approach	895	19	9	20	48		107		1,002	669	6	8	6	20		44		713
Depart	680	14	3	10	27		58		738	905	10	5	9	24		52		957
Total	1,575	33	12	30	75	4.5%	165	2.2	1,740	1,574	16	13	15	44	2.7%	96	2.2	1,670
South Leg Volumes																		
Approach	842	13	4	10	27		58		900	952	10	6	9	25		54		1,006
Depart	1,001	18	9	20	47		106		1,107	682	6	10	6	22		48		730
Total	1,843	31	13	30	74	3.9%	164	2.2	2,007	1,634	16	16	15	47	2.8%	102	2.2	1,736
East Leg Volumes																		
Approach	289	4	1	0	5		9		298	261	2	2	0	4		7		268
Depart	401	5	0	0	5		8		409	306	4	0	0	4		7		313
Total	690	9	1	0	10	1.4%	17	1.7	707	567	6	2	0	8	1.4%	14	1.8	581
West Leg Volumes																		
Approach	318	4	0	0	4		7		325	213	4	2	0	6		11		224
Depart	262	3	2	0	5		9		271	202	2	3	0	5		9		211
Total	580	7	2	0	9	1.5%	16	1.8	596	415	6	5	0	11	2.6%	20	1.8	435
All Legs																		
Approach	2,344	40	14	30	84		181		2,525	2,095	22	18	15	55		116		2,211
Depart	2,344	40	14	30	84		181		2,525	2,095	22	18	15	55		116		2,211
Total	4,688	80	28	60	168	3.5%	362	2.2	5,050	4,190	44	36	30	110	2.6%	232	2.1	4,422

Existing Peak Hour Volumes - Classification Counts

11 Sierra Ave at Randall Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	31	0	0	0	0	0.0%	0	0.0	31	68	0	0	0	0	0.0%	0	0.0	68
NT	689	19	2	1	22	3.1%	36	1.6	725	1,005	11	0	1	12	1.2%	20	1.7	1,025
NR	47	1	0	0	1	2.1%	2	2.0	49	112	0	0	0	0	0.0%	0	0.0	112
SL	22	0	0	0	0	0.0%	0	0.0	22	64	0	0	0	0	0.0%	0	0.0	64
ST	993	20	4	4	28	2.7%	50	1.8	1,043	748	11	1	6	18	2.3%	37	2.1	785
SR	36	0	0	0	0	0.0%	0	0.0	36	57	3	0	0	3	5.0%	5	1.7	62
EL	55	1	0	0	1	1.8%	2	2.0	57	74	1	0	0	1	1.3%	2	2.0	76
ET	192	5	0	0	5	2.5%	8	1.6	200	229	0	1	0	1	0.4%	2	2.0	231
ER	93	0	0	0	0	0.0%	0	0.0	93	64	1	0	0	1	1.5%	2	2.0	66
WL	126	5	0	0	5	3.8%	8	1.6	134	117	0	0	0	0	0.0%	0	0.0	117
WT	198	3	0	0	3	1.5%	5	1.7	203	148	3	4	1	8	5.1%	16	2.0	164
WR	44	2	0	1	3	6.4%	6	2.0	50	55	2	0	0	2	3.5%	3	1.5	58
									2,643									2,828
North Leg Volumes																		
Approach	1,051	20	4	4	28		50		1,101	869	14	1	6	21		42		911
Depart	788	22	2	2	26		44		832	1,134	14	0	1	15		25		1,159
Total	1,839	42	6	6	54	2.9%	94	1.7	1,933	2,003	28	1	7	36	1.8%	67	1.9	2,070
South Leg Volumes																		
Approach	767	20	2	1	23		38		805	1,185	11	0	1	12		20		1,205
Depart	1,212	25	4	4	33		58		1,270	929	12	1	6	19		39		968
Total	1,979	45	6	5	56	2.8%	96	1.7	2,075	2,114	23	1	7	31	1.4%	59	1.9	2,173
East Leg Volumes																		
Approach	368	10	0	1	11		19		387	320	5	4	1	10		19		339
Depart	261	6	0	0	6		10		271	405	0	1	0	1		2		407
Total	629	16	0	1	17	2.6%	29	1.7	658	725	5	5	1	11	1.5%	21	1.9	746
West Leg Volumes																		
Approach	340	6	0	0	6		10		350	367	2	1	0	3		6		373
Depart	265	3	0	0	3		5		270	273	6	4	1	11		21		294
Total	605	9	0	0	9	1.5%	15	1.7	620	640	8	5	1	14	2.1%	27	1.9	667
All Legs																		
Approach	2,526	56	6	6	68		117		2,643	2,741	32	6	8	46		87		2,828
Depart	2,526	56	6	6	68		117		2,643	2,741	32	6	8	46		87		2,828
Total	5,052	112	12	12	136	2.6%	234	1.7	5,286	5,482	64	12	16	92	1.7%	174	1.9	5,656

Existing Peak Hour Volumes - Classification Counts

12 I-15 SB Ramps/Ontario Mills Dr at Fourth St

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	83	2	0	0	2	2.4%	3	1.5	86	119	0	0	0	0	0.0%	0	0.0	119
NT	36	6	0	1	7	16.3%	12	1.7	48	202	2	0	1	3	1.5%	6	2.0	208
NR	63	5	3	0	8	11.3%	14	1.8	77	358	1	0	0	1	0.3%	2	2.0	360
SL	82	4	0	16	20	19.6%	54	2.7	136	53	1	2	16	19	26.4%	54	2.8	107
ST	243	2	0	0	2	0.8%	3	1.5	246	266	5	1	2	8	2.9%	16	2.0	282
SR	841	9	0	10	19	2.2%	44	2.3	885	485	5	1	13	19	3.8%	49	2.6	534
EL	197	12	5	14	31	13.6%	70	2.3	267	759	8	2	14	24	3.1%	58	2.4	817
ET	326	15	9	11	35	9.7%	74	2.1	400	903	16	18	19	53	5.5%	117	2.2	1,020
ER	56	2	0	0	2	3.4%	3	1.5	59	89	1	0	1	2	2.2%	5	2.5	94
WL	119	5	2	1	8	6.3%	15	1.9	134	147	2	1	0	3	2.0%	5	1.7	152
WT	1,003	34	17	34	85	7.8%	187	2.2	1,190	509	13	8	20	41	7.5%	96	2.3	605
WR	83	10	7	36	53	39.0%	137	2.6	220	267	4	3	9	16	5.7%	39	2.4	306
									3,748									4,604
North Leg Volumes																		
Approach	1,166	15	0	26	41		101		1,267	804	11	4	31	46		119		923
Depart	316	28	12	51	91		219		535	1,228	14	5	24	43		103		1,331
Total	1,482	43	12	77	132	8.2%	320	2.4	1,802	2,032	25	9	55	89	4.2%	222	2.5	2,254
South Leg Volumes																		
Approach	182	13	3	1	17		29		211	679	3	0	1	4		8		687
Depart	418	9	2	1	12		21		439	502	8	2	3	13		26		528
Total	600	22	5	2	29	4.6%	50	1.7	650	1,181	11	2	4	17	1.4%	34	2.0	1,215
East Leg Volumes																		
Approach	1,205	49	26	71	146		339		1,544	923	19	12	29	60		140		1,063
Depart	471	24	12	27	63		142		613	1,314	18	20	35	73		173		1,487
Total	1,676	73	38	98	209	11.1%	481	2.3	2,157	2,237	37	32	64	133	5.6%	313	2.4	2,550
West Leg Volumes																		
Approach	579	29	14	25	68		147		726	1,751	25	20	34	79		180		1,931
Depart	1,927	45	17	44	106		234		2,161	1,113	18	9	33	60		145		1,258
Total	2,506	74	31	69	174	6.5%	381	2.2	2,887	2,864	43	29	67	139	4.6%	325	2.3	3,189
All Legs																		
Approach	3,132	106	43	123	272		616		3,748	4,157	58	36	95	189		447		4,604
Depart	3,132	106	43	123	272		616		3,748	4,157	58	36	95	189		447		4,604
Total	6,264	212	86	246	544	8.0%	1,232	2.3	7,496	8,314	116	72	190	378	4.3%	894	2.4	9,208

Existing Peak Hour Volumes - Classification Counts

13 I-15 NB Ramps at Fourth St

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	31	1	1	3	5	13.9%	13	2.6	44	74	0	0	0	0	0.0%	0	0.0	74
NT	20	1	0	1	2	9.1%	5	2.5	25	40	3	0	1	4	9.1%	8	2.0	48
NR	31	2	0	0	2	6.1%	3	1.5	34	41	0	1	0	1	2.4%	2	2.0	43
SL	223	9	4	31	44	16.5%	115	2.6	338	62	4	2	14	20	24.4%	52	2.6	114
ST	40	2	0	2	4	9.1%	9	2.3	49	39	0	0	1	1	2.5%	3	3.0	42
SR	828	21	10	25	56	6.3%	127	2.3	955	307	7	4	11	22	6.7%	52	2.4	359
EL	226	6	1	6	13	5.4%	29	2.2	255	660	3	0	3	6	0.9%	14	2.3	674
ET	220	17	11	21	49	18.2%	111	2.3	331	593	13	20	33	66	10.0%	159	2.4	752
ER	23	1	0	0	1	4.2%	2	2.0	25	61	1	0	0	1	1.6%	2	2.0	63
WL	26	1	1	0	2	7.1%	4	2.0	30	37	0	0	0	0	0.0%	0	0.0	37
WT	352	27	15	43	85	19.5%	200	2.4	552	540	11	7	20	38	6.6%	91	2.4	631
WR	35	0	6	16	22	38.6%	60	2.7	95	104	2	3	9	14	11.9%	36	2.6	140
									2,733									2,977
North Leg Volumes																		
Approach	1,091	32	14	58	104		251		1,342	408	11	6	26	43		107		515
Depart	281	7	7	23	37		94		375	804	8	3	13	24		58		862
Total	1,372	39	21	81	141	9.3%	345	2.4	1,717	1,212	19	9	39	67	5.2%	165	2.5	1,377
South Leg Volumes																		
Approach	82	4	1	4	9		21		103	155	3	1	1	5		10		165
Depart	89	4	1	2	7		15		104	137	1	0	1	2		5		142
Total	171	8	2	6	16	8.6%	36	2.3	207	292	4	1	2	7	2.3%	15	2.1	307
East Leg Volumes																		
Approach	413	28	22	59	109		264		677	681	13	10	29	52		127		808
Depart	474	28	15	52	95		229		703	696	17	23	47	87		213		909
Total	887	56	37	111	204	18.7%	493	2.4	1,380	1,377	30	33	76	139	9.2%	340	2.4	1,717
West Leg Volumes																		
Approach	469	24	12	27	63		142		611	1,314	17	20	36	73		175		1,489
Depart	1,211	49	26	71	146		340		1,551	921	18	11	31	60		143		1,064
Total	1,680	73	38	98	209	11.1%	482	2.3	2,162	2,235	35	31	67	133	5.6%	318	2.4	2,553
All Legs																		
Approach	2,055	88	49	148	285		678		2,733	2,558	44	37	92	173		419		2,977
Depart	2,055	88	49	148	285		678		2,733	2,558	44	37	92	173		419		2,977
Total	4,110	176	98	296	570	12.2%	1,356	2.4	5,466	5,116	88	74	184	346	6.3%	838	2.4	5,954

Existing Peak Hour Volumes - Classification Counts

14 Etiwanda Ave at Fourth St/San Bernardino Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	145	8	7	19	34	19.0%	83	2.4	228	123	5	3	7	15	10.9%	35	2.3	158
NT	376	14	36	58	108	22.3%	267	2.5	643	502	5	38	56	99	16.5%	252	2.5	754
NR	42	0	2	13	15	26.3%	43	2.9	85	35	1	4	15	20	36.4%	55	2.8	90
SL	37	0	5	4	9	19.6%	22	2.4	59	53	1	45	1	47	47.0%	95	2.0	148
ST	392	18	46	85	149	27.5%	374	2.5	766	432	8	25	38	71	14.1%	176	2.5	608
SR	89	6	4	11	21	19.1%	50	2.4	139	147	3	5	3	11	7.0%	24	2.2	171
EL	89	5	11	10	26	22.6%	60	2.3	149	153	0	7	5	12	7.3%	29	2.4	182
ET	103	5	7	10	22	17.6%	52	2.4	155	498	7	9	16	32	6.0%	77	2.4	575
ER	38	1	5	14	20	34.5%	54	2.7	92	119	8	7	28	43	26.5%	110	2.6	229
WL	55	1	7	24	32	36.8%	88	2.8	143	69	3	5	8	16	18.8%	39	2.4	108
WT	222	10	3	22	35	13.6%	87	2.5	309	216	5	4	12	21	8.9%	52	2.5	268
WR	32	0	2	2	4	11.1%	10	2.5	42	37	2	8	3	13	26.0%	28	2.2	65
									2,810									3,356
North Leg Volumes																		
Approach	518	24	55	100	179		446		964	632	12	75	42	129		295		927
Depart	497	19	49	70	138		337		834	692	7	53	64	124		309		1,001
Total	1,015	43	104	170	317	23.8%	783	2.5	1,798	1,324	19	128	106	253	16.0%	604	2.4	1,928
South Leg Volumes																		
Approach	563	22	45	90	157		393		956	660	11	45	78	134		342		1,002
Depart	485	20	58	123	201		516		1,001	620	19	37	74	130		325		945
Total	1,048	42	103	213	358	25.5%	909	2.5	1,957	1,280	30	82	152	264	17.1%	667	2.5	1,947
East Leg Volumes																		
Approach	309	11	12	48	71		185		494	322	10	17	23	50		119		441
Depart	182	5	14	27	46		117		299	586	9	58	32	99		227		813
Total	491	16	26	75	117	19.2%	302	2.6	793	908	19	75	55	149	14.1%	346	2.3	1,254
West Leg Volumes																		
Approach	230	11	23	34	68		166		396	770	15	23	49	87		216		986
Depart	456	24	14	52	90		220		676	486	13	12	22	47		111		597
Total	686	35	37	86	158	18.7%	386	2.4	1,072	1,256	28	35	71	134	9.6%	327	2.4	1,583
All Legs																		
Approach	1,620	68	135	272	475		1,190		2,810	2,384	48	160	192	400		972		3,356
Depart	1,620	68	135	272	475		1,190		2,810	2,384	48	160	192	400		972		3,356
Total	3,240	136	270	544	950	22.7%	2,380	2.5	5,620	4,768	96	320	384	800	14.4%	1,944	2.4	6,712

Existing Peak Hour Volumes - Classification Counts

15 Commerce Dr at San Bernardino Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	29	1	0	5	6	17.1%	17	2.8	46	22	0	0	8	8	26.7%	24	3.0	46
NT	3	0	0	0	0	0.0%	0	0.0	3	0	0	0	1	1	100.0%	3	3.0	3
NR	134	3	6	23	32	19.3%	86	2.7	220	342	8	15	36	59	14.7%	150	2.5	492
SL	1	0	0	1	1	50.0%	3	3.0	4	3	0	0	0	0	0.0%	0	0.0	3
ST	2	0	0	2	2	50.0%	6	3.0	8	0	0	0	0	0	0.0%	0	0.0	0
SR	0	0	0	0	0	0.0%	0	0.0	0	1	0	0	0	0	0.0%	0	0.0	1
EL	1	0	0	0	0	0.0%	0	0.0	1	0	0	0	0	0	0.0%	0	0.0	0
ET	118	5	10	12	27	18.6%	64	2.4	182	612	8	49	23	80	11.6%	179	2.2	791
ER	7	0	1	8	9	56.3%	26	2.9	33	19	1	0	8	9	32.1%	26	2.9	45
WL	174	2	4	26	32	15.5%	89	2.8	263	123	2	1	4	7	5.4%	17	2.4	140
WT	341	13	8	32	53	13.5%	132	2.5	473	205	9	15	4	28	12.0%	56	2.0	261
WR	2	0	0	0	0	0.0%	0	0.0	2	2	0	0	0	0	0.0%	0	0.0	2
									1,235									1,784
North Leg Volumes																		
Approach	3	0	0	3	3		9		12	4	0	0	0	0		0		4
Depart	6	0	0	0	0		0		6	2	0	0	1	1		3		5
Total	9	0	0	3	3	25.0%	9	3.0	18	6	0	0	1	1	14.3%	3	3.0	9
South Leg Volumes																		
Approach	166	4	6	28	38		103		269	364	8	15	45	68		177		541
Depart	183	2	5	36	43		121		304	142	3	1	12	16		43		185
Total	349	6	11	64	81	18.8%	224	2.8	573	506	11	16	57	84	14.2%	220	2.6	726
East Leg Volumes																		
Approach	517	15	12	58	85		221		738	330	11	16	8	35		73		403
Depart	253	8	16	36	60		153		406	957	16	64	59	139		329		1,286
Total	770	23	28	94	145	15.8%	374	2.6	1,144	1,287	27	80	67	174	11.9%	402	2.3	1,689
West Leg Volumes																		
Approach	126	5	11	20	36		90		216	631	9	49	31	89		205		836
Depart	370	14	8	37	59		149		519	228	9	15	12	36		80		308
Total	496	19	19	57	95	16.1%	239	2.5	735	859	18	64	43	125	12.7%	285	2.3	1,144
All Legs																		
Approach	812	24	29	109	162		423		1,235	1,329	28	80	84	192		455		1,784
Depart	812	24	29	109	162		423		1,235	1,329	28	80	84	192		455		1,784
Total	1,624	48	58	218	324	16.6%	846	2.6	2,470	2,658	56	160	168	384	12.6%	910	2.4	3,568

Existing Peak Hour Volumes - Classification Counts

16 Vip Rd at San Bernardino Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SR	0	0	0	1	1	100.0%	3	3.0	3	0	0	0	0	0	0.0%	0	0.0	0
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	245	10	13	37	60	19.7%	152	2.5	397	942	27	81	50	158	14.4%	353	2.2	1,295
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	1	0	0	0	0	0.0%	0	0.0	1	0	0	0	0	0	0.0%	0	0.0	0
WT	527	16	12	57	85	13.9%	219	2.6	746	291	8	11	25	44	13.1%	109	2.5	400
WR	1	0	0	0	0	0.0%	0	0.0	1	0	0	0	0	0	0.0%	0	0.0	0
									1,148									1,695
North Leg Volumes																		
Approach	0	0	0	1	1		3		3	0	0	0	0	0		0		0
Depart	1	0	0	0	0		0		1	0	0	0	0	0		0		0
Total	1	0	0	1	1	50.0%	3	3.0	4	0	0	0	0	0	0.0%	0	0.0	0
South Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	1	0	0	0	0		0		1	0	0	0	0	0		0		0
Total	1	0	0	0	0	0.0%	0	0.0	1	0	0	0	0	0	0.0%	0	0.0	0
East Leg Volumes																		
Approach	529	16	12	57	85		219		748	291	8	11	25	44		109		400
Depart	245	10	13	37	60		152		397	942	27	81	50	158		353		1,295
Total	774	26	25	94	145	15.8%	371	2.6	1,145	1,233	35	92	75	202	14.1%	462	2.3	1,695
West Leg Volumes																		
Approach	245	10	13	37	60		152		397	942	27	81	50	158		353		1,295
Depart	527	16	12	58	86		222		749	291	8	11	25	44		109		400
Total	772	26	25	95	146	15.9%	374	2.6	1,146	1,233	35	92	75	202	14.1%	462	2.3	1,695
All Legs																		
Approach	774	26	25	95	146		374		1,148	1,233	35	92	75	202		462		1,695
Depart	774	26	25	95	146		374		1,148	1,233	35	92	75	202		462		1,695
Total	1,548	52	50	190	292	15.9%	748	2.6	2,296	2,466	70	184	150	404	14.1%	924	2.3	3,390

Existing Peak Hour Volumes - Classification Counts

1 Cherry Ave at San Bernardino Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	49	3	15	9	27	35.5%	62	2.3	111	32	0	6	7	13	28.9%	33	2.5	65
NT	631	36	23	41	100	13.7%	223	2.2	854	836	23	30	30	83	9.0%	185	2.2	1,021
NR	40	1	7	13	21	34.4%	55	2.6	95	94	0	2	14	16	14.5%	46	2.9	140
SL	68	5	0	4	9	11.7%	20	2.2	88	66	1	1	2	4	5.7%	10	2.5	76
ST	717	24	32	29	85	10.6%	187	2.2	904	609	8	23	36	67	9.9%	166	2.5	775
SR	291	8	10	20	38	11.6%	92	2.4	383	182	3	10	6	19	9.5%	43	2.3	225
EL	128	3	9	10	22	14.7%	53	2.4	181	377	7	10	20	37	8.9%	91	2.5	468
ET	62	4	3	2	9	12.7%	18	2.0	80	616	7	5	10	22	3.4%	51	2.3	667
ER	34	5	5	22	32	48.5%	84	2.6	118	138	13	42	20	75	35.2%	164	2.2	302
WL	106	1	4	9	14	11.7%	37	2.6	143	50	2	2	6	10	16.7%	25	2.5	75
WT	284	6	3	11	20	6.6%	48	2.4	332	157	5	5	3	13	7.6%	27	2.1	184
WR	65	4	1	2	7	9.7%	14	2.0	79	52	1	2	0	3	5.5%	6	2.0	58
									3,368									4,056
North Leg Volumes																		
Approach	1,076	37	42	53	132		299		1,375	857	12	34	44	90		219		1,076
Depart	824	43	33	53	129		290		1,114	1,265	31	42	50	123		282		1,547
Total	1,900	80	75	106	261	12.1%	589	2.3	2,489	2,122	43	76	94	213	9.1%	501	2.4	2,623
South Leg Volumes																		
Approach	720	40	45	63	148		340		1,060	962	23	38	51	112		264		1,226
Depart	857	30	41	60	131		308		1,165	797	23	67	62	152		355		1,152
Total	1,577	70	86	123	279	15.0%	648	2.3	2,225	1,759	46	105	113	264	13.0%	619	2.3	2,378
East Leg Volumes																		
Approach	455	11	8	22	41		99		554	259	8	9	9	26		58		317
Depart	170	10	10	19	39		93		263	776	8	8	26	42		107		883
Total	625	21	18	41	80	11.3%	192	2.4	817	1,035	16	17	35	68	6.2%	165	2.4	1,200
West Leg Volumes																		
Approach	224	12	17	34	63		155		379	1,131	27	57	50	134		306		1,437
Depart	624	17	28	40	85		202		826	371	8	21	16	45		103		474
Total	848	29	45	74	148	14.9%	357	2.4	1,205	1,502	35	78	66	179	10.6%	409	2.3	1,911
All Legs																		
Approach	2,475	100	112	172	384		893		3,368	3,209	70	138	154	362		847		4,056
Depart	2,475	100	112	172	384		893		3,368	3,209	70	138	154	362		847		4,056
Total	4,950	200	224	344	768	13.4%	1,786	2.3	6,736	6,418	140	276	308	724	10.1%	1,694	2.3	8,112

Existing Peak Hour Volumes - Classification Counts

2 Beech Ave at San Bernardino Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	23	0	0	2	2	8.0%	6	3.0	29	10	2	2	0	4	28.6%	7	1.8	17
NT	108	2	0	5	7	6.1%	18	2.6	126	150	0	1	2	3	2.0%	8	2.7	158
NR	4	1	0	0	1	20.0%	2	2.0	6	23	1	0	0	1	4.2%	2	2.0	25
SL	43	0	0	0	0	0.0%	0	0.0	43	39	0	0	0	0	0.0%	0	0.0	39
ST	120	2	0	2	4	3.2%	9	2.3	129	83	4	1	3	8	8.8%	17	2.1	100
SR	69	2	0	1	3	4.2%	6	2.0	75	30	0	1	1	2	6.3%	5	2.5	35
EL	30	0	0	0	0	0.0%	0	0.0	30	68	0	0	0	0	0.0%	0	0.0	68
ET	201	5	2	1	8	3.8%	15	1.9	216	525	8	3	1	12	2.2%	21	1.8	546
ER	16	0	0	0	0	0.0%	0	0.0	16	12	0	0	0	0	0.0%	0	0.0	12
WL	7	0	0	0	0	0.0%	0	0.0	7	11	1	0	0	1	8.3%	2	2.0	13
WT	309	14	1	3	18	5.5%	32	1.8	341	203	9	2	2	13	6.0%	24	1.8	227
WR	66	0	0	0	0	0.0%	0	0.0	66	35	0	0	0	0	0.0%	0	0.0	35
									1,084									1,275
North Leg Volumes																		
Approach	232	4	0	3	7		15		247	152	4	2	4	10		22		174
Depart	204	2	0	5	7		18		222	253	0	1	2	3		8		261
Total	436	6	0	8	14	3.1%	33	2.4	469	405	4	3	6	13	3.1%	30	2.3	435
South Leg Volumes																		
Approach	135	3	0	7	10		26		161	183	3	3	2	8		17		200
Depart	143	2	0	2	4		9		152	106	5	1	3	9		19		125
Total	278	5	0	9	14	4.8%	35	2.5	313	289	8	4	5	17	5.6%	36	2.1	325
East Leg Volumes																		
Approach	382	14	1	3	18		32		414	249	10	2	2	14		26		275
Depart	248	6	2	1	9		17		265	587	9	3	1	13		23		610
Total	630	20	3	4	27	4.1%	49	1.8	679	836	19	5	3	27	3.1%	49	1.8	885
West Leg Volumes																		
Approach	247	5	2	1	8		15		262	605	8	3	1	12		21		626
Depart	401	16	1	6	23		44		445	243	11	5	3	19		36		279
Total	648	21	3	7	31	4.6%	59	1.9	707	848	19	8	4	31	3.5%	57	1.8	905
All Legs																		
Approach	996	26	3	14	43		88		1,084	1,189	25	10	9	44		86		1,275
Depart	996	26	3	14	43		88		1,084	1,189	25	10	9	44		86		1,275
Total	1,992	52	6	28	86	4.1%	176	2.0	2,168	2,378	50	20	18	88	3.6%	172	2.0	2,550

Existing Peak Hour Volumes - Classification Counts

3 Fontana Ave/Elm Ave at San Bernardino Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
									0									0
North Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
South Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
East Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
West Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
All Legs																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0

Existing Peak Hour Volumes - Classification Counts

4 Citrus Ave at San Bernardino Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	113	2	0	0	2	1.7%	3	1.5	116	163	2	2	1	5	3.0%	10	2.0	173
NT	538	10	6	8	24	4.3%	51	2.1	589	924	3	6	5	14	1.5%	32	2.3	956
NR	157	1	0	0	1	0.6%	2	2.0	159	47	0	0	0	0	0.0%	0	0.0	47
SL	100	0	0	0	0	0.0%	0	0.0	100	48	0	0	0	0	0.0%	0	0.0	48
ST	691	14	8	19	41	5.6%	94	2.3	785	542	5	5	5	15	2.7%	33	2.2	575
SR	63	0	0	0	0	0.0%	0	0.0	63	25	0	0	0	0	0.0%	0	0.0	25
EL	133	1	0	0	1	0.7%	2	2.0	135	53	0	0	0	0	0.0%	0	0.0	53
ET	110	5	0	0	5	4.3%	8	1.6	118	296	6	0	0	6	2.0%	9	1.5	305
ER	61	2	0	1	3	4.7%	6	2.0	67	62	1	0	0	1	1.6%	2	2.0	64
WL	107	0	0	0	0	0.0%	0	0.0	107	44	0	0	0	0	0.0%	0	0.0	44
WT	122	4	1	0	5	3.9%	8	1.6	130	206	2	0	1	3	1.4%	6	2.0	212
WR	257	1	1	0	2	0.8%	4	2.0	261	69	0	1	0	1	1.4%	2	2.0	71
									2,630									2,573
North Leg Volumes																		
Approach	854	14	8	19	41		94		948	615	5	5	5	15		33		648
Depart	928	12	7	8	27		57		985	1,046	3	7	5	15		34		1,080
Total	1,782	26	15	27	68	3.7%	151	2.2	1,933	1,661	8	12	10	30	1.8%	67	2.2	1,728
South Leg Volumes																		
Approach	808	13	6	8	27		56		864	1,134	5	8	6	19		42		1,176
Depart	859	16	8	20	44		100		959	648	6	5	5	16		35		683
Total	1,667	29	14	28	71	4.1%	156	2.2	1,823	1,782	11	13	11	35	1.9%	77	2.2	1,859
East Leg Volumes																		
Approach	486	5	2	0	7		12		498	319	2	1	1	4		8		327
Depart	367	6	0	0	6		10		377	391	6	0	0	6		9		400
Total	853	11	2	0	13	1.5%	22	1.7	875	710	8	1	1	10	1.4%	17	1.7	727
West Leg Volumes																		
Approach	304	8	0	1	9		16		320	411	7	0	0	7		11		422
Depart	298	6	1	0	7		11		309	394	4	2	2	8		16		410
Total	602	14	1	1	16	2.6%	27	1.7	629	805	11	2	2	15	1.8%	27	1.8	832
All Legs																		
Approach	2,452	40	16	28	84		178		2,630	2,479	19	14	12	45		94		2,573
Depart	2,452	40	16	28	84		178		2,630	2,479	19	14	12	45		94		2,573
Total	4,904	80	32	56	168	3.3%	356	2.1	5,260	4,958	38	28	24	90	1.8%	188	2.1	5,146

Existing Peak Hour Volumes - Classification Counts

5 Sierra Ave at San Bernardino Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	49	0	0	0	0	0.0%	0	0.0	49	179	2	0	0	2	1.1%	3	1.5	182
NT	695	19	2	1	22	3.1%	36	1.6	731	935	13	0	1	14	1.5%	23	1.6	958
NR	157	1	0	1	2	1.3%	5	2.5	162	366	1	0	0	1	0.3%	2	2.0	368
SL	10	0	0	0	0	0.0%	0	0.0	10	67	0	0	0	0	0.0%	0	0.0	67
ST	1,109	22	2	4	28	2.5%	49	1.8	1,158	837	14	2	6	22	2.6%	43	2.0	880
SR	65	0	1	0	1	1.5%	2	2.0	67	54	0	0	0	0	0.0%	0	0.0	54
EL	27	0	0	0	0	0.0%	0	0.0	27	92	0	0	0	0	0.0%	0	0.0	92
ET	174	2	0	0	2	1.1%	3	1.5	177	330	5	1	0	6	1.8%	10	1.7	340
ER	81	1	0	0	1	1.2%	2	2.0	83	135	0	0	0	0	0.0%	0	0.0	135
WL	249	4	0	1	5	2.0%	9	1.8	258	227	3	0	0	3	1.3%	5	1.7	232
WT	297	6	0	0	6	2.0%	9	1.5	306	261	8	1	2	11	4.0%	20	1.8	281
WR	38	0	0	0	0	0.0%	0	0.0	38	73	1	0	0	1	1.4%	2	2.0	75
									3,066									3,664
North Leg Volumes																		
Approach	1,184	22	3	4	29		51		1,235	958	14	2	6	22		43		1,001
Depart	760	19	2	1	22		36		796	1,100	14	0	1	15		25		1,125
Total	1,944	41	5	5	51	2.6%	87	1.7	2,031	2,058	28	2	7	37	1.8%	68	1.8	2,126
South Leg Volumes																		
Approach	901	20	2	2	24		41		942	1,480	16	0	1	17		28		1,508
Depart	1,439	27	2	5	34		60		1,499	1,199	17	2	6	25		48		1,247
Total	2,340	47	4	7	58	2.4%	101	1.7	2,441	2,679	33	2	7	42	1.5%	76	1.8	2,755
East Leg Volumes																		
Approach	584	10	0	1	11		18		602	561	12	1	2	15		27		588
Depart	341	3	0	1	4		8		349	763	6	1	0	7		12		775
Total	925	13	0	2	15	1.6%	26	1.7	951	1,324	18	2	2	22	1.6%	39	1.8	1,363
West Leg Volumes																		
Approach	282	3	0	0	3		5		287	557	5	1	0	6		10		567
Depart	411	6	1	0	7		11		422	494	10	1	2	13		23		517
Total	693	9	1	0	10	1.4%	16	1.6	709	1,051	15	2	2	19	1.8%	33	1.7	1,084
All Legs																		
Approach	2,951	55	5	7	67		115		3,066	3,556	47	4	9	60		108		3,664
Depart	2,951	55	5	7	67		115		3,066	3,556	47	4	9	60		108		3,664
Total	5,902	110	10	14	134	2.2%	230	1.7	6,132	7,112	94	8	18	120	1.7%	216	1.8	7,328

Existing Peak Hour Volumes - Classification Counts

6 Beech Ave at Fontana Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	6	0	0	0	0	0.0%	0	0.0	6	0	0	0	0	0	0.0%	0	0.0	0
NT	89	1	1	3	5	5.3%	13	2.6	102	148	4	2	2	8	5.1%	16	2.0	164
NR	8	0	0	0	0	0.0%	0	0.0	8	58	1	2	0	3	4.9%	6	2.0	64
SL	8	0	0	0	0	0.0%	0	0.0	8	4	0	0	0	0	0.0%	0	0.0	4
ST	112	2	1	2	5	4.3%	11	2.2	123	85	4	2	2	8	8.6%	16	2.0	101
SR	37	1	0	2	3	7.5%	8	2.7	45	19	1	1	0	2	9.5%	4	2.0	23
EL	15	0	0	2	2	11.8%	6	3.0	21	34	2	1	1	4	10.5%	8	2.0	42
ET	41	1	0	0	1	2.4%	2	2.0	43	122	2	1	1	4	3.2%	8	2.0	130
ER	2	0	0	0	0	0.0%	0	0.0	2	1	0	0	0	0	0.0%	0	0.0	1
WL	19	1	0	0	1	5.0%	2	2.0	21	5	1	0	0	1	16.7%	2	2.0	7
WT	136	2	1	2	5	3.5%	11	2.2	147	69	2	1	1	4	5.5%	8	2.0	77
WR	7	0	0	0	0	0.0%	0	0.0	7	12	0	0	0	0	0.0%	0	0.0	12
									533									625
North Leg Volumes																		
Approach	157	3	1	4	8		19		176	108	5	3	2	10		20		128
Depart	111	1	1	5	7		19		130	194	6	3	3	12		24		218
Total	268	4	2	9	15	5.3%	38	2.5	306	302	11	6	5	22	6.8%	44	2.0	346
South Leg Volumes																		
Approach	103	1	1	3	5		13		116	206	5	4	2	11		22		228
Depart	133	3	1	2	6		13		146	91	5	2	2	9		18		109
Total	236	4	2	5	11	4.5%	26	2.4	262	297	10	6	4	20	6.3%	40	2.0	337
East Leg Volumes																		
Approach	162	3	1	2	6		13		175	86	3	1	1	5		10		96
Depart	57	1	0	0	1		2		59	184	3	3	1	7		14		198
Total	219	4	1	2	7	3.1%	15	2.1	234	270	6	4	2	12	4.3%	24	2.0	294
West Leg Volumes																		
Approach	58	1	0	2	3		8		66	157	4	2	2	8		16		173
Depart	179	3	1	4	8		19		198	88	3	2	1	6		12		100
Total	237	4	1	6	11	4.4%	27	2.5	264	245	7	4	3	14	5.4%	28	2.0	273
All Legs																		
Approach	480	8	3	11	22		53		533	557	17	10	7	34		68		625
Depart	480	8	3	11	22		53		533	557	17	10	7	34		68		625
Total	960	16	6	22	44	4.4%	106	2.4	1,066	1,114	34	20	14	68	5.8%	136	2.0	1,250

Existing Peak Hour Volumes - Classification Counts

7 Etiwanda Ave at Valley Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	228	5	1	18	24	9.5%	64	2.7	292	188	5	2	19	26	12.1%	69	2.7	257
NT	541	31	43	89	163	23.2%	400	2.5	941	616	13	44	71	128	17.2%	321	2.5	937
NR	30	0	3	14	17	36.2%	48	2.8	78	41	2	4	23	29	41.4%	80	2.8	121
SL	14	2	0	8	10	41.7%	27	2.7	41	30	2	5	7	14	31.8%	34	2.4	64
ST	437	22	54	93	169	27.9%	420	2.5	857	645	16	32	69	117	15.4%	295	2.5	940
SR	29	0	4	2	6	17.1%	14	2.3	43	22	1	0	2	3	12.0%	8	2.7	30
EL	8	2	1	4	7	46.7%	17	2.4	25	50	1	1	7	9	15.3%	25	2.8	75
ET	23	2	2	5	9	28.1%	22	2.4	45	206	1	3	14	18	8.0%	50	2.8	256
ER	43	5	4	23	32	42.7%	85	2.7	128	278	5	3	16	24	7.9%	62	2.6	340
WL	76	5	3	25	33	30.3%	89	2.7	165	68	5	9	14	28	29.2%	68	2.4	136
WT	133	2	2	7	11	7.6%	28	2.5	161	83	0	1	2	3	3.5%	8	2.7	91
WR	46	4	2	4	10	17.9%	22	2.2	68	54	1	4	8	13	19.4%	34	2.6	88
									2,844									3,335
North Leg Volumes																		
Approach	480	24	58	103	185		461		941	697	19	37	78	134		337		1,034
Depart	595	37	46	97	180		439		1,034	720	15	49	86	150		380		1,100
Total	1,075	61	104	200	365	25.3%	900	2.5	1,975	1,417	34	86	164	284	16.7%	717	2.5	2,134
South Leg Volumes																		
Approach	799	36	47	121	204		512		1,311	845	20	50	113	183		470		1,315
Depart	556	32	61	141	234		594		1,150	991	26	44	99	169		425		1,416
Total	1,355	68	108	262	438	24.4%	1,106	2.5	2,461	1,836	46	94	212	352	16.1%	895	2.5	2,731
East Leg Volumes																		
Approach	255	11	7	36	54		139		394	205	6	14	24	44		110		315
Depart	67	4	5	27	36		97		164	277	5	12	44	61		164		441
Total	322	15	12	63	90	21.8%	236	2.6	558	482	11	26	68	105	17.9%	274	2.6	756
West Leg Volumes																		
Approach	74	9	7	32	48		124		198	534	7	7	37	51		137		671
Depart	390	7	7	27	41		106		496	293	6	3	23	32		85		378
Total	464	16	14	59	89	16.1%	230	2.6	694	827	13	10	60	83	9.1%	222	2.7	1,049
All Legs																		
Approach	1,608	80	119	292	491		1,236		2,844	2,281	52	108	252	412		1,054		3,335
Depart	1,608	80	119	292	491		1,236		2,844	2,281	52	108	252	412		1,054		3,335
Total	3,216	160	238	584	982	23.4%	2,472	2.5	5,688	4,562	104	216	504	824	15.3%	2,108	2.6	6,670

Existing Peak Hour Volumes - Classification Counts

8 Commerce Dr/I-10 Ramps at Valley Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	37	1	1	5	7	15.9%	19	2.7	56	17	0	0	5	5	22.7%	15	3.0	32
NT	134	2	6	22	30	18.3%	81	2.7	215	280	11	1	24	36	11.4%	91	2.5	371
NR	199	10	14	52	76	27.6%	199	2.6	398	402	21	25	63	109	21.3%	271	2.5	673
SL	5	0	0	1	1	16.7%	3	3.0	8	6	1	0	1	2	25.0%	5	2.5	11
ST	150	2	5	48	55	26.8%	157	2.9	307	208	4	2	12	18	8.0%	46	2.6	254
SR	35	1	1	1	3	7.9%	7	2.3	42	16	0	0	3	3	15.8%	9	3.0	25
EL	6	0	3	2	5	45.5%	12	2.4	18	34	0	0	2	2	5.6%	6	3.0	40
ET	58	3	4	12	19	24.7%	49	2.6	107	325	8	8	30	46	12.4%	118	2.6	443
ER	4	1	0	5	6	60.0%	17	2.8	21	16	1	1	1	3	15.8%	7	2.3	23
WL	103	15	14	80	109	51.4%	291	2.7	394	519	8	17	51	76	12.8%	199	2.6	718
WT	211	8	8	27	43	16.9%	109	2.5	320	342	7	18	18	43	11.2%	101	2.3	443
WR	9	1	5	3	9	50.0%	21	2.3	30	43	2	8	3	13	23.2%	28	2.2	71
									1,916									3,104
North Leg Volumes																		
Approach	190	3	6	50	59		167		357	230	5	2	16	23		60		290
Depart	149	3	14	27	44		114		263	357	13	9	29	51		125		482
Total	339	6	20	77	103	23.3%	281	2.7	620	587	18	11	45	74	11.2%	185	2.5	772
South Leg Volumes																		
Approach	370	13	21	79	113		299		669	699	32	26	92	150		377		1,076
Depart	257	18	19	133	170		465		722	743	13	20	64	97		252		995
Total	627	31	40	212	283	31.1%	764	2.7	1,391	1,442	45	46	156	247	14.6%	629	2.5	2,071
East Leg Volumes																		
Approach	323	24	27	110	161		421		744	904	17	43	72	132		328		1,232
Depart	262	13	18	65	96		251		513	733	30	33	94	157		394		1,127
Total	585	37	45	175	257	30.5%	672	2.6	1,257	1,637	47	76	166	289	15.0%	722	2.5	2,359
West Leg Volumes																		
Approach	68	4	7	19	30		78		146	375	9	9	33	51		131		506
Depart	283	10	10	33	53		135		418	375	7	18	26	51		125		500
Total	351	14	17	52	83	19.1%	213	2.6	564	750	16	27	59	102	12.0%	256	2.5	1,006
All Legs																		
Approach	951	44	61	258	363		965		1,916	2,208	63	80	213	356		896		3,104
Depart	951	44	61	258	363		965		1,916	2,208	63	80	213	356		896		3,104
Total	1,902	88	122	516	726	27.6%	1,930	2.7	3,832	4,416	126	160	426	712	13.9%	1,792	2.5	6,208

Existing Peak Hour Volumes - Classification Counts

9 Cherry Ave at Valley Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	327	13	22	25	60	15.5%	139	2.3	466	147	8	11	22	41	21.8%	100	2.4	247
NT	717	37	31	59	127	15.0%	295	2.3	1,012	723	21	26	48	95	11.6%	228	2.4	951
NR	273	7	16	18	41	13.1%	97	2.4	370	584	12	11	24	47	7.4%	112	2.4	696
SL	79	5	2	0	7	8.1%	12	1.7	91	76	3	4	3	10	11.6%	22	2.2	98
ST	771	34	38	80	152	16.5%	367	2.4	1,138	699	18	39	48	105	13.1%	249	2.4	948
SR	33	6	3	7	16	32.7%	36	2.3	69	34	8	6	3	17	33.3%	33	1.9	67
EL	38	7	5	9	21	35.6%	48	2.3	86	142	6	3	7	16	10.1%	36	2.3	178
ET	68	8	6	8	22	24.4%	48	2.2	116	401	6	12	6	24	5.6%	51	2.1	452
ER	79	16	22	40	78	49.7%	188	2.4	267	209	8	20	31	59	22.0%	145	2.5	354
WL	380	12	6	32	50	11.6%	126	2.5	506	269	10	9	31	50	15.7%	126	2.5	395
WT	235	11	13	9	33	12.3%	70	2.1	305	166	7	12	13	32	16.2%	74	2.3	240
WR	45	4	4	4	12	21.1%	26	2.2	71	52	5	2	6	13	20.0%	30	2.3	82
									4,497									4,708
North Leg Volumes																		
Approach	883	45	43	87	175		415		1,298	809	29	49	54	132		304		1,113
Depart	800	48	40	72	160		369		1,169	917	32	31	61	124		294		1,211
Total	1,683	93	83	159	335	16.6%	784	2.3	2,467	1,726	61	80	115	256	12.9%	598	2.3	2,324
South Leg Volumes																		
Approach	1,317	57	69	102	228		531		1,848	1,454	41	48	94	183		440		1,894
Depart	1,230	62	66	152	280		681		1,911	1,177	36	68	110	214		520		1,697
Total	2,547	119	135	254	508	16.6%	1,212	2.4	3,759	2,631	77	116	204	397	13.1%	960	2.4	3,591
East Leg Volumes																		
Approach	660	27	23	45	95		222		882	487	22	23	50	95		230		717
Depart	420	20	24	26	70		157		577	1,061	21	27	33	81		185		1,246
Total	1,080	47	47	71	165	13.3%	379	2.3	1,459	1,548	43	50	83	176	10.2%	415	2.4	1,963
West Leg Volumes																		
Approach	185	31	33	57	121		284		469	752	20	35	44	99		232		984
Depart	595	30	38	41	109		245		840	347	23	29	38	90		207		554
Total	780	61	71	98	230	22.8%	529	2.3	1,309	1,099	43	64	82	189	14.7%	439	2.3	1,538
All Legs																		
Approach	3,045	160	168	291	619		1,452		4,497	3,502	112	155	242	509		1,206		4,708
Depart	3,045	160	168	291	619		1,452		4,497	3,502	112	155	242	509		1,206		4,708
Total	6,090	320	336	582	1,238	16.9%	2,904	2.3	8,994	7,004	224	310	484	1,018	12.7%	2,412	2.4	9,416

Existing Peak Hour Volumes - Classification Counts

10 Fontana Ave/Hemlock Ave at Valley Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
									0									0
North Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
South Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
East Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
West Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
All Legs																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0

Existing Peak Hour Volumes - Classification Counts

11 Beech Ave at Valley Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	1	1	0	1	2	66.7%	5	2.5	6	1	0	0	1	1	50.0%	3	3.0	4
NT	1	0	0	0	0	0.0%	0	0.0	1	2	0	0	0	0	0.0%	0	0.0	2
NR	16	0	1	1	2	11.1%	5	2.5	21	16	0	1	0	1	5.9%	2	2.0	18
SL	78	4	1	2	7	8.2%	14	2.0	92	60	5	0	2	7	10.4%	14	2.0	74
ST	3	0	0	0	0	0.0%	0	0.0	3	0	0	0	0	0	0.0%	0	0.0	0
SR	29	0	0	0	0	0.0%	0	0.0	29	15	0	1	1	2	11.8%	5	2.5	20
EL	14	0	0	0	0	0.0%	0	0.0	14	107	3	1	1	5	4.5%	10	2.0	117
ET	314	14	8	16	38	10.8%	85	2.2	399	862	13	20	27	60	6.5%	141	2.4	1,003
ER	3	2	1	0	3	50.0%	5	1.7	8	0	0	2	1	3	100.0%	7	2.3	7
WL	14	0	0	0	0	0.0%	0	0.0	14	5	1	0	0	1	16.7%	2	2.0	7
WT	478	15	22	20	57	10.7%	127	2.2	605	377	14	15	27	56	12.9%	132	2.4	509
WR	62	1	1	2	4	6.1%	10	2.5	72	113	3	2	1	6	5.0%	12	2.0	125
									1,264									1,886
North Leg Volumes																		
Approach	110	4	1	2	7		14		124	75	5	1	3	9		19		94
Depart	77	1	1	2	4		10		87	222	6	3	2	11		22		244
Total	187	5	2	4	11	5.6%	24	2.2	211	297	11	4	5	20	6.3%	41	2.1	338
South Leg Volumes																		
Approach	18	1	1	2	4		10		28	19	0	1	1	2		5		24
Depart	20	2	1	0	3		5		25	5	1	2	1	4		9		14
Total	38	3	2	2	7	15.6%	15	2.1	53	24	1	3	2	6	20.0%	14	2.3	38
East Leg Volumes																		
Approach	554	16	23	22	61		137		691	495	18	17	28	63		146		641
Depart	408	18	10	19	47		104		512	938	18	21	29	68		157		1,095
Total	962	34	33	41	108	10.1%	241	2.2	1,203	1,433	36	38	57	131	8.4%	303	2.3	1,736
West Leg Volumes																		
Approach	331	16	9	16	41		90		421	969	16	23	29	68		158		1,127
Depart	508	16	22	21	59		132		640	393	14	16	29	59		140		533
Total	839	32	31	37	100	10.6%	222	2.2	1,061	1,362	30	39	58	127	8.5%	298	2.3	1,660
All Legs																		
Approach	1,013	37	34	42	113		251		1,264	1,558	39	42	61	142		328		1,886
Depart	1,013	37	34	42	113		251		1,264	1,558	39	42	61	142		328		1,886
Total	2,026	74	68	84	226	10.0%	502	2.2	2,528	3,116	78	84	122	284	8.4%	656	2.3	3,772

Existing Peak Hour Volumes - Classification Counts

12 Citrus Ave at Valley Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	352	10	9	18	37	9.5%	87	2.4	439	455	7	6	25	38	7.7%	98	2.6	553
NT	512	10	6	14	30	5.5%	69	2.3	581	935	6	4	6	16	1.7%	35	2.2	970
NR	125	1	0	3	4	3.1%	11	2.8	136	266	0	2	5	7	2.6%	19	2.7	285
SL	71	0	2	3	5	6.6%	13	2.6	84	91	3	0	0	3	3.2%	5	1.7	96
ST	684	13	5	15	33	4.6%	75	2.3	759	510	4	6	4	14	2.7%	30	2.1	540
SR	21	1	1	2	4	16.0%	10	2.5	31	38	2	0	0	2	5.0%	3	1.5	41
EL	27	2	1	1	4	12.9%	8	2.0	35	70	0	0	0	0	0.0%	0	0.0	70
ET	253	9	4	2	15	5.6%	28	1.9	281	638	4	5	3	12	1.8%	25	2.1	663
ER	387	7	9	16	32	7.6%	77	2.4	464	329	8	14	12	34	9.4%	76	2.2	405
WL	233	6	4	5	15	6.0%	32	2.1	265	152	1	2	0	3	1.9%	6	2.0	158
WT	339	7	7	4	18	5.0%	37	2.1	376	695	7	7	11	25	3.5%	58	2.3	753
WR	77	1	0	1	2	2.5%	5	2.5	82	177	1	2	0	3	1.7%	6	2.0	183
									3,533									4,717
North Leg Volumes																		
Approach	776	14	8	20	42		98		874	639	9	6	4	19		38		677
Depart	616	13	7	16	36		82		698	1,182	7	6	6	19		41		1,223
Total	1,392	27	15	36	78	5.3%	180	2.3	1,572	1,821	16	12	10	38	2.0%	79	2.1	1,900
South Leg Volumes																		
Approach	989	21	15	35	71		167		1,156	1,656	13	12	36	61		152		1,808
Depart	1,304	26	18	36	80		184		1,488	991	13	22	16	51		112		1,103
Total	2,293	47	33	71	151	6.2%	351	2.3	2,644	2,647	26	34	52	112	4.1%	264	2.4	2,911
East Leg Volumes																		
Approach	649	14	11	10	35		74		723	1,024	9	11	11	31		70		1,094
Depart	449	10	6	8	24		52		501	995	7	7	8	22		49		1,044
Total	1,098	24	17	18	59	5.1%	126	2.1	1,224	2,019	16	18	19	53	2.6%	119	2.2	2,138
West Leg Volumes																		
Approach	667	18	14	19	51		113		780	1,037	12	19	15	46		101		1,138
Depart	712	18	17	24	59		134		846	1,188	16	13	36	65		159		1,347
Total	1,379	36	31	43	110	7.4%	247	2.2	1,626	2,225	28	32	51	111	4.8%	260	2.3	2,485
All Legs																		
Approach	3,081	67	48	84	199		452		3,533	4,356	43	48	66	157		361		4,717
Depart	3,081	67	48	84	199		452		3,533	4,356	43	48	66	157		361		4,717
Total	6,162	134	96	168	398	6.1%	904	2.3	7,066	8,712	86	96	132	314	3.5%	722	2.3	9,434

Existing Peak Hour Volumes - Classification Counts

13 Sierra Ave at Valley Blvd

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	153	2	3	6	11	6.7%	27	2.5	180	225	2	1	2	5	2.2%	11	2.2	236
NT	1,195	9	1	2	12	1.0%	22	1.8	1,217	1,158	8	0	2	10	0.9%	18	1.8	1,176
NR	652	8	1	3	12	1.8%	23	1.9	675	654	9	10	13	32	4.7%	73	2.3	727
SL	105	1	1	0	2	1.9%	4	2.0	109	149	2	1	0	3	2.0%	5	1.7	154
ST	1,346	19	1	3	23	1.7%	40	1.7	1,386	1,149	20	2	6	28	2.4%	52	1.9	1,201
SR	91	3	1	0	4	4.2%	7	1.8	98	85	1	0	0	1	1.2%	2	2.0	87
EL	170	0	0	0	0	0.0%	0	0.0	170	263	1	1	0	2	0.8%	4	2.0	267
ET	237	7	1	3	11	4.4%	22	2.0	259	814	8	8	7	23	2.7%	49	2.1	863
ER	140	3	0	2	5	3.4%	11	2.2	151	206	2	2	2	6	2.8%	13	2.2	219
WL	462	12	9	16	37	7.4%	84	2.3	546	555	6	9	17	32	5.5%	78	2.4	633
WT	383	14	3	3	20	5.0%	36	1.8	419	532	15	7	23	45	7.8%	106	2.4	638
WR	78	5	1	2	8	9.3%	16	2.0	94	103	2	0	0	2	1.9%	3	1.5	106
									5,304									6,307
North Leg Volumes																		
Approach	1,542	23	3	3	29		51		1,593	1,383	23	3	6	32		59		1,442
Depart	1,443	14	2	4	20		38		1,481	1,524	11	1	2	14		25		1,549
Total	2,985	37	5	7	49	1.6%	89	1.8	3,074	2,907	34	4	8	46	1.6%	84	1.8	2,991
South Leg Volumes																		
Approach	2,000	19	5	11	35		72		2,072	2,037	19	11	17	47		102		2,139
Depart	1,948	34	10	21	65		135		2,083	1,910	28	13	25	66		143		2,053
Total	3,948	53	15	32	100	2.5%	207	2.1	4,155	3,947	47	24	42	113	2.8%	245	2.2	4,192
East Leg Volumes																		
Approach	923	31	13	21	65		136		1,059	1,190	23	16	40	79		187		1,377
Depart	994	16	3	6	25		49		1,043	1,617	19	19	20	58		127		1,744
Total	1,917	47	16	27	90	4.5%	185	2.1	2,102	2,807	42	35	60	137	4.7%	314	2.3	3,121
West Leg Volumes																		
Approach	547	10	1	5	16		33		580	1,283	11	11	9	31		66		1,349
Depart	627	19	7	9	35		70		697	842	18	8	25	51		119		961
Total	1,174	29	8	14	51	4.2%	103	2.0	1,277	2,125	29	19	34	82	3.7%	185	2.3	2,310
All Legs																		
Approach	5,012	83	22	40	145		292		5,304	5,893	76	41	72	189		414		6,307
Depart	5,012	83	22	40	145		292		5,304	5,893	76	41	72	189		414		6,307
Total	10,024	166	44	80	290	2.8%	584	2.0	10,608	11,786	152	82	144	378	3.1%	828	2.2	12,614

Existing Peak Hour Volumes - Classification Counts

14 Etiwanda Ave at I-10 WB Off-Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	375	17	50	87	154	29.1%	387	2.5	762	607	19	52	82	153	20.1%	379	2.5	986
NR	128	25	24	77	126	49.6%	317	2.5	445	428	16	10	50	76	15.1%	194	2.6	622
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	432	30	33	77	140	24.5%	342	2.4	774	736	32	27	65	124	14.4%	297	2.4	1,033
SR	117	11	35	68	114	49.4%	291	2.6	408	226	14	23	43	80	26.1%	196	2.5	422
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	345	10	8	38	56	14.0%	145	2.6	490	190	19	13	34	66	25.8%	157	2.4	347
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	415	11	6	29	46	10.0%	116	2.5	531	323	9	7	27	43	11.7%	109	2.5	432
									3,410									3,842
North Leg Volumes																		
Approach	549	41	68	145	254		633		1,182	962	46	50	108	204		493		1,455
Depart	790	28	56	116	200		503		1,293	930	28	59	109	196		488		1,418
Total	1,339	69	124	261	454	25.3%	1,136	2.5	2,475	1,892	74	109	217	400	17.5%	981	2.5	2,873
South Leg Volumes																		
Approach	503	42	74	164	280		704		1,207	1,035	35	62	132	229		573		1,608
Depart	777	40	41	115	196		487		1,264	926	51	40	99	190		454		1,380
Total	1,280	82	115	279	476	27.1%	1,191	2.5	2,471	1,961	86	102	231	419	17.6%	1,027	2.5	2,988
East Leg Volumes																		
Approach	760	21	14	67	102		261		1,021	513	28	20	61	109		266		779
Depart	128	25	24	77	126		317		445	428	16	10	50	76		194		622
Total	888	46	38	144	228	20.4%	578	2.5	1,466	941	44	30	111	185	16.4%	460	2.5	1,401
West Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	117	11	35	68	114		291		408	226	14	23	43	80		196		422
Total	117	11	35	68	114	49.4%	291	2.6	408	226	14	23	43	80	26.1%	196	2.5	422
All Legs																		
Approach	1,812	104	156	376	636		1,598		3,410	2,510	109	132	301	542		1,332		3,842
Depart	1,812	104	156	376	636		1,598		3,410	2,510	109	132	301	542		1,332		3,842
Total	3,624	208	312	752	1,272	26.0%	3,196	2.5	6,820	5,020	218	264	602	1,084	17.8%	2,664	2.5	7,684

Existing Peak Hour Volumes - Classification Counts

15 Cherry Ave at I-10 WB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	717	36	45	44	125	14.8%	276	2.2	993	1,027	26	42	63	131	11.3%	312	2.4	1,339
NR	266	9	16	77	102	27.7%	277	2.7	543	220	6	11	46	63	22.3%	169	2.7	389
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	1,058	72	66	150	288	21.4%	690	2.4	1,748	1,283	53	74	98	225	14.9%	522	2.3	1,805
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	526	13	24	48	85	13.9%	212	2.5	738	322	12	14	50	76	19.1%	196	2.6	518
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	448	22	24	36	82	15.5%	189	2.3	637	322	11	18	39	68	17.4%	170	2.5	492
									4,659									4,543
North Leg Volumes																		
Approach	1,058	72	66	150	288		690		1,748	1,283	53	74	98	225		522		1,805
Depart	1,165	58	69	80	207		465		1,630	1,349	37	60	102	199		482		1,831
Total	2,223	130	135	230	495	18.2%	1,155	2.3	3,378	2,632	90	134	200	424	13.9%	1,004	2.4	3,636
South Leg Volumes																		
Approach	983	45	61	121	227		553		1,536	1,247	32	53	109	194		481		1,728
Depart	1,584	85	90	198	373		902		2,486	1,605	65	88	148	301		718		2,323
Total	2,567	130	151	319	600	18.9%	1,455	2.4	4,022	2,852	97	141	257	495	14.8%	1,199	2.4	4,051
East Leg Volumes																		
Approach	974	35	48	84	167		401		1,375	644	23	32	89	144		366		1,010
Depart	266	9	16	77	102		277		543	220	6	11	46	63		169		389
Total	1,240	44	64	161	269	17.8%	678	2.5	1,918	864	29	43	135	207	19.3%	535	2.6	1,399
West Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
All Legs																		
Approach	3,015	152	175	355	682		1,644		4,659	3,174	108	159	296	563		1,369		4,543
Depart	3,015	152	175	355	682		1,644		4,659	3,174	108	159	296	563		1,369		4,543
Total	6,030	304	350	710	1,364	18.4%	3,288	2.4	9,318	6,348	216	318	592	1,126	15.1%	2,738	2.4	9,086

Existing Peak Hour Volumes - Classification Counts

16 Citrus Ave at I-10 WB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	582	18	3	13	34	5.5%	72	2.1	654	987	30	8	9	47	4.5%	88	1.9	1,075
NR	168	6	10	25	41	19.6%	104	2.5	272	195	4	5	15	24	11.0%	61	2.5	256
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	868	20	14	19	53	5.8%	115	2.2	983	784	18	9	21	48	5.8%	108	2.3	892
SR	409	8	3	13	24	5.5%	57	2.4	466	426	4	3	12	19	4.3%	48	2.5	474
EL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WL	297	5	5	16	26	8.0%	66	2.5	363	180	7	2	15	24	11.8%	60	2.5	240
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	404	10	10	3	23	5.4%	44	1.9	448	417	9	8	17	34	7.5%	81	2.4	498
									3,186									3,435
North Leg Volumes																		
Approach	1,277	28	17	32	77		172		1,449	1,210	22	12	33	67		156		1,366
Depart	986	28	13	16	57		116		1,102	1,404	39	16	26	81		169		1,573
Total	2,263	56	30	48	134	5.6%	288	2.1	2,551	2,614	61	28	59	148	5.4%	325	2.2	2,939
South Leg Volumes																		
Approach	750	24	13	38	75		176		926	1,182	34	13	24	71		149		1,331
Depart	1,165	25	19	35	79		181		1,346	964	25	11	36	72		168		1,132
Total	1,915	49	32	73	154	7.4%	357	2.3	2,272	2,146	59	24	60	143	6.2%	317	2.2	2,463
East Leg Volumes																		
Approach	701	15	15	19	49		110		811	597	16	10	32	58		141		738
Depart	168	6	10	25	41		104		272	195	4	5	15	24		61		256
Total	869	21	25	44	90	9.4%	214	2.4	1,083	792	20	15	47	82	9.4%	202	2.5	994
West Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	409	8	3	13	24		57		466	426	4	3	12	19		48		474
Total	409	8	3	13	24	5.5%	57	2.4	466	426	4	3	12	19	4.3%	48	2.5	474
All Legs																		
Approach	2,728	67	45	89	201		458		3,186	2,989	72	35	89	196		446		3,435
Depart	2,728	67	45	89	201		458		3,186	2,989	72	35	89	196		446		3,435
Total	5,456	134	90	178	402	6.9%	916	2.3	6,372	5,978	144	70	178	392	6.2%	892	2.3	6,870

Existing Peak Hour Volumes - Classification Counts

1 Etiwanda Ave at I-10 EB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	397	36	46	177	259	39.5%	677	2.6	1,074	872	27	40	98	165	15.9%	415	2.5	1,287
NR	130	23	12	64	99	43.2%	251	2.5	381	370	14	15	47	76	17.0%	192	2.5	562
SL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ST	635	34	32	72	138	17.9%	331	2.4	966	635	40	29	72	141	18.2%	334	2.4	969
SR	126	6	8	29	43	25.4%	112	2.6	238	323	10	4	16	30	8.5%	71	2.4	394
EL	124	5	28	40	73	37.1%	184	2.5	308	129	8	32	31	71	35.5%	169	2.4	298
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	388	23	22	68	113	22.6%	283	2.5	671	151	17	10	65	92	37.9%	241	2.6	392
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
									3,638									3,902
North Leg Volumes																		
Approach	761	40	40	101	181		443		1,204	958	50	33	88	171		405		1,363
Depart	521	41	74	217	332		861		1,382	1,001	35	72	129	236		584		1,585
Total	1,282	81	114	318	513	28.6%	1,304	2.5	2,586	1,959	85	105	217	407	17.2%	989	2.4	2,948
South Leg Volumes																		
Approach	527	59	58	241	358		928		1,455	1,242	41	55	145	241		607		1,849
Depart	1,023	57	54	140	251		614		1,637	786	57	39	137	233		575		1,361
Total	1,550	116	112	381	609	28.2%	1,542	2.5	3,092	2,028	98	94	282	474	18.9%	1,182	2.5	3,210
East Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	130	23	12	64	99		251		381	370	14	15	47	76		192		562
Total	130	23	12	64	99	43.2%	251	2.5	381	370	14	15	47	76	17.0%	192	2.5	562
West Leg Volumes																		
Approach	512	28	50	108	186		467		979	280	25	42	96	163		410		690
Depart	126	6	8	29	43		112		238	323	10	4	16	30		71		394
Total	638	34	58	137	229	26.4%	579	2.5	1,217	603	35	46	112	193	24.2%	481	2.5	1,084
All Legs																		
Approach	1,800	127	148	450	725		1,838		3,638	2,480	116	130	329	575		1,422		3,902
Depart	1,800	127	148	450	725		1,838		3,638	2,480	116	130	329	575		1,422		3,902
Total	3,600	254	296	900	1,450	28.7%	3,676	2.5	7,276	4,960	232	260	658	1,150	18.8%	2,844	2.5	7,804

Existing Peak Hour Volumes - Classification Counts

2 Cherry Ave at I-10 EB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	712	40	42	126	208	22.6%	522	2.5	1,234	889	26	40	76	142	13.8%	347	2.4	1,236
NR	281	15	19	47	81	22.4%	202	2.5	483	283	6	8	37	51	15.3%	136	2.7	419
SL	241	22	18	50	90	27.2%	219	2.4	460	372	16	18	27	61	14.1%	141	2.3	513
ST	1,073	37	46	89	172	13.8%	415	2.4	1,488	794	24	53	82	159	16.7%	388	2.4	1,182
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	251	23	20	25	68	21.3%	150	2.2	401	358	9	13	37	59	14.1%	151	2.6	509
ET	4	1	0	0	1	20.0%	2	2.0	6	41	1	0	0	1	2.4%	2	2.0	43
ER	347	12	18	72	102	22.7%	270	2.6	617	340	14	8	57	79	18.9%	208	2.6	548
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
									4,689									4,450
North Leg Volumes																		
Approach	1,314	59	64	139	262		634		1,948	1,166	40	71	109	220		529		1,695
Depart	963	63	62	151	276		672		1,635	1,247	35	53	113	201		498		1,745
Total	2,277	122	126	290	538	19.1%	1,306	2.4	3,583	2,413	75	124	222	421	14.9%	1,027	2.4	3,440
South Leg Volumes																		
Approach	993	55	61	173	289		724		1,717	1,172	32	48	113	193		483		1,655
Depart	1,420	49	64	161	274		685		2,105	1,134	38	61	139	238		596		1,730
Total	2,413	104	125	334	563	18.9%	1,409	2.5	3,822	2,306	70	109	252	431	15.7%	1,079	2.5	3,385
East Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	526	38	37	97	172		423		949	696	23	26	64	113		279		975
Total	526	38	37	97	172	24.6%	423	2.5	949	696	23	26	64	113	14.0%	279	2.5	975
West Leg Volumes																		
Approach	602	36	38	97	171		422		1,024	739	24	21	94	139		361		1,100
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	602	36	38	97	171	22.1%	422	2.5	1,024	739	24	21	94	139	15.8%	361	2.6	1,100
All Legs																		
Approach	2,909	150	163	409	722		1,780		4,689	3,077	96	140	316	552		1,373		4,450
Depart	2,909	150	163	409	722		1,780		4,689	3,077	96	140	316	552		1,373		4,450
Total	5,818	300	326	818	1,444	19.9%	3,560	2.5	9,378	6,154	192	280	632	1,104	15.2%	2,746	2.5	8,900

Existing Peak Hour Volumes - Classification Counts

3 Citrus Ave at I-10 EB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
NT	486	21	8	39	68	12.3%	165	2.4	651	780	25	9	19	53	6.4%	113	2.1	893
NR	223	9	4	29	42	15.8%	109	2.6	332	406	15	4	24	43	9.6%	103	2.4	509
SL	442	21	9	14	44	9.1%	92	2.1	534	432	11	8	12	31	6.7%	69	2.2	501
ST	742	24	11	17	52	6.5%	109	2.1	851	541	22	5	21	48	8.1%	106	2.2	647
SR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
EL	265	8	9	3	20	7.0%	39	2.0	304	408	13	4	5	22	5.1%	43	2.0	451
ET	6	1	0	0	1	14.3%	2	2.0	8	7	0	0	0	0	0.0%	0	0.0	7
ER	302	12	4	33	49	14.0%	125	2.6	427	153	8	4	13	25	14.0%	59	2.4	212
WL	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
									3,107									3,220
North Leg Volumes																		
Approach	1,184	45	20	31	96		201		1,385	973	33	13	33	79		175		1,148
Depart	751	29	17	42	88		204		955	1,188	38	13	24	75		156		1,344
Total	1,935	74	37	73	184	8.7%	405	2.2	2,340	2,161	71	26	57	154	6.7%	331	2.1	2,492
South Leg Volumes																		
Approach	709	30	12	68	110		274		983	1,186	40	13	43	96		216		1,402
Depart	1,044	36	15	50	101		234		1,278	694	30	9	34	73		165		859
Total	1,753	66	27	118	211	10.7%	508	2.4	2,261	1,880	70	22	77	169	8.2%	381	2.3	2,261
East Leg Volumes																		
Approach	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Depart	671	31	13	43	87		203		874	845	26	12	36	74		172		1,017
Total	671	31	13	43	87	11.5%	203	2.3	874	845	26	12	36	74	8.1%	172	2.3	1,017
West Leg Volumes																		
Approach	573	21	13	36	70		166		739	568	21	8	18	47		102		670
Depart	0	0	0	0	0		0		0	0	0	0	0	0		0		0
Total	573	21	13	36	70	10.9%	166	2.4	739	568	21	8	18	47	7.6%	102	2.2	670
All Legs																		
Approach	2,466	96	45	135	276		641		3,107	2,727	94	34	94	222		493		3,220
Depart	2,466	96	45	135	276		641		3,107	2,727	94	34	94	222		493		3,220
Total	4,932	192	90	270	552	10.1%	1,282	2.3	6,214	5,454	188	68	188	444	7.5%	986	2.2	6,440

Existing Peak Hour Volumes - Classification Counts

4 Sierra Ave at I-10 EB/WB Ramps

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	331	10	4	22	36	9.8%	89	2.5	420	419	8	6	23	37	8.1%	93	2.5	512
NT	699	9	1	1	11	1.5%	19	1.7	718	1,206	5	3	1	9	0.7%	17	1.9	1,223
NR	309	7	2	11	20	6.1%	48	2.4	357	414	8	4	11	23	5.3%	53	2.3	467
SL	479	7	2	2	11	2.2%	21	1.9	500	454	3	3	5	11	2.4%	26	2.4	480
ST	714	14	0	2	16	2.2%	27	1.7	741	832	8	7	1	16	1.9%	29	1.8	861
SR	740	20	3	15	38	4.9%	81	2.1	821	745	18	6	4	28	3.6%	51	1.8	796
EL	820	12	1	5	18	2.1%	35	1.9	855	848	27	5	5	37	4.2%	66	1.8	914
ET	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
ER	403	13	9	20	42	9.4%	98	2.3	501	363	17	4	20	41	10.1%	94	2.3	457
WL	371	7	2	14	23	5.8%	57	2.5	428	414	9	4	9	22	5.0%	49	2.2	463
WT	0	0	0	0	0	0.0%	0	0.0	0	0	0	0	0	0	0.0%	0	0.0	0
WR	539	5	1	1	7	1.3%	13	1.9	552	537	6	4	1	11	2.0%	20	1.8	557
									5,893									6,730
North Leg Volumes																		
Approach	1,933	41	5	19	65		129		2,062	2,031	29	16	10	55		106		2,137
Depart	2,058	26	3	7	36		67		2,125	2,591	38	12	7	57		103		2,694
Total	3,991	67	8	26	101	2.5%	196	1.9	4,187	4,622	67	28	17	112	2.4%	209	1.9	4,831
South Leg Volumes																		
Approach	1,339	26	7	34	67		156		1,495	2,039	21	13	35	69		163		2,202
Depart	1,488	34	11	36	81		182		1,670	1,609	34	15	30	79		172		1,781
Total	2,827	60	18	70	148	5.0%	338	2.3	3,165	3,648	55	28	65	148	3.9%	335	2.3	3,983
East Leg Volumes																		
Approach	910	12	3	15	30		70		980	951	15	8	10	33		69		1,020
Depart	788	14	4	13	31		69		857	868	11	7	16	34		79		947
Total	1,698	26	7	28	61	3.5%	139	2.3	1,837	1,819	26	15	26	67	3.6%	148	2.2	1,967
West Leg Volumes																		
Approach	1,223	25	10	25	60		133		1,356	1,211	44	9	25	78		160		1,371
Depart	1,071	30	7	37	74		170		1,241	1,164	26	12	27	65		144		1,308
Total	2,294	55	17	62	134	5.5%	303	2.3	2,597	2,375	70	21	52	143	5.7%	304	2.1	2,679
All Legs																		
Approach	5,405	104	25	93	222		488		5,893	6,232	109	46	80	235		498		6,730
Depart	5,405	104	25	93	222		488		5,893	6,232	109	46	80	235		498		6,730
Total	10,810	208	50	186	444	3.9%	976	2.2	11,786	12,464	218	92	160	470	3.6%	996	2.1	13,460

Existing Peak Hour Volumes - Classification Counts

5 Milliken Ave at Arrow Rte

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	140	3	2	9	14	9.1%	36	2.6	176	159	2	0	4	6	3.6%	15	2.5	174
NT	276	17	2	9	28	9.2%	57	2.0	333	1,439	6	1	6	13	0.9%	29	2.2	1,468
NR	52	4	2	6	12	18.8%	28	2.3	80	293	3	2	9	14	4.6%	36	2.6	329
SL	97	1	0	3	4	4.0%	11	2.8	108	55	1	1	1	3	5.2%	7	2.3	62
ST	651	12	0	12	24	3.6%	54	2.3	705	487	11	2	4	17	3.4%	33	1.9	520
SR	183	7	3	6	16	8.0%	35	2.2	218	107	2	1	2	5	4.5%	11	2.2	118
EL	70	3	1	0	4	5.4%	7	1.8	77	217	3	0	5	8	3.6%	20	2.5	237
ET	354	13	7	7	27	7.1%	55	2.0	409	888	20	11	13	44	4.7%	91	2.1	979
ER	84	1	1	10	12	12.5%	34	2.8	118	163	1	0	7	8	4.7%	23	2.9	186
WL	136	4	1	4	9	6.2%	20	2.2	156	79	3	1	7	11	12.2%	28	2.5	107
WT	1,027	23	8	8	39	3.7%	75	1.9	1,102	492	6	2	12	20	3.9%	49	2.5	541
WR	88	3	2	2	7	7.4%	15	2.1	103	97	1	0	1	2	2.0%	5	2.5	102
									3,585									4,823
North Leg Volumes																		
Approach	931	20	3	21	44		100		1,031	649	14	4	7	25		51		700
Depart	434	23	5	11	39		79		513	1,753	10	1	12	23		54		1,807
Total	1,365	43	8	32	83	5.7%	179	2.2	1,544	2,402	24	5	19	48	2.0%	105	2.2	2,507
South Leg Volumes																		
Approach	468	24	6	24	54		121		589	1,891	11	3	19	33		80		1,971
Depart	871	17	2	26	45		108		979	729	15	3	18	36		84		813
Total	1,339	41	8	50	99	6.9%	229	2.3	1,568	2,620	26	6	37	69	2.6%	164	2.4	2,784
East Leg Volumes																		
Approach	1,251	30	11	14	55		110		1,361	668	10	3	20	33		82		750
Depart	503	18	9	16	43		94		597	1,236	24	14	23	61		134		1,370
Total	1,754	48	20	30	98	5.3%	204	2.1	1,958	1,904	34	17	43	94	4.7%	216	2.3	2,120
West Leg Volumes																		
Approach	508	17	9	17	43		96		604	1,268	24	11	25	60		134		1,402
Depart	1,350	33	13	23	69		146		1,496	758	10	3	18	31		75		833
Total	1,858	50	22	40	112	5.7%	242	2.2	2,100	2,026	34	14	43	91	4.3%	209	2.3	2,235
All Legs																		
Approach	3,158	91	29	76	196		427		3,585	4,476	59	21	71	151		347		4,823
Depart	3,158	91	29	76	196		427		3,585	4,476	59	21	71	151		347		4,823
Total	6,316	182	58	152	392	5.8%	854	2.2	7,170	8,952	118	42	142	302	3.3%	694	2.3	9,646

Existing Peak Hour Volumes - Classification Counts

6 Rochester Ave at Arrow Rte

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	29	5	0	4	9	23.7%	20	2.2	49	35	2	1	5	8	18.6%	20	2.5	55
NT	143	6	0	6	12	7.7%	27	2.3	170	766	9	1	3	13	1.7%	25	1.9	791
NR	52	3	3	1	7	11.9%	14	2.0	66	234	5	3	3	11	4.5%	23	2.1	257
SL	102	2	0	0	2	1.9%	3	1.5	105	82	0	1	1	2	2.4%	5	2.5	87
ST	357	12	0	5	17	4.5%	33	1.9	390	207	4	0	2	6	2.8%	12	2.0	219
SR	259	5	0	1	6	2.3%	11	1.8	270	165	3	0	3	6	3.5%	14	2.3	179
EL	104	3	0	3	6	5.5%	14	2.3	118	342	1	0	1	2	0.6%	5	2.5	347
ET	284	9	10	5	24	7.8%	49	2.0	333	780	14	9	20	43	5.2%	99	2.3	879
ER	47	5	1	4	10	17.5%	22	2.2	69	18	0	0	1	1	5.3%	3	3.0	21
WL	148	4	3	2	9	5.7%	18	2.0	166	57	0	1	3	4	6.6%	11	2.8	68
WT	937	21	10	8	39	4.0%	76	1.9	1,013	448	3	2	11	16	3.4%	42	2.6	490
WR	118	7	1	1	9	7.1%	16	1.8	134	165	3	0	1	4	2.4%	8	2.0	173
									2,883									3,566
North Leg Volumes																		
Approach	718	19	0	6	25		47		765	454	7	1	6	14		31		485
Depart	365	16	1	10	27		57		422	1,273	13	1	5	19		38		1,311
Total	1,083	35	1	16	52	4.6%	104	2.0	1,187	1,727	20	2	11	33	1.9%	69	2.1	1,796
South Leg Volumes																		
Approach	224	14	3	11	28		61		285	1,035	16	5	11	32		68		1,103
Depart	552	21	4	11	36		73		625	282	4	1	6	11		26		308
Total	776	35	7	22	64	7.6%	134	2.1	910	1,317	20	6	17	43	3.2%	94	2.2	1,411
East Leg Volumes																		
Approach	1,203	32	14	11	57		110		1,313	670	6	3	15	24		61		731
Depart	438	14	13	6	33		66		504	1,096	19	13	24	56		127		1,223
Total	1,641	46	27	17	90	5.2%	176	2.0	1,817	1,766	25	16	39	80	4.3%	188	2.4	1,954
West Leg Volumes																		
Approach	435	17	11	12	40		85		520	1,140	15	9	22	46		107		1,247
Depart	1,225	31	10	13	54		107		1,332	648	8	3	19	30		76		724
Total	1,660	48	21	25	94	5.4%	192	2.0	1,852	1,788	23	12	41	76	4.1%	183	2.4	1,971
All Legs																		
Approach	2,580	82	28	40	150		303		2,883	3,299	44	18	54	116		267		3,566
Depart	2,580	82	28	40	150		303		2,883	3,299	44	18	54	116		267		3,566
Total	5,160	164	56	80	300	5.5%	606	2.0	5,766	6,598	88	36	108	232	3.4%	534	2.3	7,132

Existing Peak Hour Volumes - Classification Counts

7 Cherry Ave at Slover Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	26	0	1	0	1	3.7%	2	2.0	28	28	1	1	1	3	9.7%	7	2.3	35
NT	780	18	17	32	67	7.9%	157	2.3	937	722	13	14	29	56	7.2%	135	2.4	857
NR	40	3	5	0	8	16.7%	15	1.9	55	53	2	2	2	6	10.2%	13	2.2	66
SL	238	10	27	34	71	23.0%	171	2.4	409	200	16	21	37	74	27.0%	177	2.4	377
ST	888	25	14	52	91	9.3%	222	2.4	1,110	828	19	12	34	65	7.3%	155	2.4	983
SR	247	9	27	69	105	29.8%	275	2.6	522	130	8	25	71	104	44.4%	275	2.6	405
EL	81	20	31	78	129	61.4%	326	2.5	407	218	18	21	51	90	29.2%	222	2.5	440
ET	86	14	13	29	56	39.4%	134	2.4	220	469	15	12	52	79	14.4%	203	2.6	672
ER	14	6	2	5	13	48.1%	28	2.2	42	16	0	25	6	31	66.0%	68	2.2	84
WL	43	3	1	1	5	10.4%	10	2.0	53	47	2	2	2	6	11.3%	13	2.2	60
WT	141	9	11	27	47	25.0%	117	2.5	258	92	5	10	19	34	27.0%	85	2.5	177
WR	130	15	15	56	86	39.8%	221	2.6	351	252	6	17	23	46	15.4%	112	2.4	364
									4,392									4,520
North Leg Volumes																		
Approach	1,373	44	68	155	267		668		2,041	1,158	43	58	142	243		607		1,765
Depart	991	53	63	166	282		704		1,695	1,192	37	52	103	192		469		1,661
Total	2,364	97	131	321	549	18.8%	1,372	2.5	3,736	2,350	80	110	245	435	15.6%	1,076	2.5	3,426
South Leg Volumes																		
Approach	846	21	23	32	76		174		1,020	803	16	17	32	65		155		958
Depart	945	34	17	58	109		260		1,205	891	21	39	42	102		236		1,127
Total	1,791	55	40	90	185	9.4%	434	2.3	2,225	1,694	37	56	74	167	9.0%	391	2.3	2,085
East Leg Volumes																		
Approach	314	27	27	84	138		348		662	391	13	29	44	86		210		601
Depart	364	27	45	63	135		320		684	722	33	35	91	159		393		1,115
Total	678	54	72	147	273	28.7%	668	2.4	1,346	1,113	46	64	135	245	18.0%	603	2.5	1,716
West Leg Volumes																		
Approach	181	40	46	112	198		488		669	703	33	58	109	200		493		1,196
Depart	414	18	39	96	153		394		808	250	14	36	91	141		367		617
Total	595	58	85	208	351	37.1%	882	2.5	1,477	953	47	94	200	341	26.4%	860	2.5	1,813
All Legs																		
Approach	2,714	132	164	383	679		1,678		4,392	3,055	105	162	327	594		1,465		4,520
Depart	2,714	132	164	383	679		1,678		4,392	3,055	105	162	327	594		1,465		4,520
Total	5,428	264	328	766	1,358	20.0%	3,356	2.5	8,784	6,110	210	324	654	1,188	16.3%	2,930	2.5	9,040

Existing Peak Hour Volumes - Classification Counts

8 Cherry Ave at Santa Ana Ave

	AM Peak Hour Volumes									PM Peak Hour Volumes								
		Truck Volumes							Total		Truck Volumes							Total
	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume	Passenger Vehicles	2-Axle 1.5	3-Axle 2.0	4-Axle 3.0	Total Trucks	Truck %-age	PCE	Average PCE	PCE Volume
NL	21	2	0	4	6	22.2%	15	2.5	36	2	1	2	0	3	60.0%	6	2.0	8
NT	630	13	11	30	54	7.9%	132	2.4	762	529	8	9	14	31	5.5%	72	2.3	601
NR	11	0	0	0	0	0.0%	0	0.0	11	9	3	0	5	8	47.1%	20	2.5	29
SL	33	6	0	24	30	47.6%	81	2.7	114	33	1	1	10	12	26.7%	34	2.8	67
ST	612	17	8	22	47	7.1%	108	2.3	720	815	13	11	11	35	4.1%	75	2.1	890
SR	277	9	5	10	24	8.0%	54	2.3	331	73	8	3	13	24	24.7%	57	2.4	130
EL	213	8	1	6	15	6.6%	32	2.1	245	201	6	3	9	18	8.2%	42	2.3	243
ET	25	2	4	1	7	21.9%	14	2.0	39	40	1	2	1	4	9.1%	9	2.3	49
ER	67	2	5	0	7	9.5%	13	1.9	80	25	0	1	1	2	7.4%	5	2.5	30
WL	4	2	1	0	3	42.9%	5	1.7	9	9	0	2	0	2	18.2%	4	2.0	13
WT	15	0	0	2	2	11.8%	6	3.0	21	11	2	2	1	5	31.3%	10	2.0	21
WR	18	4	6	10	20	52.6%	48	2.4	66	41	0	21	0	21	33.9%	42	2.0	83
									2,434									2,164
North Leg Volumes																		
Approach	922	32	13	56	101		243		1,165	921	22	15	34	71		166		1,087
Depart	861	25	18	46	89		212		1,073	771	14	33	23	70		156		927
Total	1,783	57	31	102	190	9.6%	455	2.4	2,238	1,692	36	48	57	141	7.7%	322	2.3	2,014
South Leg Volumes																		
Approach	662	15	11	34	60		147		809	540	12	11	19	42		98		638
Depart	683	21	14	22	57		126		809	849	13	14	12	39		84		933
Total	1,345	36	25	56	117	8.0%	273	2.3	1,618	1,389	25	25	31	81	5.5%	182	2.2	1,571
East Leg Volumes																		
Approach	37	6	7	12	25		59		96	61	2	25	1	28		56		117
Depart	69	8	4	25	37		95		164	82	5	3	16	24		63		145
Total	106	14	11	37	62	36.9%	154	2.5	260	143	7	28	17	52	26.7%	119	2.3	262
West Leg Volumes																		
Approach	305	12	10	7	29		59		364	266	7	6	11	24		56		322
Depart	313	11	5	16	32		75		388	86	11	7	14	32		73		159
Total	618	23	15	23	61	9.0%	134	2.2	752	352	18	13	25	56	13.7%	129	2.3	481
All Legs																		
Approach	1,926	65	41	109	215		508		2,434	1,788	43	57	65	165		376		2,164
Depart	1,926	65	41	109	215		508		2,434	1,788	43	57	65	165		376		2,164
Total	3,852	130	82	218	430	10.0%	1,016	2.4	4,868	3,576	86	114	130	330	8.4%	752	2.3	4,328

APPENDIX D

INTERSECTION ANALYSIS
WORKSHEETS

APPENDIX D-1

INTERSECTION ANALYSIS
WORKSHEETS –
EXISTING CONDITIONS

Speedway Commerce Center

Vistro File: K:\...\Speedway CC AM.vistro
Report File: K:\...\1 EX AM.pdf

Scenario 1 EX AM
1/13/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.524	28.6	C
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.553	25.0	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.451	19.4	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.520	22.7	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.666	27.6	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.466	17.3	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.403	31.3	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.593	35.2	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.564	31.1	C
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.735	47.3	D
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.443	21.4	C
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.495	31.7	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.684	37.1	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.456	40.0	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.816	41.4	D
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	EB Left	0.542	33.0	C
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.580	45.9	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.845	26.7	C
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.622	25.0	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.695	39.3	D
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.622	39.8	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	1.285	482.9	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.719	44.3	D
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	NB Left	0.649	40.4	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.649	42.4	D
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.685	39.4	D
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.461	30.0	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.696	41.8	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	NB Left	0.554	36.5	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.576	23.5	C
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.696	33.3	C
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.307	30.5	D
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.372	15.2	B
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.578	23.0	C
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	WB Thru	0.724	21.8	C
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.509	28.4	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	NB Left	0.546	39.3	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.429	19.4	B
			HCM 6th				

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Thru	0.438	18.9	B
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	SB Thru	0.569	15.8	C
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	WB Thru	0.501	14.7	B
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.482	29.4	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	NB Left	0.503	26.0	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Left	0.730	42.1	D
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	WB Left	0.626	43.5	D
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.471	31.8	C
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	EB Left	0.399	31.2	C
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.005	11.1	B
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.546	30.7	C
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	EB Left	0.470	33.2	C
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	SB Left	0.311	31.8	C
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.596	35.9	D
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	NB Left	0.624	28.4	C
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	WB Thru	0.301	9.6	A
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.434	26.3	C
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	SB Left	0.423	30.8	C
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.672	38.3	D
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.489	26.9	C
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Thru	0.018	50.7	F
			HCM 6th				

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.769	45.3	D
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	SB Left	0.684	32.3	C
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.481	23.5	C
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	WB Right	0.751	27.1	C
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.519	20.6	C
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.777	29.3	C
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	EB Right	0.740	30.8	C
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.685	31.5	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	EB Left	0.643	23.9	C
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	EB Left	0.656	37.4	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	NB Left	0.649	36.4	D
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.645	31.6	C
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	30.094	576.3	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition		0.000	0.0	A
998543	New Intersection	Unknown	?		?	?	?
998552	New Intersection	Unknown	?		?	?	?
998555	New Intersection	Unknown	?		?	?	?

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	166	303	0	0	712	200	0	0	0	360	4	252
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	303	0	0	712	200	0	0	0	360	4	252
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	44	80	0	0	187	53	0	0	0	95	1	66
Total Analysis Volume [veh/h]	175	319	0	0	749	211	0	0	0	379	4	265
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	29	46	0	0	17	0	0	0	0	0	74	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	14	82	64	64		30	30
g / C, Green / Cycle	0.12	0.69	0.53	0.53		0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.10	0.09	0.19	0.20		0.22	0.17
s, saturation flow rate [veh/h]	1714	3427	3427	1612		1715	1530
c, Capacity [veh/h]	205	2348	1825	858		426	380
d1, Uniform Delay [s]	51.81	6.56	16.13	16.37		43.67	41.02
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	9.73	0.12	0.53	1.24		7.09	2.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.14	0.35	0.37		0.90	0.70
d, Delay for Lane Group [s/veh]	61.54	6.68	16.66	17.61		50.76	43.35
Lane Group LOS	E	A	B	B		D	D
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	5.71	1.38	5.12	5.36		11.78	7.36
50th-Percentile Queue Length [ft/ln]	142.86	34.38	128.05	133.90		294.53	183.95
95th-Percentile Queue Length [veh/ln]	9.63	2.48	8.83	9.15		17.41	11.81
95th-Percentile Queue Length [ft/ln]	240.87	61.88	220.85	228.79		435.26	295.17

Movement, Approach, & Intersection Results

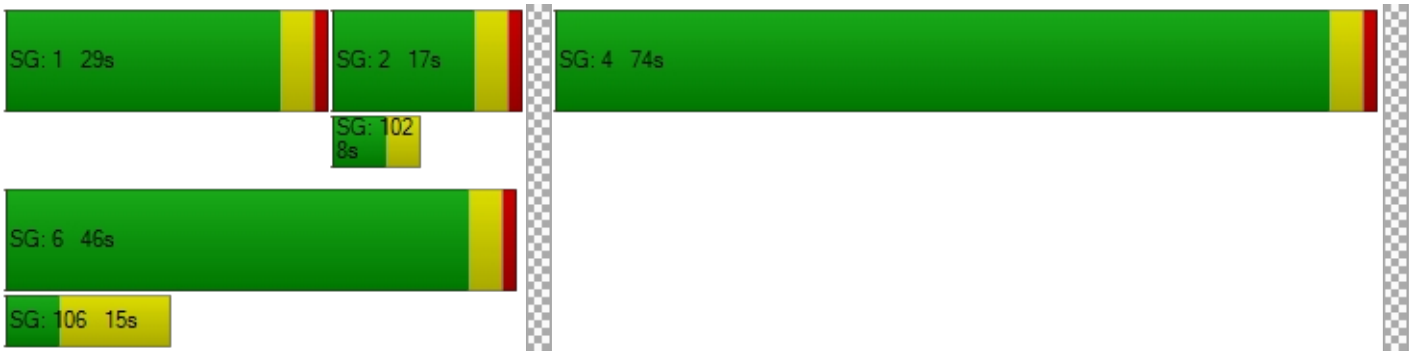
d_M, Delay for Movement [s/veh]	61.54	6.68	0.00	0.00	16.80	17.61	0.00	0.00	0.00	50.76	50.76	43.35
Movement LOS	E	A			B	B				D	D	D
d_A, Approach Delay [s/veh]	26.11			16.98			0.00			47.73		
Approach LOS	C			B			A			D		
d_I, Intersection Delay [s/veh]	28.60											
Intersection LOS	C											
Intersection V/C	0.524											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.819	2.166
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	217	0	1167
d_b, Bicycle Delay [s]	25.35	47.70	60.00	10.42
l_b,int, Bicycle LOS Score for Intersection	1.967	2.088	4.132	2.629
Bicycle LOS	A	B	D	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.553

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	302	906	0	0	822	355	0	0	0	421	1	309
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	302	906	0	0	822	355	0	0	0	421	1	309
Peak Hour Factor	0.964	0.964	1.000	1.000	0.964	0.964	1.000	1.000	1.000	0.964	0.964	0.964
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	78	235	0	0	213	92	0	0	0	109	0	80
Total Analysis Volume [veh/h]	313	940	0	0	853	368	0	0	0	437	1	321
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	27	51	0	0	24	0	0	0	0	0	69	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	14	84	66	66		28	28	28
g / C, Green / Cycle	0.11	0.70	0.55	0.55		0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.09	0.27	0.25	0.24		0.13	0.13	0.21
s, saturation flow rate [veh/h]	3329	3427	3427	1530		1714	1715	1530
c, Capacity [veh/h]	382	2387	1879	839		406	406	363
d1, Uniform Delay [s]	51.91	7.62	16.29	16.11		40.05	40.05	44.21
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	4.41	0.49	0.79	1.67		1.11	1.11	7.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.39	0.45	0.44		0.54	0.54	0.89
d, Delay for Lane Group [s/veh]	56.32	8.11	17.09	17.78		41.16	41.16	51.47
Lane Group LOS	E	A	B	B		D	D	D
Critical Lane Group	Yes	No	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.84	4.84	7.10	6.27		5.79	5.79	9.90
50th-Percentile Queue Length [ft/ln]	120.88	120.97	177.54	156.79		144.7	144.7	247.4
95th-Percentile Queue Length [veh/ln]	8.44	8.45	11.47	10.38		9.74	9.74	15.06
95th-Percentile Queue Length [ft/ln]	211.04	211.16	286.80	259.46		243.4	243.4	376.4

Movement, Approach, & Intersection Results

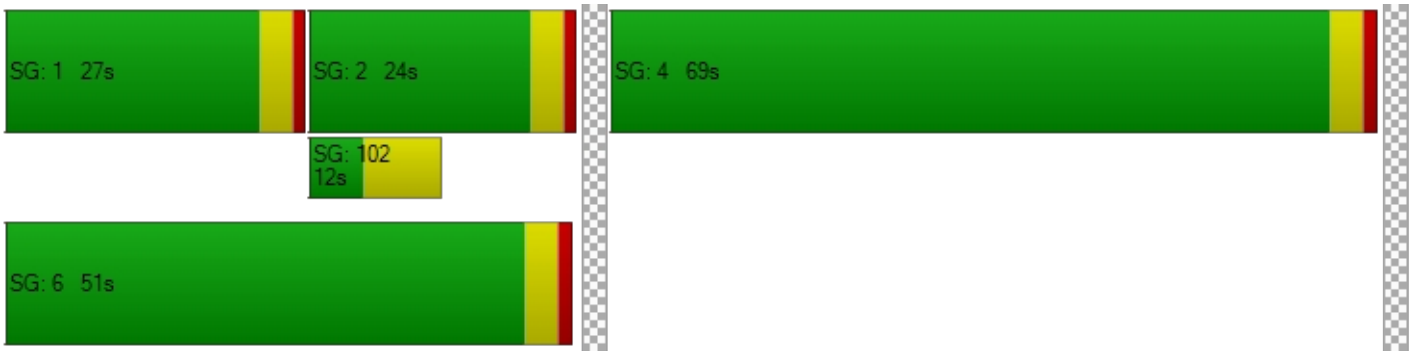
d_M, Delay for Movement [s/veh]	56.32	8.11	0.00	0.00	17.09	17.78	0.00	0.00	0.00	41.16	41.16	51.47
Movement LOS	E	A			B	B				D	D	D
d_A, Approach Delay [s/veh]	20.15			17.29			0.00			45.52		
Approach LOS	C			B			A			D		
d_I, Intersection Delay [s/veh]	25.03											
Intersection LOS	C											
Intersection V/C	0.553											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.063	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	333	0	1083
d_b, Bicycle Delay [s]	22.20	41.67	60.00	12.60
l_b,int, Bicycle LOS Score for Intersection	2.593	2.567	4.132	2.812
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.451

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	792	0	0	1079	0	0	0	0	510	0	291
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	792	0	0	1079	0	0	0	0	510	0	291
Peak Hour Factor	1.000	0.869	1.000	1.000	0.869	1.000	1.000	1.000	1.000	0.869	0.869	0.869
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	228	0	0	310	0	0	0	0	147	0	84
Total Analysis Volume [veh/h]	0	911	0	0	1242	0	0	0	0	587	0	335
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	33	0	0	33	0	0	0	0	0	87	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	85	85		27	27	27
g / C, Green / Cycle	0.71	0.71		0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.19	0.25		0.18	0.18	0.20
s, saturation flow rate [veh/h]	4903	4903		1714	1693	1530
c, Capacity [veh/h]	3453	3453		393	388	351
d1, Uniform Delay [s]	6.45	7.03		43.53	43.62	44.44
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.29		3.58	3.79	6.34
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	0.36		0.79	0.80	0.86
d, Delay for Lane Group [s/veh]	6.63	7.32		47.10	47.41	50.78
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.65	3.95		9.04	9.05	9.23
50th-Percentile Queue Length [ft/ln]	66.28	98.65		225.9	226.2	230.7
95th-Percentile Queue Length [veh/ln]	4.77	7.10		13.97	13.99	14.21
95th-Percentile Queue Length [ft/ln]	119.30	177.57		349.1	349.6	355.3

Movement, Approach, & Intersection Results

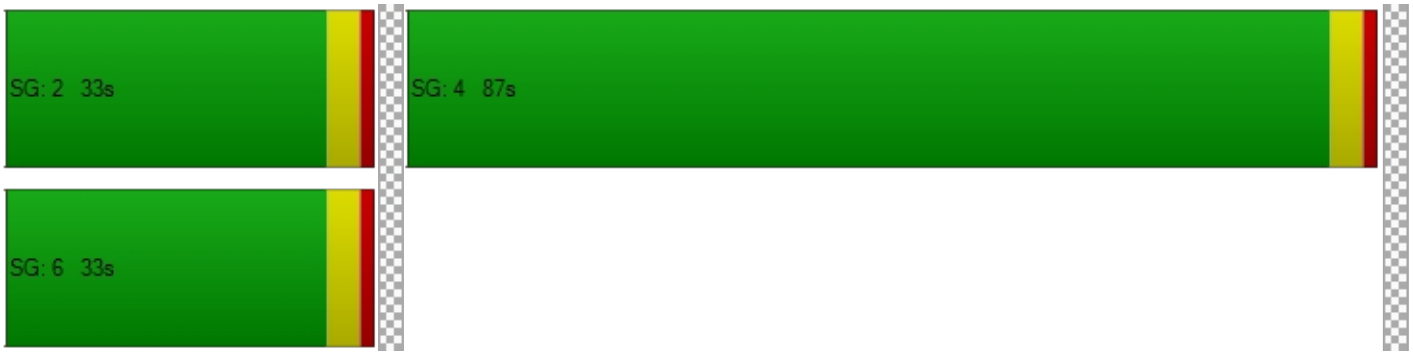
d_M, Delay for Movement [s/veh]	0.00	6.63	0.00	0.00	7.32	0.00	0.00	0.00	0.00	47.25	47.41	50.50
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	6.63			7.32			0.00			48.41		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	19.44											
Intersection LOS	B											
Intersection V/C	0.451											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	483	0	1383
d_b, Bicycle Delay [s]	34.50	34.50	60.00	5.70
l_b,int, Bicycle LOS Score for Intersection	2.061	2.243	4.132	3.081
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.520

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	427	319	160	805	0	153	5	296	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	427	319	160	805	0	153	5	296	0	0	0
Peak Hour Factor	1.000	0.952	0.952	0.952	0.952	1.000	0.952	0.952	0.952	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	112	84	42	211	0	40	1	78	0	0	0
Total Analysis Volume [veh/h]	0	449	335	168	846	0	161	5	311	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	26	0	26	52	0	0	68	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	67	67	14	85	27	27	
g / C, Green / Cycle	0.56	0.56	0.11	0.71	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.13	0.22	0.10	0.25	0.10	0.20	
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1717	1530	
c, Capacity [veh/h]	1917	856	197	2424	388	346	
d1, Uniform Delay [s]	13.41	14.92	52.12	6.82	39.80	45.12	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.29	1.35	9.99	0.40	0.75	8.50	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.23	0.39	0.85	0.35	0.43	0.90	
d, Delay for Lane Group [s/veh]	13.70	16.27	62.11	7.22	40.55	53.62	
Lane Group LOS	B	B	E	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	3.12	5.37	5.51	3.98	4.30	9.77	
50th-Percentile Queue Length [ft/ln]	77.99	134.32	137.66	99.55	107.39	244.21	
95th-Percentile Queue Length [veh/ln]	5.62	9.17	9.35	7.17	7.69	14.89	
95th-Percentile Queue Length [ft/ln]	140.39	229.36	233.87	179.19	192.36	372.36	

Movement, Approach, & Intersection Results

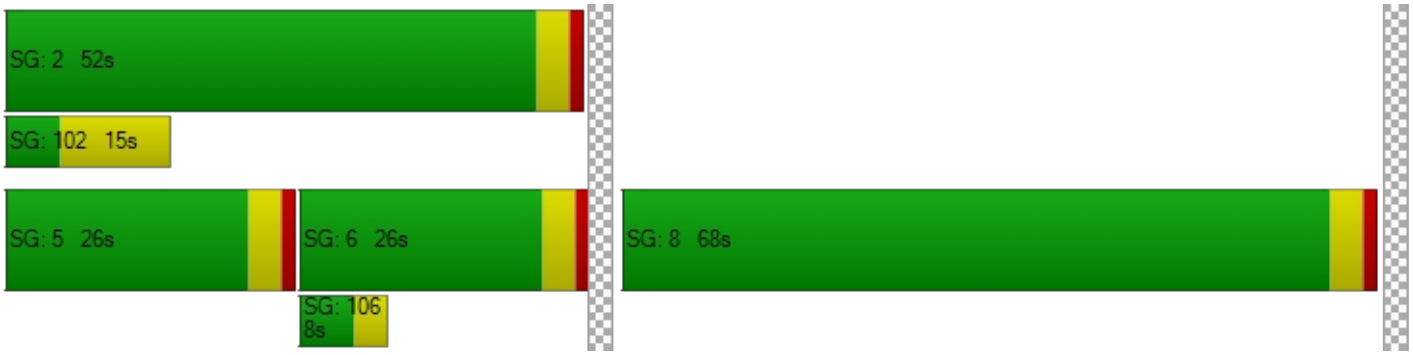
d_M, Delay for Movement [s/veh]	0.00	13.70	16.27	62.11	7.22	0.00	40.55	40.55	53.62	0.00	0.00	0.00
Movement LOS		B	B	E	A		D	D	D			
d_A, Approach Delay [s/veh]	14.80			16.31			49.07			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	22.66											
Intersection LOS	C											
Intersection V/C	0.520											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.110	1.934
Crosswalk LOS	F	F	B	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	800	1067	0
d_b, Bicycle Delay [s]	40.02	21.60	13.07	60.00
l_b,int, Bicycle LOS Score for Intersection	1.991	2.396	2.347	4.132
Bicycle LOS	A	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	817	408	302	931	0	411	3	402	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	817	408	302	931	0	411	3	402	0	0	0
Peak Hour Factor	1.000	0.966	0.966	0.966	0.966	1.000	0.966	0.966	0.966	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	211	106	78	241	0	106	1	104	0	0	0
Total Analysis Volume [veh/h]	0	846	422	313	964	0	425	3	416	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	58	0	19	77	0	0	43	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	70	70	13	87	25	25	25	
g / C, Green / Cycle	0.58	0.58	0.11	0.73	0.21	0.21	0.21	
(v / s)_i Volume / Saturation Flow Rate	0.35	0.39	0.09	0.28	0.17	0.17	0.18	
s, saturation flow rate [veh/h]	1800	1611	3329	3427	1714	1617	1530	
c, Capacity [veh/h]	1046	936	369	2485	357	337	318	
d1, Uniform Delay [s]	16.26	17.37	52.36	6.31	45.25	45.54	45.81	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.12	0.13	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.61	3.93	5.45	0.46	4.43	5.80	7.77	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.61	0.68	0.85	0.39	0.81	0.84	0.86	
d, Delay for Lane Group [s/veh]	18.87	21.30	57.81	6.76	49.68	51.35	53.58	
Lane Group LOS	B	C	E	A	D	D	D	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	11.58	12.58	4.90	4.35	8.63	8.55	8.53	
50th-Percentile Queue Length [ft/ln]	289.46	314.51	122.55	108.81	215.6	213.8	213.2	
95th-Percentile Queue Length [veh/ln]	17.16	18.40	8.53	7.77	13.44	13.35	13.32	
95th-Percentile Queue Length [ft/ln]	428.98	459.94	213.32	194.35	336.0	333.7	332.9	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	19.48	21.30	57.81	6.76	0.00	50.23	51.35	52.84	0.00	0.00	0.00
Movement LOS		B	C	E	A		D	D	D			
d_A, Approach Delay [s/veh]	20.09			19.28			51.50			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	27.61											
Intersection LOS	C											
Intersection V/C	0.666											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.352	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	1217	650	0
d_b, Bicycle Delay [s]	18.15	9.20	27.34	60.00
I_b,int, Bicycle LOS Score for Intersection	2.606	2.613	2.952	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	17.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.466

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	946	463	0	1265	26	160	0	553	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	946	463	0	1265	26	160	0	553	0	0	0
Peak Hour Factor	1.000	0.942	0.942	1.000	0.942	1.000	0.942	0.942	0.942	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	251	123	0	336	7	42	0	147	0	0	0
Total Analysis Volume [veh/h]	0	1004	492	0	1343	26	170	0	587	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	70	0	0	70	0	0	50	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	86	86	26	26	26	
g / C, Green / Cycle	0.71	0.71	0.22	0.22	0.22	
(v / s)_i Volume / Saturation Flow Rate	0.20	0.27	0.10	0.19	0.19	
s, saturation flow rate [veh/h]	4903	4903	1714	1530	1530	
c, Capacity [veh/h]	3495	3495	378	337	337	
d1, Uniform Delay [s]	6.23	6.82	40.46	45.10	45.10	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.21	0.32	0.84	6.88	6.88	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.29	0.38	0.45	0.87	0.87	
d, Delay for Lane Group [s/veh]	6.43	7.14	41.30	51.98	51.98	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	2.87	4.21	4.45	9.04	9.04	
50th-Percentile Queue Length [ft/ln]	71.78	105.30	111.2	226.0	226.0	
95th-Percentile Queue Length [veh/ln]	5.17	7.58	7.91	13.97	13.97	
95th-Percentile Queue Length [ft/ln]	129.21	189.45	197.8	349.3	349.3	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.43	0.00	0.00	7.14	0.00	41.30	51.98	51.98	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	6.43			7.14			49.58			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	17.26											
Intersection LOS	B											
Intersection V/C	0.466											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.331	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1100	1100	767	0
d_b, Bicycle Delay [s]	12.15	12.15	22.82	60.00
l_b,int, Bicycle LOS Score for Intersection	2.112	2.298	2.809	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.403

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	37	570	67	55	502	93	117	199	75	90	208	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	570	67	55	502	93	117	199	75	90	208	61
Peak Hour Factor	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	160	19	15	141	26	33	56	21	25	58	17
Total Analysis Volume [veh/h]	42	640	75	62	563	104	131	223	84	101	233	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	40	0	11	39	0	43	26	0	43	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	74	74	6	76	76	11	15	15	9	13	13
g / C, Green / Cycle	0.03	0.62	0.62	0.05	0.63	0.63	0.09	0.13	0.13	0.07	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.02	0.20	0.20	0.04	0.19	0.19	0.08	0.09	0.09	0.06	0.09	0.09
s, saturation flow rate [veh/h]	1714	1800	1735	1714	1800	1704	1714	1800	1636	1714	1800	1664
c, Capacity [veh/h]	54	1113	1072	79	1138	1078	161	230	209	129	196	181
d1, Uniform Delay [s]	57.67	10.96	10.97	56.66	10.01	10.01	53.35	50.09	50.22	54.55	52.13	52.27
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.40	0.78	0.82	15.70	0.68	0.72	9.54	3.69	4.43	10.05	6.93	8.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.33	0.33	0.79	0.30	0.30	0.81	0.69	0.71	0.79	0.79	0.81
d, Delay for Lane Group [s/veh]	78.07	11.75	11.78	72.36	10.68	10.73	62.89	53.78	54.65	64.60	59.06	60.62
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.57	4.72	4.57	2.20	4.16	3.96	4.30	4.79	4.53	3.36	4.91	4.73
50th-Percentile Queue Length [ft/ln]	39.33	117.9	114.1	55.09	103.9	99.12	107.6	119.8	113.2	84.02	122.7	118.3
95th-Percentile Queue Length [veh/ln]	2.83	8.28	8.07	3.97	7.49	7.14	7.71	8.39	8.02	6.05	8.54	8.30
95th-Percentile Queue Length [ft/ln]	70.80	207.0	201.7	99.17	187.1	178.4	192.6	209.6	200.5	151.2	213.5	207.4

Movement, Approach, & Intersection Results

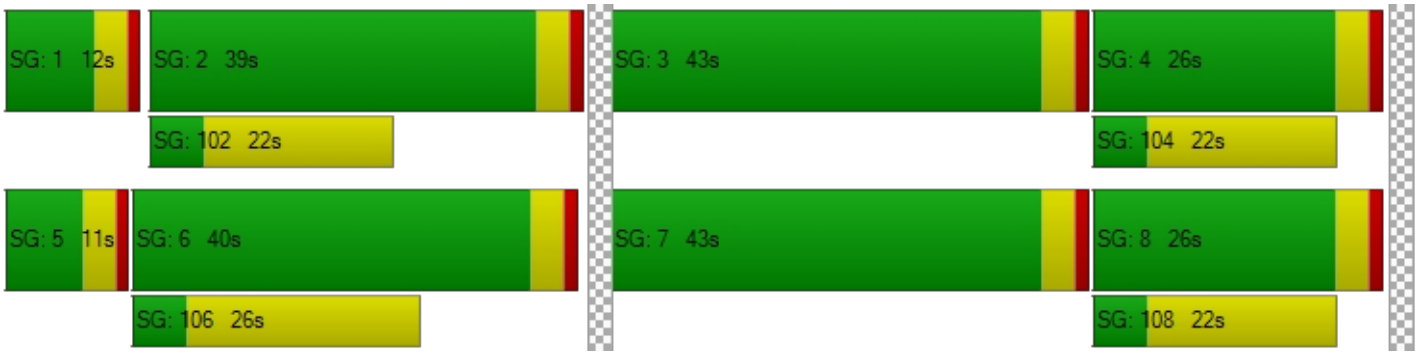
d_M, Delay for Movement [s/veh]	78.07	11.76	11.78	72.36	10.70	10.73	62.89	54.03	54.65	64.60	59.59	60.62
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	15.44			15.95			56.80			61.02		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	31.27											
Intersection LOS	C											
Intersection V/C	0.403											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.609	2.621	2.474	2.592
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	583	367	367
d_b, Bicycle Delay [s]	29.40	30.10	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	2.184	2.161	1.921	1.891
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	35.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.593

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	75	725	72	337	942	150	215	192	53	91	197	246
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	725	72	337	942	150	215	192	53	91	197	246
Peak Hour Factor	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	20	197	20	92	257	41	59	52	14	25	54	67
Total Analysis Volume [veh/h]	82	790	78	367	1026	163	234	209	58	99	215	268
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	27	0	34	47	0	14	38	0	21	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	54	54	16	63	63	10	25	25	9	24	24
g / C, Green / Cycle	0.06	0.45	0.45	0.13	0.53	0.53	0.08	0.21	0.21	0.07	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.05	0.23	0.05	0.11	0.30	0.11	0.07	0.06	0.04	0.06	0.12	0.18
s, saturation flow rate [veh/h]	1714	3427	1530	3329	3427	1530	3329	3427	1530	1714	1800	1530
c, Capacity [veh/h]	103	1553	693	442	1802	804	277	714	319	124	355	302
d1, Uniform Delay [s]	55.65	23.33	18.91	50.71	19.27	15.11	54.23	40.04	39.08	54.79	43.89	46.85
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.79	1.19	0.33	4.07	1.31	0.57	6.88	0.23	0.27	11.01	1.66	8.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.51	0.11	0.83	0.57	0.20	0.84	0.29	0.18	0.80	0.60	0.89
d, Delay for Lane Group [s/veh]	68.45	24.52	19.24	54.78	20.58	15.68	61.11	40.27	39.35	65.80	45.55	55.50
Lane Group LOS	E	C	B	D	C	B	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.82	8.12	1.32	5.62	9.78	2.48	3.75	2.64	1.44	3.33	5.99	8.48
50th-Percentile Queue Length [ft/ln]	70.41	203.0	33.06	140.5	244.5	62.06	93.69	65.94	36.02	83.17	149.8	212.1
95th-Percentile Queue Length [veh/ln]	5.07	12.80	2.38	9.51	14.91	4.47	6.75	4.75	2.59	5.99	10.01	13.26
95th-Percentile Queue Length [ft/ln]	126.7	319.8	59.51	237.7	372.7	111.7	168.6	118.7	64.84	149.7	250.2	331.5

Movement, Approach, & Intersection Results

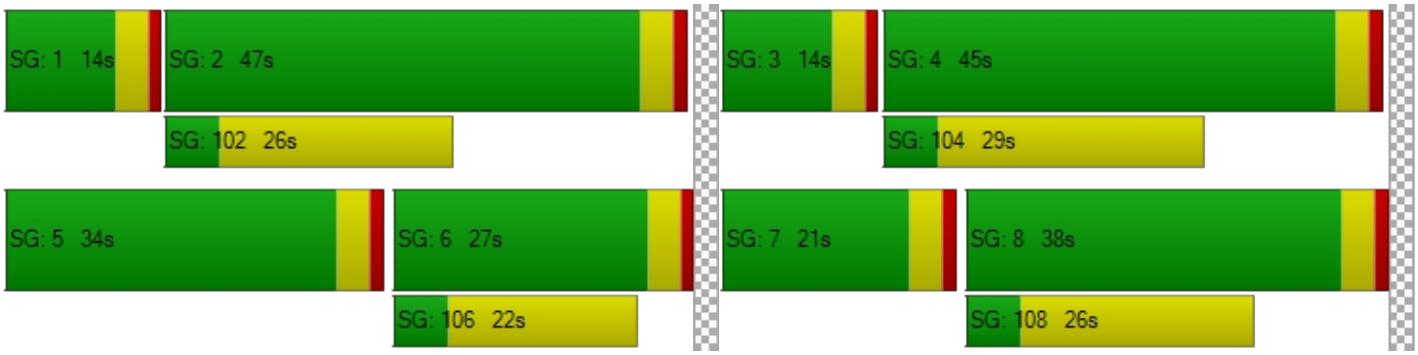
d_M, Delay for Movement [s/veh]	68.45	24.52	19.24	54.78	20.58	15.68	61.11	40.27	39.35	65.80	45.55	55.50
Movement LOS	E	C	B	D	C	B	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	27.88			28.13			49.90			53.58		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.23											
Intersection LOS	D											
Intersection V/C	0.593											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.815	3.006	2.743	2.669
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	717	567	683
d_b, Bicycle Delay [s]	39.20	24.70	30.82	26.00
l_b,int, Bicycle LOS Score for Intersection	2.343	2.843	1.973	2.520
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	31.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	160	919	38	219	1191	403	291	252	173	16	252	199
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	919	38	219	1191	403	291	252	173	16	252	199
Peak Hour Factor	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	43	245	10	58	317	107	78	67	46	4	67	53
Total Analysis Volume [veh/h]	171	980	41	233	1270	430	310	269	184	17	269	212
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	38	0	18	44	0	18	55	0	9	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	61	61	10	64	64	13	30	30	2	19	19
g / C, Green / Cycle	0.07	0.51	0.51	0.09	0.53	0.53	0.11	0.25	0.25	0.02	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.05	0.20	0.03	0.07	0.26	0.28	0.09	0.08	0.12	0.01	0.08	0.14
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	222	2491	777	291	2594	809	363	866	387	61	555	248
d1, Uniform Delay [s]	55.10	18.14	14.92	53.72	17.97	18.52	52.51	36.37	38.09	58.11	45.73	48.92
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.58	0.47	0.13	5.05	0.66	2.49	5.74	0.20	0.91	2.42	0.66	8.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.39	0.05	0.80	0.49	0.53	0.85	0.31	0.48	0.28	0.48	0.86
d, Delay for Lane Group [s/veh]	60.68	18.61	15.04	58.77	18.63	21.01	58.25	36.57	39.00	60.53	46.39	57.17
Lane Group LOS	E	B	B	E	B	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.72	5.61	0.60	3.65	7.47	8.21	4.87	3.24	4.71	0.28	3.71	6.74
50th-Percentile Queue Length [ft/ln]	67.90	140.3	14.90	91.35	186.7	205.3	121.8	81.04	117.7	6.89	92.75	168.4
95th-Percentile Queue Length [veh/ln]	4.89	9.50	1.07	6.58	11.95	12.91	8.49	5.83	8.27	0.50	6.68	10.99
95th-Percentile Queue Length [ft/ln]	122.2	237.4	26.82	164.4	298.8	322.8	212.3	145.8	206.6	12.40	166.9	274.8

Movement, Approach, & Intersection Results

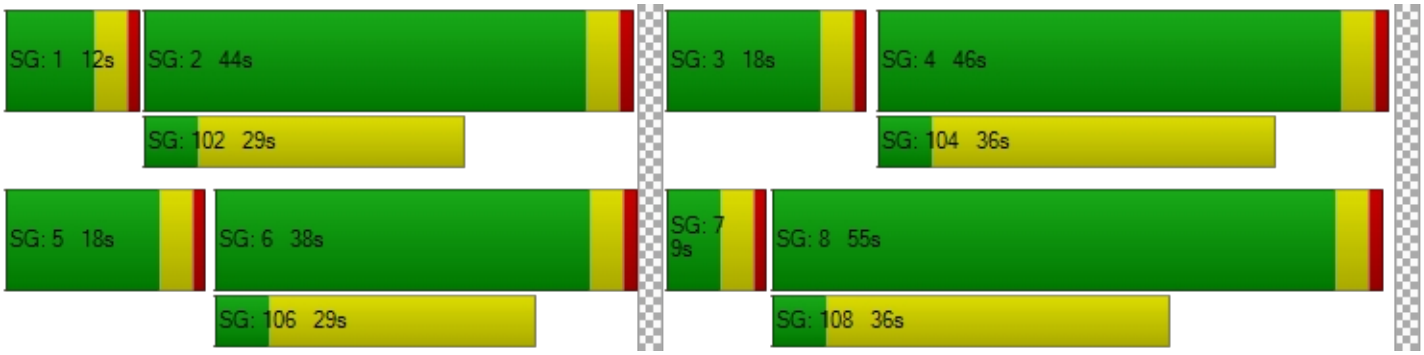
d_M, Delay for Movement [s/veh]	60.68	18.61	15.04	58.77	18.63	21.01	58.25	36.57	39.00	60.53	46.39	57.17
Movement LOS	E	B	B	E	B	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	24.52			24.00			45.96			51.46		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	31.08											
Intersection LOS	C											
Intersection V/C	0.564											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.153	3.237	2.837	2.754
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	667	850	700
d_b, Bicycle Delay [s]	30.82	26.67	19.84	25.35
l_b,int, Bicycle LOS Score for Intersection	2.215	2.623	2.189	1.970
Bicycle LOS	B	B	B	A

Sequence

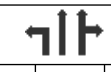
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	47.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	268	102	147	286	257	107	507	78	172	1112	236
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	268	102	147	286	257	107	507	78	172	1112	236
Peak Hour Factor	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	30	72	27	39	76	69	29	135	21	46	297	63
Total Analysis Volume [veh/h]	121	286	109	157	306	275	114	542	83	184	1188	252
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	36	36	16	42	0	12	55	0	13	56	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	32	45	12	38	38	8	51	51	9	52	52
g / C, Green / Cycle	0.05	0.27	0.37	0.10	0.32	0.32	0.07	0.43	0.43	0.07	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.04	0.16	0.07	0.09	0.17	0.18	0.07	0.12	0.12	0.06	0.41	0.42
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1530	1714	3427	1682	3329	1800	1694
c, Capacity [veh/h]	166	485	574	171	575	489	114	1457	715	240	775	729
d1, Uniform Delay [s]	56.19	38.06	25.24	53.50	33.47	33.87	55.99	22.58	22.64	54.68	32.81	33.44
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.42	0.44
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.93	5.18	0.73	17.03	3.50	4.62	38.52	0.11	0.22	5.08	19.15	25.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.59	0.19	0.92	0.53	0.56	1.00	0.29	0.29	0.77	0.95	0.97
d, Delay for Lane Group [s/veh]	62.13	43.24	25.97	70.53	36.97	38.49	94.51	22.69	22.86	59.77	51.96	58.51
Lane Group LOS	E	D	C	E	D	D	F	C	C	E	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.94	7.99	2.22	5.50	7.85	7.26	4.67	3.89	3.91	2.90	24.01	24.66
50th-Percentile Queue Length [ft/ln]	48.60	199.8	55.61	137.4	196.3	181.5	116.7	97.14	97.66	72.55	600.2	616.5
95th-Percentile Queue Length [veh/ln]	3.50	12.63	4.00	9.34	12.45	11.68	8.21	6.99	7.03	5.22	32.04	32.81
95th-Percentile Queue Length [ft/ln]	87.49	315.7	100.1	233.5	311.2	292.0	205.3	174.8	175.7	130.5	801.0	820.1

Movement, Approach, & Intersection Results

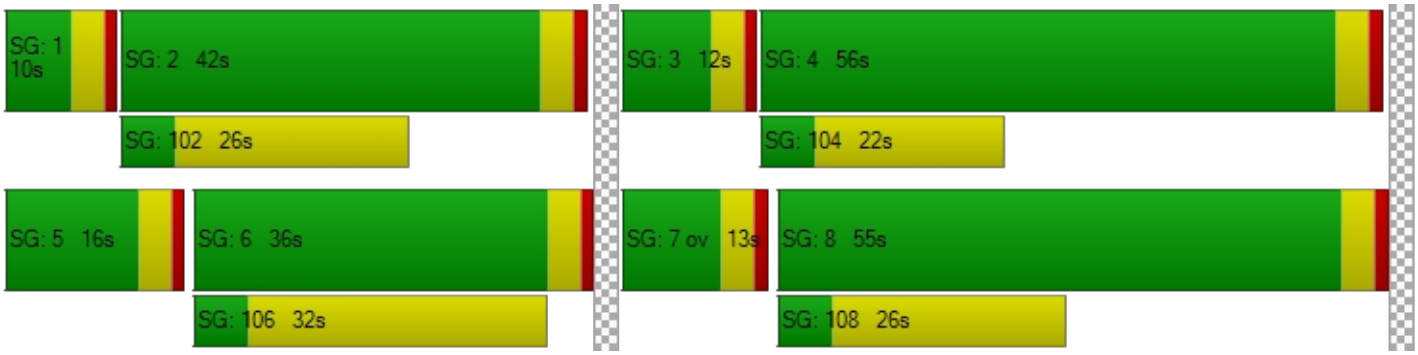
d_M, Delay for Movement [s/veh]	62.13	43.24	25.97	70.53	36.97	38.49	94.51	22.73	22.86	59.77	54.48	58.51
Movement LOS	E	D	C	E	D	D	F	C	C	E	D	E
d_A, Approach Delay [s/veh]	44.02			44.68			33.82			55.70		
Approach LOS	D			D			C			E		
d_I, Intersection Delay [s/veh]	47.31											
Intersection LOS	D											
Intersection V/C	0.735											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.645	2.586	2.846	3.037
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	633	850	867
d_b, Bicycle Delay [s]	32.27	28.02	19.84	19.27
l_b,int, Bicycle LOS Score for Intersection	2.411	2.168	1.966	2.899
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.443

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	367	0	567	0	537	236	0	946	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	367	0	567	0	537	236	0	946	0
Peak Hour Factor	1.000	1.000	1.000	0.908	1.000	0.908	1.000	0.908	0.908	1.000	0.908	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	101	0	156	0	148	65	0	260	0
Total Analysis Volume [veh/h]	0	0	0	404	0	624	0	591	260	0	1042	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Split	Permi	Split	Permi	Permi	Unsig	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	56	0	0	56	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		32	32	80	80
g / C, Green / Cycle		0.27	0.27	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate		0.12	0.23	0.12	0.21
s, saturation flow rate [veh/h]		3329	2708	4903	4903
c, Capacity [veh/h]		885	720	3273	3273
d1, Uniform Delay [s]		36.81	42.02	7.54	8.42
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.37	3.33	0.12	0.26
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.46	0.87	0.18	0.32
d, Delay for Lane Group [s/veh]		37.17	45.35	7.66	8.68
Lane Group LOS		D	D	A	A
Critical Lane Group		No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		5.01	9.10	1.87	3.68
50th-Percentile Queue Length [ft/ln]		125.36	227.39	46.68	92.06
95th-Percentile Queue Length [veh/ln]		8.69	14.04	3.36	6.63
95th-Percentile Queue Length [ft/ln]		217.17	351.05	84.03	165.71

Movement, Approach, & Intersection Results

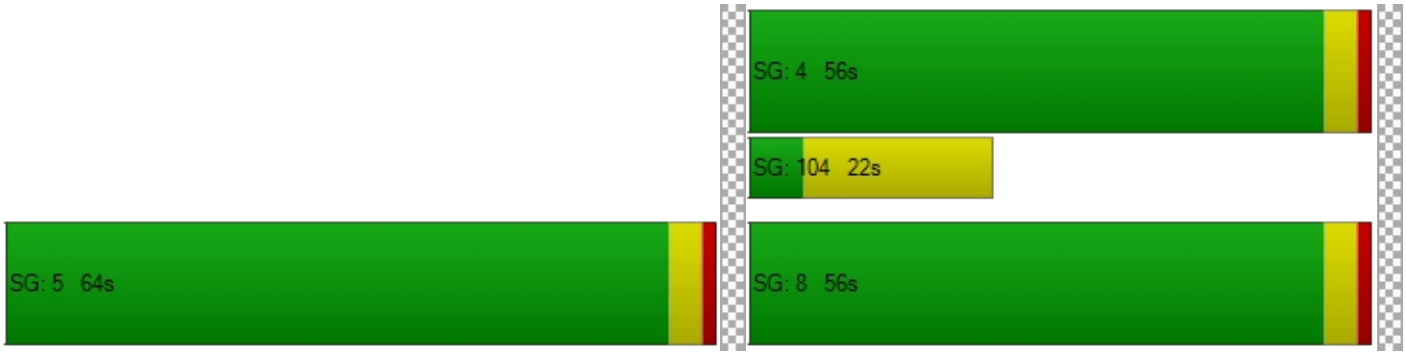
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	37.17	0.00	45.35	0.00	7.66	0.00	0.00	8.68	0.00
Movement LOS				D		D		A			A	
d_A, Approach Delay [s/veh]	0.00			42.14			7.66			8.68		
Approach LOS	A			D			A			A		
d_I, Intersection Delay [s/veh]	21.38											
Intersection LOS	C											
Intersection V/C	0.443											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.516	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1000	867	867
d_b, Bicycle Delay [s]	60.00	15.00	19.27	19.27
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	1.885	2.133
Bicycle LOS	D	A	A	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.495

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	278	2	306	0	0	0	354	565	0	0	1595	179
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	278	2	306	0	0	0	354	565	0	0	1595	179
Peak Hour Factor	0.952	0.952	0.952	1.000	1.000	1.000	0.952	0.952	1.000	1.000	0.952	0.952
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	73	1	80	0	0	0	93	148	0	0	419	47
Total Analysis Volume [veh/h]	292	2	321	0	0	0	372	593	0	0	1675	188
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Unsig
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	32	0	0	0	0	30	88	0	0	58	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	50	50	50		16	62	42
g / C, Green / Cycle	0.42	0.42	0.42		0.13	0.51	0.35
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.13		0.11	0.12	0.26
s, saturation flow rate [veh/h]	1714	1596	1530		3329	4903	6538
c, Capacity [veh/h]	718	668	641		446	2523	2269
d1, Uniform Delay [s]	23.20	23.22	23.23		50.65	16.09	34.39
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	1.08	1.17	1.22		4.13	0.05	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.30	0.30		0.83	0.24	0.74
d, Delay for Lane Group [s/veh]	24.29	24.39	24.45		54.77	16.13	34.87
Lane Group LOS	C	C	C		D	B	C
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.31	4.04	3.90		5.70	3.01	10.71
50th-Percentile Queue Length [ft/ln]	107.6	101.1	97.46		142.53	75.18	267.63
95th-Percentile Queue Length [veh/ln]	7.71	7.28	7.02		9.62	5.41	16.07
95th-Percentile Queue Length [ft/ln]	192.7	182.0	175.4		240.43	135.33	401.78

Movement, Approach, & Intersection Results

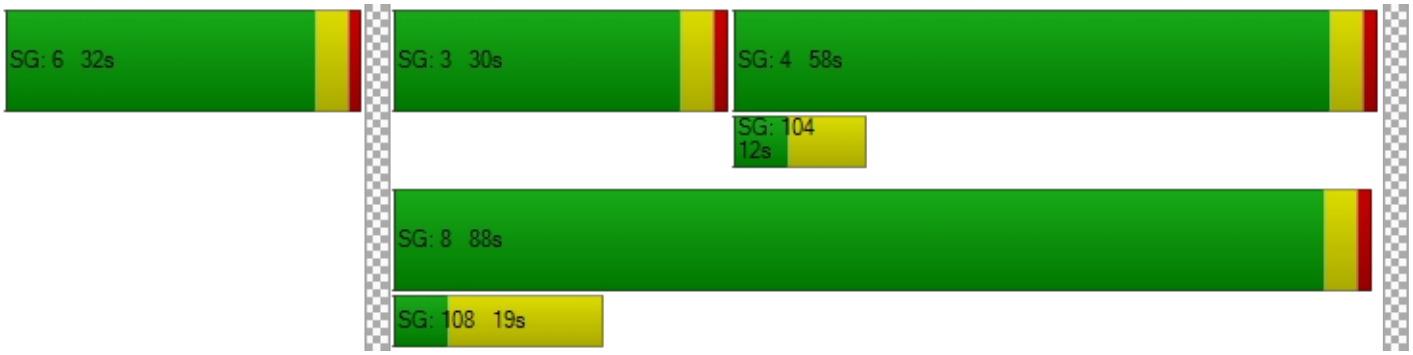
d_M, Delay for Movement [s/veh]	24.32	24.39	24.43	0.00	0.00	0.00	54.77	16.13	0.00	0.00	34.87	0.00
Movement LOS	C	C	C				D	B			C	
d_A, Approach Delay [s/veh]	24.37			0.00			31.03			34.87		
Approach LOS	C			A			C			C		
d_I, Intersection Delay [s/veh]	31.75											
Intersection LOS	C											
Intersection V/C	0.495											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.296	1.912	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	0	1400	900
d_b, Bicycle Delay [s]	35.27	60.00	5.40	18.15
l_b,int, Bicycle LOS Score for Intersection	2.574	4.132	2.090	2.251
Bicycle LOS	B	D	B	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	37.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.684

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	63	529	155	69	828	410	232	502	139	414	1336	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	529	155	69	828	410	232	502	139	414	1336	66
Peak Hour Factor	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	144	42	19	225	111	63	136	38	113	363	18
Total Analysis Volume [veh/h]	68	575	168	75	900	446	252	546	151	450	1452	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	43	0	9	43	0	15	40	0	28	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	47	47	5	47	47	11	33	33	19	41	41
g / C, Green / Cycle	0.04	0.39	0.39	0.04	0.40	0.40	0.09	0.28	0.28	0.16	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.02	0.12	0.11	0.02	0.18	0.29	0.08	0.11	0.10	0.14	0.30	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	125	1932	603	128	1936	604	303	1365	426	519	1682	525
d1, Uniform Delay [s]	56.75	24.96	24.75	56.76	26.91	31.01	53.62	35.15	34.66	49.45	36.78	27.17
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.67	0.39	1.15	4.24	0.80	7.87	5.84	0.19	0.50	4.57	1.42	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.30	0.28	0.59	0.46	0.74	0.83	0.40	0.35	0.87	0.86	0.14
d, Delay for Lane Group [s/veh]	60.41	25.35	25.90	61.00	27.71	38.88	59.46	35.34	35.16	54.01	38.20	27.28
Lane Group LOS	E	C	C	E	C	D	E	D	D	D	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.08	3.83	3.46	1.19	6.49	12.20	3.98	4.36	3.60	6.90	13.30	1.45
50th-Percentile Queue Length [ft/ln]	26.93	95.71	86.46	29.86	162.3	304.9	99.57	108.9	90.11	172.5	332.4	36.35
95th-Percentile Queue Length [veh/ln]	1.94	6.89	6.23	2.15	10.67	17.92	7.17	7.78	6.49	11.21	19.28	2.62
95th-Percentile Queue Length [ft/ln]	48.47	172.2	155.6	53.75	266.7	448.1	179.2	194.5	162.1	280.3	481.9	65.43

Movement, Approach, & Intersection Results

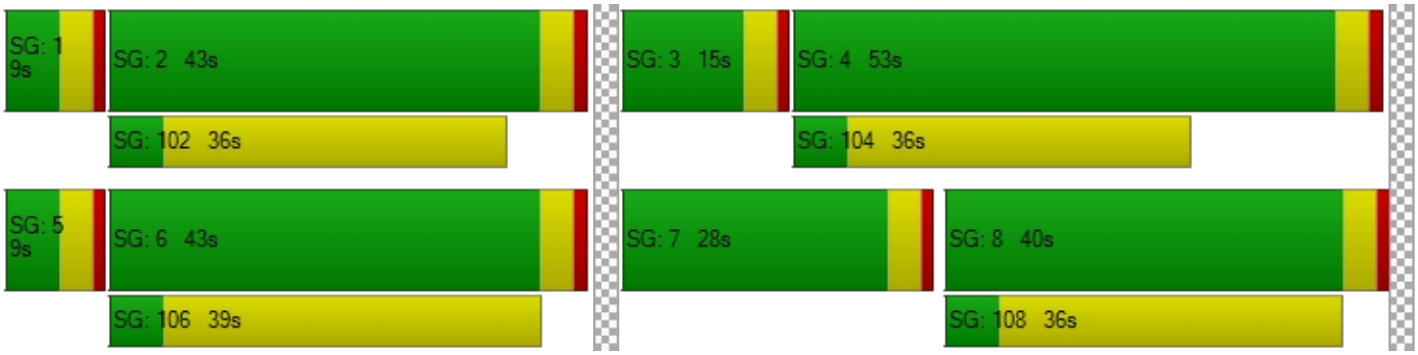
d_M, Delay for Movement [s/veh]	60.41	25.35	25.90	61.00	27.71	38.88	59.46	35.34	35.16	54.01	38.20	27.28
Movement LOS	E	C	C	E	C	D	E	D	D	D	D	C
d_A, Approach Delay [s/veh]	28.40			32.97			41.71			41.41		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.09											
Intersection LOS	D											
Intersection V/C	0.684											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.115	3.116	3.352	3.251
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	650	600	817
d_b, Bicycle Delay [s]	27.34	27.34	29.40	21.00
l_b,int, Bicycle LOS Score for Intersection	2.006	2.341	2.082	2.645
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	40.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.456

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	239	13	94	239	197	132	419	37	45	589	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	239	13	94	239	197	132	419	37	45	589	82
Peak Hour Factor	0.828	0.828	0.828	0.828	1.000	0.828	0.828	0.828	1.000	1.000	0.828	0.828
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	20	72	4	28	60	59	40	127	9	11	178	25
Total Analysis Volume [veh/h]	79	289	16	114	239	238	159	506	37	45	711	99
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	36	0	17	40	0	25	45	0	22	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	59	59	10	62	62	13	31	31	4	22	22
g / C, Green / Cycle	0.06	0.49	0.49	0.08	0.51	0.51	0.11	0.26	0.26	0.03	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.01	0.07	0.13	0.16	0.09	0.10	0.02	0.03	0.16	0.16
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1772	1506	1714	4903	1506	1687	3427	1690
c, Capacity [veh/h]	100	1675	748	139	907	771	188	1282	394	60	642	317
d1, Uniform Delay [s]	55.81	17.12	15.84	54.28	16.53	16.98	52.46	36.50	33.56	57.36	47.04	47.13
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.18	0.22	0.05	11.23	0.71	1.04	10.07	0.20	0.10	17.22	3.09	6.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.17	0.02	0.82	0.26	0.31	0.85	0.39	0.09	0.75	0.84	0.85
d, Delay for Lane Group [s/veh]	68.99	17.35	15.90	65.51	17.24	18.02	62.53	36.70	33.66	74.58	50.13	53.52
Lane Group LOS	E	B	B	E	B	B	E	D	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.73	2.28	0.24	3.82	3.87	4.00	5.22	4.11	0.84	1.64	8.05	8.32
50th-Percentile Queue Length [ft/ln]	68.15	57.04	5.98	95.57	96.76	100.0	130.5	102.7	20.89	41.01	201.1	208.0
95th-Percentile Queue Length [veh/ln]	4.91	4.11	0.43	6.88	6.97	7.20	8.97	7.40	1.50	2.95	12.70	13.05
95th-Percentile Queue Length [ft/ln]	122.6	102.6	10.77	172.0	174.1	180.0	224.3	184.9	37.60	73.81	317.4	326.3

Movement, Approach, & Intersection Results

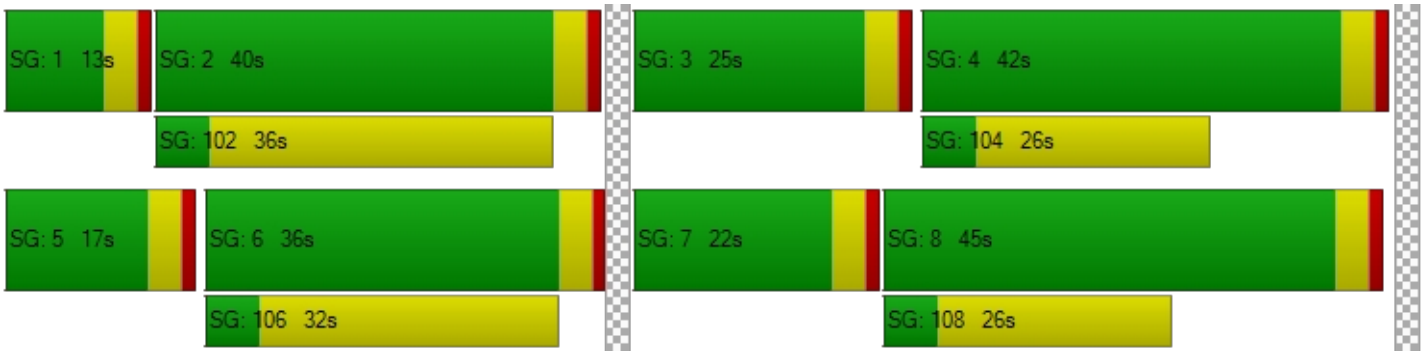
d_M, Delay for Movement [s/veh]	68.99	17.35	15.90	65.51	17.24	18.02	62.53	36.70	33.66	74.58	50.94	53.52
Movement LOS	E	B	B	E	B	B	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	27.91			26.86			42.39			52.48		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.98											
Intersection LOS	D											
Intersection V/C	0.456											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.583	2.653	3.052	2.922
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	683	633
d_b, Bicycle Delay [s]	32.27	29.40	26.00	28.02
l_b,int, Bicycle LOS Score for Intersection	1.876	2.047	1.946	2.030
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	41.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	120	571	733	124	771	237	274	346	109	156	659	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	571	733	124	771	237	274	346	109	156	659	102
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	32	152	195	33	205	63	73	92	29	41	175	27
Total Analysis Volume [veh/h]	127	606	778	132	818	252	291	367	116	166	700	108
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	32	61	0	14	43	0	15	26	0	19	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	11	63	63	10	62	62	11	23	23	8	20	34
g / C, Green / Cycle	0.09	0.52	0.52	0.08	0.52	0.52	0.09	0.19	0.19	0.07	0.17	0.29
(v / s)_i Volume / Saturation Flow Rate	0.07	0.34	0.51	0.08	0.24	0.16	0.09	0.07	0.08	0.05	0.14	0.07
s, saturation flow rate [veh/h]	1714	1800	1530	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	155	941	800	143	1767	789	305	946	295	225	828	437
d1, Uniform Delay [s]	53.59	20.59	27.79	54.62	18.49	16.86	54.25	42.25	42.29	54.90	48.36	32.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.00	3.39	25.79	20.64	0.87	1.07	15.16	0.26	0.85	4.69	2.49	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.64	0.97	0.92	0.46	0.32	0.95	0.39	0.39	0.74	0.85	0.25
d, Delay for Lane Group [s/veh]	63.58	23.98	53.58	75.26	19.37	17.92	69.41	42.51	43.14	59.59	50.85	33.25
Lane Group LOS	E	C	D	E	B	B	E	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.20	12.78	26.34	4.78	7.33	4.23	5.01	3.20	3.08	2.61	6.95	2.47
50th-Percentile Queue Length [ft/ln]	104.8	319.4	658.4	119.4	183.3	105.7	125.2	79.96	77.10	65.25	173.7	61.71
95th-Percentile Queue Length [veh/ln]	7.55	18.64	34.75	8.36	11.77	7.60	8.68	5.76	5.55	4.70	11.27	4.44
95th-Percentile Queue Length [ft/ln]	188.7	466.0	868.8	209.0	294.3	190.1	217.0	143.9	138.7	117.4	281.7	111.0

Movement, Approach, & Intersection Results

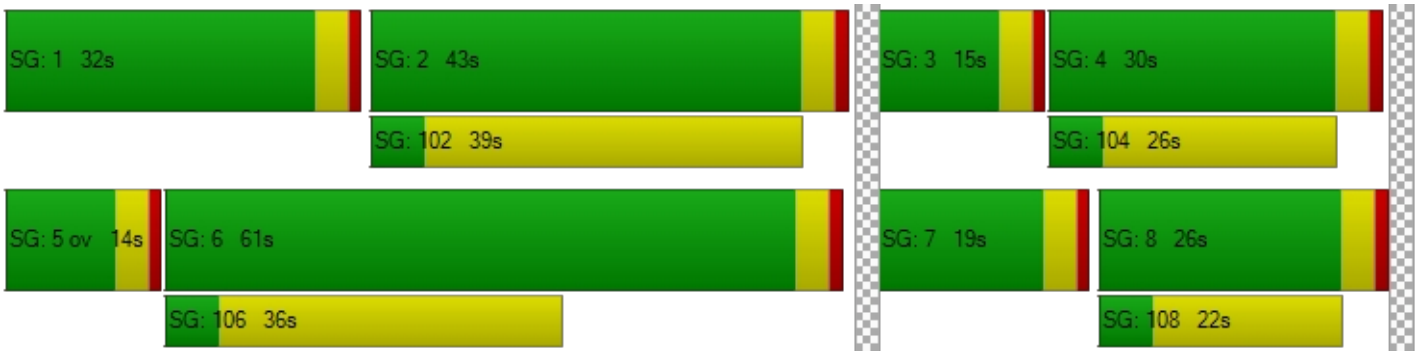
d_M, Delay for Movement [s/veh]	63.58	23.98	53.58	75.26	19.37	17.92	69.41	42.51	43.14	59.59	50.85	33.25
Movement LOS	E	C	D	E	B	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	42.55			25.20			52.72			50.39		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	41.35											
Intersection LOS	D											
Intersection V/C	0.816											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.824	2.827	3.065	3.201
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	650	367	433
d_b, Bicycle Delay [s]	16.54	27.34	40.02	36.82
l_b,int, Bicycle LOS Score for Intersection	2.806	2.551	1.985	2.095
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.542

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	157	629	56	220	1054	104	94	405	109	90	492	139
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	629	56	220	1054	104	94	405	109	90	492	139
Peak Hour Factor	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	44	176	16	62	296	29	26	114	31	25	138	39
Total Analysis Volume [veh/h]	176	706	63	247	1183	117	105	455	122	101	552	156
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	40	0	24	51	0	9	47	0	9	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	71	71	11	74	74	5	17	17	5	17	17
g / C, Green / Cycle	0.07	0.59	0.59	0.09	0.61	0.61	0.04	0.14	0.14	0.04	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.05	0.14	0.04	0.07	0.35	0.08	0.03	0.09	0.08	0.03	0.11	0.10
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	229	2886	901	311	2102	938	139	700	219	139	700	219
d1, Uniform Delay [s]	54.93	11.86	10.59	53.26	13.70	9.71	56.90	48.59	47.90	56.83	49.67	49.09
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.37	0.20	0.15	4.58	1.10	0.27	8.13	1.02	2.22	7.10	2.02	4.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.24	0.07	0.79	0.56	0.12	0.76	0.65	0.56	0.73	0.79	0.71
d, Delay for Lane Group [s/veh]	60.30	12.06	10.74	57.84	14.79	9.98	65.03	49.61	50.13	63.92	51.70	53.38
Lane Group LOS	E	B	B	E	B	A	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.79	3.03	0.75	3.84	9.34	1.34	1.73	4.36	3.54	1.65	5.46	4.73
50th-Percentile Queue Length [ft/ln]	69.67	75.64	18.69	96.12	233.6	33.42	43.30	109.0	88.55	41.25	136.4	118.1
95th-Percentile Queue Length [veh/ln]	5.02	5.45	1.35	6.92	14.36	2.41	3.12	7.79	6.38	2.97	9.29	8.29
95th-Percentile Queue Length [ft/ln]	125.4	136.1	33.65	173.0	358.9	60.16	77.94	194.7	159.3	74.26	232.3	207.2

Movement, Approach, & Intersection Results

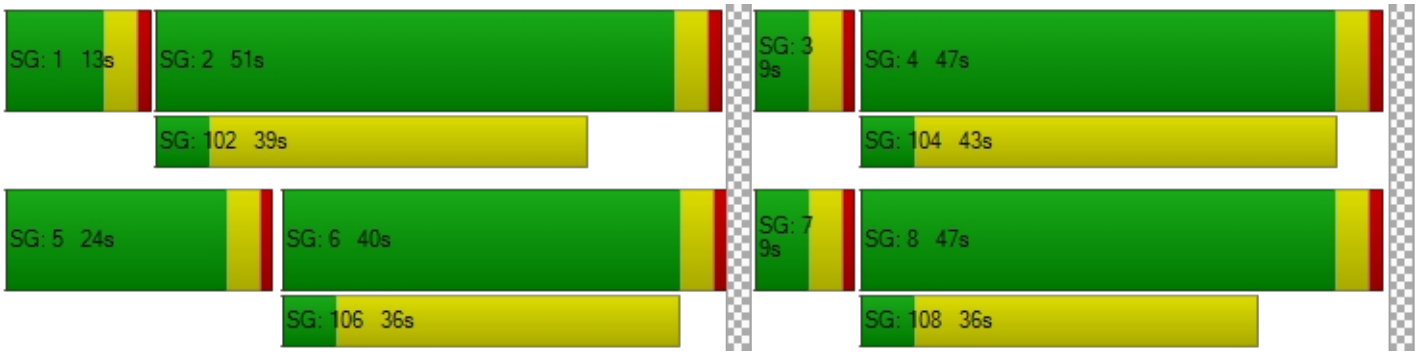
d_M, Delay for Movement [s/veh]	60.30	12.06	10.74	57.84	14.79	9.98	65.03	49.61	50.13	63.92	51.70	53.38
Movement LOS	E	B	B	E	B	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	20.96			21.30			52.08			53.55		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.04											
Intersection LOS	C											
Intersection V/C	0.542											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.119	3.316	3.131	3.035
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	783	717	717
d_b, Bicycle Delay [s]	29.40	22.20	24.70	24.70
l_b,int, Bicycle LOS Score for Intersection	2.079	2.836	1.935	2.005
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	45.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	141	239	145	76	282	121	87	249	108	94	464	69
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	239	145	76	282	121	87	249	108	94	464	69
Peak Hour Factor	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	71	43	23	84	36	26	74	32	28	138	20
Total Analysis Volume [veh/h]	167	284	172	90	335	144	103	295	128	112	550	82
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	19	27	0	15	23	23	0	26	0	0	52	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	44	44	8	39	39	22	22	30	30
g / C, Green / Cycle	0.11	0.37	0.37	0.07	0.32	0.32	0.18	0.18	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.10	0.13	0.14	0.05	0.10	0.09	0.16	0.16	0.22	0.22
s, saturation flow rate [veh/h]	1714	1800	1577	1714	3427	1530	1768	1499	1775	1573
c, Capacity [veh/h]	193	663	581	113	1103	492	326	276	440	390
d1, Uniform Delay [s]	52.34	27.62	27.69	55.25	30.58	30.46	47.50	47.63	43.66	43.68
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.13	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.90	1.54	1.80	11.89	0.71	1.50	6.97	8.84	8.11	9.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.36	0.37	0.80	0.30	0.29	0.87	0.88	0.90	0.90
d, Delay for Lane Group [s/veh]	63.23	29.16	29.50	67.13	31.29	31.96	54.47	56.47	51.77	52.81
Lane Group LOS	E	C	C	E	C	C	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.52	5.34	4.80	3.06	3.77	3.34	8.81	7.73	12.25	10.98
50th-Percentile Queue Length [ft/ln]	138.1	133.4	120.0	76.44	94.16	83.44	220.26	193.31	306.15	274.55
95th-Percentile Queue Length [veh/ln]	9.38	9.12	8.39	5.50	6.78	6.01	13.68	12.29	17.98	16.42
95th-Percentile Queue Length [ft/ln]	234.4	228.1	209.8	137.6	169.4	150.1	341.95	307.32	449.62	410.42

Movement, Approach, & Intersection Results

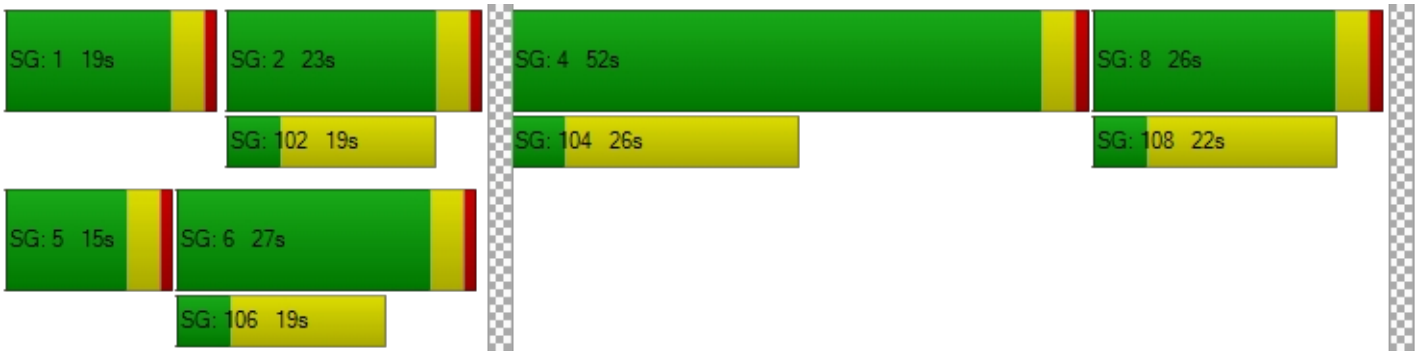
d_M, Delay for Movement [s/veh]	63.23	29.21	29.50	67.13	31.29	31.96	54.47	55.25	56.47	51.77	52.28	52.81
Movement LOS	E	C	C	E	C	C	D	E	E	D	D	D
d_A, Approach Delay [s/veh]	38.41			37.13			55.40			52.26		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	45.93											
Intersection LOS	D											
Intersection V/C	0.580											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.549	2.637	2.484	2.463
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	317	367	800
d_b, Bicycle Delay [s]	39.20	42.50	40.02	21.60
l_b,int, Bicycle LOS Score for Intersection	2.074	2.029	1.994	2.173
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	26.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	150	0	849	0	520	798	0	1435	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	150	0	849	0	520	798	0	1435	0
Peak Hour Factor	1.000	1.000	1.000	0.945	1.000	0.945	1.000	0.945	0.945	1.000	0.945	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	40	0	225	0	138	211	0	380	0
Total Analysis Volume [veh/h]	0	0	0	159	0	898	0	550	844	0	1519	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	57	0	0	0	63	0	0	63	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
l1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		39	39	39	73	73	73
g / C, Green / Cycle		0.32	0.32	0.32	0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate		0.09	0.29	0.29	0.11	0.55	0.31
s, saturation flow rate [veh/h]		1714	1530	1530	4903	1530	4903
c, Capacity [veh/h]		556	496	496	2987	932	2987
d1, Uniform Delay [s]		30.21	38.80	38.80	10.32	20.43	13.27
k, delay calibration		0.11	0.22	0.22	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.28	11.86	11.86	0.14	13.93	0.62
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.29	0.91	0.91	0.18	0.91	0.51
d, Delay for Lane Group [s/veh]		30.49	50.66	50.66	10.45	34.36	13.89
Lane Group LOS		C	D	D	B	C	B
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		3.49	14.13	14.13	2.13	22.65	7.59
50th-Percentile Queue Length [ft/ln]		87.26	353.3	353.3	53.18	566.34	189.87
95th-Percentile Queue Length [veh/ln]		6.28	20.30	20.30	3.83	30.46	12.11
95th-Percentile Queue Length [ft/ln]		157.0	507.4	507.4	95.72	761.48	302.86

Movement, Approach, & Intersection Results

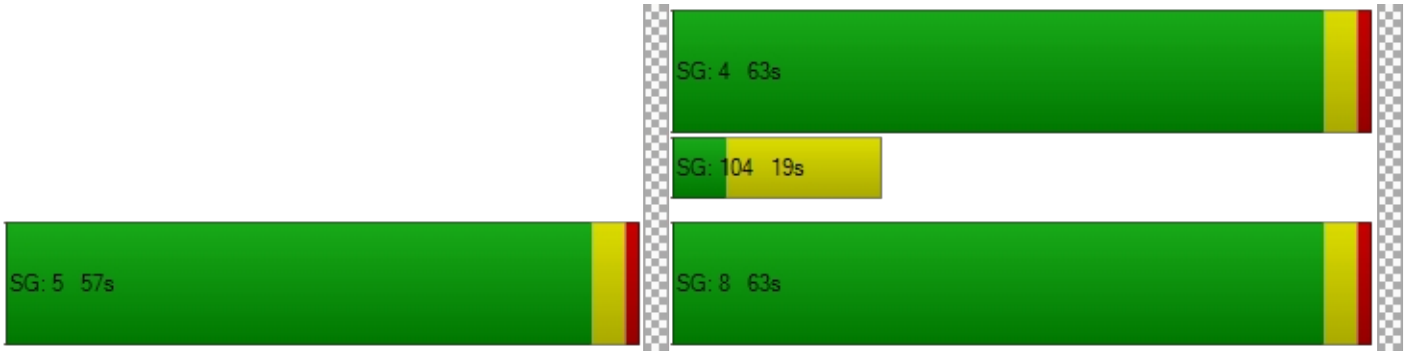
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	30.49	0.00	50.66	0.00	10.45	34.36	0.00	13.89	0.00
Movement LOS				C		D		B	C		B	
d_A, Approach Delay [s/veh]	0.00			47.63			24.93			13.89		
Approach LOS	A			D			C			B		
d_I, Intersection Delay [s/veh]	26.75											
Intersection LOS	C											
Intersection V/C	0.845											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.404	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	883	983	983
d_b, Bicycle Delay [s]	60.00	18.70	15.50	15.50
l_b,int, Bicycle LOS Score for Intersection	4.132	3.304	2.326	2.395
Bicycle LOS	D	C	B	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	873	0	494	0	0	0	0	441	0	0	1219	197
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	873	0	494	0	0	0	0	441	0	0	1219	197
Peak Hour Factor	0.879	1.000	0.879	1.000	1.000	1.000	1.000	0.879	1.000	1.000	0.879	0.879
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	248	0	141	0	0	0	0	125	0	0	347	56
Total Analysis Volume [veh/h]	993	0	562	0	0	0	0	502	0	0	1387	224
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	86	0	0	0	0	0	0	34	0	0	34	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	45		67	67	67
g / C, Green / Cycle	0.38	0.38	0.38		0.56	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.30	0.31	0.34		0.10	0.28	0.15
s, saturation flow rate [veh/h]	1714	1697	1530		4903	4903	1530
c, Capacity [veh/h]	649	642	579		2721	2721	849
d1, Uniform Delay [s]	33.22	33.37	35.05		13.24	16.58	13.93
k, delay calibration	0.11	0.11	0.11		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.32	2.46	5.17		0.15	0.69	0.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.81	0.90		0.18	0.51	0.26
d, Delay for Lane Group [s/veh]	35.55	35.83	40.22		13.39	17.26	14.69
Lane Group LOS	D	D	D		B	B	B
Critical Lane Group	No	No	Yes		No	Yes	No
50th-Percentile Queue Length [veh/ln]	13.69	13.77	14.83		2.26	7.86	3.31
50th-Percentile Queue Length [ft/ln]	342.2	344.2	370.8		56.52	196.54	82.71
95th-Percentile Queue Length [veh/ln]	19.76	19.85	21.15		4.07	12.46	5.96
95th-Percentile Queue Length [ft/ln]	493.9	496.3	528.7		101.74	311.50	148.88

Movement, Approach, & Intersection Results

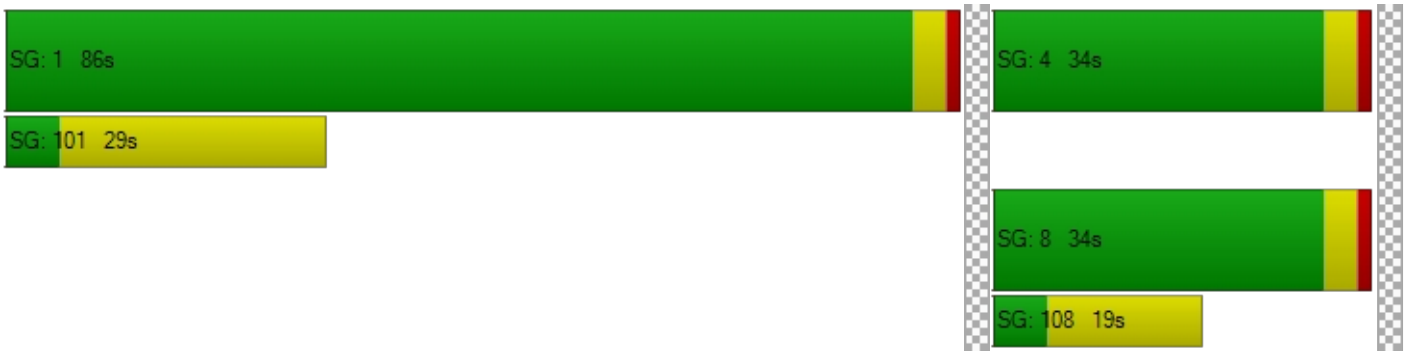
d_M, Delay for Movement [s/veh]	35.68	0.00	39.88	0.00	0.00	0.00	0.00	13.39	0.00	0.00	17.26	14.69
Movement LOS	D		D					B			B	B
d_A, Approach Delay [s/veh]	37.20			0.00			13.39			16.91		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	25.03											
Intersection LOS	C											
Intersection V/C	0.622											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.525	0.000	0.000	2.982
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1367	0	500	500
d_b, Bicycle Delay [s]	6.02	60.00	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	4.125	4.132	1.836	2.446
Bicycle LOS	D	D	A	B

Sequence

Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	39.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.695

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	153	199	67	50	341	230	100	448	210	342	1200	115
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	153	199	67	50	341	230	100	448	210	342	1200	115
Peak Hour Factor	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	54	18	14	93	62	27	122	57	93	326	31
Total Analysis Volume [veh/h]	166	216	73	54	370	250	109	486	228	371	1303	125
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	44	0	9	36	0	9	46	46	21	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	45	45	5	37	37	5	39	56	15	49	49
g / C, Green / Cycle	0.11	0.37	0.37	0.04	0.31	0.31	0.04	0.32	0.47	0.13	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.10	0.12	0.05	0.03	0.18	0.19	0.03	0.14	0.15	0.11	0.38	0.08
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1562	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	186	672	571	69	550	477	139	1110	712	430	1410	629
d1, Uniform Delay [s]	52.82	26.76	24.73	57.07	35.46	35.56	56.97	31.97	20.14	51.20	33.54	22.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.15	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.70	1.26	0.46	17.40	4.79	5.67	9.37	0.27	0.37	5.23	3.09	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.32	0.13	0.78	0.60	0.61	0.79	0.44	0.32	0.86	0.92	0.20
d, Delay for Lane Group [s/veh]	66.52	28.03	25.19	74.48	40.25	41.23	66.34	32.24	20.51	56.43	36.63	22.79
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.64	4.65	1.45	1.96	8.91	7.96	1.82	5.61	4.07	5.77	18.22	2.31
50th-Percentile Queue Length [ft/ln]	140.9	116.2	36.28	48.90	222.8	199.1	45.45	140.1	101.8	144.3	455.4	57.69
95th-Percentile Queue Length [veh/ln]	9.53	8.18	2.61	3.52	13.81	12.59	3.27	9.49	7.33	9.72	25.22	4.15
95th-Percentile Queue Length [ft/ln]	238.3	204.6	65.31	88.03	345.2	314.8	81.81	237.2	183.2	242.8	630.4	103.8

Movement, Approach, & Intersection Results

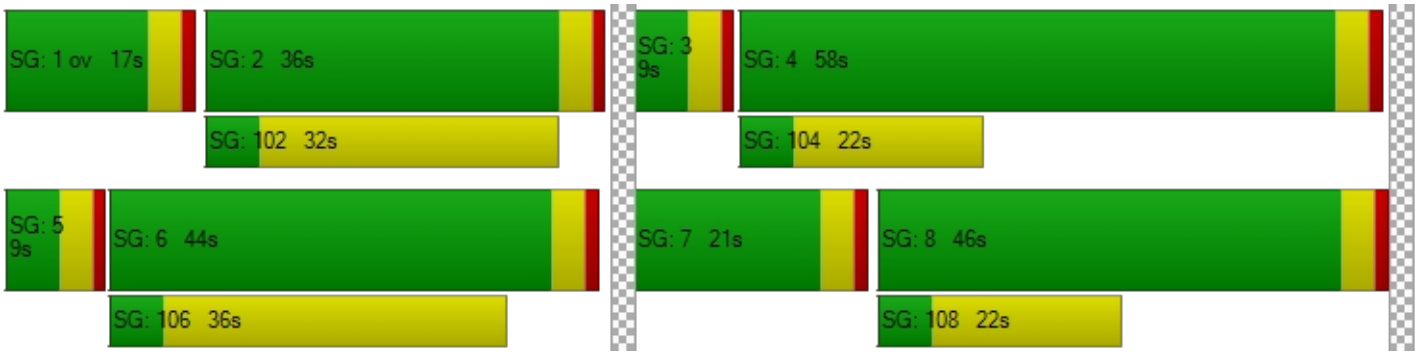
d_M, Delay for Movement [s/veh]	66.52	28.03	25.19	74.48	40.35	41.23	66.34	32.24	20.51	56.43	36.63	22.79
Movement LOS	E	C	C	E	D	D	E	C	C	E	D	C
d_A, Approach Delay [s/veh]	41.62			43.41			33.51			39.75		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	39.27											
Intersection LOS	D											
Intersection V/C	0.695											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.593	2.534	3.050	3.126
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	533	700	900
d_b, Bicycle Delay [s]	26.67	32.27	25.35	18.15
l_b,int, Bicycle LOS Score for Intersection	2.310	2.116	2.239	3.044
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	39.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	214	404	115	164	793	203	183	414	153	284	1138	98
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	214	404	115	164	793	203	183	414	153	284	1138	98
Peak Hour Factor	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	58	110	31	44	215	55	50	112	41	77	309	27
Total Analysis Volume [veh/h]	232	438	125	178	860	220	198	449	166	308	1234	106
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	26	40	0	26	40	40	12	36	0	18	42	42
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	18	47	47	15	44	56	8	29	29	13	34	53
g / C, Green / Cycle	0.15	0.39	0.39	0.12	0.36	0.46	0.07	0.24	0.24	0.11	0.28	0.44
(v / s)_i Volume / Saturation Flow Rate	0.14	0.09	0.08	0.10	0.18	0.14	0.06	0.09	0.11	0.09	0.25	0.07
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	260	1928	602	210	1787	711	222	1186	370	362	1392	673
d1, Uniform Delay [s]	49.95	24.25	24.05	51.52	29.39	20.10	55.57	37.96	38.68	52.53	41.11	20.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.74	0.27	0.78	8.97	0.93	1.13	11.68	0.20	0.85	5.68	2.09	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.23	0.21	0.85	0.48	0.31	0.89	0.38	0.45	0.85	0.89	0.16
d, Delay for Lane Group [s/veh]	60.69	24.53	24.83	60.49	30.32	21.23	67.25	38.15	39.53	58.22	43.21	20.32
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.59	2.82	2.49	5.76	6.51	4.07	3.33	3.71	4.26	4.84	11.81	1.82
50th-Percentile Queue Length [ft/ln]	189.8	70.62	62.19	144.0	162.7	101.6	83.28	92.76	106.4	120.9	295.2	45.51
95th-Percentile Queue Length [veh/ln]	12.11	5.08	4.48	9.70	10.70	7.32	6.00	6.68	7.64	8.45	17.44	3.28
95th-Percentile Queue Length [ft/ln]	302.7	127.1	111.9	242.5	267.3	182.9	149.9	166.9	190.9	211.1	436.0	81.92

Movement, Approach, & Intersection Results

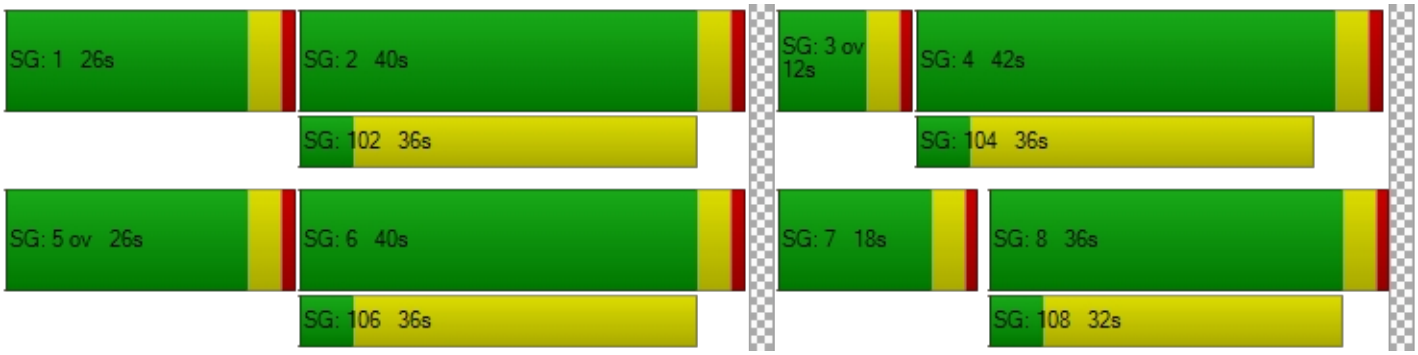
d_M, Delay for Movement [s/veh]	60.69	24.53	24.83	60.49	30.32	21.23	67.25	38.15	39.53	58.22	43.21	20.32
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	35.13			33.00			45.52			44.54		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.84											
Intersection LOS	D											
Intersection V/C	0.622											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.000	3.081	3.135	3.124
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	533	633
d_b, Bicycle Delay [s]	29.40	29.40	32.27	28.02
l_b,int, Bicycle LOS Score for Intersection	1.997	2.252	2.007	2.466
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	482.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.285

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	21	0	102	0	0	0	0	621	36	198	1526	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	0	102	0	0	0	0	621	36	198	1526	0
Peak Hour Factor	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	6	0	31	0	0	0	0	189	11	60	464	0
Total Analysis Volume [veh/h]	26	0	124	0	0	0	0	755	44	241	1854	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.28	0.00	0.20	0.00	0.00	0.00	0.00	0.01	0.00	0.29	0.02	0.00
d_M, Delay for Movement [s/veh]	482.9	741.3	310.9	575.1	456.1	18.14	15.87	0.00	0.00	11.08	0.00	0.00
Movement LOS	F	F	F	F	F	C	C	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	11.19	11.19	11.19	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00
95th-Percentile Queue Length [ft/ln]	279.7	279.7	279.7	0.00	0.00	0.00	0.00	0.00	0.00	30.07	0.00	0.00
d_A, Approach Delay [s/veh]	340.78			349.79			0.00			1.27		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	17.67											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	44.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	143	515	78	132	724	162	149	428	114	235	797	78
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	143	515	78	132	724	162	149	428	114	235	797	78
Peak Hour Factor	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	39	141	21	36	198	44	41	117	31	64	218	21
Total Analysis Volume [veh/h]	156	563	85	144	792	177	163	468	125	257	872	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	43	0	17	44	0	17	31	0	29	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	46	46	12	46	46	13	26	26	20	33	33
g / C, Green / Cycle	0.10	0.38	0.38	0.10	0.38	0.38	0.11	0.22	0.22	0.17	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.09	0.18	0.18	0.08	0.28	0.28	0.10	0.14	0.08	0.15	0.25	0.06
s, saturation flow rate [veh/h]	1714	1800	1719	1714	1800	1688	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	171	684	653	170	682	640	186	755	337	287	957	427
d1, Uniform Delay [s]	53.47	28.27	28.28	53.16	32.02	32.04	52.72	42.26	39.73	48.93	41.81	33.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.16	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.34	2.45	2.57	10.94	6.83	7.29	12.29	0.84	0.68	13.20	3.81	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.48	0.49	0.85	0.73	0.73	0.88	0.62	0.37	0.90	0.91	0.20
d, Delay for Lane Group [s/veh]	69.81	30.72	30.85	64.09	38.85	39.33	65.00	43.09	40.41	62.13	45.62	33.23
Lane Group LOS	E	C	C	E	D	D	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.43	7.68	7.36	4.78	13.61	12.86	5.47	6.35	3.21	8.58	12.88	1.93
50th-Percentile Queue Length [ft/ln]	135.7	191.8	184.0	119.6	340.2	321.5	136.7	158.7	80.20	214.4	321.9	48.27
95th-Percentile Queue Length [veh/ln]	9.25	12.22	11.81	8.37	19.66	18.74	9.30	10.48	5.77	13.38	18.76	3.48
95th-Percentile Queue Length [ft/ln]	231.3	305.4	295.3	209.3	491.4	468.6	232.5	262.0	144.3	334.5	469.1	86.89

Movement, Approach, & Intersection Results

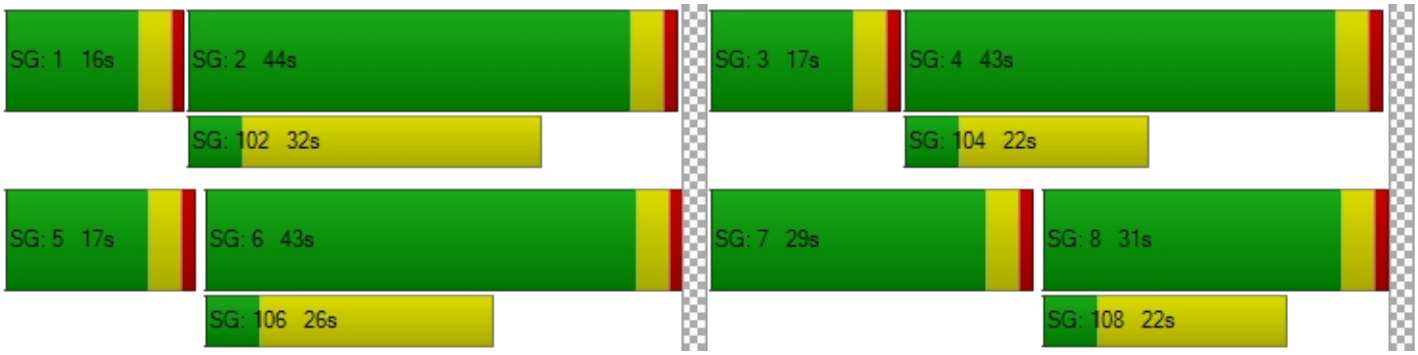
d_M, Delay for Movement [s/veh]	69.81	30.77	30.85	64.09	39.03	39.33	65.00	43.09	40.41	62.13	45.62	33.23
Movement LOS	E	C	C	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	38.35			42.32			47.37			48.25		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.33											
Intersection LOS	D											
Intersection V/C	0.719											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.701	2.690	2.787	2.779
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	667	450	650
d_b, Bicycle Delay [s]	27.34	26.67	36.04	27.34
l_b,int, Bicycle LOS Score for Intersection	2.223	2.478	2.183	2.561
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	40.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	79	436	79	192	814	126	211	375	100	151	611	125
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	436	79	192	814	126	211	375	100	151	611	125
Peak Hour Factor	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	22	121	22	53	226	35	58	104	28	42	169	35
Total Analysis Volume [veh/h]	88	483	88	213	902	140	234	416	111	167	677	139
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	31	0	24	43	0	29	38	0	27	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	42	42	17	51	51	18	31	31	14	27	27
g / C, Green / Cycle	0.06	0.35	0.35	0.14	0.43	0.43	0.15	0.26	0.26	0.11	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.14	0.06	0.12	0.26	0.09	0.14	0.12	0.07	0.10	0.20	0.09
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	109	1196	534	240	1458	651	264	899	401	197	766	342
d1, Uniform Delay [s]	55.43	29.60	26.98	50.64	26.88	21.80	49.76	37.18	35.22	52.04	45.07	39.78
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.77	1.02	0.66	10.43	1.98	0.76	10.49	0.37	0.37	9.49	3.60	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.40	0.16	0.89	0.62	0.22	0.89	0.46	0.28	0.85	0.88	0.41
d, Delay for Lane Group [s/veh]	68.20	30.61	27.64	61.07	28.86	22.55	60.25	37.55	35.59	61.53	48.67	40.56
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.02	5.45	1.85	6.97	10.35	2.64	7.63	5.18	2.64	5.45	10.09	3.59
50th-Percentile Queue Length [ft/ln]	75.38	136.2	46.32	174.1	258.6	66.01	190.8	129.6	65.97	136.2	252.1	89.76
95th-Percentile Queue Length [veh/ln]	5.43	9.28	3.33	11.30	15.62	4.75	12.17	8.92	4.75	9.28	15.29	6.46
95th-Percentile Queue Length [ft/ln]	135.6	231.9	83.37	282.4	390.5	118.8	304.1	222.9	118.7	231.9	382.3	161.5

Movement, Approach, & Intersection Results

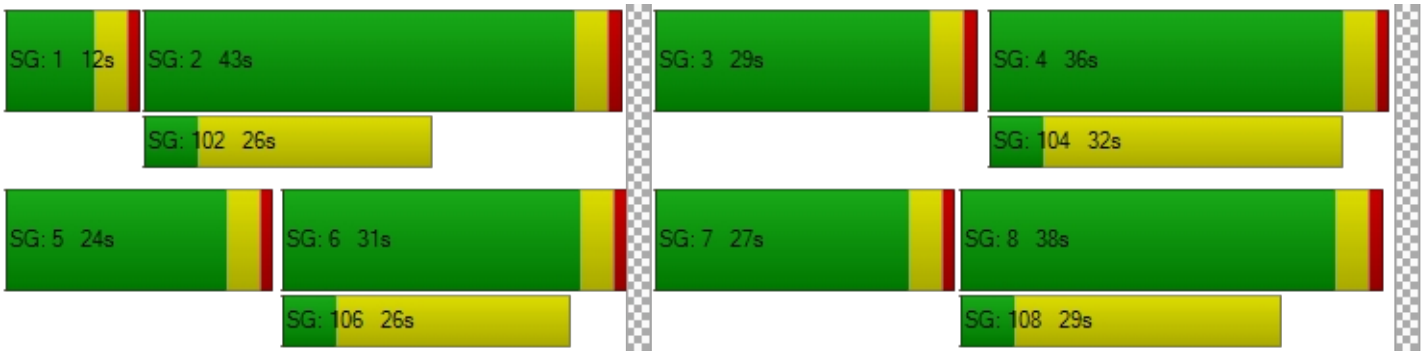
d_M, Delay for Movement [s/veh]	68.20	30.61	27.64	61.07	28.86	22.55	60.25	37.55	35.59	61.53	48.67	40.56
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	35.23			33.62			44.24			49.71		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	40.44											
Intersection LOS	D											
Intersection V/C	0.649											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.865	2.998	2.739	2.744
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	450	650	567	533
d_b, Bicycle Delay [s]	36.04	27.34	30.82	32.27
l_b,int, Bicycle LOS Score for Intersection	2.103	2.595	2.187	2.371
Bicycle LOS	B	B	B	B

Sequence

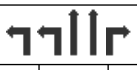
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	42.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	325	161	36	120	324	392	93	245	148	141	699	133
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	325	161	36	120	324	392	93	245	148	141	699	133
Peak Hour Factor	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	94	47	10	35	94	113	27	71	43	41	202	38
Total Analysis Volume [veh/h]	376	186	42	139	375	453	108	283	171	163	808	154
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	20	36	36	16	32	32	16	53	53	15	52	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	44	56	11	40	56	12	40	60	8	36	36
g / C, Green / Cycle	0.13	0.37	0.47	0.10	0.34	0.47	0.10	0.33	0.50	0.07	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.11	0.05	0.03	0.08	0.11	0.30	0.03	0.16	0.11	0.05	0.27	0.27
s, saturation flow rate [veh/h]	3329	3427	1530	1714	3427	1530	3329	1800	1530	3329	1800	1701
c, Capacity [veh/h]	430	1265	719	164	1151	718	333	602	760	224	543	513
d1, Uniform Delay [s]	51.31	25.24	17.35	53.38	29.71	24.01	50.23	31.53	17.10	54.90	40.34	40.36
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.76	0.24	0.16	11.21	0.75	4.18	0.56	0.57	0.15	4.52	12.05	12.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.15	0.06	0.85	0.33	0.63	0.32	0.47	0.22	0.73	0.91	0.91
d, Delay for Lane Group [s/veh]	57.07	25.49	17.51	64.59	30.46	28.18	50.79	32.10	17.25	59.42	52.39	53.13
Lane Group LOS	E	C	B	E	C	C	D	C	B	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.89	1.82	0.67	4.63	4.17	10.34	1.54	6.58	2.71	2.56	15.73	14.99
50th-Percentile Queue Length [ft/ln]	147.1	45.61	16.74	115.8	104.1	258.6	38.48	164.4	67.63	63.99	393.2	374.7
95th-Percentile Queue Length [veh/ln]	9.87	3.28	1.21	8.17	7.50	15.62	2.77	10.78	4.87	4.61	22.23	21.34
95th-Percentile Queue Length [ft/ln]	246.6	82.10	30.14	204.1	187.5	390.4	69.27	269.5	121.7	115.1	555.8	533.5

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.07	25.49	17.51	64.59	30.46	28.18	50.79	32.10	17.25	59.42	52.68	53.13
Movement LOS	E	C	B	E	C	C	D	C	B	E	D	D
d_A, Approach Delay [s/veh]	44.59			34.30			31.17			53.71		
Approach LOS	D			C			C			D		
d_I, Intersection Delay [s/veh]	42.37											
Intersection LOS	D											
Intersection V/C	0.649											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.792	2.698	2.915	2.726
Crosswalk LOS	C	B	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	467	817	800
d_b, Bicycle Delay [s]	32.27	35.27	21.00	21.60
l_b,int, Bicycle LOS Score for Intersection	2.058	2.357	2.487	2.488
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	39.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	103	671	122	53	1008	95	70	390	93	154	601	59
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	103	671	122	53	1008	95	70	390	93	154	601	59
Peak Hour Factor	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	177	32	14	266	25	18	103	25	41	158	16
Total Analysis Volume [veh/h]	109	708	129	56	1063	100	74	411	98	162	634	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	35	0	11	33	0	10	53	0	21	64	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	48	48	5	44	44	6	37	37	13	45	45
g / C, Green / Cycle	0.08	0.40	0.40	0.04	0.37	0.37	0.05	0.31	0.31	0.11	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.17	0.03	0.23	0.23	0.04	0.23	0.06	0.09	0.35	0.04
s, saturation flow rate [veh/h]	1714	3427	1662	1714	3427	1722	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	129	1377	668	73	1265	636	86	560	476	191	671	570
d1, Uniform Delay [s]	54.82	25.69	25.74	56.87	30.84	30.85	56.59	36.89	30.41	52.33	36.47	24.62
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.25	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.99	0.90	1.88	15.54	2.21	4.36	21.29	1.92	0.21	10.00	14.61	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.41	0.41	0.77	0.61	0.61	0.86	0.73	0.21	0.85	0.95	0.11
d, Delay for Lane Group [s/veh]	68.81	26.59	27.61	72.42	33.06	35.22	77.88	38.81	30.62	62.33	51.08	24.70
Lane Group LOS	E	C	C	E	C	D	E	D	C	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.75	5.90	5.96	2.00	9.45	9.89	2.73	10.98	2.13	5.32	20.38	1.18
50th-Percentile Queue Length [ft/ln]	93.82	147.3	149.1	49.90	236.2	247.2	68.32	274.6	53.21	132.9	509.4	29.47
95th-Percentile Queue Length [veh/ln]	6.76	9.88	9.97	3.59	14.49	15.05	4.92	16.42	3.83	9.10	27.78	2.12
95th-Percentile Queue Length [ft/ln]	168.8	246.9	249.2	89.81	362.3	376.2	122.9	410.4	95.78	227.5	694.5	53.05

Movement, Approach, & Intersection Results

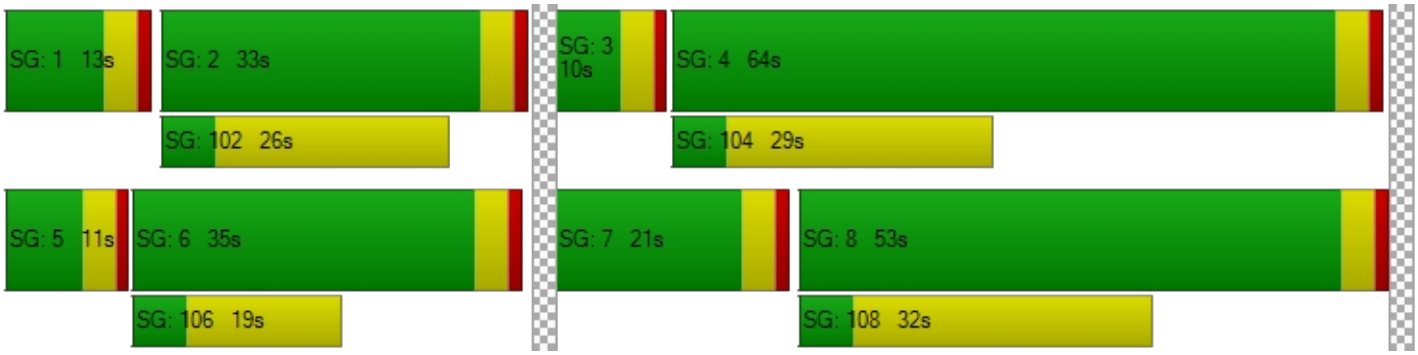
d_M, Delay for Movement [s/veh]	68.81	26.80	27.61	72.42	33.64	35.22	77.88	38.81	30.62	62.33	51.08	24.70
Movement LOS	E	C	C	E	C	D	E	D	C	E	D	C
d_A, Approach Delay [s/veh]	31.75			35.55			42.39			51.30		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	39.41											
Intersection LOS	D											
Intersection V/C	0.685											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.017	2.896	2.700	2.501
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	483	817	1000
d_b, Bicycle Delay [s]	33.00	34.50	21.00	15.00
l_b,int, Bicycle LOS Score for Intersection	2.080	2.230	2.522	2.975
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.461

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	83	127	114	14	154	84	41	337	58	140	598	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	127	114	14	154	84	41	337	58	140	598	22
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	23	35	31	4	42	23	11	93	16	39	165	6
Total Analysis Volume [veh/h]	92	140	126	15	170	93	45	372	64	154	659	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	26	0	0	26	0	0	94	0	0	94	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	65	65	65	65	65	65	47	47	47	47	47	47
g / C, Green / Cycle	0.54	0.54	0.54	0.54	0.54	0.54	0.39	0.39	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.08	0.01	0.09	0.06	0.06	0.21	0.04	0.16	0.37	0.02
s, saturation flow rate [veh/h]	1134	1800	1530	1131	1800	1530	770	1800	1530	968	1800	1530
c, Capacity [veh/h]	559	976	830	570	976	830	129	704	598	308	704	598
d1, Uniform Delay [s]	20.46	13.62	13.69	18.35	13.87	13.37	52.80	28.06	23.24	39.44	35.12	22.62
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	0.31	0.39	0.09	0.39	0.27	1.60	0.62	0.08	1.25	6.64	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.14	0.15	0.03	0.17	0.11	0.35	0.53	0.11	0.50	0.94	0.04
d, Delay for Lane Group [s/veh]	21.09	13.93	14.07	18.43	14.26	13.65	54.40	28.68	23.31	40.69	41.76	22.65
Lane Group LOS	C	B	B	B	B	B	D	C	C	D	D	C
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.68	1.96	1.78	0.25	2.42	1.29	1.37	8.30	1.18	4.12	19.43	0.43
50th-Percentile Queue Length [ft/ln]	41.88	48.94	44.61	6.19	60.56	32.13	34.27	207.5	29.45	103.0	485.7	10.75
95th-Percentile Queue Length [veh/ln]	3.02	3.52	3.21	0.45	4.36	2.31	2.47	13.03	2.12	7.42	26.66	0.77
95th-Percentile Queue Length [ft/ln]	75.38	88.08	80.29	11.15	109.0	57.84	61.69	325.6	53.01	185.4	666.5	19.34

Movement, Approach, & Intersection Results

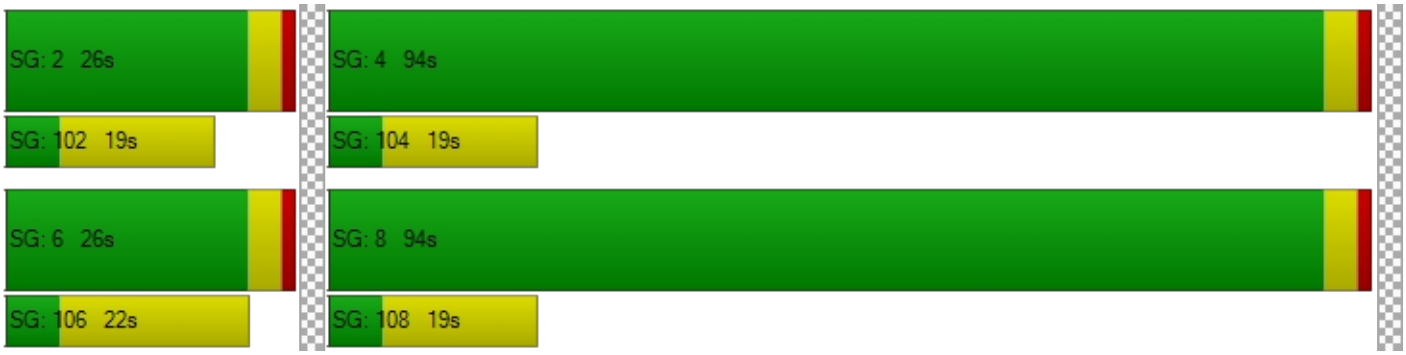
d_M, Delay for Movement [s/veh]	21.09	13.93	14.07	18.43	14.26	13.65	54.40	28.68	23.31	40.69	41.76	22.65
Movement LOS	C	B	B	B	B	B	D	C	C	D	D	C
d_A, Approach Delay [s/veh]	15.82			14.28			30.37			41.01		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	29.98											
Intersection LOS	C											
Intersection V/C	0.461											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.547	2.329	2.600	2.600
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	367	1500	1500
d_b, Bicycle Delay [s]	40.02	40.02	3.75	3.75
l_b,int, Bicycle LOS Score for Intersection	2.150	2.018	2.353	2.941
Bicycle LOS	B	B	B	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	41.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	208	617	205	96	791	141	73	255	105	226	437	131
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	617	205	96	791	141	73	255	105	226	437	131
Peak Hour Factor	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	54	160	53	25	205	36	19	66	27	58	113	34
Total Analysis Volume [veh/h]	215	639	212	99	819	146	76	264	109	234	452	136
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	51	0	12	42	0	10	30	0	27	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	57	57	8	49	49	6	20	20	18	33	33
g / C, Green / Cycle	0.14	0.48	0.48	0.07	0.41	0.41	0.05	0.17	0.17	0.15	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.13	0.25	0.25	0.06	0.28	0.28	0.04	0.08	0.07	0.14	0.25	0.09
s, saturation flow rate [veh/h]	1714	1800	1648	1714	1800	1706	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	240	860	787	114	728	690	86	578	258	264	490	417
d1, Uniform Delay [s]	50.74	21.73	21.74	55.47	29.38	29.38	56.66	44.94	44.66	49.75	42.42	34.87
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.12	0.24	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.22	2.21	2.42	17.15	5.09	5.37	24.10	0.57	1.10	10.47	14.73	0.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.52	0.52	0.87	0.68	0.68	0.89	0.46	0.42	0.89	0.92	0.33
d, Delay for Lane Group [s/veh]	61.95	23.95	24.16	72.62	34.47	34.75	80.77	45.50	45.76	60.22	57.15	35.32
Lane Group LOS	E	C	C	E	C	C	F	D	D	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.09	9.08	8.37	3.51	12.61	12.01	2.86	3.60	2.99	7.64	14.92	3.25
50th-Percentile Queue Length [ft/ln]	177.1	226.9	209.1	87.76	315.2	300.3	71.57	89.92	74.82	190.8	372.9	81.15
95th-Percentile Queue Length [veh/ln]	11.45	14.02	13.11	6.32	18.43	17.70	5.15	6.47	5.39	12.17	21.25	5.84
95th-Percentile Queue Length [ft/ln]	286.3	350.4	327.7	157.9	460.8	442.4	128.8	161.8	134.6	304.1	531.3	146.0

Movement, Approach, & Intersection Results

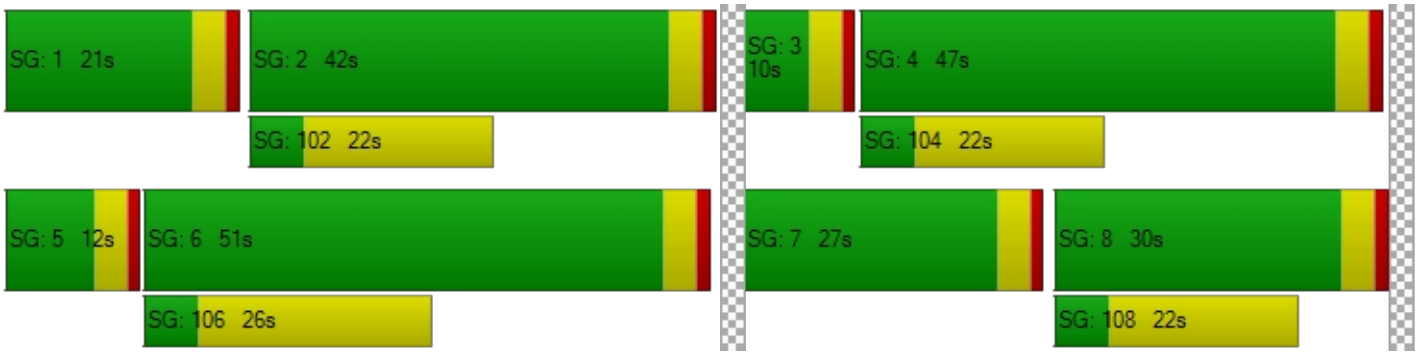
d_M, Delay for Movement [s/veh]	61.95	24.01	24.16	72.62	34.58	34.75	80.77	45.50	45.76	60.22	57.15	35.32
Movement LOS	E	C	C	E	C	C	F	D	D	E	E	D
d_A, Approach Delay [s/veh]	31.69			38.14			51.53			54.41		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	41.82											
Intersection LOS	D											
Intersection V/C	0.696											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.750	2.689	2.561	2.695
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	633	433	717
d_b, Bicycle Delay [s]	22.20	28.02	36.82	24.70
l_b,int, Bicycle LOS Score for Intersection	2.439	2.437	1.930	2.916
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	36.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.554

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	87	511	35	58	717	69	67	402	82	69	527	55
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	511	35	58	717	69	67	402	82	69	527	55
Peak Hour Factor	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	25	149	10	17	209	20	20	117	24	20	154	16
Total Analysis Volume [veh/h]	101	596	41	68	836	80	78	469	96	80	614	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	34	0	16	38	0	12	59	0	11	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	65	65	6	63	63	7	26	26	7	26	26
g / C, Green / Cycle	0.07	0.54	0.54	0.05	0.53	0.53	0.06	0.21	0.21	0.06	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.18	0.18	0.04	0.26	0.26	0.05	0.16	0.16	0.05	0.19	0.19
s, saturation flow rate [veh/h]	1714	1800	1760	1714	1800	1745	1714	1800	1696	1714	1800	1741
c, Capacity [veh/h]	114	975	953	87	947	918	98	388	365	100	390	377
d1, Uniform Delay [s]	55.54	15.34	15.34	56.27	18.16	18.16	55.87	44.02	44.08	55.81	45.54	45.55
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.98	0.91	0.93	13.68	1.82	1.88	13.45	2.90	3.15	13.52	6.70	6.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.33	0.33	0.78	0.49	0.49	0.80	0.75	0.75	0.80	0.88	0.88
d, Delay for Lane Group [s/veh]	74.52	16.24	16.27	69.95	19.98	20.04	69.33	46.92	47.23	69.33	52.23	52.53
Lane Group LOS	E	B	B	E	B	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.63	5.09	4.99	2.37	8.56	8.32	2.70	8.36	7.96	2.77	10.62	10.32
50th-Percentile Queue Length [ft/ln]	90.80	127.2	124.7	59.22	214.0	207.9	67.48	209.0	199.0	69.19	265.5	258.1
95th-Percentile Queue Length [veh/ln]	6.54	8.79	8.65	4.26	13.36	13.05	4.86	13.10	12.59	4.98	15.97	15.59
95th-Percentile Queue Length [ft/ln]	163.4	219.7	216.3	106.6	334.0	326.1	121.4	327.5	314.7	124.5	399.2	389.8

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.52	16.25	16.27	69.95	20.00	20.04	69.33	47.04	47.23	69.33	52.36	52.53
Movement LOS	E	B	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	24.23			23.46			49.77			54.17		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.51											
Intersection LOS	D											
Intersection V/C	0.554											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.656	2.748	2.596	2.576
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	567	917	900
d_b, Bicycle Delay [s]	33.75	30.82	17.60	18.15
l_b,int, Bicycle LOS Score for Intersection	2.168	2.371	2.090	2.185
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	23.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	418	151	65	572	0	0	0	0	234	0	137
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	418	151	65	572	0	0	0	0	234	0	137
Peak Hour Factor	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	122	44	19	167	0	0	0	0	68	0	40
Total Analysis Volume [veh/h]	0	488	176	76	667	0	0	0	0	273	0	160
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	49	0	38	78	0	0	33	0	0	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	74	74	7	81	81	27	27	27	27
g / C, Green / Cycle	0.00	0.62	0.62	0.06	0.68	0.68	0.22	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.00	0.27	0.12	0.04	0.37	0.00	0.00	0.00	0.21	0.10
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1530	1687	1530	1326	1530
c, Capacity [veh/h]	1	1117	949	99	1220	1037	404	339	354	339
d1, Uniform Delay [s]	0.00	11.87	9.77	55.71	9.88	0.00	0.00	0.00	46.89	40.59
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.32	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	1.25	0.43	11.46	1.76	0.00	0.00	0.00	10.03	1.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.44	0.19	0.76	0.55	0.00	0.00	0.00	0.77	0.47
d, Delay for Lane Group [s/veh]	0.00	13.11	10.20	67.18	11.65	0.00	0.00	0.00	56.92	41.61
Lane Group LOS	A	B	B	E	B	A	A	A	E	D
Critical Lane Group	No	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	6.93	2.06	2.59	8.94	0.00	0.00	0.00	8.94	4.21
50th-Percentile Queue Length [ft/ln]	0.00	173.2	51.44	64.65	223.4	0.00	0.00	0.00	223.55	105.30
95th-Percentile Queue Length [veh/ln]	0.00	11.25	3.70	4.66	13.84	0.00	0.00	0.00	13.85	7.58
95th-Percentile Queue Length [ft/ln]	0.00	281.2	92.60	116.3	346.0	0.00	0.00	0.00	346.15	189.44

Movement, Approach, & Intersection Results

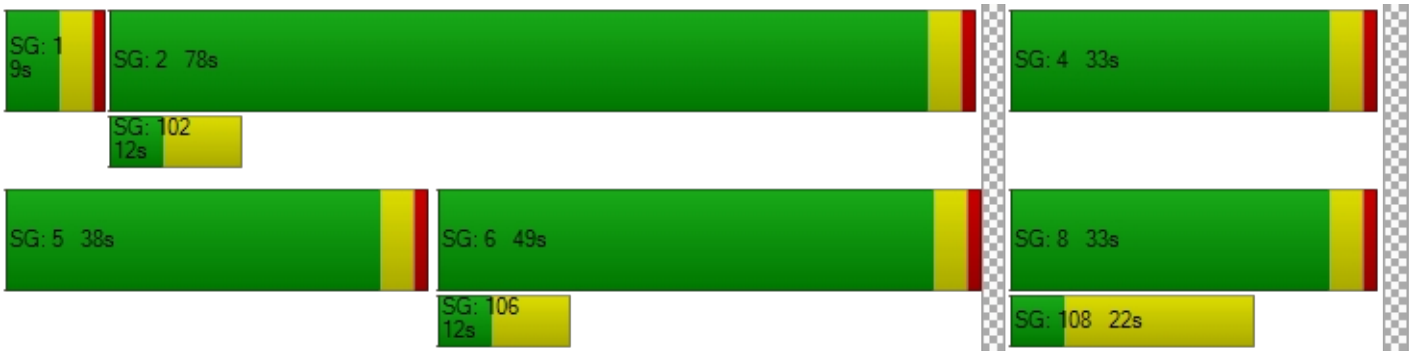
d_M, Delay for Movement [s/veh]	0.00	13.11	10.20	67.18	11.65	0.00	0.00	0.00	0.00	56.92	56.92	41.61
Movement LOS	A	B	B	E	B	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	12.34			17.33			0.00			51.26		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	23.51											
Intersection LOS	C											
Intersection V/C	0.576											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.016	0.000	1.955	2.178
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	1233	483	483
d_b, Bicycle Delay [s]	23.44	8.82	34.50	34.50
l_b,int, Bicycle LOS Score for Intersection	2.655	2.786	1.560	2.274
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	186	806	132	35	1068	89	30	30	200	150	136	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	186	806	132	35	1068	89	30	30	200	150	136	68
Peak Hour Factor	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	220	36	10	291	24	8	8	55	41	37	19
Total Analysis Volume [veh/h]	203	879	144	38	1165	97	33	33	218	164	148	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	61	0	9	47	0	13	33	0	17	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	68	68	4	56	56	3	19	19	13	29
g / C, Green / Cycle	0.13	0.57	0.57	0.03	0.46	0.46	0.03	0.16	0.16	0.11	0.24
(v / s)_i Volume / Saturation Flow Rate	0.12	0.29	0.29	0.02	0.34	0.06	0.02	0.02	0.14	0.10	0.13
s, saturation flow rate [veh/h]	1714	1800	1713	1714	3427	1530	1714	1800	1530	1714	1700
c, Capacity [veh/h]	230	1020	971	52	1586	708	50	290	247	186	408
d1, Uniform Delay [s]	51.00	15.87	15.89	57.70	26.23	18.48	57.65	43.01	49.24	52.75	39.84
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.13	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.50	1.84	1.95	17.80	3.06	0.40	13.67	0.17	12.19	12.73	1.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.51	0.51	0.73	0.73	0.14	0.66	0.11	0.88	0.88	0.54
d, Delay for Lane Group [s/veh]	61.51	17.71	17.84	75.50	29.28	18.89	71.32	43.18	61.43	65.48	40.97
Lane Group LOS	E	B	B	E	C	B	E	D	E	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	6.65	9.03	8.66	1.40	13.90	1.63	1.18	0.86	7.22	5.52	5.86
50th-Percentile Queue Length [ft/ln]	166.3	225.6	216.4	35.03	347.6	40.80	29.58	21.44	180.3	138.10	146.44
95th-Percentile Queue Length [veh/ln]	10.88	13.95	13.48	2.52	20.02	2.94	2.13	1.54	11.62	9.38	9.83
95th-Percentile Queue Length [ft/ln]	272.1	348.8	337.0	63.05	500.5	73.44	53.24	38.59	290.5	234.46	245.67

Movement, Approach, & Intersection Results

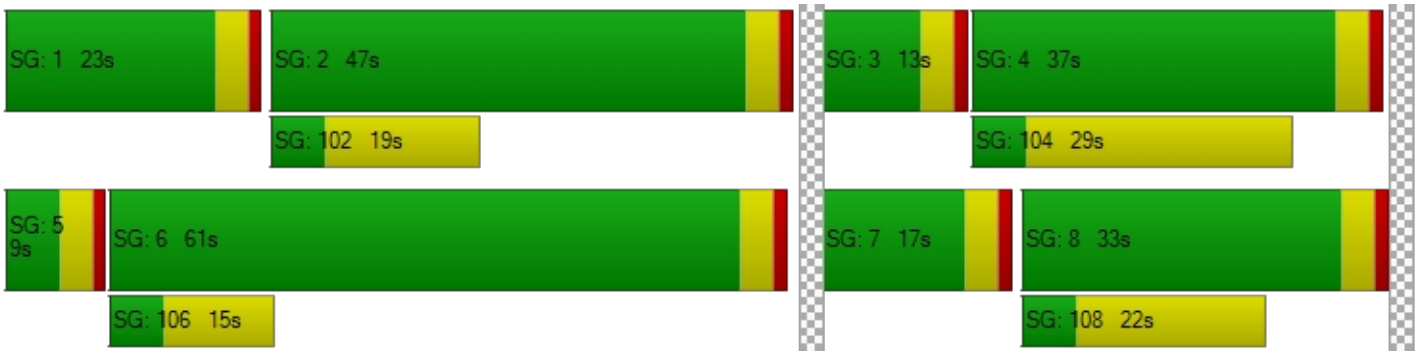
d_M, Delay for Movement [s/veh]	61.51	17.76	17.84	75.50	29.28	18.89	71.32	43.18	61.43	65.48	40.97	40.97
Movement LOS	E	B	B	E	C	B	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	25.01			29.86			60.46			51.38		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	33.32											
Intersection LOS	C											
Intersection V/C	0.696											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.919	2.928	2.325	2.151
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	717	483	550
d_b, Bicycle Delay [s]	16.54	24.70	34.50	31.54
l_b,int, Bicycle LOS Score for Intersection	2.571	2.632	2.028	2.197
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	30.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.307

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	134	290	0	0	261	111	57	0	66	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	290	0	0	261	111	57	0	66	0	0	0
Peak Hour Factor	0.913	0.913	1.000	1.000	0.913	0.913	0.913	1.000	0.913	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	37	79	0	0	71	30	16	0	18	0	0	0
Total Analysis Volume [veh/h]	147	318	0	0	286	122	62	0	72	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.10	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.55	0.00	0.00	0.00	0.00	0.00	30.54	0.00	10.73	0.00	0.00	0.00
Movement LOS	A	A			A	A	D		B			
95th-Percentile Queue Length [veh/ln]	0.43	0.43	0.00	0.00	0.00	0.00	1.24	0.00	0.34	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	10.83	10.83	0.00	0.00	0.00	0.00	31.03	0.00	8.55	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	2.70			0.00			19.89			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	3.89											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.372

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	1	551	201	49	753	1	0	0	2	174	0	40
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	551	201	49	753	1	0	0	2	174	0	40
Peak Hour Factor	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	146	53	13	199	0	0	0	1	46	0	11
Total Analysis Volume [veh/h]	1	582	212	52	796	1	0	0	2	184	0	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	59	0	11	55	0	0	9	0	0	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	84	84	5	88	88	0	0	15	15
g / C, Green / Cycle	0.00	0.70	0.70	0.04	0.73	0.73	0.00	0.00	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.00	0.23	0.23	0.03	0.22	0.22	0.00	0.00	0.11	0.03
s, saturation flow rate [veh/h]	1714	1800	1638	1714	1800	1799	1800	1392	1687	1530
c, Capacity [veh/h]	4	1254	1142	66	1320	1320	5	4	216	196
d1, Uniform Delay [s]	59.79	7.16	7.17	57.18	5.47	5.47	59.64	59.73	51.20	46.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	38.37	0.71	0.78	18.02	0.59	0.59	0.00	67.03	9.07	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.33	0.33	0.78	0.30	0.30	0.00	0.48	0.85	0.21
d, Delay for Lane Group [s/veh]	98.16	7.87	7.95	75.20	6.06	6.06	59.64	126.76	60.27	47.44
Lane Group LOS	F	A	A	E	A	A	E	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.07	4.13	3.80	1.90	3.27	3.27	0.00	0.14	5.95	1.16
50th-Percentile Queue Length [ft/ln]	1.71	103.2	94.93	47.39	81.83	81.79	0.00	3.46	148.84	29.01
95th-Percentile Queue Length [veh/ln]	0.12	7.44	6.84	3.41	5.89	5.89	0.00	0.25	9.95	2.09
95th-Percentile Queue Length [ft/ln]	3.07	185.9	170.8	85.30	147.2	147.2	0.00	6.23	248.87	52.22

Movement, Approach, & Intersection Results

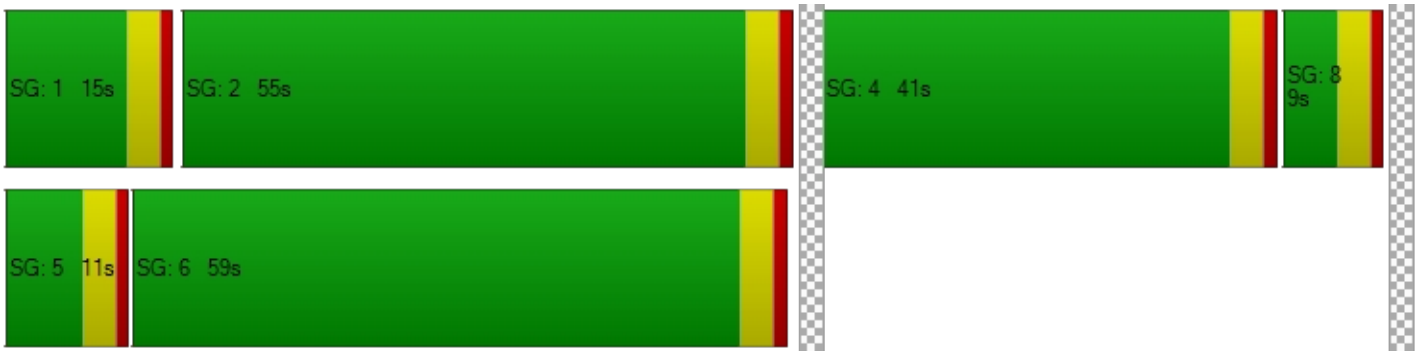
d_M, Delay for Movement [s/veh]	98.16	7.89	7.95	75.20	6.06	6.06	59.64	59.64	126.7	60.27	60.27	47.44
Movement LOS	F	A	A	E	A	A	E	E	F	E	E	D
d_A, Approach Delay [s/veh]	8.02			10.30			126.76			57.88		
Approach LOS	A			B			F			E		
d_I, Intersection Delay [s/veh]	15.20											
Intersection LOS	B											
Intersection V/C	0.372											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	850	83	617
d_b, Bicycle Delay [s]	17.60	19.84	55.10	28.70
l_b,int, Bicycle LOS Score for Intersection	2.215	2.260	1.561	1.933
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.578

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	3	813	117	130	1237	0	0	0	0	145	0	253
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	813	117	130	1237	0	0	0	0	145	0	253
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	223	32	36	339	0	0	0	0	40	0	69
Total Analysis Volume [veh/h]	3	890	128	142	1355	0	0	0	0	159	0	277
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	48	0	23	62	0	9	30	0	19	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	68	68	12	80	80	0	11	13	24
g / C, Green / Cycle	0.00	0.57	0.57	0.10	0.66	0.66	0.00	0.09	0.11	0.20
(v / s)_i Volume / Saturation Flow Rate	0.00	0.26	0.08	0.08	0.40	0.00	0.00	0.00	0.09	0.18
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1714	1530
c, Capacity [veh/h]	8	1944	868	170	2268	1012	1	166	185	306
d1, Uniform Delay [s]	59.56	15.18	12.26	53.10	11.36	0.00	0.00	0.00	52.62	46.92
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.21	0.78	0.36	10.28	1.17	0.00	0.00	0.00	10.90	10.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.46	0.15	0.84	0.60	0.00	0.00	0.00	0.86	0.91
d, Delay for Lane Group [s/veh]	87.77	15.96	12.62	63.38	12.53	0.00	0.00	0.00	63.52	57.31
Lane Group LOS	F	B	B	E	B	A	A	A	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.15	7.13	1.69	4.69	9.74	0.00	0.00	0.00	5.27	8.93
50th-Percentile Queue Length [ft/ln]	3.81	178.2	42.37	117.2	243.5	0.00	0.00	0.00	131.66	223.28
95th-Percentile Queue Length [veh/ln]	0.27	11.51	3.05	8.24	14.86	0.00	0.00	0.00	9.03	13.83
95th-Percentile Queue Length [ft/ln]	6.85	287.7	76.26	206.0	371.5	0.00	0.00	0.00	225.75	345.81

Movement, Approach, & Intersection Results

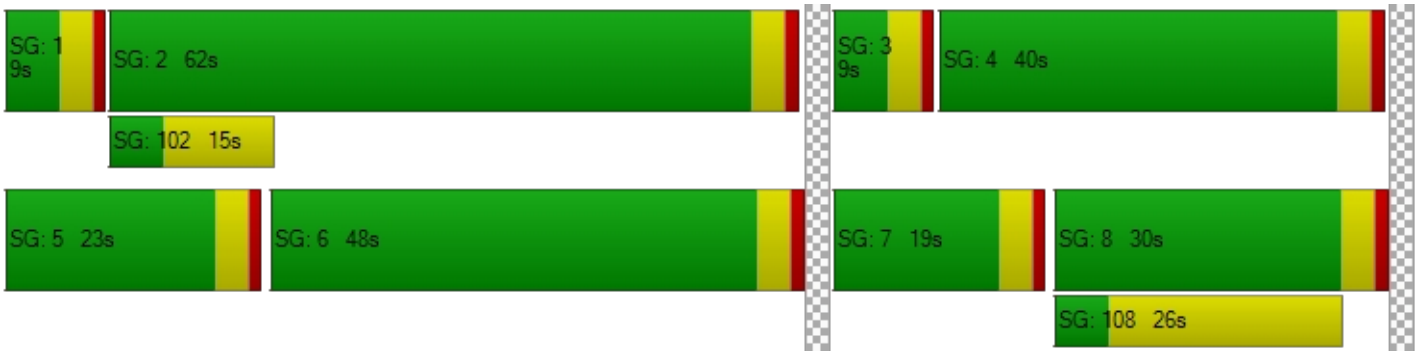
d_M, Delay for Movement [s/veh]	87.77	15.96	12.62	63.38	12.53	0.00	0.00	0.00	0.00	63.52	57.31	57.31
Movement LOS	F	B	B	E	B	A	A	A	A	E	E	E
d_A, Approach Delay [s/veh]	15.75			17.35			0.00			59.57		
Approach LOS	B			B			A			E		
d_I, Intersection Delay [s/veh]	23.03											
Intersection LOS	C											
Intersection V/C	0.578											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.962	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	967	433	600
d_b, Bicycle Delay [s]	24.07	16.02	36.82	29.40
I_b,int, Bicycle LOS Score for Intersection	2.402	2.795	1.560	2.279
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	21.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.724

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	51	162	58	56	145	76	103	129	56	67	230	153
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	162	58	56	145	76	103	129	56	67	230	153
Peak Hour Factor	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	46	16	16	41	21	29	36	16	19	65	43
Total Analysis Volume [veh/h]	58	183	65	63	164	86	116	146	63	76	260	173
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	441	492	466	441	498	464	520
Degree of Utilization, x	0.55	0.13	0.67	0.59	0.13	0.72	0.33

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.20	0.45	4.88	3.77	0.43	5.78	1.45
95th-Percentile Queue Length [ft]	79.95	11.32	122.04	94.18	10.77	144.62	36.20
Approach Delay [s/veh]	18.29		25.09	20.00		23.10	
Approach LOS	C		D	C		C	
Intersection Delay [s/veh]	21.82						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	28.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	51	676	27	61	902	92	147	156	48	43	206	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	676	27	61	902	92	147	156	48	43	206	103
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	176	7	16	235	24	38	41	13	11	54	27
Total Analysis Volume [veh/h]	53	704	28	64	940	96	153	163	50	45	215	107
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	54	0	11	55	0	29	33	0	22	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	72	72	6	72	72	13	23	23	4	14	14
g / C, Green / Cycle	0.04	0.60	0.60	0.05	0.60	0.60	0.11	0.19	0.19	0.03	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.20	0.20	0.04	0.29	0.29	0.09	0.05	0.03	0.03	0.09	0.10
s, saturation flow rate [veh/h]	1714	1800	1776	1714	1800	1742	1714	3427	1530	1714	1800	1605
c, Capacity [veh/h]	68	1071	1057	81	1086	1051	183	648	289	60	212	189
d1, Uniform Delay [s]	57.13	12.37	12.37	56.55	13.35	13.36	52.59	41.43	40.79	57.37	51.49	51.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.76	0.88	0.89	15.25	1.55	1.60	9.70	0.20	0.28	16.73	6.40	8.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.34	0.34	0.79	0.48	0.49	0.84	0.25	0.17	0.75	0.79	0.82
d, Delay for Lane Group [s/veh]	74.90	13.25	13.26	71.80	14.90	14.96	62.29	41.63	41.07	74.10	57.89	60.34
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.93	5.16	5.10	2.26	8.14	7.90	5.01	2.08	1.27	1.63	5.25	5.01
50th-Percentile Queue Length [ft/ln]	48.17	129.1	127.5	56.59	203.5	197.5	125.3	52.11	31.76	40.85	131.3	125.3
95th-Percentile Queue Length [veh/ln]	3.47	8.89	8.81	4.07	12.82	12.51	8.69	3.75	2.29	2.94	9.01	8.68
95th-Percentile Queue Length [ft/ln]	86.71	222.2	220.1	101.8	320.5	312.7	217.1	93.79	57.18	73.53	225.3	217.1

Movement, Approach, & Intersection Results

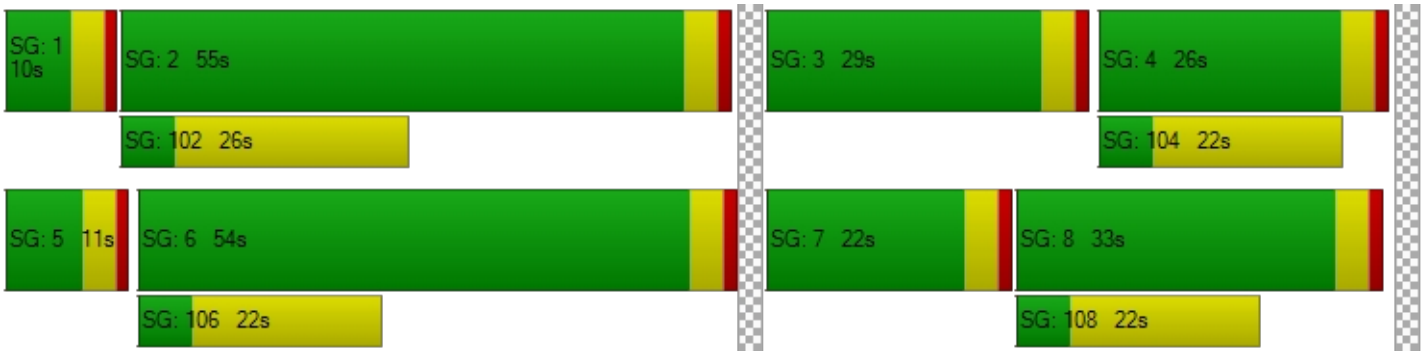
d_M, Delay for Movement [s/veh]	74.90	13.25	13.26	71.80	14.93	14.96	62.29	41.63	41.07	74.10	58.44	60.34
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	17.42			18.24			50.19			60.91		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	28.44											
Intersection LOS	C											
Intersection V/C	0.509											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.670	2.804	2.587	2.569
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	850	483	367
d_b, Bicycle Delay [s]	20.42	19.84	34.50	40.02
l_b,int, Bicycle LOS Score for Intersection	2.207	2.467	1.862	1.862
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	39.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	57	568	91	33	877	42	50	340	93	134	370	43
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	568	91	33	877	42	50	340	93	134	370	43
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	157	25	9	242	12	14	94	26	37	102	12
Total Analysis Volume [veh/h]	63	626	100	36	967	46	55	375	103	148	408	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	65	0	9	65	0	13	30	0	16	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	39	39	4	37	37	5	50	50	12	57	57
g / C, Green / Cycle	0.04	0.32	0.32	0.03	0.31	0.31	0.04	0.41	0.41	0.10	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.04	0.21	0.21	0.02	0.28	0.28	0.03	0.14	0.14	0.09	0.13	0.13
s, saturation flow rate [veh/h]	1714	1800	1715	1714	1800	1771	1714	1800	1669	1714	1800	1736
c, Capacity [veh/h]	71	582	555	51	561	552	72	744	690	171	849	819
d1, Uniform Delay [s]	57.21	34.59	34.61	57.72	39.71	39.72	56.92	23.90	23.96	53.19	19.20	19.22
k, delay calibration	0.11	0.11	0.11	0.11	0.14	0.14	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.98	1.17	1.23	16.80	7.68	7.80	15.66	1.19	1.31	11.99	0.79	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.64	0.64	0.71	0.91	0.91	0.77	0.33	0.34	0.86	0.27	0.27
d, Delay for Lane Group [s/veh]	84.19	35.76	35.84	74.52	47.40	47.51	72.57	25.09	25.27	65.18	19.99	20.04
Lane Group LOS	F	D	D	E	D	D	E	C	C	E	B	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.44	9.40	8.98	1.32	15.51	15.28	1.96	5.00	4.73	4.96	4.08	3.97
50th-Percentile Queue Length [ft/ln]	60.90	234.9	224.4	33.00	387.6	382.0	49.08	124.9	118.3	124.0	102.0	99.15
95th-Percentile Queue Length [veh/ln]	4.38	14.42	13.89	2.38	21.97	21.69	3.53	8.66	8.30	8.62	7.35	7.14
95th-Percentile Queue Length [ft/ln]	109.6	360.5	347.3	59.39	549.1	542.2	88.35	216.5	207.5	215.4	183.6	178.4

Movement, Approach, & Intersection Results

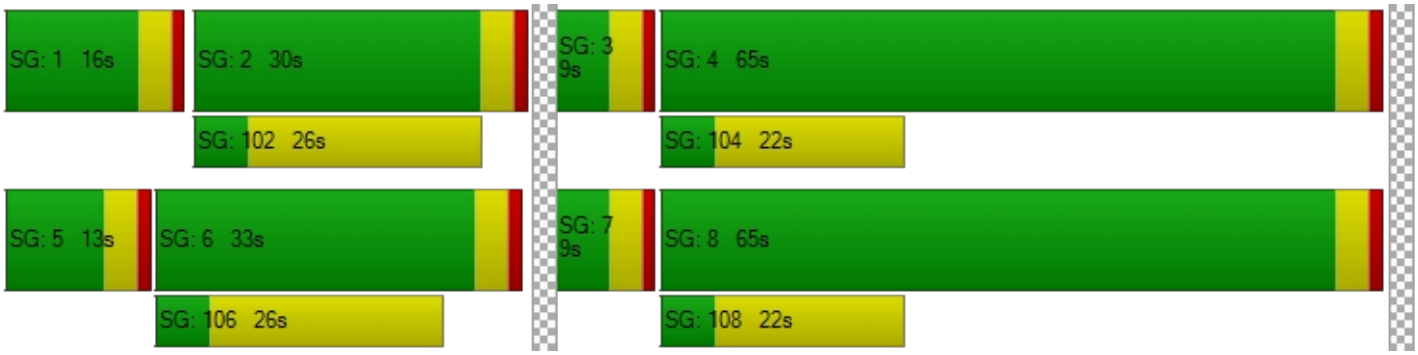
d_M, Delay for Movement [s/veh]	84.19	35.79	35.84	74.52	47.45	47.51	72.57	25.15	25.27	65.18	20.01	20.04
Movement LOS	F	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	39.66			48.38			30.07			31.10		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	39.28											
Intersection LOS	D											
Intersection V/C	0.546											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.794	2.757	2.520	2.532
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1017	433	483
d_b, Bicycle Delay [s]	14.50	14.50	36.82	34.50
l_b,int, Bicycle LOS Score for Intersection	2.211	2.425	1.999	2.057
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.429

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	20	645	75	23	871	122	103	90	11	74	78	31
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	645	75	23	871	122	103	90	11	74	78	31
Peak Hour Factor	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	174	20	6	235	33	28	24	3	20	21	8
Total Analysis Volume [veh/h]	22	697	81	25	942	132	111	97	12	80	84	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	53	0	9	53	0	32	26	0	32	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	84	84	3	84	84	10	10	10	7	8	8
g / C, Green / Cycle	0.02	0.70	0.70	0.02	0.70	0.70	0.08	0.08	0.08	0.06	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.01	0.22	0.22	0.01	0.30	0.30	0.06	0.05	0.01	0.05	0.05	0.02
s, saturation flow rate [veh/h]	1714	1800	1735	1714	1800	1724	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	37	1257	1212	41	1260	1207	138	152	129	103	115	98
d1, Uniform Delay [s]	58.16	7.00	7.00	58.04	7.75	7.76	54.22	53.18	50.71	55.57	55.14	53.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.84	0.66	0.68	14.15	1.10	1.15	10.26	4.42	0.31	11.53	8.52	2.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.31	0.32	0.62	0.44	0.44	0.80	0.64	0.09	0.77	0.73	0.35
d, Delay for Lane Group [s/veh]	71.99	7.66	7.68	72.19	8.85	8.90	64.48	57.60	51.02	67.10	63.66	55.87
Lane Group LOS	E	A	A	E	A	A	E	E	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.81	3.86	3.73	0.91	5.97	5.74	3.69	3.02	0.35	2.72	2.77	1.04
50th-Percentile Queue Length [ft/ln]	20.15	96.39	93.26	22.81	149.2	143.4	92.26	75.52	8.64	67.98	69.21	26.05
95th-Percentile Queue Length [veh/ln]	1.45	6.94	6.71	1.64	9.98	9.67	6.64	5.44	0.62	4.89	4.98	1.88
95th-Percentile Queue Length [ft/ln]	36.28	173.5	167.8	41.05	249.3	241.6	166.0	135.9	15.55	122.3	124.5	46.90

Movement, Approach, & Intersection Results

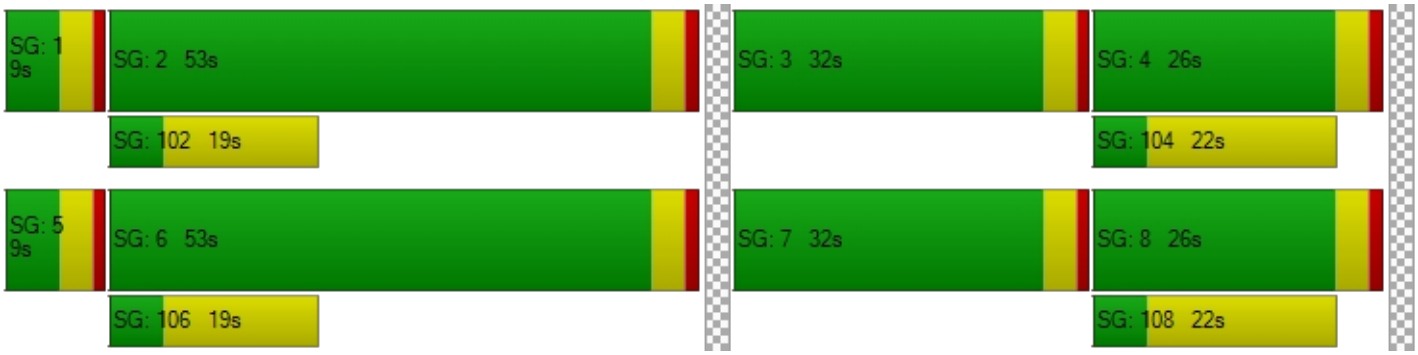
d_M, Delay for Movement [s/veh]	71.99	7.67	7.68	72.19	8.87	8.90	64.48	57.60	51.02	67.10	63.66	55.87
Movement LOS	E	A	A	E	A	A	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	9.44			10.32			60.71			63.71		
Approach LOS	A			B			E			E		
d_I, Intersection Delay [s/veh]	19.36											
Intersection LOS	B											
Intersection V/C	0.429											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.673	2.694	2.258	2.244
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	817	367	367
d_b, Bicycle Delay [s]	21.00	21.00	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	2.220	2.466	1.923	1.886
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	18.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.438

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	10	838	104	156	1207	9	0	1	0	214	0	109
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	838	104	156	1207	9	0	1	0	214	0	109
Peak Hour Factor	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	3	229	28	43	330	2	0	0	0	58	0	30
Total Analysis Volume [veh/h]	11	916	114	170	1319	10	0	1	0	234	0	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	19	0	30	39	0	9	33	0	38	62	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	71	71	14	84	84	0	0	19	19
g / C, Green / Cycle	0.01	0.59	0.59	0.12	0.70	0.70	0.00	0.00	0.15	0.16
(v / s)_i Volume / Saturation Flow Rate	0.01	0.20	0.20	0.10	0.27	0.01	0.00	0.00	0.14	0.08
s, saturation flow rate [veh/h]	1714	3427	1700	1714	4903	1530	1714	1800	1714	1530
c, Capacity [veh/h]	22	2036	1010	199	3418	1067	0	4	265	239
d1, Uniform Delay [s]	58.84	12.37	12.38	52.04	7.53	5.54	0.00	59.76	49.70	46.30
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.12	0.45	0.91	9.97	0.33	0.02	0.00	27.55	9.53	1.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.34	0.34	0.85	0.39	0.01	0.00	0.24	0.88	0.50
d, Delay for Lane Group [s/veh]	74.95	12.82	13.30	62.02	7.86	5.56	0.00	87.31	59.22	47.89
Lane Group LOS	E	B	B	E	A	A	A	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.43	4.70	4.82	5.57	4.43	0.08	0.00	0.06	7.56	3.36
50th-Percentile Queue Length [ft/ln]	10.79	117.4	120.3	139.1	110.7	1.93	0.00	1.55	188.96	84.11
95th-Percentile Queue Length [veh/ln]	0.78	8.25	8.41	9.44	7.88	0.14	0.00	0.11	12.07	6.06
95th-Percentile Queue Length [ft/ln]	19.42	206.2	210.3	235.9	197.0	3.47	0.00	2.80	301.68	151.39

Movement, Approach, & Intersection Results

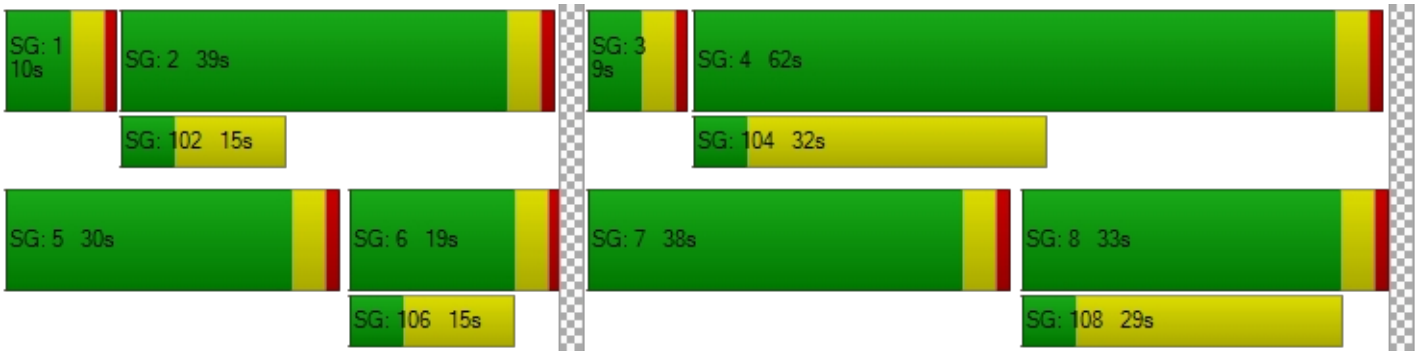
d_M, Delay for Movement [s/veh]	74.95	12.94	13.30	62.02	7.86	5.56	0.00	87.31	87.31	59.22	47.89	47.89
Movement LOS	E	B	B	E	A	A	A	F	F	E	D	D
d_A, Approach Delay [s/veh]	13.63			13.99			87.31			55.40		
Approach LOS	B			B			F			E		
d_I, Intersection Delay [s/veh]	18.94											
Intersection LOS	B											
Intersection V/C	0.438											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.970	3.229	1.963	2.163
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	583	483	967
d_b, Bicycle Delay [s]	45.94	30.10	34.50	16.02
l_b,int, Bicycle LOS Score for Intersection	2.132	2.384	1.561	2.142
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	15.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.569

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	17	193	42	6	194	82	55	115	18	31	173	39
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	193	42	6	194	82	55	115	18	31	173	39
Peak Hour Factor	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	57	13	2	58	24	16	34	5	9	51	12
Total Analysis Volume [veh/h]	20	230	50	7	231	98	65	137	21	37	206	46
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	576	590	545	565
Degree of Utilization, x	0.52	0.57	0.41	0.51

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.00	3.57	1.98	2.90
95th-Percentile Queue Length [ft]	75.09	89.13	49.58	72.54
Approach Delay [s/veh]	15.86	16.85	14.12	15.87
Approach LOS	C	C	B	C
Intersection Delay [s/veh]	15.82			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	14.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.501

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	4	43	60	69	61	1	41	86	14	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	43	60	69	61	1	41	86	14	9
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	11	16	18	16	0	11	23	4	2
Total Analysis Volume [veh/h]	4	45	63	72	64	1	43	90	15	9
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	538	504
Degree of Utilization, x	0.46	0.31

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.41	1.33
95th-Percentile Queue Length [ft]	60.16	33.24
Approach Delay [s/veh]	15.29	13.38
Approach LOS	C	B
Intersection Delay [s/veh]	14.73	
Intersection LOS	B	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	46	6	95	57	0	27	55	146	14	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	6	95	57	0	27	55	146	14	4
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	2	25	15	0	7	14	38	4	1
Total Analysis Volume [veh/h]	48	6	100	60	0	28	58	153	15	4
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	517	514
Degree of Utilization, x	0.41	0.50

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.02	2.77
95th-Percentile Queue Length [ft]	50.39	69.35
Approach Delay [s/veh]	14.82	16.81
Approach LOS	B	C
Intersection Delay [s/veh]	14.73	
Intersection LOS	B	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	2	13	66	23	1	13	45	123	26	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	13	66	23	1	13	45	123	26	6
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	3	17	6	0	3	12	32	7	2
Total Analysis Volume [veh/h]	2	14	69	24	1	14	47	129	27	6
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	502	492	558
Degree of Utilization, x	0.22	0.39	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.83	1.80	0.19
95th-Percentile Queue Length [ft]	20.73	45.03	4.70
Approach Delay [s/veh]	12.19	13.81	
Approach LOS	B	B	
Intersection Delay [s/veh]	14.73		
Intersection LOS	B		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	29.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.482

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	591	196	103	849	50	80	110	135	123	108	67
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	591	196	103	849	50	80	110	135	123	108	67
Peak Hour Factor	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	149	49	26	214	13	20	28	34	31	27	17
Total Analysis Volume [veh/h]	114	596	198	104	856	50	81	111	136	124	109	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	56	0	16	55	0	22	26	0	22	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	72	72	9	71	71	7	13	13	11	16	16
g / C, Green / Cycle	0.08	0.60	0.60	0.07	0.59	0.59	0.06	0.11	0.11	0.09	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.23	0.06	0.25	0.25	0.05	0.03	0.09	0.07	0.06	0.04
s, saturation flow rate [veh/h]	1714	1800	1648	1714	1800	1765	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	139	1072	981	128	1060	1040	104	372	166	151	244	208
d1, Uniform Delay [s]	54.28	12.76	12.76	54.69	13.58	13.58	55.55	49.29	52.34	53.79	47.70	46.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.23	1.05	1.15	11.56	1.28	1.31	11.67	0.44	9.52	10.47	1.28	0.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.39	0.39	0.81	0.43	0.43	0.78	0.30	0.82	0.82	0.45	0.33
d, Delay for Lane Group [s/veh]	65.51	13.81	13.91	66.25	14.86	14.89	67.22	49.73	61.87	64.26	48.98	47.81
Lane Group LOS	E	B	B	E	B	B	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.82	6.01	5.53	3.51	6.99	6.86	2.76	1.56	4.45	4.12	3.09	1.90
50th-Percentile Queue Length [ft/ln]	95.57	150.1	138.2	87.68	174.8	171.6	68.89	39.07	111.1	102.9	77.37	47.44
95th-Percentile Queue Length [veh/ln]	6.88	10.03	9.39	6.31	11.33	11.16	4.96	2.81	7.90	7.41	5.57	3.42
95th-Percentile Queue Length [ft/ln]	172.0	250.6	234.6	157.8	283.2	279.0	124.0	70.32	197.6	185.3	139.2	85.39

Movement, Approach, & Intersection Results

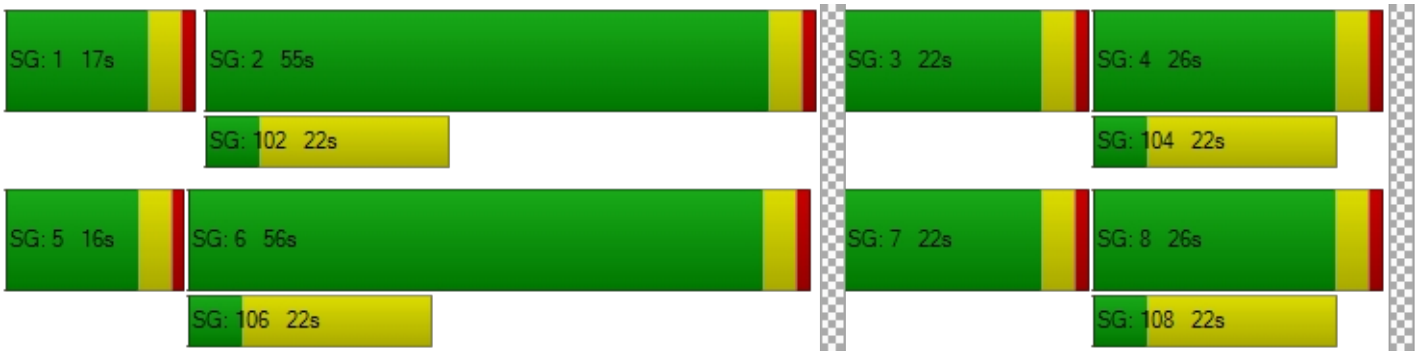
d_M, Delay for Movement [s/veh]	65.51	13.84	13.91	66.25	14.88	14.89	67.22	49.73	61.87	64.26	48.98	47.81
Movement LOS	E	B	B	E	B	B	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	20.34			20.17			59.08			55.01		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	29.36											
Intersection LOS	C											
Intersection V/C	0.482											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.710	2.657	2.432	2.584
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	850	367	367
d_b, Bicycle Delay [s]	19.27	19.84	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	2.309	2.393	1.830	2.056
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.503

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	31	725	49	22	1043	36	57	200	93	134	203	50
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	725	49	22	1043	36	57	200	93	134	203	50
Peak Hour Factor	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	188	13	6	270	9	15	52	24	35	53	13
Total Analysis Volume [veh/h]	32	752	51	23	1082	37	59	207	96	139	211	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	36	0	9	36	0	40	33	0	42	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	76	76	3	76	76	5	13	13	12	20	20
g / C, Green / Cycle	0.03	0.63	0.63	0.02	0.63	0.63	0.05	0.11	0.11	0.10	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.02	0.23	0.23	0.01	0.31	0.31	0.03	0.09	0.09	0.08	0.07	0.08
s, saturation flow rate [veh/h]	1714	1800	1760	1714	1800	1779	1714	1800	1613	1714	1800	1680
c, Capacity [veh/h]	47	1141	1116	39	1132	1119	79	201	180	169	296	276
d1, Uniform Delay [s]	57.83	10.38	10.39	58.11	12.02	12.02	56.56	51.86	52.07	53.05	45.28	45.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.85	0.87	0.89	13.91	1.56	1.58	13.16	6.41	8.49	9.51	1.09	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.36	0.36	0.60	0.50	0.50	0.75	0.78	0.81	0.82	0.45	0.47
d, Delay for Lane Group [s/veh]	73.68	11.25	11.27	72.03	13.58	13.60	69.71	58.26	60.55	62.56	46.38	46.59
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.17	5.15	5.04	0.84	8.23	8.15	2.06	4.94	4.73	4.56	3.72	3.57
50th-Percentile Queue Length [ft/ln]	29.26	128.6	126.0	21.03	205.8	203.6	51.42	123.6	118.2	113.9	92.99	89.19
95th-Percentile Queue Length [veh/ln]	2.11	8.86	8.72	1.51	12.94	12.83	3.70	8.59	8.29	8.06	6.69	6.42
95th-Percentile Queue Length [ft/ln]	52.66	221.6	218.0	37.86	323.4	320.7	92.55	214.7	207.3	201.4	167.3	160.5

Movement, Approach, & Intersection Results

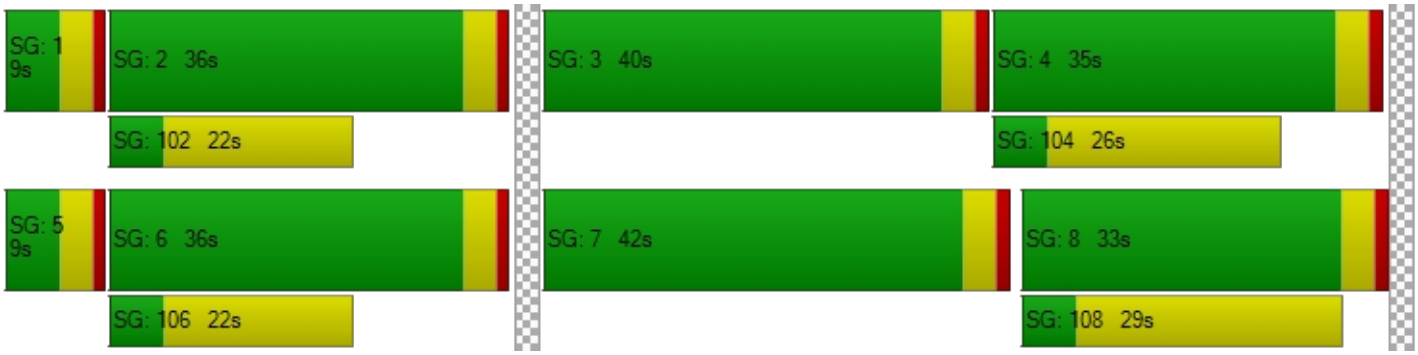
d_M, Delay for Movement [s/veh]	73.68	11.26	11.27	72.03	13.59	13.60	69.71	58.82	60.55	62.56	46.45	46.59
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	13.66			14.77			61.06			52.04		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	26.01											
Intersection LOS	C											
Intersection V/C	0.503											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.909	2.794	2.440	2.448
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	533	483	517
d_b, Bicycle Delay [s]	32.27	32.27	34.50	33.00
l_b,int, Bicycle LOS Score for Intersection	2.248	2.502	1.858	1.891
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	42.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	86	48	77	136	246	885	267	400	59	134	1190	220
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	48	77	136	246	885	267	400	59	134	1190	220
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	13	21	37	68	244	74	110	16	37	328	61
Total Analysis Volume [veh/h]	95	53	85	150	271	976	294	441	65	148	1312	243
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	43	0	16	47	0	16	47	0	14	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	43	43	12	47	47	47	12	41	41	7	37	37
g / C, Green / Cycle	0.07	0.36	0.36	0.10	0.39	0.39	0.39	0.10	0.34	0.34	0.06	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.06	0.02	0.06	0.09	0.15	0.32	0.32	0.09	0.09	0.04	0.04	0.27	0.16
s, saturation flow rate [veh/h]	1714	3427	1530	171	180	153	153	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	114	1237	552	171	710	603	603	333	1686	526	206	1499	468
d1, Uniform Delay [s]	55.33	24.88	25.94	53.2	25.9	32.3	32.3	53.31	28.39	26.98	55.26	39.50	34.39
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.13	0.07	0.59	12.9	1.56	11.1	11.1	7.70	0.08	0.10	4.66	1.77	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.04	0.15	0.88	0.38	0.81	0.81	0.88	0.26	0.12	0.72	0.88	0.52
d, Delay for Lane Group [s/veh]	69.47	24.95	26.53	66.1	27.4	43.4	43.4	61.01	28.47	27.09	59.92	41.27	35.29
Lane Group LOS	E	C	C	E	C	D	D	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.29	0.51	1.75	5.07	5.82	14.2	14.2	4.73	3.08	1.30	2.33	12.35	5.97
50th-Percentile Queue Length [ft/ln]	82.19	12.66	43.67	126.	145.	356.	356.	118.2	76.98	32.60	58.33	308.8	149.3
95th-Percentile Queue Length [veh/ln]	5.92	0.91	3.14	8.77	9.78	20.4	20.4	8.29	5.54	2.35	4.20	18.12	9.98
95th-Percentile Queue Length [ft/ln]	147.9	22.79	78.61	219.	244.	511.	511.	207.3	138.5	58.68	104.9	452.9	249.5

Movement, Approach, & Intersection Results

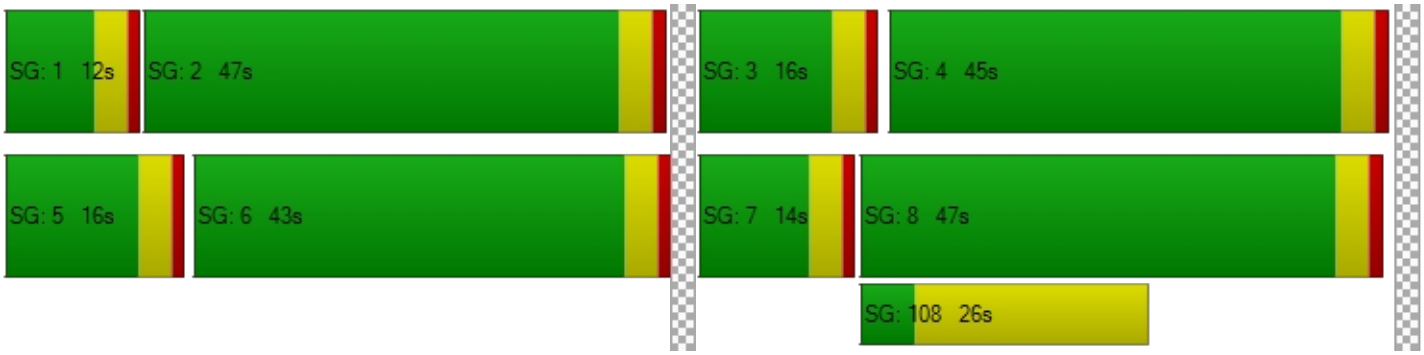
d_M, Delay for Movement [s/veh]	69.47	24.95	26.53	66.18	27.46	43.48	61.01	28.47	27.09	59.92	41.27	35.29
Movement LOS	E	C	C	E	C	D	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	43.68			42.81			40.32			42.03		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.06											
Intersection LOS	D											
Intersection V/C	0.730											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.585	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	717	717	683
d_b, Bicycle Delay [s]	27.34	24.70	24.70	26.00
l_b,int, Bicycle LOS Score for Intersection	1.752	2.712	2.000	2.496
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	43.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.626

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	44	25	34	338	49	955	255	331	25	30	552	95
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	25	34	338	49	955	255	331	25	30	552	95
Peak Hour Factor	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	12	7	9	91	13	256	68	89	7	8	148	25
Total Analysis Volume [veh/h]	47	27	36	363	53	1025	274	355	27	32	592	102
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	48	0	9	23	0	16	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	5	44	44	44	12	51	51	3	42	42
g / C, Green / Cycle	0.04	0.04	0.04	0.37	0.37	0.37	0.10	0.43	0.43	0.03	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.02	0.12	0.12	0.38	0.08	0.07	0.02	0.02	0.14	0.14
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1735	2708	3329	4903	1530	1714	3427	1669
c, Capacity [veh/h]	76	80	68	629	636	993	340	2099	655	47	1211	590
d1, Uniform Delay [s]	56.32	55.61	56.09	27.39	27.34	38.00	52.71	21.16	19.98	57.83	29.01	29.10
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.81	2.44	6.21	0.31	0.30	22.57	4.52	0.17	0.12	15.79	0.92	1.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.34	0.53	0.33	0.33	1.03	0.81	0.17	0.04	0.68	0.38	0.39
d, Delay for Lane Group [s/veh]	64.13	58.05	62.31	27.70	27.64	60.57	57.24	21.34	20.10	73.61	29.93	31.04
Lane Group LOS	E	E	E	C	C	F	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.57	0.85	1.19	4.37	4.36	17.40	4.25	2.10	0.47	1.17	5.16	5.30
50th-Percentile Queue Length [ft/ln]	39.14	21.21	29.64	109.2	109.0	435.0	106.2	52.43	11.65	29.24	129.1	132.6
95th-Percentile Queue Length [veh/ln]	2.82	1.53	2.13	7.80	7.78	24.77	7.63	3.78	0.84	2.11	8.89	9.08
95th-Percentile Queue Length [ft/ln]	70.45	38.18	53.35	194.8	194.6	619.2	190.7	94.38	20.97	52.63	222.2	227.0

Movement, Approach, & Intersection Results

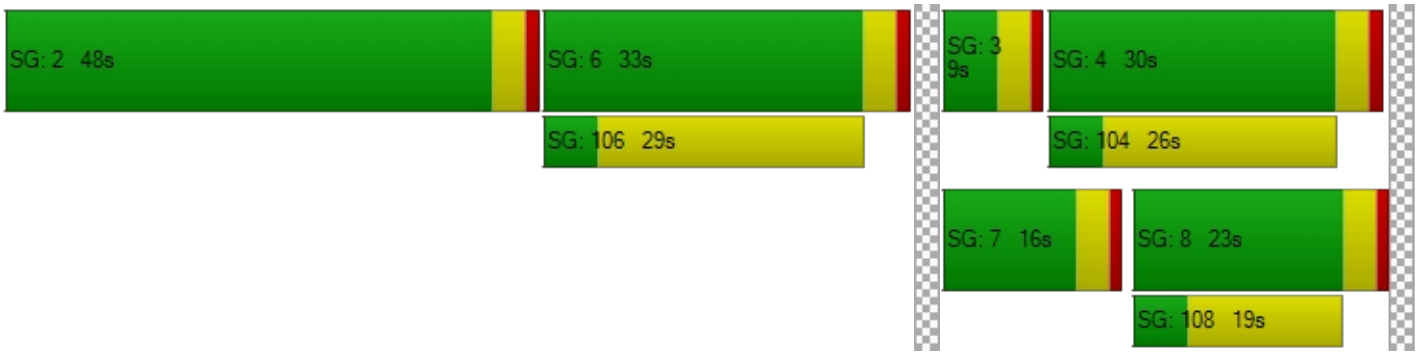
d_M, Delay for Movement [s/veh]	64.13	58.05	62.31	27.67	27.64	60.57	57.24	21.34	20.10	73.61	30.17	31.04
Movement LOS	E	E	E	C	C	F	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	62.04			51.07			36.28			32.21		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	43.51											
Intersection LOS	D											
Intersection V/C	0.626											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.200	2.768	0.000	2.815
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	733	317	433
d_b, Bicycle Delay [s]	34.50	24.07	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.650	3.937	1.920	1.959
Bicycle LOS	A	D	A	A

Sequence

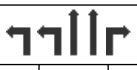
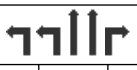
Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.471

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	228	643	85	59	766	139	149	155	92	143	309	42
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	228	643	85	59	766	139	149	155	92	143	309	42
Peak Hour Factor	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	61	173	23	16	207	37	40	42	25	39	83	11
Total Analysis Volume [veh/h]	246	694	92	64	826	150	161	167	99	154	333	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Unsig	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	61	0	10	52	0	14	36	0	13	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	76	4	70	70	8	16	16	7	15	15
g / C, Green / Cycle	0.09	0.64	0.04	0.58	0.58	0.06	0.13	0.13	0.06	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.07	0.20	0.02	0.24	0.10	0.05	0.05	0.06	0.05	0.11	0.11
s, saturation flow rate [veh/h]	3329	3427	3329	3427	1530	3329	3427	1530	3329	1800	1726
c, Capacity [veh/h]	305	2178	123	1990	889	216	452	202	208	233	223
d1, Uniform Delay [s]	53.45	9.99	56.74	13.89	11.69	55.14	47.55	48.36	55.30	50.92	50.97
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.99	0.39	3.38	0.64	0.41	5.07	0.50	1.85	5.14	7.23	7.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.32	0.52	0.41	0.17	0.75	0.37	0.49	0.74	0.83	0.83
d, Delay for Lane Group [s/veh]	58.44	10.38	60.12	14.53	12.10	60.20	48.05	50.20	60.44	58.15	58.81
Lane Group LOS	E	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.85	4.14	1.01	6.20	1.94	2.55	2.32	2.86	2.44	6.09	5.93
50th-Percentile Queue Length [ft/ln]	96.27	103.42	25.28	154.9	48.53	63.63	58.01	71.59	60.97	152.3	148.3
95th-Percentile Queue Length [veh/ln]	6.93	7.45	1.82	10.28	3.49	4.58	4.18	5.15	4.39	10.14	9.93
95th-Percentile Queue Length [ft/ln]	173.28	186.15	45.50	256.9	87.35	114.5	104.4	128.8	109.7	253.5	248.2

Movement, Approach, & Intersection Results

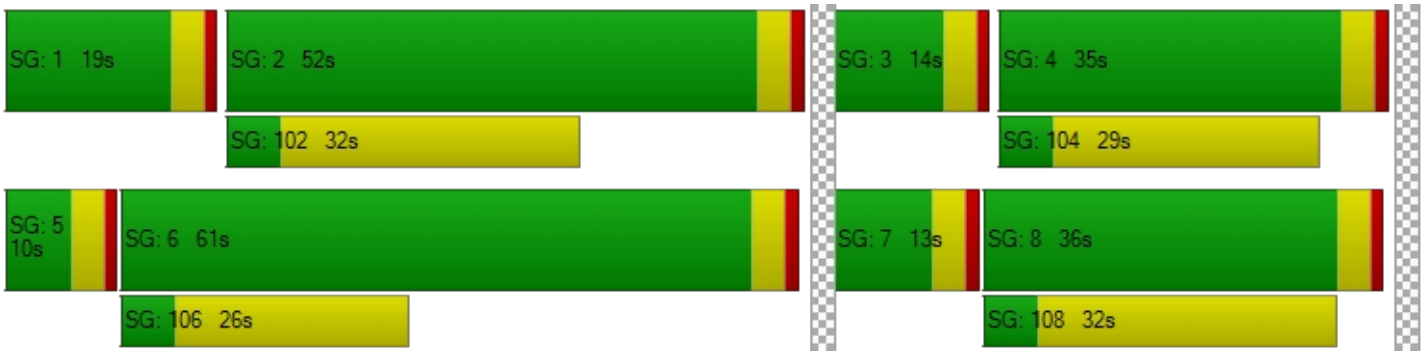
d_M, Delay for Movement [s/veh]	58.44	10.38	0.00	60.12	14.53	12.10	60.20	48.05	50.20	60.44	58.43	58.81
Movement LOS	E	B		E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	22.96			16.99			53.13			59.04		
Approach LOS	C			B			D			E		
d_I, Intersection Delay [s/veh]	31.76											
Intersection LOS	C											
Intersection V/C	0.471											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.987	2.879	2.882	2.592
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	800	533	517
d_b, Bicycle Delay [s]	16.54	21.60	32.27	33.00
l_b,int, Bicycle LOS Score for Intersection	2.335	2.418	1.912	1.999
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	31.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.399

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	46	3	220	4	8	0	1	182	33	263	473	2
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	3	220	4	8	0	1	182	33	263	473	2
Peak Hour Factor	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	1	61	1	2	0	0	51	9	73	132	1
Total Analysis Volume [veh/h]	51	3	246	4	9	0	1	203	37	294	528	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	33	0	9	33	0	63	26	0	52	15	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	28	22	28	0	58	58	23	80	80
g / C, Green / Cycle	0.23	0.23	0.18	0.23	0.00	0.48	0.48	0.19	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.16	0.01	0.00	0.06	0.02	0.17	0.15	0.15
s, saturation flow rate [veh/h]	1428	1519	1530	1547	1714	3427	1530	1714	1800	1798
c, Capacity [veh/h]	351	464	274	424	4	1642	733	326	1201	1199
d1, Uniform Delay [s]	36.16	36.19	48.15	35.78	59.76	17.30	16.67	47.49	7.80	7.80
k, delay calibration	0.11	0.11	0.16	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	0.06	14.23	0.03	30.05	0.15	0.13	9.08	0.42	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.07	0.90	0.03	0.25	0.12	0.05	0.90	0.22	0.22
d, Delay for Lane Group [s/veh]	36.24	36.25	62.38	35.81	89.80	17.45	16.80	56.58	8.22	8.22
Lane Group LOS	D	D	E	D	F	B	B	E	A	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.54	0.73	8.26	0.30	0.06	1.60	0.57	9.38	2.69	2.68
50th-Percentile Queue Length [ft/ln]	13.39	18.30	206.4	7.54	1.59	39.89	14.37	234.4	67.17	67.09
95th-Percentile Queue Length [veh/ln]	0.96	1.32	12.97	0.54	0.11	2.87	1.03	14.40	4.84	4.83
95th-Percentile Queue Length [ft/ln]	24.11	32.94	324.2	13.57	2.86	71.80	25.87	360.0	120.9	120.7

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.24	36.25	62.38	35.81	35.81	35.81	89.80	17.45	16.80	56.58	8.22	8.22
Movement LOS	D	D	E	D	D	D	F	B	B	E	A	A
d_A, Approach Delay [s/veh]	57.68			35.81			17.65			25.47		
Approach LOS	E			D			B			C		
d_I, Intersection Delay [s/veh]	31.21											
Intersection LOS	C											
Intersection V/C	0.399											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.440	0.000	2.800	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	633	367	183
d_b, Bicycle Delay [s]	28.02	28.02	40.02	49.50
l_b,int, Bicycle LOS Score for Intersection	2.055	1.581	1.758	2.239
Bicycle LOS	B	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	3	0	397	746	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	3	0	397	746	1
Peak Hour Factor	0.9060	0.9060	1.0000	0.9060	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	0	110	206	0
Total Analysis Volume [veh/h]	0	3	0	438	823	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	20.79	11.08	9.49	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.38	0.38	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.08		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.03					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	111	854	95	88	904	383	181	80	118	143	332	79
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	854	95	88	904	383	181	80	118	143	332	79
Peak Hour Factor	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	30	233	26	24	247	105	49	22	32	39	91	22
Total Analysis Volume [veh/h]	121	933	104	96	988	419	198	87	129	156	363	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	36	0	13	34	34	21	40	0	31	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	60	60	8	59	80	17	22	13	18	18
g / C, Green / Cycle	0.08	0.50	0.50	0.07	0.49	0.66	0.14	0.19	0.11	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.20	0.20	0.06	0.20	0.27	0.12	0.03	0.09	0.13	0.13
s, saturation flow rate [veh/h]	1714	3427	1709	1714	4903	1530	1714	3427	1714	1800	1683
c, Capacity [veh/h]	145	1724	860	118	2389	1013	243	637	186	275	257
d1, Uniform Delay [s]	54.07	18.56	18.57	55.08	19.75	9.42	49.98	40.80	52.45	49.40	49.46
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.50	0.70	1.40	12.29	0.53	1.25	6.55	0.10	9.55	6.76	7.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.40	0.40	0.81	0.41	0.41	0.82	0.14	0.84	0.84	0.85
d, Delay for Lane Group [s/veh]	65.57	19.26	19.97	67.37	20.28	10.67	56.53	40.89	62.00	56.15	57.02
Lane Group LOS	E	B	B	E	C	B	E	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.06	6.08	6.25	3.27	5.97	5.17	6.20	1.09	5.10	7.24	6.90
50th-Percentile Queue Length [ft/ln]	101.5	152.0	156.2	81.67	149.1	129.1	155.03	27.28	127.5	181.0	172.4
95th-Percentile Queue Length [veh/ln]	7.31	10.12	10.35	5.88	9.97	8.89	10.29	1.96	8.81	11.66	11.20
95th-Percentile Queue Length [ft/ln]	182.7	253.1	258.6	147.0	249.2	222.3	257.13	49.11	220.1	291.4	280.0

Movement, Approach, & Intersection Results

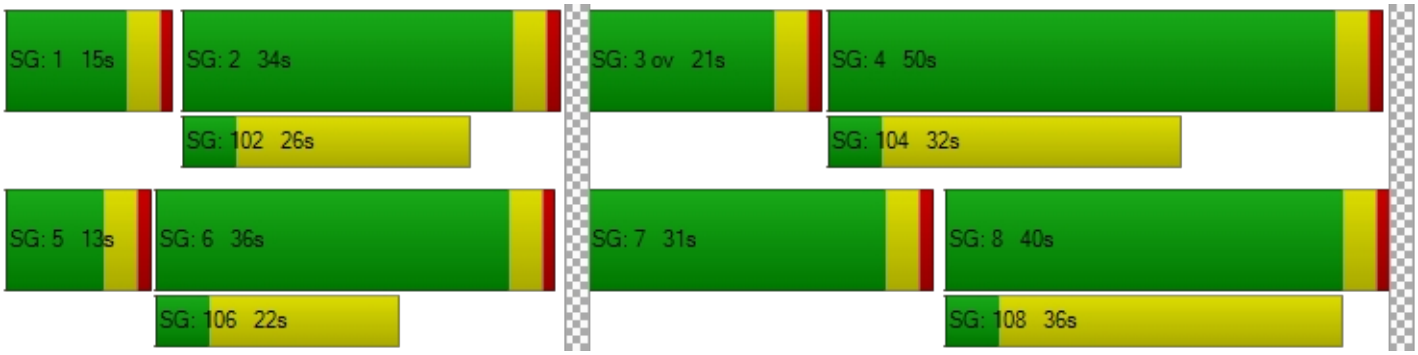
d_M, Delay for Movement [s/veh]	65.57	19.44	19.97	67.37	20.28	10.67	56.53	40.89	0.00	62.00	56.47	57.02
Movement LOS	E	B	B	E	C	B	E	D		E	E	E
d_A, Approach Delay [s/veh]	24.31			20.61			51.76			57.98		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	30.68											
Intersection LOS	C											
Intersection V/C	0.546											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.114	3.072	2.661	2.489
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	500	600	767
d_b, Bicycle Delay [s]	32.27	33.75	29.40	22.82
l_b,int, Bicycle LOS Score for Intersection	2.197	2.386	1.795	2.059
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	33.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.470

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	29	126	6	43	129	75	30	216	16	7	341	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	126	6	43	129	75	30	216	16	7	341	66
Peak Hour Factor	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	41	2	14	42	24	10	70	5	2	111	21
Total Analysis Volume [veh/h]	38	164	8	56	168	98	39	281	21	9	444	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	23	0	0	23	0	9	88	0	9	88	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	72	72	4	34	1	32	32
g / C, Green / Cycle	0.60	0.60	0.03	0.29	0.01	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.13	0.20	0.02	0.17	0.01	0.25	0.06
s, saturation flow rate [veh/h]	1637	1608	1714	1778	1714	1800	1530
c, Capacity [veh/h]	1020	1003	52	511	19	482	410
d1, Uniform Delay [s]	10.79	11.73	57.71	36.73	58.96	42.68	34.07
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.46	0.85	18.79	1.10	16.39	7.69	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.32	0.75	0.59	0.47	0.92	0.21
d, Delay for Lane Group [s/veh]	11.25	12.58	76.50	37.82	75.35	50.37	34.32
Lane Group LOS	B	B	E	D	E	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.60	4.35	1.45	7.75	0.36	13.72	1.99
50th-Percentile Queue Length [ft/ln]	64.98	108.87	36.19	193.84	9.00	343.0	49.77
95th-Percentile Queue Length [veh/ln]	4.68	7.78	2.61	12.32	0.65	19.80	3.58
95th-Percentile Queue Length [ft/ln]	116.97	194.42	65.14	308.00	16.21	494.8	89.58

Movement, Approach, & Intersection Results

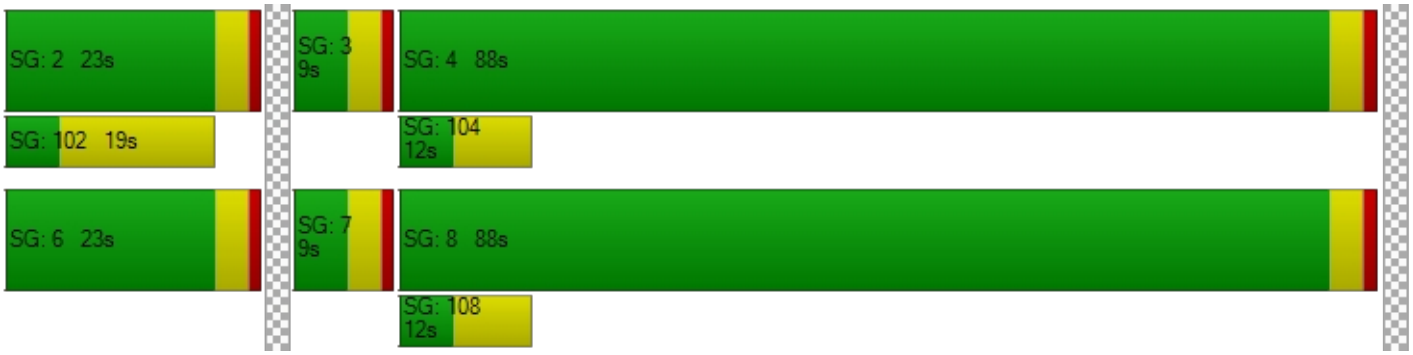
d_M, Delay for Movement [s/veh]	11.25	11.25	11.25	12.58	12.58	12.58	76.50	37.82	37.82	75.35	50.37	34.32
Movement LOS	B	B	B	B	B	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	11.25			12.58			42.25			48.23		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	33.16											
Intersection LOS	C											
Intersection V/C	0.470											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	1.929	2.028	2.425	0.000
Crosswalk LOS	A	B	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	1400	1400
d_b, Bicycle Delay [s]	42.50	42.50	5.40	5.40
l_b,int, Bicycle LOS Score for Intersection	1.906	2.091	2.122	2.449
Bicycle LOS	A	B	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.311

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	1	21	14	9	8	0	42	34	21	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	21	14	9	8	0	42	34	21	15
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	7	4	3	3	0	13	11	7	5
Total Analysis Volume [veh/h]	1	27	18	11	10	0	54	43	27	19
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	34	0	0	0	0	34	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	13	13
g / C, Green / Cycle	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09
s, saturation flow rate [veh/h]	1388	1590
c, Capacity [veh/h]	189	209
d1, Uniform Delay [s]	50.08	52.64
k, delay calibration	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	1.13	3.92
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.68
d, Delay for Lane Group [s/veh]	51.20	56.56
Lane Group LOS	D	E
Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	1.95	4.46
50th-Percentile Queue Length [ft/ln]	48.63	111.38
95th-Percentile Queue Length [veh/ln]	3.50	7.92
95th-Percentile Queue Length [ft/ln]	87.53	197.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.20	51.20	51.20	51.20	51.20	56.56	56.56	56.56	56.56	56.56
Movement LOS	D	D	D	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	51.20					56.56				
Approach LOS	D					E				
d_I, Intersection Delay [s/veh]	31.84									
Intersection LOS	C									
Intersection V/C	0.311									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.843	1.905
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	500
d_b, Bicycle Delay [s]	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	1.609	1.675
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	9	42	159	11	5	1	9	169	11	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	42	159	11	5	1	9	169	11	6
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	13	51	4	2	0	3	54	4	2
Total Analysis Volume [veh/h]	11	54	203	14	6	1	11	215	14	8
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	47	0	0	9	0	47	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	82	76	82	74	74
g / C, Green / Cycle	0.68	0.64	0.68	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.05	0.13	0.01	0.12	0.01
s, saturation flow rate [veh/h]	1205	1772	1200	1800	1530
c, Capacity [veh/h]	853	1128	849	1104	938
d1, Uniform Delay [s]	6.41	9.08	6.21	10.19	9.11
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	0.39	0.01	0.39	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.20	0.01	0.19	0.02
d, Delay for Lane Group [s/veh]	6.59	9.47	6.22	10.59	9.15
Lane Group LOS	A	A	A	B	A
Critical Lane Group	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.56	2.48	0.09	2.57	0.24
50th-Percentile Queue Length [ft/ln]	14.00	62.05	2.36	64.17	5.89
95th-Percentile Queue Length [veh/ln]	1.01	4.47	0.17	4.62	0.42
95th-Percentile Queue Length [ft/ln]	25.19	111.68	4.24	115.51	10.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.59	6.59	9.47	9.47	9.47	6.22	6.22	10.59	9.15	9.15
Movement LOS	A	A	A	A	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	8.82					10.25				
Approach LOS	A					B				
d_I, Intersection Delay [s/veh]	31.84									
Intersection LOS	C									
Intersection V/C	0.311									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.224	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	717
d_b, Bicycle Delay [s]	24.70	24.70
l_b,int, Bicycle LOS Score for Intersection	1.936	1.939
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	10	36	12	1	3	14	94	78	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	10	36	12	1	3	14	94	78	2
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	11	4	0	1	4	30	25	1
Total Analysis Volume [veh/h]	0	13	46	15	1	4	18	120	99	3
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	30	0	0	0	0	30	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13
g / C, Green / Cycle	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.08	0.09	0.07
s, saturation flow rate [veh/h]	922	1623	1530
c, Capacity [veh/h]	138	215	170
d1, Uniform Delay [s]	49.71	51.66	50.79
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	3.33	3.44	3.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.66	0.60
d, Delay for Lane Group [s/veh]	53.04	55.10	54.16
Lane Group LOS	D	E	D
Critical Lane Group	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.22	4.36	3.08
50th-Percentile Queue Length [ft/ln]	55.58	108.89	77.03
95th-Percentile Queue Length [veh/ln]	4.00	7.78	5.55
95th-Percentile Queue Length [ft/ln]	100.05	194.45	138.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.04	53.04	53.04	53.04	53.04	55.10	55.10	55.10	54.16	54.16
Movement LOS	D	D	D	D	D	E	E	E	D	D
d_A, Approach Delay [s/veh]	53.04					54.71				
Approach LOS	D					D				
d_I, Intersection Delay [s/veh]	31.84									
Intersection LOS	C									
Intersection V/C	0.311									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.898	2.208
Crosswalk LOS	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433
d_b, Bicycle Delay [s]	36.82	36.82
l_b,int, Bicycle LOS Score for Intersection	1.637	1.951
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	116	589	159	100	785	63	135	118	67	107	130	261
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	589	159	100	785	63	135	118	67	107	130	261
Peak Hour Factor	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	31	158	43	27	211	17	36	32	18	29	35	70
Total Analysis Volume [veh/h]	124	632	171	107	842	68	145	127	72	115	139	280
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	36	0	20	38	0	16	39	0	25	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	58	58	9	57	57	12	26	26	10	24	24
g / C, Green / Cycle	0.09	0.49	0.49	0.08	0.48	0.48	0.10	0.22	0.22	0.08	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.23	0.06	0.26	0.26	0.08	0.06	0.06	0.07	0.08	0.18
s, saturation flow rate [veh/h]	1714	1800	1670	1714	1800	1753	1714	1800	1589	1714	1800	1530
c, Capacity [veh/h]	150	875	811	132	857	834	170	397	350	142	368	313
d1, Uniform Delay [s]	53.88	20.63	20.63	54.48	22.15	22.15	53.19	38.69	38.81	54.07	41.17	46.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.99	1.86	2.00	10.94	2.42	2.48	11.36	0.34	0.42	10.26	0.64	8.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.48	0.48	0.81	0.54	0.54	0.85	0.26	0.27	0.81	0.38	0.90
d, Delay for Lane Group [s/veh]	64.87	22.48	22.63	65.42	24.57	24.63	64.55	39.03	39.23	64.33	41.81	55.48
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.14	8.16	7.60	3.58	9.60	9.37	4.84	2.57	2.40	3.82	3.63	8.89
50th-Percentile Queue Length [ft/ln]	103.4	204.0	190.1	89.62	240.0	234.2	120.9	64.17	59.89	95.50	90.70	222.1
95th-Percentile Queue Length [veh/ln]	7.45	12.85	12.13	6.45	14.68	14.39	8.44	4.62	4.31	6.88	6.53	13.77
95th-Percentile Queue Length [ft/ln]	186.2	321.1	303.1	161.3	367.1	359.7	211.0	115.5	107.8	171.8	163.2	344.3

Movement, Approach, & Intersection Results

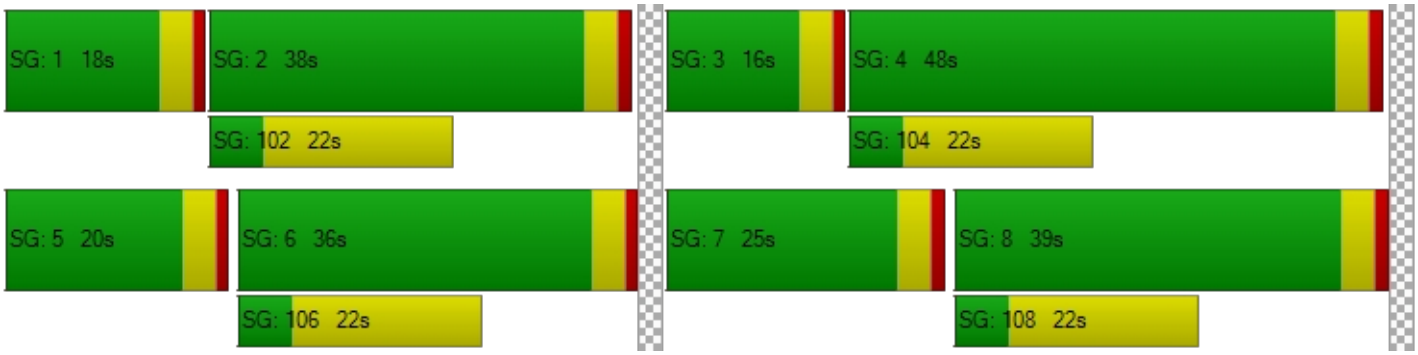
d_M, Delay for Movement [s/veh]	64.87	22.53	22.63	65.42	24.60	24.63	64.55	39.07	39.23	64.33	41.81	55.48
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	28.21			28.90			49.85			53.83		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.94											
Intersection LOS	D											
Intersection V/C	0.596											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.697	2.720	2.447	2.621
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	567	583	733
d_b, Bicycle Delay [s]	32.27	30.82	30.10	24.07
l_b,int, Bicycle LOS Score for Intersection	2.324	2.399	1.843	2.000
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	28.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.624

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	731	162	10	1158	67	27	177	83	258	306	38
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	731	162	10	1158	67	27	177	83	258	306	38
Peak Hour Factor	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	192	42	3	304	18	7	46	22	68	80	10
Total Analysis Volume [veh/h]	51	767	170	10	1215	70	28	186	87	271	321	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	26	0	9	26	0	32	36	0	49	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	69	69	1	66	66	3	12	12	21	30	30
g / C, Green / Cycle	0.04	0.58	0.58	0.01	0.55	0.55	0.03	0.10	0.10	0.18	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.03	0.22	0.11	0.01	0.35	0.05	0.02	0.08	0.08	0.16	0.10	0.10
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1613	1714	1800	1731
c, Capacity [veh/h]	65	1970	880	21	1882	840	46	185	166	303	455	438
d1, Uniform Delay [s]	57.26	13.97	12.20	58.91	18.89	12.78	57.76	52.37	52.61	48.30	37.31	37.33
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.66	0.58	0.49	16.51	1.72	0.19	12.18	6.24	8.47	9.11	0.58	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.39	0.19	0.48	0.65	0.08	0.61	0.76	0.80	0.89	0.40	0.41
d, Delay for Lane Group [s/veh]	75.92	14.55	12.69	75.42	20.61	12.97	69.94	58.61	61.08	57.41	37.88	37.93
Lane Group LOS	E	B	B	E	C	B	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.87	5.72	2.27	0.40	11.86	0.93	1.00	4.44	4.29	8.67	4.57	4.43
50th-Percentile Queue Length [ft/ln]	46.75	143.0	56.83	9.92	296.4	23.37	24.95	111.0	107.3	216.8	114.3	110.6
95th-Percentile Queue Length [veh/ln]	3.37	9.65	4.09	0.71	17.51	1.68	1.80	7.90	7.69	13.50	8.08	7.87
95th-Percentile Queue Length [ft/ln]	84.15	241.1	102.3	17.86	437.6	42.06	44.91	197.4	192.2	337.5	202.0	196.8

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	75.92	14.55	12.69	75.42	20.61	12.97	69.94	59.21	61.08	57.41	37.90	37.93
Movement LOS	E	B	B	E	C	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	17.39			20.62			60.75			46.27		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	28.43											
Intersection LOS	C											
Intersection V/C	0.624											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.053	2.814	2.460	2.510
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	367	533	817
d_b, Bicycle Delay [s]	40.02	40.02	32.27	21.00
l_b,int, Bicycle LOS Score for Intersection	2.375	2.628	1.808	2.081
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.301

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	6	102	8	8	123	45	21	43	2	21	147	7
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	102	8	8	123	45	21	43	2	21	147	7
Peak Hour Factor	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	30	2	2	36	13	6	13	1	6	43	2
Total Analysis Volume [veh/h]	7	119	9	9	144	53	25	50	2	25	172	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	734	765	691	655	761
Degree of Utilization, x	0.18	0.27	0.11	0.30	0.01

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.67	1.09	0.37	1.26	0.03
95th-Percentile Queue Length [ft]	16.77	27.20	9.37	31.59	0.80
Approach Delay [s/veh]	9.01	9.43	8.87	10.43	
Approach LOS	A	A	A	B	
Intersection Delay [s/veh]	9.60				
Intersection LOS	A				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	26.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.434

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	292	941	78	41	857	43	25	45	128	165	161	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	292	941	78	41	857	43	25	45	128	165	161	68
Peak Hour Factor	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	80	258	21	11	235	12	7	12	35	45	44	19
Total Analysis Volume [veh/h]	321	1033	86	45	941	47	27	49	141	181	177	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	40	46	0	24	30	0	17	37	0	13	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	78	78	4	68	68	3	13	13	8	19	19
g / C, Green / Cycle	0.12	0.65	0.65	0.03	0.57	0.57	0.03	0.11	0.11	0.07	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.10	0.22	0.22	0.03	0.19	0.19	0.02	0.01	0.09	0.05	0.05	0.05
s, saturation flow rate [veh/h]	3329	3427	1730	1714	3427	1757	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	396	2232	1127	59	1942	996	44	380	170	234	534	238
d1, Uniform Delay [s]	51.56	9.32	9.32	57.45	13.91	13.92	57.91	48.12	52.25	54.85	45.10	44.97
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.04	0.40	0.80	18.14	0.47	0.92	13.55	0.15	9.97	5.42	0.36	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.33	0.33	0.76	0.34	0.34	0.62	0.13	0.83	0.77	0.33	0.31
d, Delay for Lane Group [s/veh]	55.61	9.73	10.12	75.59	14.38	14.83	71.45	48.27	62.22	60.27	45.46	45.72
Lane Group LOS	E	A	B	E	B	B	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.93	4.26	4.43	1.65	4.78	5.03	0.98	0.67	4.63	2.87	2.38	2.04
50th-Percentile Queue Length [ft/ln]	123.2	106.5	110.7	41.30	119.4	125.7	24.40	16.83	115.6	71.65	59.60	51.04
95th-Percentile Queue Length [veh/ln]	8.57	7.65	7.88	2.97	8.36	8.71	1.76	1.21	8.15	5.16	4.29	3.67
95th-Percentile Queue Length [ft/ln]	214.2	191.2	196.9	74.34	209.0	217.7	43.92	30.30	203.8	128.9	107.2	91.87

Movement, Approach, & Intersection Results

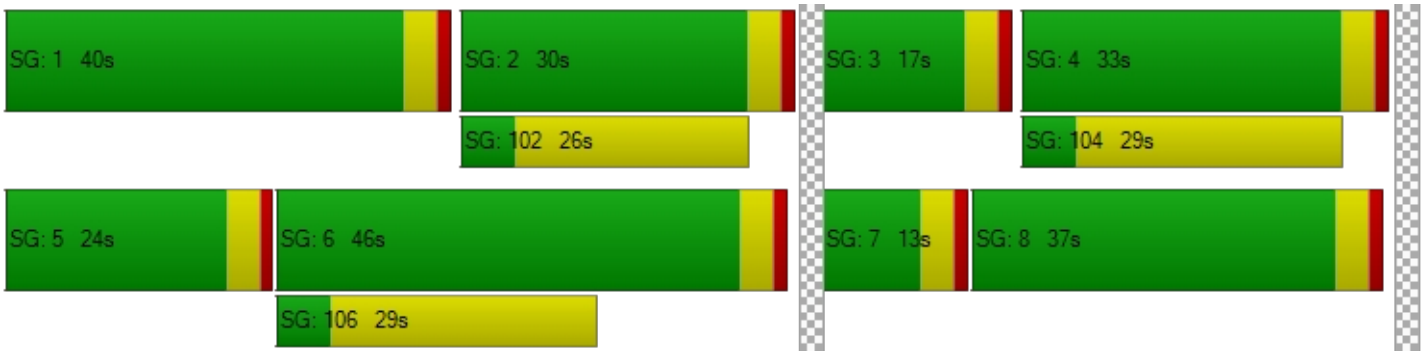
d_M, Delay for Movement [s/veh]	55.61	9.84	10.12	75.59	14.52	14.83	71.45	48.27	62.22	60.27	45.46	45.72
Movement LOS	E	A	B	E	B	B	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	20.06			17.19			60.22			51.70		
Approach LOS	C			B			E			D		
d_I, Intersection Delay [s/veh]	26.29											
Intersection LOS	C											
Intersection V/C	0.434											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.911	2.592	2.695
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	433	550	483
d_b, Bicycle Delay [s]	25.35	36.82	31.54	34.50
l_b,int, Bicycle LOS Score for Intersection	2.352	2.128	1.739	1.917
Bicycle LOS	B	B	A	A

Sequence

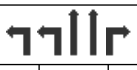
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.423

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	56	215	398	8	307	42	18	107	21	394	320	30
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	215	398	8	307	42	18	107	21	394	320	30
Peak Hour Factor	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	55	101	2	78	11	5	27	5	100	82	8
Total Analysis Volume [veh/h]	57	219	406	8	313	43	18	109	21	402	326	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	36	0	9	33	0	9	9	0	66	66	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	80	80	1	76	76	2	6	6	17	21	21
g / C, Green / Cycle	0.04	0.66	0.66	0.01	0.64	0.64	0.02	0.05	0.05	0.14	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.02	0.12	0.27	0.00	0.10	0.10	0.01	0.03	0.01	0.12	0.10	0.02
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1725	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	119	1192	1013	17	1146	1098	33	169	75	483	602	269
d1, Uniform Delay [s]	56.77	7.80	9.32	59.08	8.81	8.83	58.36	56.02	54.99	49.86	45.07	41.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.98	0.34	1.18	18.42	0.29	0.31	13.85	4.09	1.98	3.78	0.76	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.18	0.40	0.47	0.16	0.16	0.55	0.65	0.28	0.83	0.54	0.12
d, Delay for Lane Group [s/veh]	59.75	8.14	10.50	77.50	9.10	9.14	72.21	60.11	56.97	53.64	45.84	41.82
Lane Group LOS	E	A	B	E	A	A	E	E	E	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.90	2.20	4.95	0.33	1.94	1.90	0.67	1.72	0.65	6.11	4.50	0.79
50th-Percentile Queue Length [ft/ln]	22.44	54.89	123.7	8.25	48.47	47.42	16.69	42.93	16.37	152.8	112.4	19.82
95th-Percentile Queue Length [veh/ln]	1.62	3.95	8.60	0.59	3.49	3.41	1.20	3.09	1.18	10.17	7.98	1.43
95th-Percentile Queue Length [ft/ln]	40.40	98.80	214.9	14.84	87.25	85.36	30.04	77.28	29.47	254.1	199.3	35.68

Movement, Approach, & Intersection Results

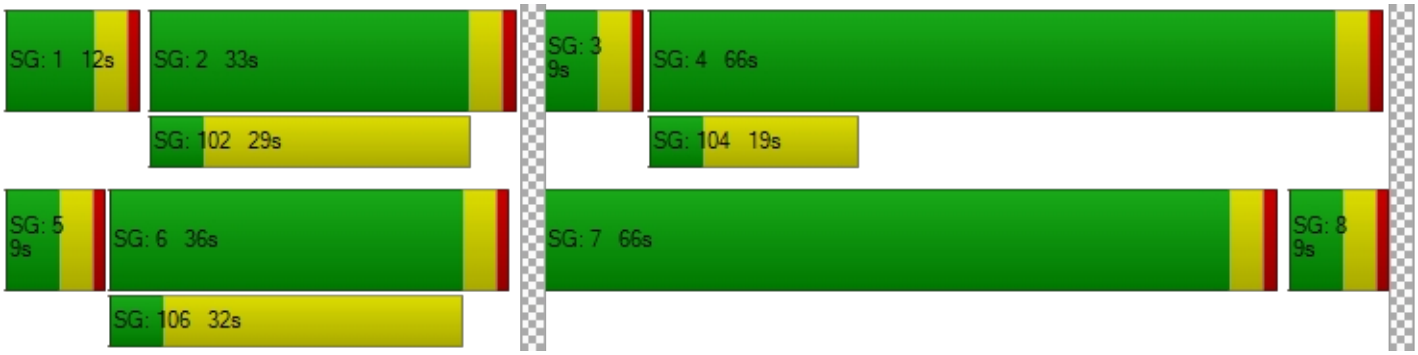
d_M, Delay for Movement [s/veh]	59.75	8.14	10.50	77.50	9.12	9.14	72.21	60.11	56.97	53.64	45.84	41.82
Movement LOS	E	A	B	E	A	A	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	13.86			10.62			61.13			49.81		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	30.81											
Intersection LOS	C											
Intersection V/C	0.423											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.300	2.689	2.897
Crosswalk LOS	F	B	B	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	483	83	1033
d_b, Bicycle Delay [s]	32.27	34.50	55.10	14.02
l_b,int, Bicycle LOS Score for Intersection	2.685	1.860	1.682	2.186
Bicycle LOS	B	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	38.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.672

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	466	1012	370	91	1138	69	86	116	267	506	305	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	466	1012	370	91	1138	69	86	116	267	506	305	71
Peak Hour Factor	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	123	266	97	24	299	18	23	30	70	133	80	19
Total Analysis Volume [veh/h]	490	1064	389	96	1197	73	90	122	281	532	321	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	45	0	12	36	0	13	40	40	23	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	67	67	8	58	58	5	10	31	19	24	24
g / C, Green / Cycle	0.14	0.55	0.55	0.07	0.48	0.48	0.04	0.09	0.26	0.16	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.15	0.31	0.25	0.06	0.24	0.05	0.03	0.04	0.18	0.16	0.11	0.11
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1684
c, Capacity [veh/h]	472	1900	848	114	2351	734	141	299	401	527	365	342
d1, Uniform Delay [s]	51.50	17.27	15.97	55.37	21.51	17.07	56.54	51.84	40.01	50.50	43.00	43.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.26	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	30.27	1.20	1.78	14.82	0.79	0.27	4.67	0.89	5.17	20.51	1.34	1.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.04	0.56	0.46	0.84	0.51	0.10	0.64	0.41	0.70	1.01	0.56	0.56
d, Delay for Lane Group [s/veh]	81.77	18.47	17.75	70.18	22.30	17.34	61.21	52.73	45.18	71.01	44.34	44.43
Lane Group LOS	F	B	B	E	C	B	E	D	D	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.05	9.55	6.66	3.34	7.81	1.16	1.44	1.78	8.05	9.38	5.60	5.25
50th-Percentile Queue Length [ft/ln]	226.2	238.7	166.5	83.52	195.2	29.11	35.88	44.48	201.2	234.5	139.9	131.1
95th-Percentile Queue Length [veh/ln]	14.22	14.62	10.90	6.01	12.39	2.10	2.58	3.20	12.70	14.47	9.48	9.00
95th-Percentile Queue Length [ft/ln]	355.6	365.4	272.4	150.3	309.8	52.39	64.59	80.06	317.5	361.7	237.0	225.0

Movement, Approach, & Intersection Results

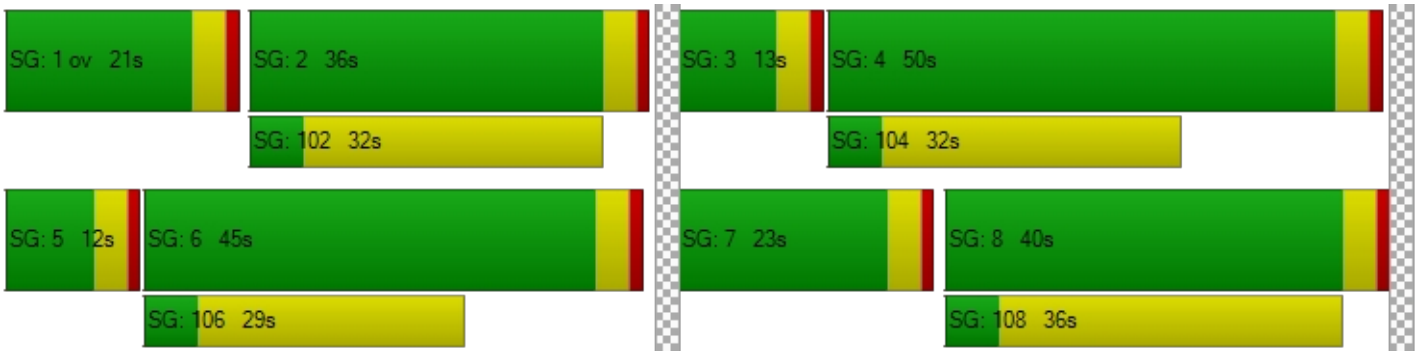
d_M, Delay for Movement [s/veh]	81.77	18.47	17.75	70.18	22.30	17.34	61.21	52.73	45.18	71.01	44.37	44.43
Movement LOS	F	B	B	E	C	B	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	34.29			25.40			49.98			59.65		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	38.33											
Intersection LOS	D											
Intersection V/C	0.672											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.293	3.057	2.909	2.823
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	533	600	767
d_b, Bicycle Delay [s]	26.00	32.27	29.40	22.82
l_b,int, Bicycle LOS Score for Intersection	3.163	2.311	1.966	2.325
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.489

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	8	9	4	23	1	73	5	50	26	56	314	11
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	9	4	23	1	73	5	50	26	56	314	11
Peak Hour Factor	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	3	1	7	0	21	1	14	7	16	90	3
Total Analysis Volume [veh/h]	9	10	5	26	1	83	6	57	30	64	358	13
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	Permi
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	73	67	67
g / C, Green / Cycle	0.11	0.11	0.61	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.11	0.10	0.10
s, saturation flow rate [veh/h]	1652	1495	848	1800	1778
c, Capacity [veh/h]	221	215	506	1006	994
d1, Uniform Delay [s]	48.80	52.32	10.79	13.02	13.02
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	3.82	0.81	0.41	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.68	0.19	0.19	0.19
d, Delay for Lane Group [s/veh]	49.32	56.14	11.60	13.42	13.43
Lane Group LOS	D	E	B	B	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.41	4.58	1.11	2.57	2.55
50th-Percentile Queue Length [ft/ln]	35.23	114.45	27.86	64.17	63.66
95th-Percentile Queue Length [veh/ln]	2.54	8.09	2.01	4.62	4.58
95th-Percentile Queue Length [ft/ln]	63.42	202.18	50.16	115.51	114.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.32	49.32	49.32	49.32	56.14	56.14	56.14	56.14	11.60	11.60	13.43	13.43
Movement LOS	D	D	D	D	E	E	E	E	B	B	B	B
d_A, Approach Delay [s/veh]	49.32				56.14				13.06			
Approach LOS	D				E				B			
d_I, Intersection Delay [s/veh]	26.86											
Intersection LOS	C											
Intersection V/C	0.489											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.777	0.000	2.704
Crosswalk LOS	A	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	250
d_b, Bicycle Delay [s]	45.94	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.599	1.665	1.890
Bicycle LOS	A	A	A

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	16	545	49	18	10	9	194	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	545	49	18	10	9	194	1
Peak Hour Factor	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	155	14	5	3	3	55	0
Total Analysis Volume [veh/h]	18	621	56	21	11	10	221	1
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	19	0	0	0	73	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	65	65	65	21
g / C, Green / Cycle	0.02	0.54	0.54	0.54	0.18
(v / s)_i Volume / Saturation Flow Rate	0.01	0.14	0.21	0.05	0.16
s, saturation flow rate [veh/h]	1714	1800	1800	1530	1547
c, Capacity [veh/h]	33	968	968	823	273
d1, Uniform Delay [s]	58.36	14.82	16.20	13.49	48.27
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.85	0.63	1.18	0.23	9.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.25	0.39	0.09	0.89
d, Delay for Lane Group [s/veh]	72.21	15.44	17.38	13.71	57.89
Lane Group LOS	E	B	B	B	E
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.67	3.70	6.28	1.07	7.82
50th-Percentile Queue Length [ft/ln]	16.69	92.51	156.95	26.64	195.39
95th-Percentile Queue Length [veh/ln]	1.20	6.66	10.39	1.92	12.40
95th-Percentile Queue Length [ft/ln]	30.04	166.52	259.68	47.95	310.01

Movement, Approach, & Intersection Results

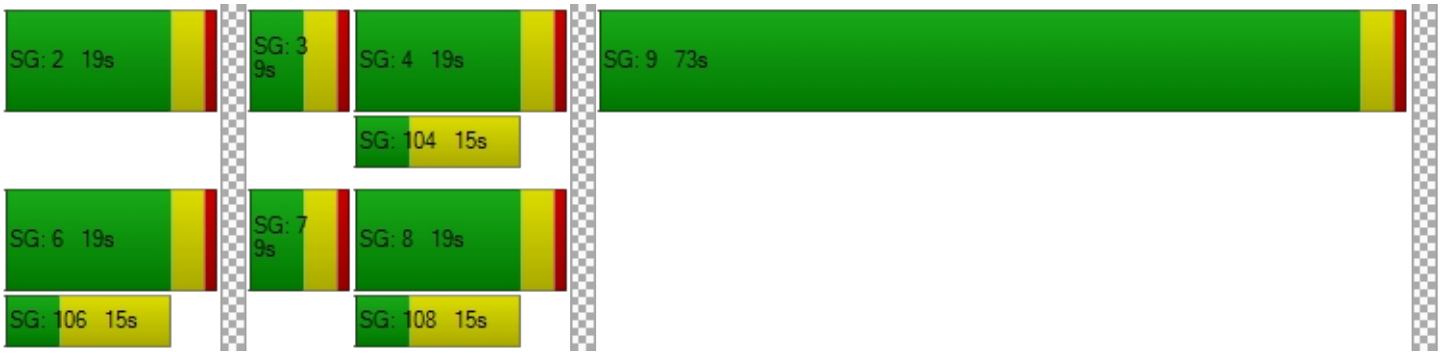
d_M, Delay for Movement [s/veh]	72.21	16.62	17.38	13.71	57.89	57.89	57.89	57.89
Movement LOS	E	B	B	B	E	E	E	E
d_A, Approach Delay [s/veh]	17.70				57.89			
Approach LOS	B				E			
d_I, Intersection Delay [s/veh]	26.86							
Intersection LOS	C							
Intersection V/C	0.489							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.087
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	1150
d_b, Bicycle Delay [s]	45.94	10.84
l_b,int, Bicycle LOS Score for Intersection	2.133	1.959
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	50.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	6	1	21	92	3	29	14	399	8	14	605	72
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	1	21	92	3	29	14	399	8	14	605	72
Peak Hour Factor	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	0	6	26	1	8	4	113	2	4	171	20
Total Analysis Volume [veh/h]	7	1	24	104	3	33	16	451	9	16	684	81
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

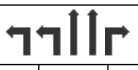
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.01	0.03	0.57	0.02	0.05	0.02	0.00	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	21.25	27.94	10.17	48.93	50.66	11.12	9.28	0.00	0.00	8.29	0.00	0.00
Movement LOS	C	D	B	E	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.22	0.22	0.22	3.16	3.16	0.17	0.06	0.00	0.00	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.41	5.41	5.41	78.96	78.96	4.20	1.43	0.00	0.00	1.09	0.00	0.00
d_A, Approach Delay [s/veh]	13.15			40.06			0.31			0.17		
Approach LOS	B			E			A			A		
d_I, Intersection Delay [s/veh]	4.42											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	45.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	439	581	136	84	759	31	35	281	464	265	376	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	439	581	136	84	759	31	35	281	464	265	376	82
Peak Hour Factor	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	115	152	36	22	198	8	9	73	121	69	98	21
Total Analysis Volume [veh/h]	459	607	142	88	793	32	37	294	485	277	393	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	44	0	11	33	0	9	50	0	15	56	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	46	46	7	35	35	4	40	40	11	48	48
g / C, Green / Cycle	0.15	0.38	0.38	0.06	0.29	0.29	0.03	0.34	0.34	0.09	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.14	0.18	0.09	0.05	0.23	0.23	0.01	0.09	0.32	0.08	0.14	0.14
s, saturation flow rate [veh/h]	3329	3427	1530	1714	1800	1776	3329	3427	1530	3329	1800	1690
c, Capacity [veh/h]	499	1299	580	100	517	510	103	1157	517	305	717	673
d1, Uniform Delay [s]	50.28	28.12	25.51	56.08	39.61	39.61	56.97	28.79	38.54	54.00	25.17	25.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.34	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.36	1.21	1.00	20.63	12.44	12.59	2.08	0.11	20.62	10.08	0.28	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.47	0.24	0.88	0.80	0.80	0.36	0.25	0.94	0.91	0.34	0.35
d, Delay for Lane Group [s/veh]	57.65	29.33	26.51	76.72	52.05	52.21	59.05	28.91	59.15	64.08	25.46	25.49
Lane Group LOS	E	C	C	E	D	D	E	C	E	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.29	6.78	2.95	3.22	13.04	12.89	0.58	3.11	16.61	4.57	4.97	4.68
50th-Percentile Queue Length [ft/ln]	182.1	169.4	73.65	80.43	326.0	322.1	14.52	77.73	415.1	114.1	124.1	117.0
95th-Percentile Queue Length [veh/ln]	11.71	11.05	5.30	5.79	18.96	18.77	1.05	5.60	23.29	8.07	8.62	8.23
95th-Percentile Queue Length [ft/ln]	292.8	276.2	132.5	144.7	474.0	469.3	26.13	139.9	582.2	201.7	215.5	205.7

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.65	29.33	26.51	76.72	52.13	52.21	59.05	28.91	59.15	64.08	25.47	25.49
Movement LOS	E	C	C	E	D	D	E	C	E	E	C	C
d_A, Approach Delay [s/veh]	39.76			54.50			48.25			39.62		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.25											
Intersection LOS	D											
Intersection V/C	0.769											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.994	2.635	2.846	2.897
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	483	767	867
d_b, Bicycle Delay [s]	26.67	34.50	22.82	19.27
l_b,int, Bicycle LOS Score for Intersection	2.556	2.313	2.233	2.183
Bicycle LOS	B	B	B	B

Sequence

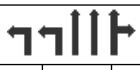
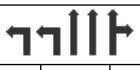
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.684

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	180	1217	675	109	1386	98	170	259	151	546	419	94
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	180	1217	675	109	1386	98	170	259	151	546	419	94
Peak Hour Factor	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	48	325	180	29	370	26	45	69	40	146	112	25
Total Analysis Volume [veh/h]	192	1300	721	116	1481	105	182	277	161	583	448	100
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	40	40	9	37	0	35	43	0	28	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	8	60	88	5	57	57	9	15	15	24	30	39
g / C, Green / Cycle	0.07	0.50	0.73	0.04	0.47	0.47	0.07	0.13	0.13	0.20	0.25	0.33
(v / s)_i Volume / Saturation Flow Rate	0.06	0.27	0.47	0.03	0.31	0.31	0.05	0.08	0.11	0.18	0.13	0.04
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1740	3329	3427	1530	3329	3427	2708
c, Capacity [veh/h]	222	2436	1117	139	1617	821	249	439	196	666	868	889
d1, Uniform Delay [s]	55.47	20.67	8.26	57.09	24.14	24.15	54.32	49.62	50.98	46.55	38.49	28.11
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.69	0.84	2.88	12.27	2.04	3.99	4.09	1.50	8.28	3.85	0.48	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.53	0.65	0.84	0.65	0.65	0.73	0.63	0.82	0.88	0.52	0.11
d, Delay for Lane Group [s/veh]	65.16	21.51	11.14	69.37	26.18	28.14	58.41	51.12	59.25	50.40	38.97	28.17
Lane Group LOS	E	C	B	E	C	C	E	D	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.17	8.37	9.21	1.98	11.62	12.25	2.83	4.04	5.16	8.76	5.73	1.02
50th-Percentile Queue Length [ft/ln]	79.36	209.2	230.1	49.57	290.4	306.2	70.85	100.9	129.0	219.0	143.1	25.48
95th-Percentile Queue Length [veh/ln]	5.71	13.12	14.18	3.57	17.21	17.99	5.10	7.27	8.89	13.61	9.65	1.83
95th-Percentile Queue Length [ft/ln]	142.8	327.9	354.5	89.23	430.1	449.7	127.5	181.7	222.2	340.3	241.3	45.87

Movement, Approach, & Intersection Results

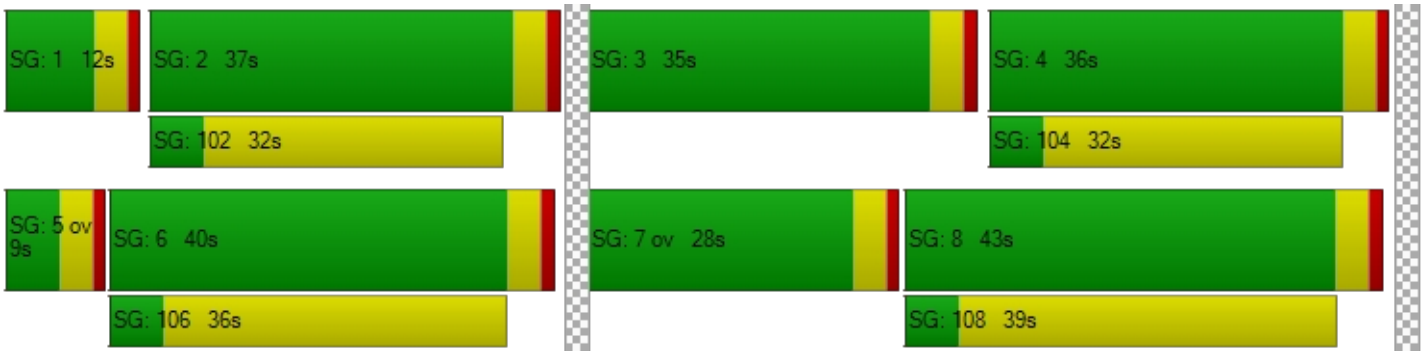
d_M, Delay for Movement [s/veh]	65.16	21.51	11.14	69.37	26.75	28.14	58.41	51.12	59.25	50.40	38.97	28.17
Movement LOS	E	C	B	E	C	C	E	D	E	D	D	C
d_A, Approach Delay [s/veh]	21.92			29.74			55.37			43.91		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	32.32											
Intersection LOS	C											
Intersection V/C	0.684											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.414	3.141	2.907	3.108
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	550	650	533
d_b, Bicycle Delay [s]	29.40	31.54	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.777	2.496	1.901	2.493
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	23.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.481

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	762	445	0	774	408	0	0	0	490	0	531
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	762	445	0	774	408	0	0	0	490	0	531
Peak Hour Factor	1.000	0.924	1.000	1.000	0.924	0.924	1.000	1.000	1.000	0.924	1.000	0.924
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	206	111	0	209	110	0	0	0	133	0	144
Total Analysis Volume [veh/h]	0	825	445	0	838	442	0	0	0	530	0	575
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	51	0	0	51	0	0	0	0	69	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	79	79		33	33	33
g / C, Green / Cycle	0.66	0.66		0.27	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.24	0.17		0.21	0.23	0.24
s, saturation flow rate [veh/h]	3427	4903		1714	1606	1530
c, Capacity [veh/h]	2257	3228		471	441	421
d1, Uniform Delay [s]	9.22	8.44		40.18	40.94	41.55
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.46	0.20		2.87	4.20	5.89
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.26		0.78	0.83	0.88
d, Delay for Lane Group [s/veh]	9.68	8.64		43.05	45.14	47.44
Lane Group LOS	A	A		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.75	2.91		10.37	10.70	11.03
50th-Percentile Queue Length [ft/ln]	118.69	72.84		259.3	267.5	275.7
95th-Percentile Queue Length [veh/ln]	8.32	5.24		15.66	16.07	16.47
95th-Percentile Queue Length [ft/ln]	208.03	131.11		391.4	401.6	411.8

Movement, Approach, & Intersection Results

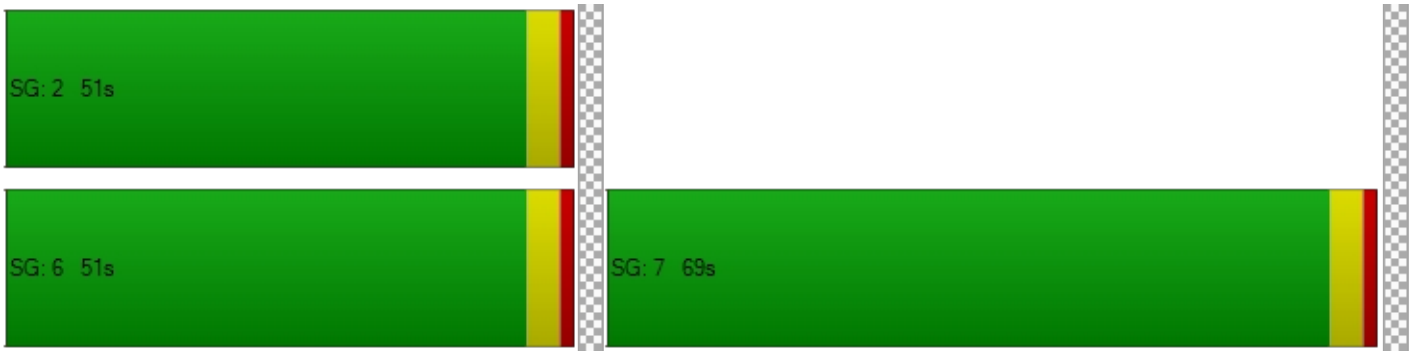
d_M, Delay for Movement [s/veh]	0.00	9.68	0.00	0.00	8.64	0.00	0.00	0.00	0.00	43.68	0.00	46.61
Movement LOS		A			A					D		D
d_A, Approach Delay [s/veh]	9.68			8.64			0.00			45.21		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	23.55											
Intersection LOS	C											
Intersection V/C	0.481											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	783	0	1083
d_b, Bicycle Delay [s]	22.20	22.20	60.00	12.60
l_b,int, Bicycle LOS Score for Intersection	2.240	2.021	4.132	3.383
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	27.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	993	543	0	1748	0	0	0	0	738	0	637
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	993	543	0	1748	0	0	0	0	738	0	637
Peak Hour Factor	1.000	0.910	0.910	1.000	0.910	0.910	0.910	0.910	0.910	0.910	1.000	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	273	149	0	480	0	0	0	0	203	0	175
Total Analysis Volume [veh/h]	0	1091	597	0	1921	0	0	0	0	811	0	700
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	19	0	0	19	0	0	0	0	101	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	53	53		59	59
g / C, Green / Cycle	0.44	0.44		0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.22	0.29		0.24	0.46
s, saturation flow rate [veh/h]	4903	6538		3329	1530
c, Capacity [veh/h]	2160	2880		1641	754
d1, Uniform Delay [s]	24.16	26.60		20.40	28.45
k, delay calibration	0.50	0.50		0.11	0.15
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.85	1.24		0.23	7.56
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.67		0.49	0.93
d, Delay for Lane Group [s/veh]	25.01	27.84		20.63	36.00
Lane Group LOS	C	C		C	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	7.54	10.97		7.57	19.68
50th-Percentile Queue Length [ft/ln]	188.54	274.18		189.30	492.03
95th-Percentile Queue Length [veh/ln]	12.05	16.40		12.08	26.96
95th-Percentile Queue Length [ft/ln]	301.14	409.96		302.12	673.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	25.01	0.00	0.00	27.84	0.00	0.00	0.00	0.00	20.63	0.00	36.00
Movement LOS		C			C					C		D
d_A, Approach Delay [s/veh]	25.01			27.84			0.00			27.75		
Approach LOS	C			C			A			C		
d_I, Intersection Delay [s/veh]	27.13											
Intersection LOS	C											
Intersection V/C	0.751											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	0	1617
d_b, Bicycle Delay [s]	45.94	45.94	60.00	2.20
l_b,int, Bicycle LOS Score for Intersection	2.160	2.352	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.519

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	654	272	0	983	466	0	0	0	363	0	448
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	654	272	0	983	466	0	0	0	363	0	448
Peak Hour Factor	1.000	0.960	0.868	1.000	0.960	1.000	1.000	1.000	1.000	0.960	1.000	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	170	78	0	256	117	0	0	0	95	0	117
Total Analysis Volume [veh/h]	0	681	313	0	1024	466	0	0	0	378	0	467
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	61	0	0	61	0	0	0	0	59	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	82	82		30	30
g / C, Green / Cycle	0.68	0.68		0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.14	0.30		0.22	0.17
s, saturation flow rate [veh/h]	4903	3427		1714	2708
c, Capacity [veh/h]	3351	2342		428	677
d1, Uniform Delay [s]	6.98	8.57		43.31	40.79
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.14	0.60		6.11	1.27
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.44		0.88	0.69
d, Delay for Lane Group [s/veh]	7.12	9.17		49.41	42.06
Lane Group LOS	A	A		D	D
Critical Lane Group	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	2.06	5.77		11.47	6.37
50th-Percentile Queue Length [ft/ln]	51.42	144.33		286.64	159.20
95th-Percentile Queue Length [veh/ln]	3.70	9.71		17.02	10.51
95th-Percentile Queue Length [ft/ln]	92.56	242.84		425.47	262.66

Movement, Approach, & Intersection Results

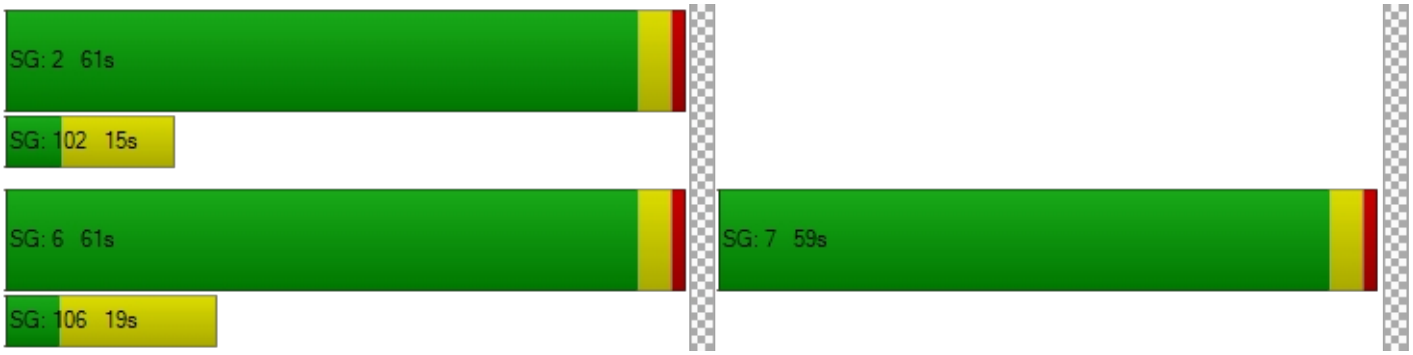
d_M, Delay for Movement [s/veh]	0.00	7.12	0.00	0.00	9.17	0.00	0.00	0.00	0.00	49.41	0.00	42.06
Movement LOS		A			A					D		D
d_A, Approach Delay [s/veh]	7.12			9.17			0.00			45.35		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	20.61											
Intersection LOS	C											
Intersection V/C	0.519											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.352
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	950	0	917
d_b, Bicycle Delay [s]	16.54	16.54	60.00	17.60
l_b,int, Bicycle LOS Score for Intersection	1.934	2.404	4.132	1.560
Bicycle LOS	A	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	29.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1074	381	0	966	238	308	0	671	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1074	381	0	966	238	308	0	671	0	0	0
Peak Hour Factor	1.000	0.927	1.000	1.000	0.927	1.000	0.927	1.000	0.927	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	290	95	0	261	60	83	0	181	0	0	0
Total Analysis Volume [veh/h]	0	1159	381	0	1042	238	332	0	724	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	19	0	0	19	0	101	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	52	52	60	60	
g / C, Green / Cycle	0.43	0.43	0.50	0.50	
(v / s)_i Volume / Saturation Flow Rate	0.24	0.30	0.10	0.47	
s, saturation flow rate [veh/h]	4903	3427	3329	1530	
c, Capacity [veh/h]	2129	1488	1662	764	
d1, Uniform Delay [s]	25.16	27.60	16.72	28.57	
k, delay calibration	0.50	0.50	0.11	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.01	2.77	0.06	9.98	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.54	0.70	0.20	0.95	
d, Delay for Lane Group [s/veh]	26.16	30.37	16.78	38.55	
Lane Group LOS	C	C	B	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	8.27	12.51	2.56	21.13	
50th-Percentile Queue Length [ft/ln]	206.70	312.83	64.12	528.33	
95th-Percentile Queue Length [veh/ln]	12.98	18.31	4.62	28.67	
95th-Percentile Queue Length [ft/ln]	324.60	457.87	115.41	716.81	

Movement, Approach, & Intersection Results

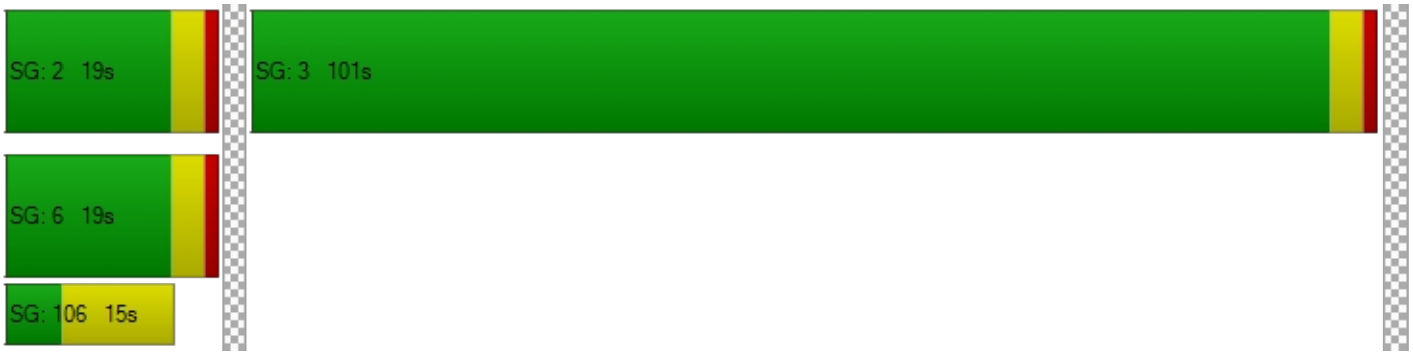
d_M, Delay for Movement [s/veh]	0.00	26.16	0.00	0.00	30.37	0.00	16.78	0.00	38.55	0.00	0.00	0.00
Movement LOS		C			C		B		D			
d_A, Approach Delay [s/veh]	26.16			30.37			31.70			0.00		
Approach LOS	C			C			C			A		
d_I, Intersection Delay [s/veh]	29.31											
Intersection LOS	C											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1617	0
d_b, Bicycle Delay [s]	45.94	45.94	2.20	60.00
l_b,int, Bicycle LOS Score for Intersection	2.197	2.419	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1234	483	460	1488	0	401	6	617	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1234	483	460	1488	0	401	6	617	0	0	0
Peak Hour Factor	1.000	0.914	0.914	0.914	0.914	1.000	0.914	0.914	0.914	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	338	132	126	407	0	110	2	169	0	0	0
Total Analysis Volume [veh/h]	0	1350	528	503	1628	0	439	7	675	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	53	0	26	79	0	0	41	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	55	55	20	80	32	32	32	
g / C, Green / Cycle	0.46	0.46	0.17	0.66	0.27	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.28	0.35	0.15	0.33	0.22	0.24	0.24	
s, saturation flow rate [veh/h]	4903	1530	3329	4903	1714	1564	1530	
c, Capacity [veh/h]	2259	705	561	3249	464	423	414	
d1, Uniform Delay [s]	24.08	26.64	48.85	10.22	40.82	41.94	42.23	
k, delay calibration	0.50	0.50	0.11	0.50	0.24	0.29	0.31	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.18	7.17	5.35	0.55	7.18	14.67	17.53	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.60	0.75	0.90	0.50	0.81	0.88	0.90	
d, Delay for Lane Group [s/veh]	25.25	33.81	54.20	10.77	47.99	56.61	59.77	
Lane Group LOS	C	C	D	B	D	E	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.60	13.55	7.78	6.95	11.17	12.25	12.62	
50th-Percentile Queue Length [ft/ln]	240.06	338.78	194.39	173.65	279.2	306.3	315.4	
95th-Percentile Queue Length [veh/ln]	14.68	19.59	12.35	11.27	16.65	17.99	18.44	
95th-Percentile Queue Length [ft/ln]	367.11	489.71	308.72	281.71	416.3	449.8	461.1	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	25.25	33.81	54.20	10.77	0.00	49.28	56.61	58.36	0.00	0.00	0.00
Movement LOS		C	C	D	B		D	E	E			
d_A, Approach Delay [s/veh]	27.66			21.02			54.79			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	30.83											
Intersection LOS	C											
Intersection V/C	0.740											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.420	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	1250	617	0
d_b, Bicycle Delay [s]	21.00	8.44	28.70	60.00
l_b,int, Bicycle LOS Score for Intersection	2.593	2.732	3.409	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	31.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	651	332	534	851	0	304	8	427	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	651	332	534	851	0	304	8	427	0	0	0
Peak Hour Factor	1.000	0.964	0.964	0.964	0.964	1.000	0.964	0.964	0.964	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	169	86	138	221	0	79	2	111	0	0	0
Total Analysis Volume [veh/h]	0	675	344	554	883	0	315	8	443	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	10	0	34	44	0	0	76	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	47	47	23	74	38	38	
g / C, Green / Cycle	0.39	0.39	0.19	0.61	0.32	0.32	
(v / s)_i Volume / Saturation Flow Rate	0.20	0.22	0.17	0.26	0.09	0.29	
s, saturation flow rate [veh/h]	3427	1530	3329	3427	3329	1534	
c, Capacity [veh/h]	1338	597	630	2101	1066	491	
d1, Uniform Delay [s]	27.76	28.76	47.30	12.10	30.62	39.27	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.36	4.01	4.16	0.62	0.15	7.39	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.50	0.58	0.88	0.42	0.30	0.92	
d, Delay for Lane Group [s/veh]	29.12	32.77	51.46	12.72	30.77	46.65	
Lane Group LOS	C	C	D	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	7.57	8.39	8.39	6.13	3.47	13.65	
50th-Percentile Queue Length [ft/ln]	189.22	209.75	209.74	153.18	86.63	341.22	
95th-Percentile Queue Length [veh/ln]	12.08	13.14	13.14	10.19	6.24	19.71	
95th-Percentile Queue Length [ft/ln]	302.02	328.51	328.50	254.67	155.93	492.69	

Movement, Approach, & Intersection Results

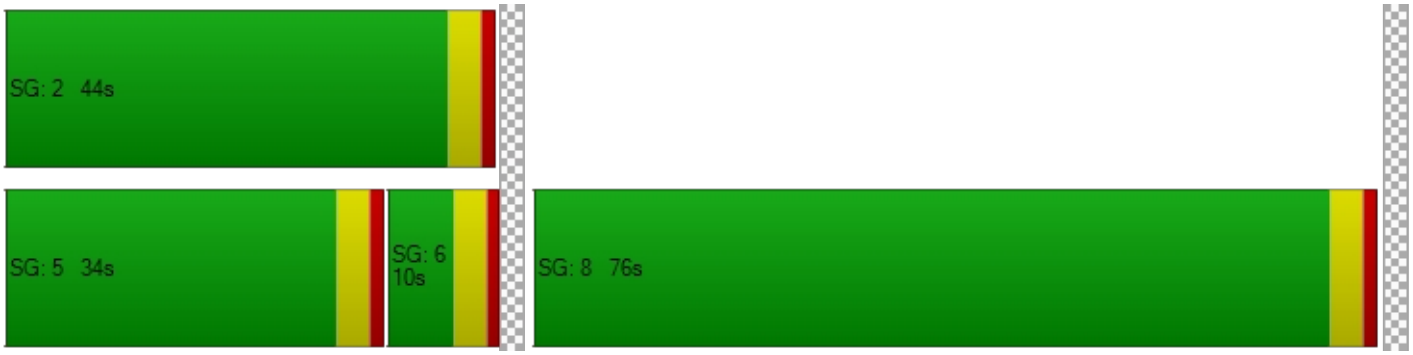
d_M, Delay for Movement [s/veh]	0.00	29.12	32.77	51.46	12.72	0.00	30.77	46.65	46.65	0.00	0.00	0.00
Movement LOS		C	C	D	B		C	D	D			
d_A, Approach Delay [s/veh]	30.36			27.66			40.12			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	31.47											
Intersection LOS	C											
Intersection V/C	0.685											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	100	667	1200	0
d_b, Bicycle Delay [s]	54.15	26.67	9.60	60.00
l_b,int, Bicycle LOS Score for Intersection	2.120	2.745	2.824	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	420	718	357	500	741	821	855	0	501	428	0	550
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	420	718	357	500	741	821	855	0	501	428	0	550
Peak Hour Factor	0.955	0.955	0.955	0.955	0.955	0.955	0.955	1.000	0.955	0.955	1.000	0.955
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	110	188	93	131	194	215	224	0	131	112	0	144
Total Analysis Volume [veh/h]	440	752	374	524	776	860	895	0	525	448	0	576
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	67	0	0	67	0	53	0	0	53	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	76	76	76	76	36	36
g / C, Green / Cycle	0.64	0.64	0.64	0.64	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.32	0.15	0.37	0.16	0.27	0.13
s, saturation flow rate [veh/h]	1371	4903	1402	4903	3329	3329
c, Capacity [veh/h]	793	3112	813	3112	994	994
d1, Uniform Delay [s]	19.14	9.46	20.52	9.52	40.36	34.10
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.79	0.18	3.91	0.19	3.28	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.24	0.64	0.25	0.90	0.45
d, Delay for Lane Group [s/veh]	21.93	9.65	24.44	9.71	43.64	34.42
Lane Group LOS	C	A	C	A	D	C
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.39	2.80	5.68	2.90	13.01	5.36
50th-Percentile Queue Length [ft/ln]	109.77	69.93	141.94	72.58	325.29	133.88
95th-Percentile Queue Length [veh/ln]	7.83	5.03	9.59	5.23	18.93	9.15
95th-Percentile Queue Length [ft/ln]	195.68	125.87	239.64	130.65	473.19	228.76

Movement, Approach, & Intersection Results

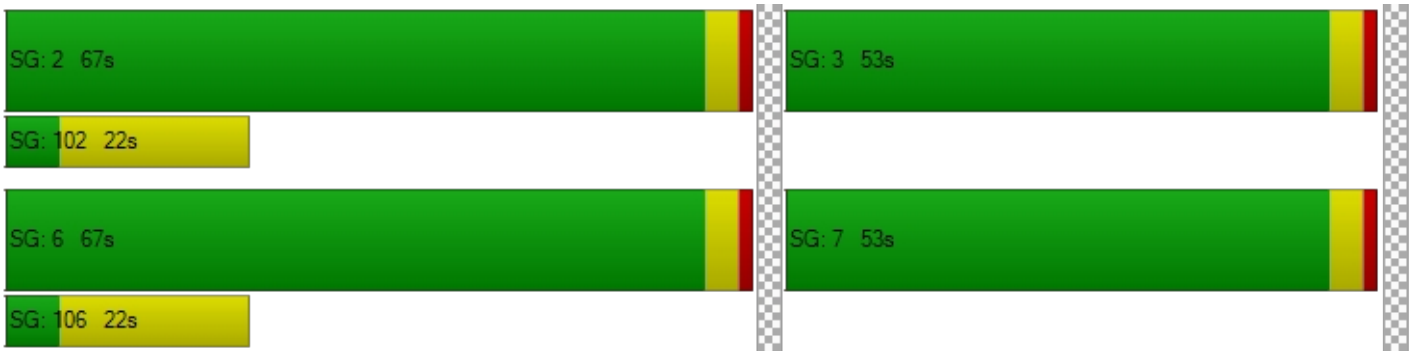
d_M, Delay for Movement [s/veh]	21.93	9.65	0.00	24.44	9.71	0.00	43.64	0.00	0.00	34.42	0.00	0.00
Movement LOS	C	A		C	A		D			C		
d_A, Approach Delay [s/veh]	14.18			15.64			43.64			34.42		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	23.92											
Intersection LOS	C											
Intersection V/C	0.643											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.201	3.250
Crosswalk LOS	F	F	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	1050	817	817
d_b, Bicycle Delay [s]	13.54	13.54	21.00	21.00
l_b,int, Bicycle LOS Score for Intersection	2.215	2.275	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	37.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.656

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	176	333	80	108	705	218	77	409	118	156	1102	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	333	80	108	705	218	77	409	118	156	1102	103
Peak Hour Factor	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	97	23	31	205	64	22	119	34	45	321	30
Total Analysis Volume [veh/h]	205	388	93	126	822	254	90	477	138	182	1284	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	27	0	12	26	0	12	58	0	23	69	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	40	40	6	37	37	8	43	43	15	50	50
g / C, Green / Cycle	0.08	0.33	0.33	0.05	0.31	0.31	0.07	0.36	0.36	0.12	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.06	0.04	0.17	0.17	0.05	0.14	0.09	0.11	0.37	0.08
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	250	1631	509	180	1529	477	112	1222	545	211	1421	635
d1, Uniform Delay [s]	54.71	29.02	28.45	55.79	34.14	34.08	55.34	28.86	27.31	51.59	32.86	22.30
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.60	0.34	0.79	4.84	1.36	4.21	12.63	0.20	0.24	9.82	2.42	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.24	0.18	0.70	0.54	0.53	0.81	0.39	0.25	0.86	0.90	0.19
d, Delay for Lane Group [s/veh]	61.31	29.36	29.24	60.63	35.50	38.29	67.98	29.06	27.55	61.41	35.29	22.44
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.28	2.77	2.03	2.00	6.79	6.66	3.08	5.17	2.85	5.95	17.55	2.19
50th-Percentile Queue Length [ft/ln]	82.04	69.20	50.66	49.94	169.8	166.6	76.95	129.3	71.25	148.6	438.8	54.77
95th-Percentile Queue Length [veh/ln]	5.91	4.98	3.65	3.60	11.07	10.90	5.54	8.90	5.13	9.94	24.42	3.94
95th-Percentile Queue Length [ft/ln]	147.6	124.5	91.19	89.89	276.6	272.4	138.5	222.5	128.2	248.6	610.6	98.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.31	29.36	29.24	60.63	35.50	38.29	67.98	29.06	27.55	61.41	35.29	22.44
Movement LOS	E	C	C	E	D	D	E	C	C	E	D	C
d_A, Approach Delay [s/veh]	38.89			38.73			33.73			37.31		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	37.37											
Intersection LOS	D											
Intersection V/C	0.656											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.062	3.059	2.866	2.839
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	367	900	1083
d_b, Bicycle Delay [s]	39.20	40.02	18.15	12.60
l_b,int, Bicycle LOS Score for Intersection	1.937	2.221	2.141	2.868
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	36.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	170	66	105	390	270	118	333	69	166	1013	134
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	170	66	105	390	270	118	333	69	166	1013	134
Peak Hour Factor	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	50	19	31	115	80	35	98	20	49	299	40
Total Analysis Volume [veh/h]	58	200	78	124	460	318	139	393	81	196	1195	158
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	11	33	0	14	36	36	15	57	0	16	58	58
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	37	37	10	42	57	11	48	48	9	46	60
g / C, Green / Cycle	0.04	0.31	0.31	0.08	0.35	0.47	0.09	0.40	0.40	0.08	0.38	0.50
(v / s)_i Volume / Saturation Flow Rate	0.03	0.06	0.05	0.07	0.13	0.21	0.08	0.14	0.14	0.06	0.35	0.10
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1695	3329	3427	1530
c, Capacity [veh/h]	75	1061	473	143	1196	725	157	715	673	256	1310	763
d1, Uniform Delay [s]	56.78	30.38	30.15	54.35	29.37	20.96	53.87	25.22	25.25	54.34	35.16	16.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.27	0.39	0.75	14.41	0.94	1.92	14.76	0.28	0.30	4.78	2.88	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.19	0.16	0.87	0.38	0.44	0.88	0.34	0.34	0.77	0.91	0.21
d, Delay for Lane Group [s/veh]	72.05	30.78	30.90	68.75	30.31	22.88	68.64	25.50	25.55	59.11	38.04	16.94
Lane Group LOS	E	C	C	E	C	C	E	C	C	E	D	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.06	2.20	1.75	4.27	5.15	6.26	4.79	4.89	4.65	3.08	16.78	2.46
50th-Percentile Queue Length [ft/ln]	51.49	54.88	43.81	106.7	128.7	156.4	119.7	122.2	116.3	76.90	419.4	61.62
95th-Percentile Queue Length [veh/ln]	3.71	3.95	3.15	7.66	8.87	10.36	8.38	8.52	8.19	5.54	23.49	4.44
95th-Percentile Queue Length [ft/ln]	92.69	98.79	78.86	191.4	221.7	259.0	209.4	212.9	204.7	138.4	587.3	110.9

Movement, Approach, & Intersection Results

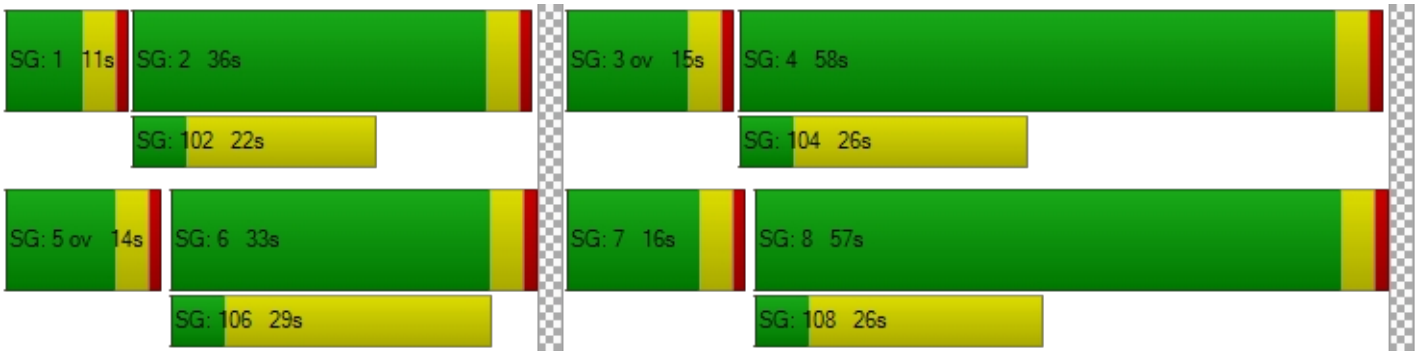
d_M, Delay for Movement [s/veh]	72.05	30.78	30.90	68.75	30.31	22.88	68.64	25.52	25.55	59.11	38.04	16.94
Movement LOS	E	C	C	E	C	C	E	C	C	E	D	B
d_A, Approach Delay [s/veh]	37.93			32.98			35.30			38.55		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	36.42											
Intersection LOS	D											
Intersection V/C	0.649											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.642	2.695	2.741	2.908
Crosswalk LOS	B	B	B	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	533	883	900
d_b, Bicycle Delay [s]	34.50	32.27	18.70	18.15
l_b,int, Bicycle LOS Score for Intersection	1.837	2.304	2.065	2.838
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	31.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.645

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	28	937	55	409	1110	522	407	220	42	53	258	351
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	937	55	409	1110	522	407	220	42	53	258	351
Peak Hour Factor	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	261	15	114	309	145	113	61	12	15	72	98
Total Analysis Volume [veh/h]	31	1043	61	455	1236	581	453	245	47	59	287	391
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	33	0	22	43	43	22	56	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	3	53	53	18	68	90	18	29	29	4	15	37
g / C, Green / Cycle	0.03	0.44	0.44	0.15	0.56	0.75	0.15	0.24	0.24	0.04	0.13	0.31
(v / s)_i Volume / Saturation Flow Rate	0.02	0.21	0.21	0.14	0.25	0.38	0.14	0.08	0.08	0.02	0.08	0.26
s, saturation flow rate [veh/h]	1714	3427	1750	3329	4903	1530	3329	1800	1701	3329	3427	1530
c, Capacity [veh/h]	47	1511	771	499	2762	1143	499	432	408	120	431	473
d1, Uniform Delay [s]	57.79	23.84	23.85	50.21	15.29	6.20	50.18	37.82	37.83	56.77	50.04	38.47
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.30
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.55	1.11	2.17	6.82	0.53	1.62	6.57	0.48	0.51	3.12	1.78	9.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.48	0.48	0.91	0.45	0.51	0.91	0.35	0.35	0.49	0.67	0.83
d, Delay for Lane Group [s/veh]	72.34	24.95	26.02	57.03	15.82	7.82	56.75	38.30	38.34	59.89	51.82	48.23
Lane Group LOS	E	C	C	E	B	A	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.12	7.55	7.95	7.18	6.56	5.71	7.13	3.73	3.54	0.93	4.22	11.86
50th-Percentile Queue Length [ft/ln]	28.07	188.6	198.6	179.4	163.9	142.7	178.2	93.22	88.46	23.26	105.4	296.5
95th-Percentile Queue Length [veh/ln]	2.02	12.05	12.57	11.57	10.76	9.63	11.51	6.71	6.37	1.67	7.59	17.51
95th-Percentile Queue Length [ft/ln]	50.53	301.3	314.2	289.3	268.9	240.7	287.6	167.8	159.2	41.87	189.6	437.7

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.34	25.27	26.02	57.03	15.82	7.82	56.75	38.31	38.34	59.89	51.82	48.23
Movement LOS	E	C	C	E	B	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.60			22.03			49.53			50.56		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	31.58											
Intersection LOS	C											
Intersection V/C	0.645											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.043	3.387	2.735	2.818
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	650	867	650
d_b, Bicycle Delay [s]	34.50	27.34	19.27	27.34
l_b,int, Bicycle LOS Score for Intersection	2.184	2.809	2.174	2.168
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	576.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	30.094

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	36	762	11	114	720	331	245	39	80	9	21	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	762	11	114	720	331	245	39	80	9	21	66
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	209	3	31	197	91	67	11	22	2	6	18
Total Analysis Volume [veh/h]	39	835	12	125	789	363	268	43	88	10	23	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	12	12	5	13	13	91	91	91	91
g / C, Green / Cycle	0.03	0.10	0.10	0.04	0.11	0.11	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.16	0.07	0.23	0.24	29.83	0.06	0.35	0.05
s, saturation flow rate [veh/h]	1714	3427	1787	1714	3427	1530	10	1530	93	1530
c, Capacity [veh/h]	52	348	182	71	387	173	64	1158	110	1158
d1, Uniform Delay [s]	57.73	53.90	53.90	57.50	53.22	53.22	53.15	3.77	34.58	3.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.23	281.9	293.8	349.7	475.6	513.8	1780.46	0.03	1.52	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	1.60	1.60	1.75	2.04	2.10	4.88	0.08	0.30	0.06
d, Delay for Lane Group [s/veh]	76.96	335.8	347.7	407.2	528.8	567.0	1833.61	3.80	36.09	3.75
Lane Group LOS	E	F	F	F	F	F	F	A	D	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.45	18.90	20.31	9.11	31.42	29.89	33.46	0.49	0.84	0.40
50th-Percentile Queue Length [ft/ln]	36.31	472.4	507.6	227.6	785.4	747.1	836.62	12.36	20.93	10.00
95th-Percentile Queue Length [veh/ln]	2.61	30.20	32.19	15.73	49.63	47.58	60.24	0.89	1.51	0.72
95th-Percentile Queue Length [ft/ln]	65.36	755.0	804.7	393.2	1240.	1189.	1505.92	22.24	37.68	18.00

Movement, Approach, & Intersection Results

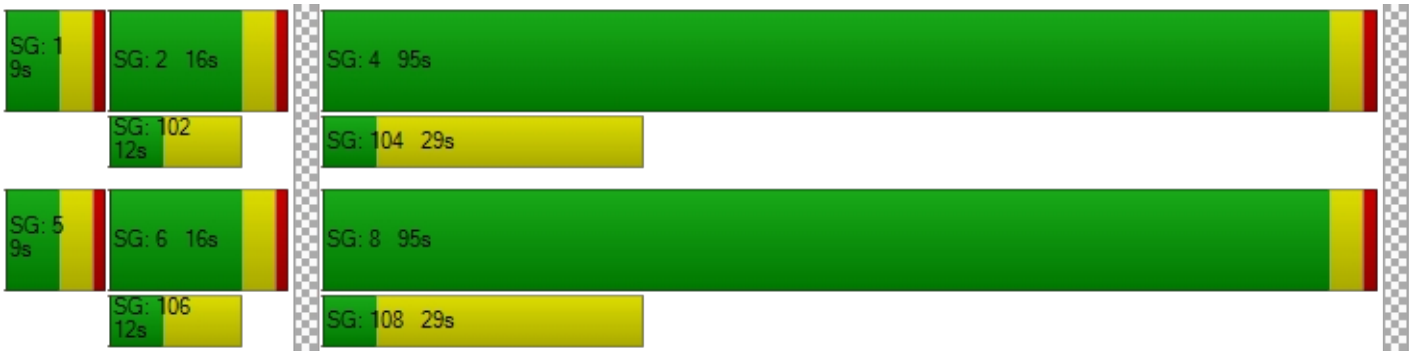
d_M, Delay for Movement [s/veh]	76.96	339.8	347.7	407.2	528.8	567.0	1833.	1833.	3.80	36.09	36.09	3.75
Movement LOS	E	F	F	F	F	F	F	F	A	D	D	A
d_A, Approach Delay [s/veh]	328.38			527.83			1430.04			13.92		
Approach LOS	F			F			F			B		
d_I, Intersection Delay [s/veh]	576.31											
Intersection LOS	F											
Intersection V/C	30.094											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.870	3.332	2.223	2.048
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	2.047	2.262	2.218	1.733
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	40	40	0	24	24	24	0	33	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	104	0	104	112	0	0	0	0	0
g / C, Green / Cycle	0.00	0.87	0.87	0.00	0.87	0.93	0.00	0.00	0.00	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1687	3373	1772	1687	3373	1506	1687	1772	2665	1687	1772
c, Capacity [veh/h]	1	2920	1533	1	2919	1405	1	1	1	1	1
d1, Uniform Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Group LOS	A	A	A	A	A	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	No	No	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement, Approach, & Intersection Results

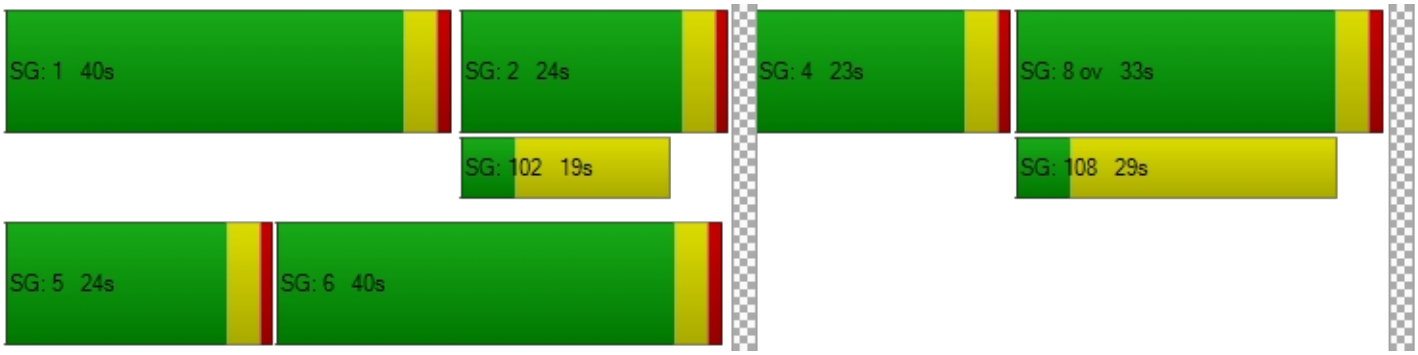
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											
Intersection V/C	0.000											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.609	0.000	2.468	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	333	483	317
d_b, Bicycle Delay [s]	29.40	41.67	34.50	42.50
l_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560	1.560
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 998543: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Level Of Service Report
Intersection 998552: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Crosswalk	Yes		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Level Of Service Report
Intersection 998555: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Left	Thru	Left	Thru	Right	Left	Thru	Right	Thru	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Speedway Commerce Center

Vistro File: K:\...\Speedway CC PM.vistro
Report File: K:\...\1 EX PM.pdf

Scenario 1 EX PM
1/13/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Left	0.480	27.8	C
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.600	25.2	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.407	16.4	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.507	22.2	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.692	28.7	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.441	14.0	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.389	34.7	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.655	38.5	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	WB Right	0.764	41.0	D
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	SB Left	0.430	40.8	D
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.315	15.0	B
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.446	34.6	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.584	37.4	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.445	43.6	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.477	39.4	D
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.471	35.0	D
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.485	43.4	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.856	19.3	B
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.519	21.5	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.572	41.1	D
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.557	40.1	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	2.327	961.7	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.725	46.6	D
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	NB Left	0.649	40.5	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.626	39.2	D
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.728	43.2	D
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.517	24.5	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.637	39.0	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.524	35.7	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.663	24.5	C
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.719	36.1	D
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.427	35.2	E
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.519	21.5	C
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.715	25.0	C
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	EB Thru	0.877	31.1	D
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.527	29.2	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	SB Left	0.554	41.4	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.448	22.1	C
			HCM 6th				

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.525	18.8	B
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	EB Thru	0.434	12.2	B
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	NEB Thru	0.601	15.4	C
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.413	22.8	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	SB Left	0.546	28.1	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	SB Left	0.803	45.3	D
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	WB Left	0.560	33.9	C
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.496	35.4	D
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	WB Left	0.746	39.0	D
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	EB Thru	0.014	0.0	A
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.669	37.2	D
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	WB Left	0.476	35.4	D
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	NB Thru	0.438	27.0	C
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.460	30.1	C
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	SB Left	0.647	36.2	D
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	EB Thru	0.321	9.6	A
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.547	33.0	C
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	EB Left	0.829	46.2	D
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.847	39.1	D
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.464	14.8	B
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Left	0.992	188.9	F

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.689	43.1	D
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	SB Left	0.841	42.9	D
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.472	18.8	B
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	WB Right	0.629	21.2	C
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Right	0.477	18.2	B
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.569	18.7	B
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.688	30.2	C
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	EB Right	0.660	28.8	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	SB Left	0.842	29.1	C
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	WB Left	0.701	37.5	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	SB Left	0.642	37.3	D
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.601	34.4	C
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	30.565	460.0	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition		0.000	0.0	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.480

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	302	571	0	0	461	146	0	0	0	287	0	135
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	302	571	0	0	461	146	0	0	0	287	0	135
Peak Hour Factor	0.981	0.981	1.000	1.000	0.981	0.981	1.000	1.000	1.000	0.981	0.981	0.981
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	77	146	0	0	117	37	0	0	0	73	0	34
Total Analysis Volume [veh/h]	308	582	0	0	470	149	0	0	0	293	0	138
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	61	82	0	0	21	0	0	0	0	0	38	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	24	89	61	61		23	23
g / C, Green / Cycle	0.20	0.74	0.51	0.51		0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.18	0.17	0.12	0.13		0.17	0.09
s, saturation flow rate [veh/h]	1714	3427	3427	1597		1714	1530
c, Capacity [veh/h]	342	2543	1746	813		328	293
d1, Uniform Delay [s]	46.89	4.81	16.42	16.59		47.33	43.13
k, delay calibration	0.11	0.50	0.50	0.50		0.16	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	8.69	0.21	0.32	0.75		11.99	1.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.23	0.24	0.25		0.89	0.47
d, Delay for Lane Group [s/veh]	55.58	5.02	16.74	17.34		59.32	44.31
Lane Group LOS	E	A	B	B		E	D
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	9.77	2.07	3.23	3.35		9.60	3.75
50th-Percentile Queue Length [ft/ln]	244.25	51.86	80.77	83.87		240.04	93.71
95th-Percentile Queue Length [veh/ln]	14.90	3.73	5.82	6.04		14.68	6.75
95th-Percentile Queue Length [ft/ln]	372.40	93.35	145.38	150.97		367.09	168.68

Movement, Approach, & Intersection Results

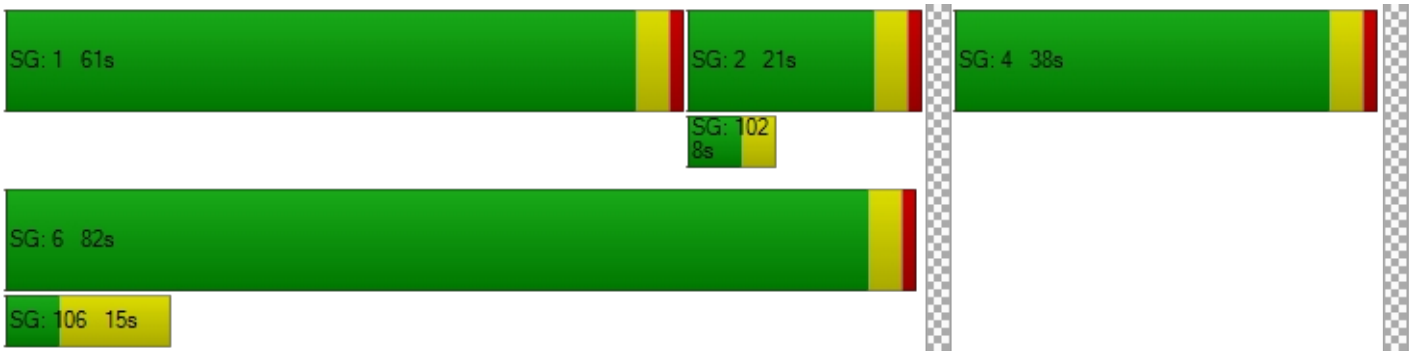
d_M, Delay for Movement [s/veh]	55.58	5.02	0.00	0.00	16.81	17.34	0.00	0.00	0.00	59.32	59.32	44.31
Movement LOS	E	A			B	B				E	E	D
d_A, Approach Delay [s/veh]	22.52			16.94			0.00			54.51		
Approach LOS	C			B			A			D		
d_I, Intersection Delay [s/veh]	27.84											
Intersection LOS	C											
Intersection V/C	0.480											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.884	2.096
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1300	283	0	567
d_b, Bicycle Delay [s]	7.35	44.20	60.00	30.82
l_b,int, Bicycle LOS Score for Intersection	2.294	1.900	4.132	2.271
Bicycle LOS	B	A	D	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.600

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	323	1038	0	0	732	395	0	0	0	341	0	332
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	323	1038	0	0	732	395	0	0	0	341	0	332
Peak Hour Factor	0.955	0.955	1.000	1.000	0.955	0.955	1.000	1.000	1.000	0.955	0.955	0.955
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	85	272	0	0	192	103	0	0	0	89	0	87
Total Analysis Volume [veh/h]	338	1087	0	0	766	414	0	0	0	357	0	348
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	18	58	0	0	40	0	0	0	0	0	62	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	14	82	64	64		30	30	30
g / C, Green / Cycle	0.12	0.68	0.53	0.53		0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.10	0.32	0.22	0.27		0.10	0.10	0.23
s, saturation flow rate [veh/h]	3329	3427	3427	1530		1714	1714	1530
c, Capacity [veh/h]	388	2329	1816	811		435	435	388
d1, Uniform Delay [s]	52.12	9.02	17.08	18.18		37.31	37.31	43.26
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	6.14	0.67	0.72	2.29		0.62	0.62	7.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.47	0.42	0.51		0.41	0.41	0.90
d, Delay for Lane Group [s/veh]	58.26	9.69	17.80	20.48		37.93	37.93	50.75
Lane Group LOS	E	A	B	C		D	D	D
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.33	6.40	6.48	7.76		4.46	4.46	10.73
50th-Percentile Queue Length [ft/ln]	133.19	159.98	161.90	193.98		111.5	111.5	268.1
95th-Percentile Queue Length [veh/ln]	9.11	10.55	10.65	12.33		7.93	7.93	16.10
95th-Percentile Queue Length [ft/ln]	227.82	263.70	266.24	308.19		198.1	198.1	402.4

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.26	9.69	0.00	0.00	17.80	20.48	0.00	0.00	0.00	37.93	37.93	50.75
Movement LOS	E	A			B	C				D	D	D
d_A, Approach Delay [s/veh]	21.21			18.74			0.00			44.26		
Approach LOS	C			B			A			D		
d_I, Intersection Delay [s/veh]	25.24											
Intersection LOS	C											
Intersection V/C	0.600											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.097	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	600	0	967
d_b, Bicycle Delay [s]	18.15	29.40	60.00	16.02
l_b,int, Bicycle LOS Score for Intersection	2.735	2.533	4.132	2.723
Bicycle LOS	B	B	D	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	16.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.407

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1132	0	0	1172	0	0	0	0	297	0	400
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1132	0	0	1172	0	0	0	0	297	0	400
Peak Hour Factor	1.000	0.948	0.948	1.000	0.948	0.948	1.000	1.000	1.000	0.948	0.948	0.948
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	299	0	0	309	0	0	0	0	78	0	105
Total Analysis Volume [veh/h]	0	1194	0	0	1236	0	0	0	0	313	0	422
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	58	0	0	58	0	0	0	0	0	62	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	90	90		22	22	22
g / C, Green / Cycle	0.75	0.75		0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.24	0.25		0.15	0.15	0.15
s, saturation flow rate [veh/h]	4903	4903		1714	1569	1530
c, Capacity [veh/h]	3674	3674		315	289	281
d1, Uniform Delay [s]	4.98	5.04		47.02	47.20	47.25
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.24	0.25		5.18	6.28	6.63
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.34		0.82	0.83	0.84
d, Delay for Lane Group [s/veh]	5.22	5.29		52.20	53.49	53.89
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.94	3.08		7.84	7.43	7.32
50th-Percentile Queue Length [ft/ln]	73.59	77.07		195.9	185.8	183.1
95th-Percentile Queue Length [veh/ln]	5.30	5.55		12.43	11.91	11.76
95th-Percentile Queue Length [ft/ln]	132.47	138.72		310.6	297.6	294.0

Movement, Approach, & Intersection Results

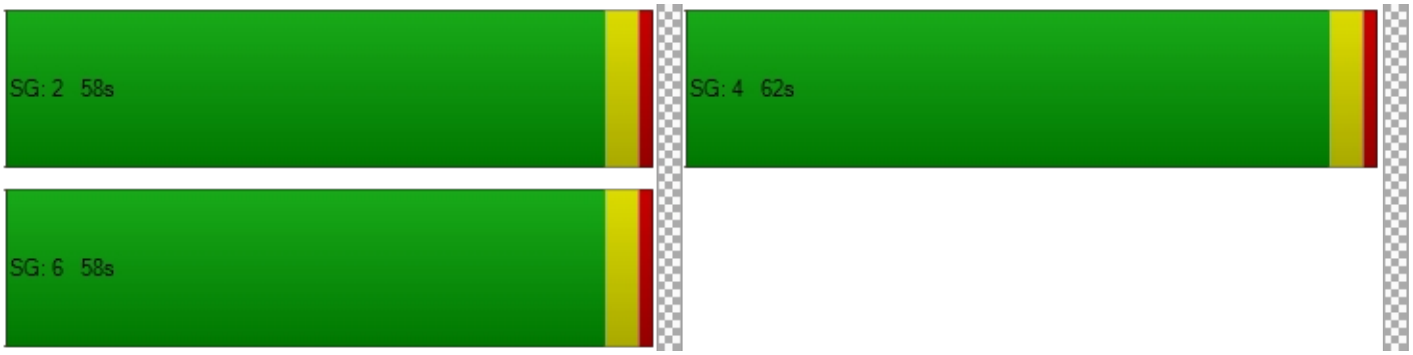
d_M, Delay for Movement [s/veh]	0.00	5.22	0.00	0.00	5.29	0.00	0.00	0.00	0.00	52.47	53.49	53.72
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	5.22			5.29			0.00			53.17		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	16.38											
Intersection LOS	B											
Intersection V/C	0.407											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	900	0	967
d_b, Bicycle Delay [s]	18.15	18.15	60.00	16.02
l_b,int, Bicycle LOS Score for Intersection	2.216	2.239	4.132	2.772
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	22.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.507

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	687	307	72	673	0	193	2	359	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	687	307	72	673	0	193	2	359	0	0	0
Peak Hour Factor	1.000	0.967	0.967	0.967	0.967	1.000	0.967	0.967	0.967	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	178	79	19	174	0	50	1	93	0	0	0
Total Analysis Volume [veh/h]	0	710	317	74	696	0	200	2	371	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	50	0	13	63	0	0	57	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	70	70	7	80	32	32	
g / C, Green / Cycle	0.58	0.58	0.05	0.67	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.20	0.22	0.04	0.20	0.12	0.24	
s, saturation flow rate [veh/h]	3427	1547	1714	3427	1715	1530	
c, Capacity [veh/h]	1986	896	94	2288	456	406	
d1, Uniform Delay [s]	13.26	13.63	56.01	8.31	36.68	42.72	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.13	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.48	1.23	13.30	0.34	0.68	9.73	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.34	0.38	0.79	0.30	0.44	0.91	
d, Delay for Lane Group [s/veh]	13.74	14.86	69.30	8.66	37.36	52.45	
Lane Group LOS	B	B	E	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	4.88	5.19	2.56	3.68	5.03	11.68	
50th-Percentile Queue Length [ft/ln]	122.08	129.76	64.05	91.97	125.86	292.08	
95th-Percentile Queue Length [veh/ln]	8.51	8.93	4.61	6.62	8.71	17.29	
95th-Percentile Queue Length [ft/ln]	212.68	223.17	115.28	165.54	217.86	432.23	

Movement, Approach, & Intersection Results

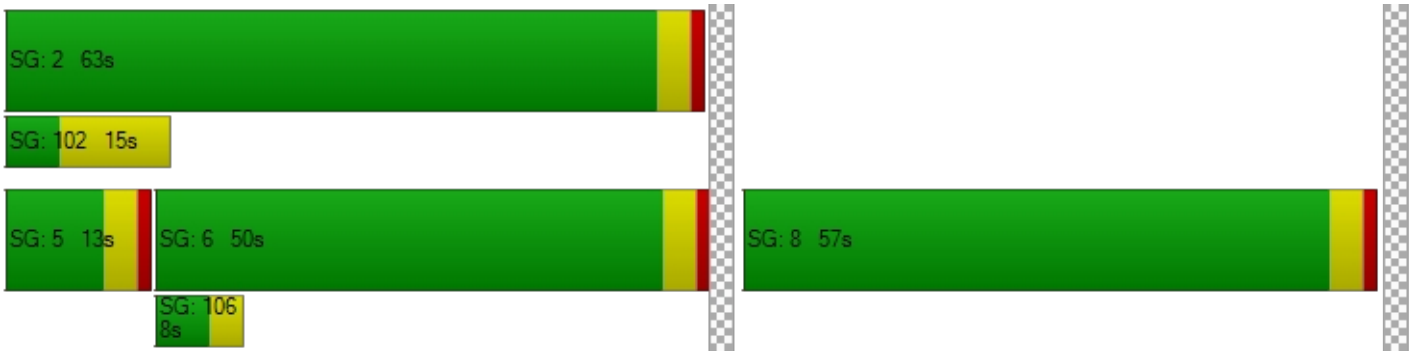
d_M, Delay for Movement [s/veh]	0.00	13.78	14.86	69.30	8.66	0.00	37.36	37.36	52.45	0.00	0.00	0.00
Movement LOS		B	B	E	A		D	D	D			
d_A, Approach Delay [s/veh]	14.11			14.48			47.13			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	22.22											
Intersection LOS	C											
Intersection V/C	0.507											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.142	1.822
Crosswalk LOS	F	F	B	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	983	883	0
d_b, Bicycle Delay [s]	22.82	15.50	18.70	60.00
l_b,int, Bicycle LOS Score for Intersection	2.124	2.195	2.505	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1043	269	204	682	0	496	3	344	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1043	269	204	682	0	496	3	344	0	0	0
Peak Hour Factor	1.000	0.915	0.915	0.915	0.915	1.000	0.915	0.915	0.915	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	285	73	56	186	0	136	1	94	0	0	0
Total Analysis Volume [veh/h]	0	1140	294	223	745	0	542	3	376	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	62	0	14	76	0	0	44	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	71	71	10	85	27	27	27	
g / C, Green / Cycle	0.59	0.59	0.08	0.71	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.40	0.43	0.07	0.22	0.18	0.18	0.20	
s, saturation flow rate [veh/h]	1800	1679	3329	3427	1714	1667	1530	
c, Capacity [veh/h]	1062	991	275	2420	389	379	348	
d1, Uniform Delay [s]	16.74	17.58	54.13	6.62	43.75	43.97	44.67	
k, delay calibration	0.50	0.50	0.11	0.50	0.12	0.13	0.16	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.44	4.59	5.70	0.33	4.20	5.11	9.50	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.72	0.81	0.31	0.80	0.81	0.87	
d, Delay for Lane Group [s/veh]	20.18	22.17	59.83	6.95	47.95	49.08	54.17	
Lane Group LOS	C	C	E	A	D	D	D	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	13.83	14.72	3.53	3.39	9.12	9.20	9.55	
50th-Percentile Queue Length [ft/ln]	345.77	368.11	88.19	84.79	228.0	229.9	238.7	
95th-Percentile Queue Length [veh/ln]	19.93	21.02	6.35	6.10	14.08	14.17	14.62	
95th-Percentile Queue Length [ft/ln]	498.24	525.44	158.75	152.62	351.9	354.3	365.4	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	20.92	22.17	59.83	6.95	0.00	48.44	49.08	53.22	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	D			
d_A, Approach Delay [s/veh]	21.17			19.13			50.37			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	28.67											
Intersection LOS	C											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.371	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	1200	667	0
d_b, Bicycle Delay [s]	16.02	9.60	26.67	60.00
l_b,int, Bicycle LOS Score for Intersection	2.743	2.358	3.079	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.441

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1417	643	0	1189	41	193	0	409	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1417	643	0	1189	41	193	0	409	0	0	0
Peak Hour Factor	1.000	0.958	0.958	1.000	0.958	0.958	0.958	0.958	0.958	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	370	168	0	310	11	50	0	107	0	0	0
Total Analysis Volume [veh/h]	0	1479	671	0	1241	43	201	0	427	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	65	0	0	65	0	0	55	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	92	92	20	20	20	
g / C, Green / Cycle	0.77	0.77	0.17	0.17	0.17	
(v / s)_i Volume / Saturation Flow Rate	0.30	0.25	0.12	0.14	0.14	
s, saturation flow rate [veh/h]	4903	4903	1714	1530	1530	
c, Capacity [veh/h]	3756	3756	287	256	256	
d1, Uniform Delay [s]	4.71	4.40	47.12	48.34	48.34	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.31	0.24	3.10	6.96	6.96	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.39	0.33	0.70	0.83	0.83	
d, Delay for Lane Group [s/veh]	5.02	4.64	50.22	55.30	55.30	
Lane Group LOS	A	A	D	E	E	
Critical Lane Group	Yes	No	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	3.56	2.79	5.92	6.67	6.67	
50th-Percentile Queue Length [ft/ln]	89.02	69.77	147.9	166.8	166.8	
95th-Percentile Queue Length [veh/ln]	6.41	5.02	9.90	10.91	10.91	
95th-Percentile Queue Length [ft/ln]	160.23	125.59	247.6	272.7	272.7	

Movement, Approach, & Intersection Results

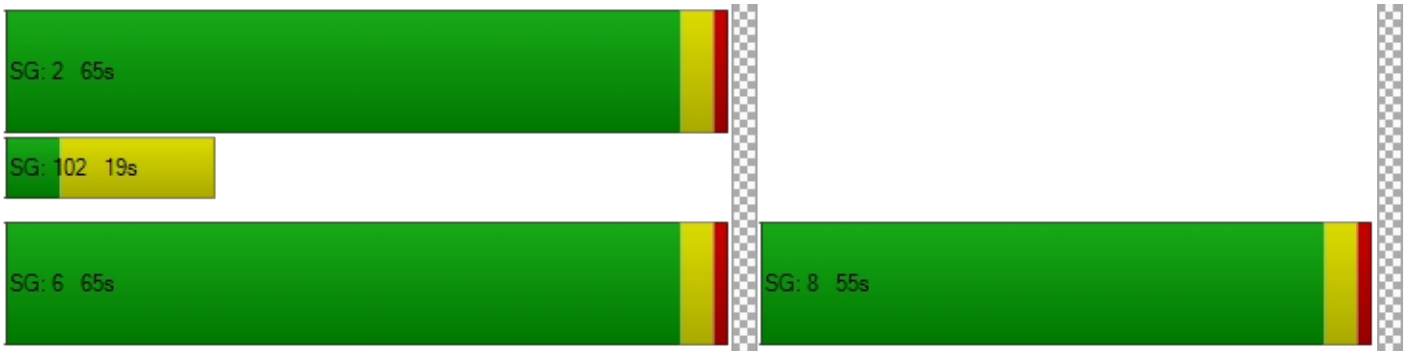
d_M, Delay for Movement [s/veh]	0.00	5.02	0.00	0.00	4.64	0.00	50.22	55.30	55.30	0.00	0.00	0.00
Movement LOS		A			A		D	E	E			
d_A, Approach Delay [s/veh]	5.02			4.64			53.67			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	14.00											
Intersection LOS	B											
Intersection V/C	0.441											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.299	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1017	850	0
d_b, Bicycle Delay [s]	14.50	14.50	19.84	60.00
l_b,int, Bicycle LOS Score for Intersection	2.373	2.242	2.596	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.389

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	26	384	87	100	386	54	65	324	60	68	185	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	384	87	100	386	54	65	324	60	68	185	82
Peak Hour Factor	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	109	25	28	109	15	18	92	17	19	52	23
Total Analysis Volume [veh/h]	29	434	98	113	437	61	74	367	68	77	209	93
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	30	0	14	29	0	43	65	0	11	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	70	70	10	76	76	7	18	18	7	18	18
g / C, Green / Cycle	0.03	0.58	0.58	0.08	0.64	0.64	0.06	0.15	0.15	0.06	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.15	0.15	0.07	0.14	0.14	0.04	0.12	0.12	0.04	0.09	0.09
s, saturation flow rate [veh/h]	1714	1800	1687	1714	1800	1724	1714	1800	1704	1714	1800	1618
c, Capacity [veh/h]	45	1049	983	137	1145	1097	98	266	252	97	265	238
d1, Uniform Delay [s]	57.86	12.31	12.34	54.39	9.24	9.25	55.77	49.72	49.80	55.94	47.78	47.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.22	0.60	0.65	11.76	0.45	0.47	11.35	6.80	7.63	13.72	2.08	2.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.26	0.26	0.83	0.22	0.22	0.76	0.84	0.85	0.80	0.59	0.61
d, Delay for Lane Group [s/veh]	72.08	12.91	12.99	66.16	9.69	9.72	67.12	56.52	57.43	69.66	49.86	50.50
Lane Group LOS	E	B	B	E	A	A	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.05	3.72	3.54	3.81	2.86	2.77	2.52	6.97	6.75	2.67	4.52	4.26
50th-Percentile Queue Length [ft/ln]	26.27	92.96	88.59	95.22	71.56	69.16	62.94	174.3	168.6	66.79	112.9	106.5
95th-Percentile Queue Length [veh/ln]	1.89	6.69	6.38	6.86	5.15	4.98	4.53	11.31	11.01	4.81	8.01	7.65
95th-Percentile Queue Length [ft/ln]	47.29	167.3	159.4	171.3	128.8	124.5	113.3	282.6	275.1	120.2	200.1	191.1

Movement, Approach, & Intersection Results

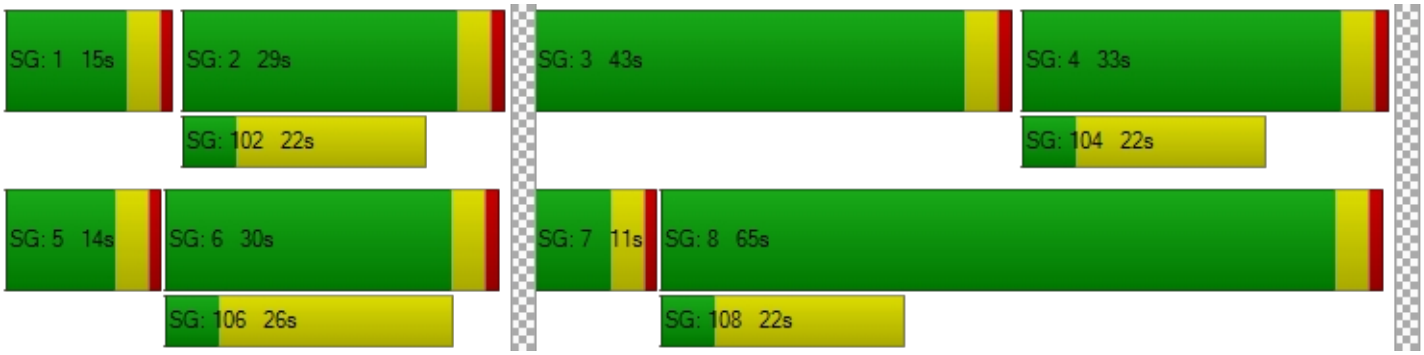
d_M, Delay for Movement [s/veh]	72.08	12.94	12.99	66.16	9.70	9.72	67.12	56.88	57.43	69.66	50.03	50.50
Movement LOS	E	B	B	E	A	A	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	16.01			20.14			58.44			54.13		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	34.73											
Intersection LOS	C											
Intersection V/C	0.389											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.538	2.551	2.473	2.624
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	417	1017	483
d_b, Bicycle Delay [s]	36.82	37.60	14.50	34.50
l_b,int, Bicycle LOS Score for Intersection	2.022	2.064	1.980	1.872
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.655

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	62	750	75	294	625	106	192	300	54	124	296	363
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	750	75	294	625	106	192	300	54	124	296	363
Peak Hour Factor	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	204	20	80	170	29	52	82	15	34	81	99
Total Analysis Volume [veh/h]	67	816	82	320	680	115	209	326	59	135	322	395
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	26	0	19	33	0	13	49	0	26	62	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	48	48	14	55	55	9	32	32	11	34	34
g / C, Green / Cycle	0.05	0.40	0.40	0.11	0.46	0.46	0.08	0.26	0.26	0.09	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.05	0.10	0.20	0.08	0.06	0.10	0.04	0.08	0.18	0.26
s, saturation flow rate [veh/h]	1714	3427	1530	3329	3427	1530	3329	3427	1530	1714	1800	1530
c, Capacity [veh/h]	85	1359	607	375	1574	703	250	899	401	163	509	432
d1, Uniform Delay [s]	56.39	28.69	23.09	52.27	21.88	18.96	54.78	36.09	33.97	53.30	37.61	41.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.60	1.97	0.46	5.58	0.87	0.50	7.28	0.25	0.17	10.00	1.31	8.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.60	0.14	0.85	0.43	0.16	0.84	0.36	0.15	0.83	0.63	0.91
d, Delay for Lane Group [s/veh]	70.99	30.66	23.56	57.85	22.74	19.46	62.06	36.34	34.14	63.29	38.92	50.32
Lane Group LOS	E	C	C	E	C	B	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.35	9.60	1.57	5.02	6.61	1.98	3.37	3.94	1.35	4.45	8.43	12.24
50th-Percentile Queue Length [ft/ln]	58.83	239.9	39.27	125.4	165.1	49.47	84.22	98.49	33.76	111.3	210.8	306.1
95th-Percentile Queue Length [veh/ln]	4.24	14.68	2.83	8.69	10.82	3.56	6.06	7.09	2.43	7.91	13.20	17.98
95th-Percentile Queue Length [ft/ln]	105.9	366.9	70.68	217.2	270.5	89.04	151.5	177.2	60.76	197.8	329.9	449.5

Movement, Approach, & Intersection Results

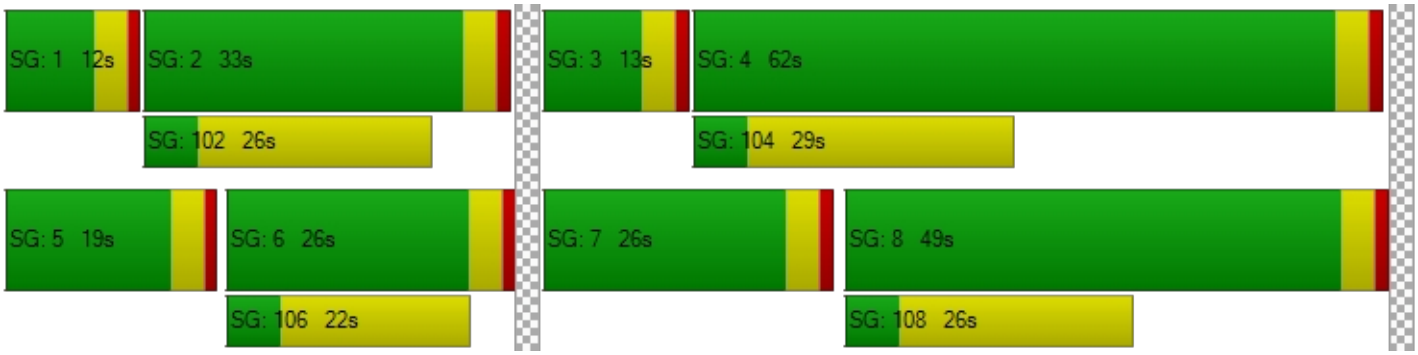
d_M, Delay for Movement [s/veh]	70.99	30.66	23.56	57.85	22.74	19.46	62.06	36.34	34.14	63.29	38.92	50.32
Movement LOS	E	C	C	E	C	B	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	32.85			32.48			45.17			48.06		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.49											
Intersection LOS	D											
Intersection V/C	0.655											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.767	2.962	2.762	2.725
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	483	750	967
d_b, Bicycle Delay [s]	40.02	34.50	23.44	16.02
l_b,int, Bicycle LOS Score for Intersection	2.356	2.479	2.050	2.965
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	41.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.764

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	59	1316	65	357	973	241	426	251	51	69	171	354
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	1316	65	357	973	241	426	251	51	69	171	354
Peak Hour Factor	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	342	17	93	253	63	111	65	13	18	44	92
Total Analysis Volume [veh/h]	61	1368	68	371	1011	251	443	261	53	72	178	368
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	40	0	19	38	0	21	40	0	21	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	41	41	15	52	52	17	43	43	5	31	31
g / C, Green / Cycle	0.04	0.34	0.34	0.13	0.43	0.43	0.14	0.36	0.36	0.04	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.02	0.28	0.04	0.11	0.21	0.16	0.13	0.08	0.03	0.02	0.05	0.24
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	123	1674	522	416	2106	657	472	1239	553	129	886	396
d1, Uniform Delay [s]	56.68	36.09	27.23	51.70	24.61	23.37	50.99	26.48	25.34	56.67	34.79	43.43
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.31
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.05	4.55	0.51	6.75	0.79	1.68	9.47	0.08	0.07	3.75	0.11	22.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.82	0.13	0.89	0.48	0.38	0.94	0.21	0.10	0.56	0.20	0.93
d, Delay for Lane Group [s/veh]	59.72	40.64	27.75	58.45	25.39	25.05	60.46	26.56	25.41	60.43	34.90	65.61
Lane Group LOS	E	D	C	E	C	C	E	C	C	E	C	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.96	12.76	1.43	5.88	7.00	5.15	7.19	2.61	1.02	1.14	2.06	13.02
50th-Percentile Queue Length [ft/ln]	24.01	319.1	35.79	146.9	174.9	128.6	179.8	65.29	25.52	28.51	51.58	325.3
95th-Percentile Queue Length [veh/ln]	1.73	18.62	2.58	9.85	11.34	8.87	11.59	4.70	1.84	2.05	3.71	18.93
95th-Percentile Queue Length [ft/ln]	43.21	465.5	64.42	246.3	283.3	221.7	289.8	117.5	45.94	51.33	92.84	473.2

Movement, Approach, & Intersection Results

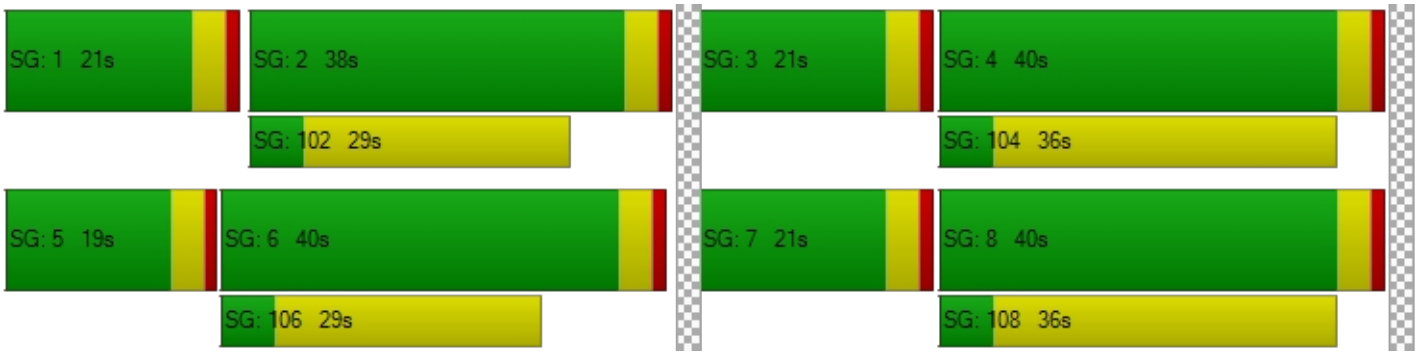
d_M, Delay for Movement [s/veh]	59.72	40.64	27.75	58.45	25.39	25.05	60.46	26.56	25.41	60.43	34.90	65.61
Movement LOS	E	D	C	E	C	C	E	C	C	E	C	E
d_A, Approach Delay [s/veh]	40.83			32.85			46.32			56.16		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	40.96											
Intersection LOS	D											
Intersection V/C	0.764											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.150	3.277	2.783	2.793
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	567	600	600
d_b, Bicycle Delay [s]	29.40	30.82	29.40	29.40
l_b,int, Bicycle LOS Score for Intersection	2.383	2.458	2.184	2.069
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	40.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.430

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	102	163	206	49	94	61	74	991	115	128	620	46
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	163	206	49	94	61	74	991	115	128	620	46
Peak Hour Factor	0.941	0.941	0.941	0.941	0.941	0.941	0.941	0.941	0.941	0.941	0.941	0.941
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	43	55	13	25	16	20	263	31	34	165	12
Total Analysis Volume [veh/h]	108	173	219	52	100	65	79	1053	122	136	659	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	36	36	11	31	0	15	60	0	13	58	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	59	72	5	58	58	7	32	32	9	34	34
g / C, Green / Cycle	0.05	0.49	0.60	0.04	0.48	0.48	0.06	0.26	0.26	0.08	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.14	0.03	0.05	0.05	0.05	0.23	0.23	0.04	0.20	0.20
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1575	1714	3427	1706	3329	1800	1757
c, Capacity [veh/h]	162	882	915	67	864	756	100	901	449	250	503	491
d1, Uniform Delay [s]	56.11	17.27	11.30	57.17	17.03	17.10	55.77	42.27	42.28	53.52	38.88	38.89
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.60	0.50	0.62	17.74	0.23	0.28	12.83	2.77	5.37	1.85	1.88	1.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.20	0.24	0.78	0.10	0.11	0.79	0.87	0.87	0.54	0.71	0.71
d, Delay for Lane Group [s/veh]	60.71	17.77	11.92	74.91	17.26	17.38	68.60	45.04	47.66	55.37	40.77	40.82
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.71	2.82	2.84	1.89	1.34	1.28	2.72	11.38	11.67	2.05	9.72	9.49
50th-Percentile Queue Length [ft/ln]	42.83	70.53	70.97	47.29	33.45	31.98	67.94	284.4	291.6	51.14	242.8	237.3
95th-Percentile Queue Length [veh/ln]	3.08	5.08	5.11	3.40	2.41	2.30	4.89	16.91	17.27	3.68	14.83	14.55
95th-Percentile Queue Length [ft/ln]	77.09	126.9	127.7	85.12	60.22	57.56	122.3	422.7	431.6	92.05	370.6	363.6

Movement, Approach, & Intersection Results

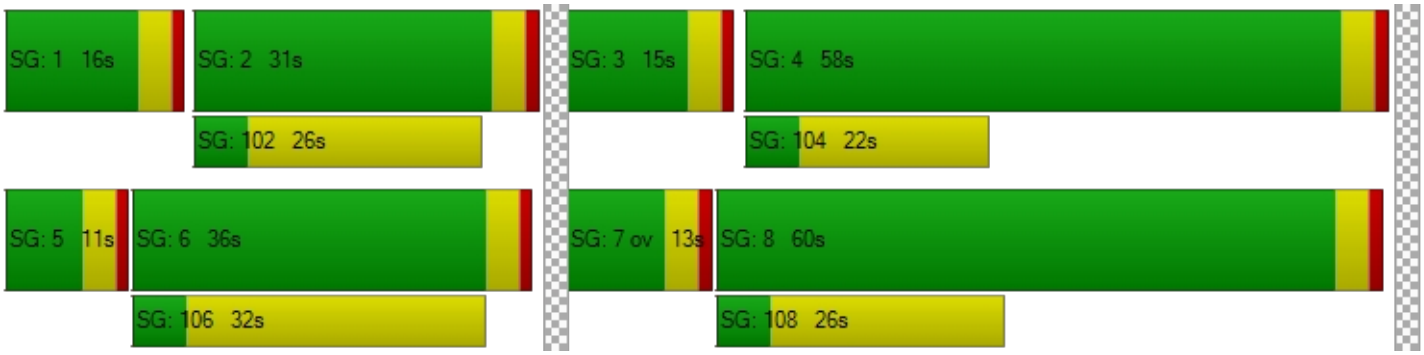
d_M, Delay for Movement [s/veh]	60.71	17.77	11.92	74.91	17.27	17.38	68.60	45.71	47.66	55.37	40.79	40.82
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	24.48			31.12			47.34			43.14		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	40.77											
Intersection LOS	D											
Intersection V/C	0.430											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.608	2.416	2.807	3.005
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	450	933	900
d_b, Bicycle Delay [s]	32.27	36.04	17.07	18.15
l_b,int, Bicycle LOS Score for Intersection	2.385	1.739	2.249	2.256
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.315

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	258	0	250	0	1047	169	0	558	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	258	0	250	0	1047	169	0	558	0
Peak Hour Factor	1.000	1.000	1.000	0.971	1.000	0.971	1.000	0.971	0.971	1.000	0.971	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	66	0	64	0	270	44	0	144	0
Total Analysis Volume [veh/h]	0	0	0	266	0	257	0	1078	174	0	575	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Split	Permi	Split	Permi	Permi	Unsig	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	40	0	0	0	80	0	0	80	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		15	15	97	97
g / C, Green / Cycle		0.12	0.12	0.81	0.81
(v / s)_i Volume / Saturation Flow Rate		0.08	0.09	0.22	0.12
s, saturation flow rate [veh/h]		3329	2708	4903	4903
c, Capacity [veh/h]		407	331	3978	3978
d1, Uniform Delay [s]		50.26	51.09	2.74	2.42
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		1.79	3.95	0.17	0.08
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.65	0.78	0.27	0.14
d, Delay for Lane Group [s/veh]		52.05	55.04	2.91	2.50
Lane Group LOS		D	E	A	A
Critical Lane Group		No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.92	3.93	1.62	0.76
50th-Percentile Queue Length [ft/ln]		97.95	98.25	40.49	19.06
95th-Percentile Queue Length [veh/ln]		7.05	7.07	2.92	1.37
95th-Percentile Queue Length [ft/ln]		176.31	176.86	72.88	34.31

Movement, Approach, & Intersection Results

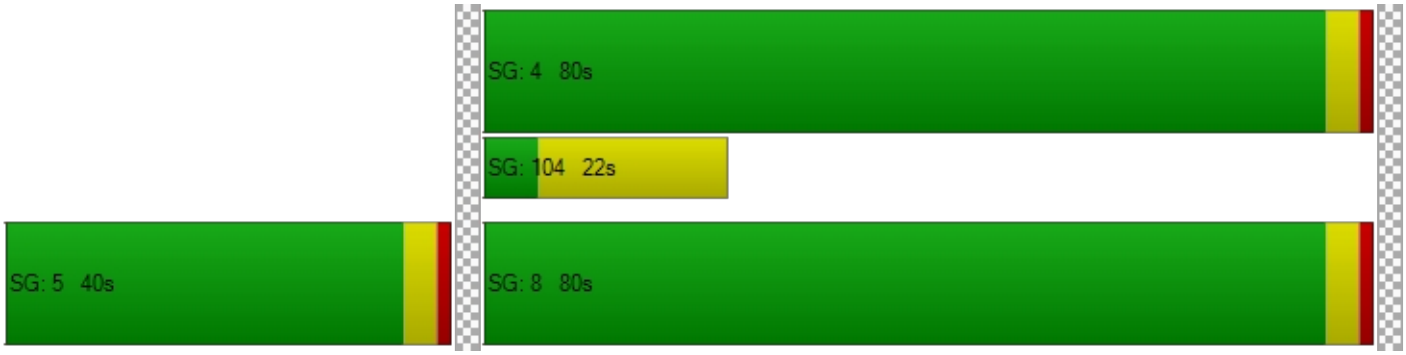
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	52.05	0.00	55.04	0.00	2.91	0.00	0.00	2.50	0.00
Movement LOS				D		E		A			A	
d_A, Approach Delay [s/veh]	0.00			53.52			2.91			2.50		
Approach LOS	A			D			A			A		
d_I, Intersection Delay [s/veh]	14.96											
Intersection LOS	B											
Intersection V/C	0.315											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.417	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	600	1267	1267
d_b, Bicycle Delay [s]	60.00	29.40	8.07	8.07
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.153	1.876
Bicycle LOS	D	A	B	A

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	34.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.446

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	276	0	514	0	0	0	439	912	0	0	798	162
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	276	0	514	0	0	0	439	912	0	0	798	162
Peak Hour Factor	0.949	0.949	0.949	1.000	1.000	1.000	0.949	0.949	1.000	1.000	0.949	0.949
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	73	0	135	0	0	0	116	240	0	0	210	43
Total Analysis Volume [veh/h]	291	0	542	0	0	0	463	961	0	0	841	171
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Unsig
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	41	0	0	0	0	49	79	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	69	69	69		20	43	20
g / C, Green / Cycle	0.57	0.57	0.57		0.16	0.36	0.16
(v / s)_i Volume / Saturation Flow Rate	0.17	0.18	0.18		0.14	0.20	0.13
s, saturation flow rate [veh/h]	1714	1531	1530		3329	4903	6538
c, Capacity [veh/h]	982	877	876		547	1768	1065
d1, Uniform Delay [s]	13.18	13.33	13.33		48.66	30.50	48.24
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.76	0.92	0.92		3.71	0.26	1.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.31	0.31		0.85	0.54	0.79
d, Delay for Lane Group [s/veh]	13.94	14.25	14.25		52.37	30.76	49.59
Lane Group LOS	B	B	B		D	C	D
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.14	3.98	3.98		7.00	7.40	6.14
50th-Percentile Queue Length [ft/ln]	103.5	99.42	99.38		175.06	184.89	153.44
95th-Percentile Queue Length [veh/ln]	7.45	7.16	7.16		11.34	11.86	10.20
95th-Percentile Queue Length [ft/ln]	186.3	178.9	178.8		283.55	296.38	255.01

Movement, Approach, & Intersection Results

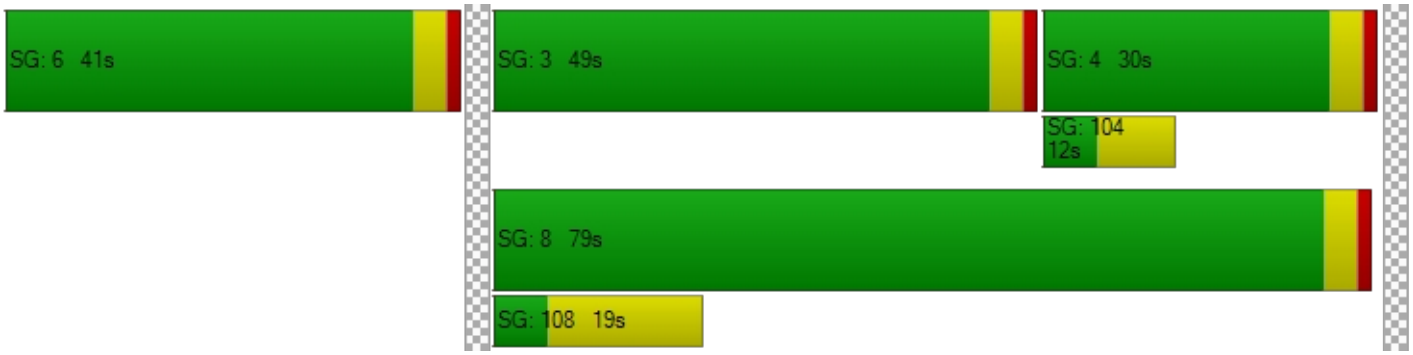
d_M, Delay for Movement [s/veh]	13.95	14.25	14.25	0.00	0.00	0.00	52.37	30.76	0.00	0.00	49.59	0.00
Movement LOS	B	B	B				D	C			D	
d_A, Approach Delay [s/veh]	14.14			0.00			37.79			49.59		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	34.64											
Intersection LOS	C											
Intersection V/C	0.446											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.349	1.956	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	0	1250	433
d_b, Bicycle Delay [s]	28.70	60.00	8.44	36.82
l_b,int, Bicycle LOS Score for Intersection	2.934	4.132	2.343	1.907
Bicycle LOS	C	D	B	A

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	37.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	154	926	338	107	435	86	305	1060	81	292	590	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	926	338	107	435	86	305	1060	81	292	590	61
Peak Hour Factor	0.954	0.954	0.954	0.954	0.954	0.954	0.954	0.954	0.954	0.954	0.954	0.954
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	40	243	89	28	114	23	80	278	21	77	155	16
Total Analysis Volume [veh/h]	161	971	354	112	456	90	320	1111	85	306	618	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	43	0	9	40	0	27	49	0	19	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	54	54	5	51	51	14	32	32	13	31	31
g / C, Green / Cycle	0.06	0.45	0.45	0.04	0.43	0.43	0.12	0.27	0.27	0.11	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.05	0.20	0.23	0.03	0.09	0.06	0.10	0.23	0.06	0.09	0.13	0.04
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	213	2202	687	139	2092	653	391	1309	408	363	1267	395
d1, Uniform Delay [s]	55.23	22.70	23.69	57.02	21.74	20.95	51.70	41.69	34.14	52.46	37.76	34.44
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.34	0.64	2.75	10.49	0.24	0.44	4.25	1.63	0.25	5.38	0.29	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.44	0.52	0.81	0.22	0.14	0.82	0.85	0.21	0.84	0.49	0.16
d, Delay for Lane Group [s/veh]	60.57	23.34	26.43	67.51	21.98	21.39	55.95	43.32	34.39	57.84	38.05	34.63
Lane Group LOS	E	C	C	E	C	C	E	D	C	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.55	6.37	7.64	1.89	2.76	1.63	4.93	10.52	1.97	4.79	5.18	1.48
50th-Percentile Queue Length [ft/ln]	63.84	159.2	191.1	47.15	69.05	40.74	123.3	263.0	49.23	119.7	129.5	36.98
95th-Percentile Queue Length [veh/ln]	4.60	10.51	12.18	3.39	4.97	2.93	8.57	15.84	3.54	8.38	8.91	2.66
95th-Percentile Queue Length [ft/ln]	114.9	262.7	304.4	84.87	124.3	73.33	214.3	396.1	88.62	209.5	222.8	66.56

Movement, Approach, & Intersection Results

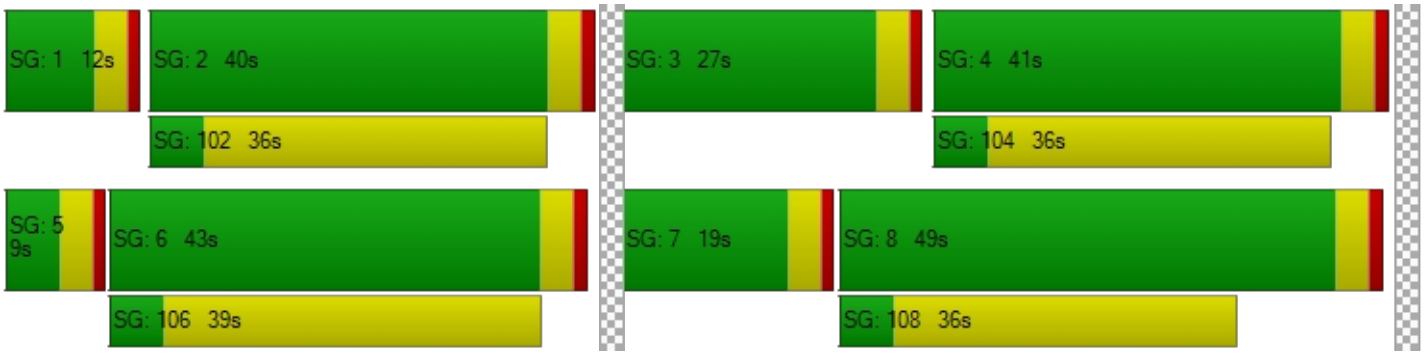
d_M, Delay for Movement [s/veh]	60.57	23.34	26.43	67.51	21.98	21.39	55.95	43.32	34.39	57.84	38.05	34.63
Movement LOS	E	C	C	E	C	C	E	D	C	E	D	C
d_A, Approach Delay [s/veh]	28.11			29.65			45.49			43.96		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.37											
Intersection LOS	D											
Intersection V/C	0.584											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.117	3.083	3.305	3.232
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	600	750	617
d_b, Bicycle Delay [s]	27.34	29.40	23.44	28.70
l_b,int, Bicycle LOS Score for Intersection	2.377	1.922	2.393	2.103
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	43.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.445

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	94	250	24	131	191	90	211	979	73	65	552	121
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	250	24	131	191	90	211	979	73	65	552	121
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	68	7	36	52	25	58	268	20	18	151	33
Total Analysis Volume [veh/h]	103	274	26	143	209	99	231	1072	80	71	605	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	36	0	17	40	0	37	56	0	11	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	53	53	12	56	56	18	33	33	6	21	21
g / C, Green / Cycle	0.07	0.44	0.44	0.10	0.47	0.47	0.15	0.27	0.27	0.05	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.02	0.08	0.09	0.09	0.13	0.22	0.05	0.04	0.14	0.15
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1772	1584	1714	4903	1506	1687	3427	1641
c, Capacity [veh/h]	126	1513	675	168	826	739	262	1344	413	89	596	285
d1, Uniform Delay [s]	54.80	20.34	19.04	53.23	18.79	18.85	49.74	40.47	33.40	56.19	47.88	48.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.09	0.26	0.11	11.15	0.52	0.61	9.31	1.13	0.23	14.65	3.12	6.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.18	0.04	0.85	0.19	0.20	0.88	0.80	0.19	0.80	0.83	0.85
d, Delay for Lane Group [s/veh]	66.89	20.60	19.15	64.38	19.31	19.46	59.05	41.60	33.62	70.84	51.00	54.91
Lane Group LOS	E	C	B	E	B	B	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.49	2.40	0.44	4.76	2.74	2.55	7.45	9.89	1.83	2.49	7.41	7.54
50th-Percentile Queue Length [ft/ln]	87.28	59.88	10.89	119.0	68.57	63.79	186.2	247.3	45.70	62.24	185.2	188.4
95th-Percentile Queue Length [veh/ln]	6.28	4.31	0.78	8.34	4.94	4.59	11.93	15.05	3.29	4.48	11.88	12.04
95th-Percentile Queue Length [ft/ln]	157.1	107.7	19.60	208.5	123.4	114.8	298.1	376.3	82.26	112.0	296.8	301.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.89	20.60	19.15	64.38	19.35	19.46	59.05	41.60	33.62	70.84	51.70	54.91
Movement LOS	E	C	B	E	B	B	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	32.34			33.65			44.05			53.91		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	43.58											
Intersection LOS	D											
Intersection V/C	0.445											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.592	2.645	3.102	2.991
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	867	433
d_b, Bicycle Delay [s]	32.27	29.40	19.27	36.82
l_b,int, Bicycle LOS Score for Intersection	1.892	1.932	2.320	2.005
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.477

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	95	607	69	127	443	106	299	720	115	160	526	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	607	69	127	443	106	299	720	115	160	526	58
Peak Hour Factor	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	25	157	18	33	114	27	77	186	30	41	136	15
Total Analysis Volume [veh/h]	98	627	71	131	458	110	309	744	119	165	543	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	40	0	23	43	0	27	45	0	12	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	63	63	11	65	65	14	22	22	8	17	32
g / C, Green / Cycle	0.07	0.52	0.52	0.09	0.54	0.54	0.11	0.19	0.19	0.07	0.14	0.26
(v / s)_i Volume / Saturation Flow Rate	0.06	0.20	0.20	0.08	0.13	0.07	0.09	0.15	0.08	0.05	0.11	0.04
s, saturation flow rate [veh/h]	1714	1800	1737	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	122	941	908	159	1866	833	376	911	284	217	676	404
d1, Uniform Delay [s]	54.89	17.03	17.03	53.45	14.37	13.42	52.03	46.90	43.14	55.16	50.15	33.81
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.45	1.15	1.20	10.01	0.31	0.33	4.48	1.86	0.98	5.40	2.29	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.38	0.38	0.82	0.25	0.13	0.82	0.82	0.42	0.76	0.80	0.15
d, Delay for Lane Group [s/veh]	66.34	18.18	18.23	63.45	14.69	13.74	56.51	48.76	44.12	60.57	52.44	33.98
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.31	6.06	5.86	4.32	3.33	1.53	4.78	7.25	3.21	2.62	5.41	1.37
50th-Percentile Queue Length [ft/ln]	82.68	151.4	146.5	108.0	83.21	38.30	119.4	181.3	80.22	65.43	135.1	34.27
95th-Percentile Queue Length [veh/ln]	5.95	10.09	9.83	7.73	5.99	2.76	8.36	11.67	5.78	4.71	9.22	2.47
95th-Percentile Queue Length [ft/ln]	148.8	252.3	245.8	193.3	149.7	68.94	209.1	291.7	144.4	117.7	230.4	61.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.34	18.20	18.23	63.45	14.69	13.74	56.51	48.76	44.12	60.57	52.44	33.98
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	24.13			23.68			50.33			52.74		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.37											
Intersection LOS	D											
Intersection V/C	0.477											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.615	2.744	3.073	3.149
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	650	683	433
d_b, Bicycle Delay [s]	29.40	27.34	26.00	36.82
l_b,int, Bicycle LOS Score for Intersection	2.216	2.136	2.204	1.982
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	35.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.471

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	104	974	61	226	510	55	136	597	90	92	640	235
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	104	974	61	226	510	55	136	597	90	92	640	235
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	248	16	58	130	14	35	152	23	23	163	60
Total Analysis Volume [veh/h]	106	994	62	231	520	56	139	609	92	94	653	240
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	40	0	15	44	0	11	56	0	9	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	64	64	10	69	69	7	25	25	5	23	23
g / C, Green / Cycle	0.05	0.53	0.53	0.09	0.57	0.57	0.06	0.21	0.21	0.04	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.03	0.20	0.04	0.07	0.15	0.04	0.04	0.12	0.06	0.03	0.13	0.16
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	156	2616	816	284	1960	875	190	1011	315	139	935	292
d1, Uniform Delay [s]	56.29	16.38	13.61	53.94	12.97	11.42	55.65	43.17	40.23	56.71	45.34	46.62
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.06	0.42	0.18	5.58	0.33	0.14	5.28	0.58	0.51	5.67	0.96	5.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.38	0.08	0.81	0.27	0.06	0.73	0.60	0.29	0.68	0.70	0.82
d, Delay for Lane Group [s/veh]	61.35	16.80	13.79	59.51	13.30	11.56	60.94	43.75	40.73	62.38	46.30	52.39
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.69	5.36	0.86	3.65	3.57	0.69	2.21	5.52	2.35	1.51	6.14	7.33
50th-Percentile Queue Length [ft/ln]	42.28	133.9	21.46	91.15	89.33	17.37	55.25	138.1	58.86	37.87	153.4	183.3
95th-Percentile Queue Length [veh/ln]	3.04	9.15	1.54	6.56	6.43	1.25	3.98	9.38	4.24	2.73	10.20	11.77
95th-Percentile Queue Length [ft/ln]	76.10	228.8	38.62	164.0	160.8	31.26	99.44	234.4	105.9	68.17	255.0	294.3

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.35	16.80	13.79	59.51	13.30	11.56	60.94	43.75	40.73	62.38	46.30	52.39
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	20.70			26.40			46.27			49.31		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.01											
Intersection LOS	D											
Intersection V/C	0.471											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.067	3.287	3.143	3.069
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	667	867	833
d_b, Bicycle Delay [s]	29.40	26.67	19.27	20.42
l_b,int, Bicycle LOS Score for Intersection	2.199	2.225	2.022	2.102
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	43.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.485

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	133	256	98	23	224	93	137	439	167	42	256	30
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	256	98	23	224	93	137	439	167	42	256	30
Peak Hour Factor	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	34	66	25	6	58	24	35	114	43	11	66	8
Total Analysis Volume [veh/h]	138	265	102	24	232	96	142	455	173	44	265	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	28	0	10	23	23	0	52	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	55	55	3	47	47	31	31	15	15
g / C, Green / Cycle	0.09	0.46	0.46	0.02	0.39	0.39	0.26	0.26	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.08	0.11	0.11	0.01	0.07	0.06	0.23	0.24	0.10	0.10
s, saturation flow rate [veh/h]	1714	1800	1633	1714	3427	1530	1770	1508	1778	1584
c, Capacity [veh/h]	157	829	753	40	1345	600	461	393	217	193
d1, Uniform Delay [s]	53.84	19.51	19.56	58.04	23.76	23.63	42.85	42.89	51.44	51.49
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.18	0.65	0.73	13.50	0.28	0.57	6.62	7.78	7.75	8.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.23	0.23	0.60	0.17	0.16	0.90	0.90	0.83	0.83
d, Delay for Lane Group [s/veh]	68.01	20.16	20.29	71.54	24.04	24.20	49.47	50.66	59.19	60.49
Lane Group LOS	E	C	C	E	C	C	D	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.73	3.36	3.14	0.87	2.21	1.87	12.66	10.95	5.72	5.21
50th-Percentile Queue Length [ft/ln]	118.2	83.92	78.39	21.81	55.27	46.80	316.38	273.69	143.08	130.29
95th-Percentile Queue Length [veh/ln]	8.30	6.04	5.64	1.57	3.98	3.37	18.49	16.37	9.65	8.96
95th-Percentile Queue Length [ft/ln]	207.4	151.0	141.1	39.27	99.48	84.24	462.23	409.35	241.16	223.89

Movement, Approach, & Intersection Results

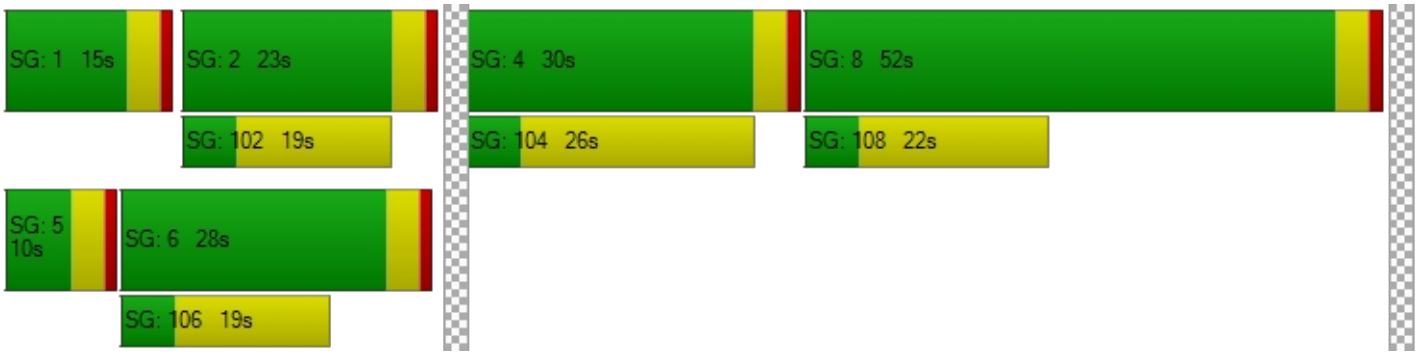
d_M, Delay for Movement [s/veh]	68.01	20.20	20.29	71.54	24.04	24.20	49.47	49.95	50.66	59.19	59.83	60.49
Movement LOS	E	C	C	E	C	C	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	33.28			27.32			50.02			59.81		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	43.35											
Intersection LOS	D											
Intersection V/C	0.485											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.501	2.596	2.456	2.371
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	317	800	433
d_b, Bicycle Delay [s]	38.40	42.50	21.60	36.82
l_b,int, Bicycle LOS Score for Intersection	1.976	1.850	2.195	1.840
Bicycle LOS	A	A	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	167	0	536	0	1898	934	0	1348	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	167	0	536	0	1898	934	0	1348	0
Peak Hour Factor	1.000	1.000	1.000	0.918	1.000	0.918	1.000	0.918	0.918	1.000	0.918	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	45	0	146	0	517	254	0	367	0
Total Analysis Volume [veh/h]	0	0	0	182	0	584	0	2068	1017	0	1468	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	30	0	0	0	90	0	0	90	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		25	25	25	87	87	87
g / C, Green / Cycle		0.21	0.21	0.21	0.73	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate		0.11	0.19	0.19	0.42	0.66	0.30
s, saturation flow rate [veh/h]		1714	1530	1530	4903	1530	4903
c, Capacity [veh/h]		357	318	318	3556	1110	3556
d1, Uniform Delay [s]		42.09	46.50	46.50	7.83	13.51	6.47
k, delay calibration		0.11	0.28	0.28	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		1.13	21.85	21.85	0.70	13.19	0.36
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.51	0.92	0.92	0.58	0.92	0.41
d, Delay for Lane Group [s/veh]		43.22	68.35	68.35	8.54	26.70	6.82
Lane Group LOS		D	E	E	A	C	A
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		4.90	10.42	10.42	7.70	23.06	4.49
50th-Percentile Queue Length [ft/ln]		122.5	260.5	260.5	192.41	576.47	112.27
95th-Percentile Queue Length [veh/ln]		8.53	15.72	15.72	12.25	30.93	7.97
95th-Percentile Queue Length [ft/ln]		213.3	392.9	392.9	306.15	773.35	199.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	43.22	0.00	68.35	0.00	8.54	26.70	0.00	6.82	0.00
Movement LOS				D		E		A	C		A	
d_A, Approach Delay [s/veh]	0.00			62.38			14.52			6.82		
Approach LOS	A			E			B			A		
d_I, Intersection Delay [s/veh]	19.29											
Intersection LOS	B											
Intersection V/C	0.856											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.333	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	433	1433	1433
d_b, Bicycle Delay [s]	60.00	36.82	4.82	4.82
l_b,int, Bicycle LOS Score for Intersection	4.132	2.824	3.256	2.367
Bicycle LOS	D	C	C	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.519

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	731	0	465	0	0	0	0	1092	0	0	1114	292
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	731	0	465	0	0	0	0	1092	0	0	1114	292
Peak Hour Factor	0.939	1.000	0.939	1.000	1.000	1.000	1.000	0.939	1.000	1.000	0.939	0.939
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	195	0	124	0	0	0	0	291	0	0	297	78
Total Analysis Volume [veh/h]	778	0	495	0	0	0	0	1163	0	0	1186	311
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	93	0	0	0	0	0	0	27	0	0	27	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	38	38	38		74	74	74
g / C, Green / Cycle	0.31	0.31	0.31		0.62	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.25	0.25	0.28		0.24	0.24	0.20
s, saturation flow rate [veh/h]	1714	1681	1530		4903	4903	1530
c, Capacity [veh/h]	537	527	479		3040	3040	949
d1, Uniform Delay [s]	37.59	37.84	39.14		11.36	11.43	10.88
k, delay calibration	0.11	0.11	0.11		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.65	2.96	5.63		0.37	0.38	0.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.81	0.89		0.38	0.39	0.33
d, Delay for Lane Group [s/veh]	40.24	40.81	44.78		11.73	11.81	11.80
Lane Group LOS	D	D	D		B	B	B
Critical Lane Group	No	No	Yes		No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.69	11.80	12.51		5.06	5.19	4.05
50th-Percentile Queue Length [ft/ln]	292.2	295.1	312.8		126.53	129.85	101.28
95th-Percentile Queue Length [veh/ln]	17.30	17.44	18.31		8.75	8.93	7.29
95th-Percentile Queue Length [ft/ln]	432.4	435.9	457.8		218.77	223.29	182.31

Movement, Approach, & Intersection Results

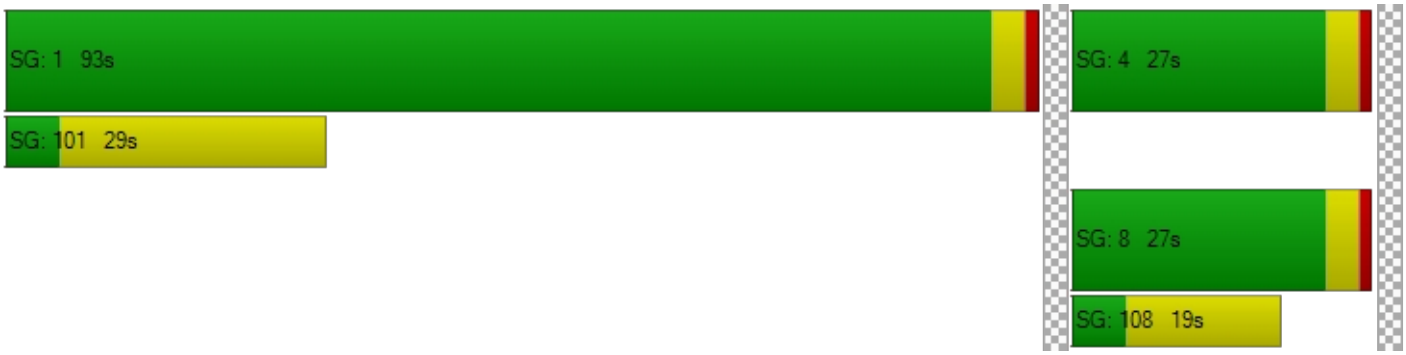
d_M, Delay for Movement [s/veh]	40.50	0.00	44.21	0.00	0.00	0.00	0.00	11.73	0.00	0.00	11.81	11.80
Movement LOS	D		D					B			B	B
d_A, Approach Delay [s/veh]	41.94			0.00			11.73			11.81		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	21.54											
Intersection LOS	C											
Intersection V/C	0.519											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.457	0.000	0.000	3.049
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1483	0	383	383
d_b, Bicycle Delay [s]	4.00	60.00	39.20	39.20
l_b,int, Bicycle LOS Score for Intersection	3.660	4.132	2.199	2.383
Bicycle LOS	D	D	B	B

Sequence

Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	41.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.572

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	260	348	189	62	209	155	236	931	176	104	748	47
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	260	348	189	62	209	155	236	931	176	104	748	47
Peak Hour Factor	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	66	88	48	16	53	39	60	235	44	26	189	12
Total Analysis Volume [veh/h]	263	352	191	63	211	157	239	941	178	105	756	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	26	52	0	10	36	0	15	49	49	9	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	57	57	6	42	42	11	36	61	5	31	31
g / C, Green / Cycle	0.17	0.47	0.47	0.05	0.35	0.35	0.09	0.30	0.51	0.04	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.15	0.20	0.12	0.04	0.11	0.11	0.07	0.27	0.12	0.03	0.22	0.03
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1553	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	291	853	725	80	631	545	292	1043	777	139	885	395
d1, Uniform Delay [s]	48.84	20.64	18.97	56.60	28.34	28.49	53.80	40.03	16.47	56.90	42.35	34.08
k, delay calibration	0.17	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.46	1.47	0.89	15.40	1.26	1.55	5.61	3.21	0.15	8.13	2.48	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.41	0.26	0.79	0.31	0.32	0.82	0.90	0.23	0.76	0.85	0.12
d, Delay for Lane Group [s/veh]	63.30	22.12	19.86	72.00	29.59	30.04	59.41	43.23	16.62	65.03	44.83	34.21
Lane Group LOS	E	C	B	E	C	C	E	D	B	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.87	6.75	3.37	2.23	4.28	3.91	3.77	13.65	2.76	1.73	10.90	1.10
50th-Percentile Queue Length [ft/ln]	221.8	168.7	84.28	55.81	107.0	97.87	94.29	341.1	69.08	43.30	272.6	27.45
95th-Percentile Queue Length [veh/ln]	13.76	11.01	6.07	4.02	7.68	7.05	6.79	19.70	4.97	3.12	16.32	1.98
95th-Percentile Queue Length [ft/ln]	343.9	275.3	151.7	100.4	191.8	176.1	169.7	492.5	124.3	77.94	407.9	49.41

Movement, Approach, & Intersection Results

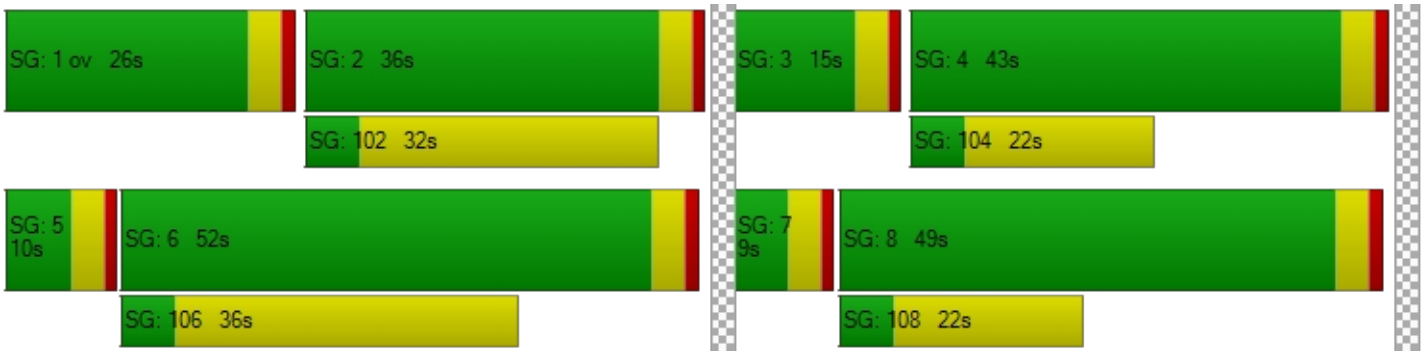
d_M, Delay for Movement [s/veh]	63.30	22.12	19.86	72.00	29.63	30.04	59.41	43.23	16.62	65.03	44.83	34.21
Movement LOS	E	C	B	E	C	C	E	D	B	E	D	C
d_A, Approach Delay [s/veh]	35.02			35.97			42.59			46.60		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.08											
Intersection LOS	D											
Intersection V/C	0.572											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.569	2.524	3.050	3.092
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	533	750	650
d_b, Bicycle Delay [s]	21.60	32.27	23.44	27.34
l_b,int, Bicycle LOS Score for Intersection	2.890	1.915	2.680	2.310
Bicycle LOS	C	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.557

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	276	828	230	281	634	195	247	860	100	135	567	123
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	276	828	230	281	634	195	247	860	100	135	567	123
Peak Hour Factor	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	70	210	58	71	161	49	63	218	25	34	144	31
Total Analysis Volume [veh/h]	280	841	234	285	644	198	251	873	102	137	576	125
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	26	40	0	26	40	40	14	43	0	11	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	21	50	50	22	50	64	10	25	25	7	22	48
g / C, Green / Cycle	0.18	0.42	0.42	0.18	0.42	0.54	0.08	0.21	0.21	0.06	0.19	0.40
(v / s)_i Volume / Saturation Flow Rate	0.16	0.17	0.15	0.17	0.13	0.13	0.08	0.18	0.07	0.04	0.12	0.08
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	305	2044	638	310	2058	821	277	1043	325	189	912	612
d1, Uniform Delay [s]	48.49	24.63	24.09	48.32	23.26	14.82	54.53	45.25	39.85	55.69	45.05	23.53
k, delay calibration	0.20	0.50	0.50	0.20	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.70	0.61	1.63	18.30	0.40	0.70	10.66	1.87	0.54	5.25	0.73	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.41	0.37	0.92	0.31	0.24	0.90	0.84	0.31	0.73	0.63	0.20
d, Delay for Lane Group [s/veh]	66.19	25.24	25.72	66.62	23.66	15.51	65.19	47.12	40.40	60.94	45.78	23.70
Lane Group LOS	E	C	C	E	C	B	E	D	D	E	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.71	5.71	4.85	9.92	4.14	3.01	4.17	8.46	2.60	2.18	5.34	2.36
50th-Percentile Queue Length [ft/ln]	242.6	142.7	121.3	248.1	103.4	75.31	104.1	211.4	65.12	54.45	133.5	59.04
95th-Percentile Queue Length [veh/ln]	14.82	9.63	8.47	15.09	7.45	5.42	7.50	13.23	4.69	3.92	9.13	4.25
95th-Percentile Queue Length [ft/ln]	370.3	240.7	211.7	377.2	186.2	135.5	187.5	330.7	117.2	98.01	228.3	106.2

Movement, Approach, & Intersection Results

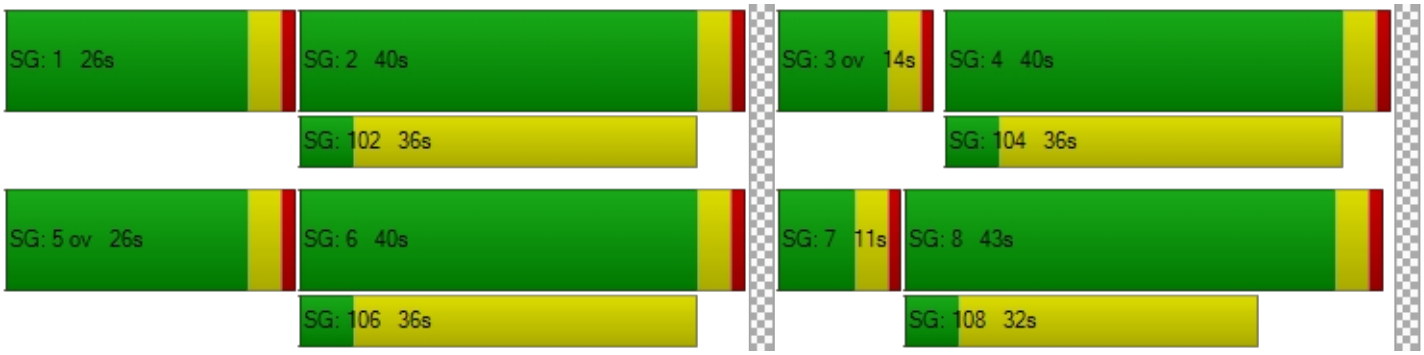
d_M, Delay for Movement [s/veh]	66.19	25.24	25.72	66.62	23.66	15.51	65.19	47.12	40.40	60.94	45.78	23.70
Movement LOS	E	C	C	E	C	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	33.79			33.09			50.26			44.97		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	40.12											
Intersection LOS	D											
Intersection V/C	0.557											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.013	3.118	3.111	3.106
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	650	600
d_b, Bicycle Delay [s]	29.40	29.40	27.34	29.40
l_b,int, Bicycle LOS Score for Intersection	2.305	2.179	2.234	2.021
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	961.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.327

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	60	0	118	0	0	0	0	1326	54	104	760	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	0	118	0	0	0	0	1326	54	104	760	0
Peak Hour Factor	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	0	31	0	0	0	0	350	14	27	201	0
Total Analysis Volume [veh/h]	63	0	125	0	0	0	0	1402	57	110	803	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	2.33	0.00	0.34	0.00	0.00	0.00	0.00	0.01	0.00	0.23	0.01	0.00
d_M, Delay for Movement [s/veh]	961.6	978.9	838.4	118.6	161.7	10.96	9.34	0.00	0.00	15.00	0.00	0.00
Movement LOS	F	F	F	F	F	B	A	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	18.49	18.49	18.49	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.00	0.00
95th-Percentile Queue Length [ft/ln]	462.3	462.3	462.3	0.00	0.00	0.00	0.00	0.00	0.00	22.50	0.00	0.00
d_A, Approach Delay [s/veh]	879.72			97.11			0.00			1.81		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	65.25											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	46.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.725

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	138	673	87	131	551	71	256	837	177	287	553	119
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	673	87	131	551	71	256	837	177	287	553	119
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	36	173	22	34	142	18	66	216	46	74	143	31
Total Analysis Volume [veh/h]	142	694	90	135	568	73	264	863	182	296	570	123
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	36	0	15	36	0	30	37	0	32	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	37	37	11	37	37	21	33	33	23	35	35
g / C, Green / Cycle	0.09	0.31	0.31	0.09	0.31	0.31	0.17	0.28	0.28	0.19	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.08	0.22	0.22	0.08	0.18	0.18	0.15	0.25	0.12	0.17	0.17	0.08
s, saturation flow rate [veh/h]	1714	1800	1729	1714	1800	1729	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	157	556	534	157	556	534	294	945	422	326	1008	450
d1, Uniform Delay [s]	53.98	36.82	36.82	53.74	34.99	35.00	48.66	42.06	35.72	47.57	35.85	32.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.17	0.11	0.11	0.22	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.74	7.79	8.10	12.59	4.49	4.69	13.85	3.93	0.70	17.25	0.50	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.72	0.72	0.86	0.59	0.59	0.90	0.91	0.43	0.91	0.57	0.27
d, Delay for Lane Group [s/veh]	70.72	44.61	44.92	66.33	39.48	39.69	62.51	45.98	36.41	64.82	36.35	32.82
Lane Group LOS	E	D	D	E	D	D	E	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.97	11.56	11.15	4.56	8.73	8.43	8.86	12.76	4.47	10.20	7.12	2.80
50th-Percentile Queue Length [ft/ln]	124.3	288.9	278.6	114.0	218.3	210.8	221.4	319.1	111.7	254.9	177.9	69.97
95th-Percentile Queue Length [veh/ln]	8.63	17.14	16.62	8.07	13.58	13.20	13.74	18.62	7.94	15.43	11.50	5.04
95th-Percentile Queue Length [ft/ln]	215.7	428.3	415.5	201.6	339.4	329.9	343.4	465.5	198.4	385.8	287.3	125.9

Movement, Approach, & Intersection Results

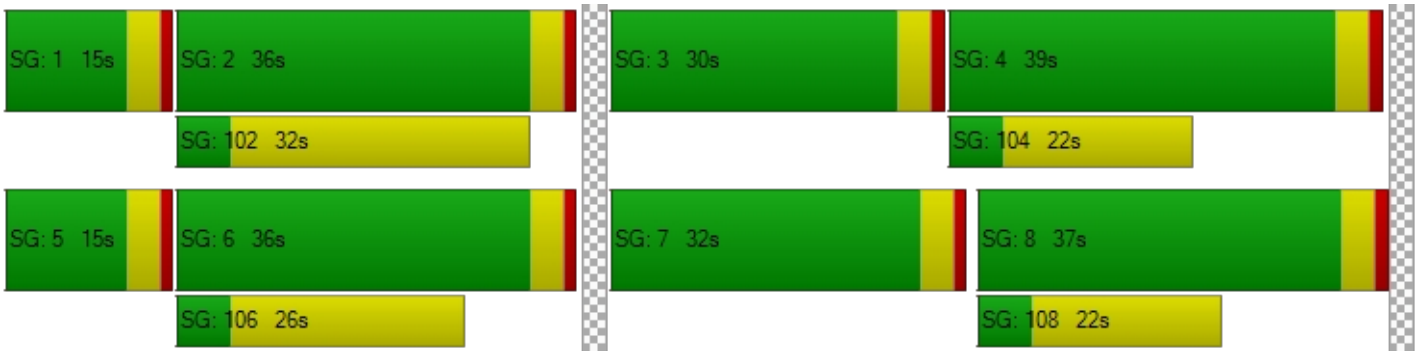
d_M, Delay for Movement [s/veh]	70.72	44.74	44.92	66.33	39.57	39.69	62.51	45.98	36.41	64.82	36.35	32.82
Movement LOS	E	D	D	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	48.74			44.24			47.99			44.43		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	46.56											
Intersection LOS	D											
Intersection V/C	0.725											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.700	2.677	2.808	2.806
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	533	550	583
d_b, Bicycle Delay [s]	32.27	32.27	31.54	30.10
l_b,int, Bicycle LOS Score for Intersection	2.324	2.200	2.640	2.376
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	103	798	135	153	488	119	200	689	134	200	501	162
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	103	798	135	153	488	119	200	689	134	200	501	162
Peak Hour Factor	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	202	34	39	124	30	51	175	34	51	127	41
Total Analysis Volume [veh/h]	104	809	137	155	495	121	203	699	136	203	508	164
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	30	0	19	33	0	31	39	0	32	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	47	47	13	51	51	16	28	28	16	28	28
g / C, Green / Cycle	0.07	0.39	0.39	0.11	0.43	0.43	0.14	0.23	0.23	0.14	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.09	0.09	0.14	0.08	0.12	0.20	0.09	0.12	0.15	0.11
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	128	1349	602	181	1455	650	233	793	354	233	793	354
d1, Uniform Delay [s]	54.69	28.89	24.24	52.75	23.22	21.57	50.81	44.54	38.92	50.79	41.61	39.70
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.56	1.98	0.88	10.87	0.64	0.63	9.64	3.44	0.68	9.57	0.87	0.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.60	0.23	0.86	0.34	0.19	0.87	0.88	0.38	0.87	0.64	0.46
d, Delay for Lane Group [s/veh]	66.25	30.87	25.12	63.62	23.86	22.21	60.45	47.98	39.60	60.36	42.48	40.64
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.51	9.54	2.75	5.14	4.84	2.25	6.59	10.36	3.46	6.59	6.88	4.27
50th-Percentile Queue Length [ft/ln]	87.68	238.4	68.80	128.4	120.9	56.32	164.8	259.1	86.55	164.7	171.9	106.7
95th-Percentile Queue Length [veh/ln]	6.31	14.60	4.95	8.85	8.44	4.06	10.81	15.64	6.23	10.80	11.18	7.66
95th-Percentile Queue Length [ft/ln]	157.8	365.0	123.8	221.3	211.1	101.3	270.1	391.0	155.7	269.9	279.4	191.4

Movement, Approach, & Intersection Results

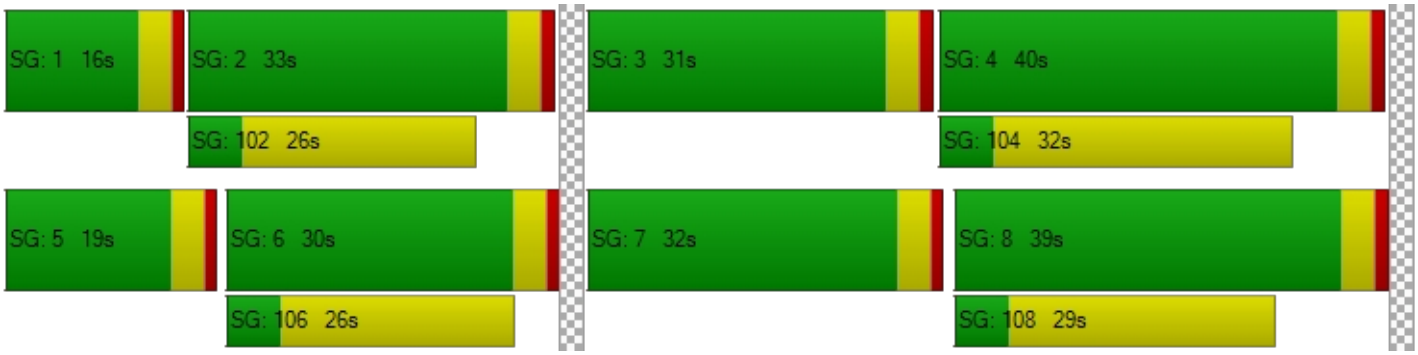
d_M, Delay for Movement [s/veh]	66.25	30.87	25.12	63.62	23.86	22.21	60.45	47.98	39.60	60.36	42.48	40.64
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	33.62			31.59			49.32			46.28		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	40.53											
Intersection LOS	D											
Intersection V/C	0.649											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.872	2.978	2.756	2.771
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	483	583	600
d_b, Bicycle Delay [s]	36.82	34.50	30.10	29.40
l_b,int, Bicycle LOS Score for Intersection	2.426	2.196	2.416	2.281
Bicycle LOS	B	B	B	B

Sequence

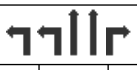
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	39.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.626

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	163	520	116	127	235	114	349	622	387	100	360	144
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	163	520	116	127	235	114	349	622	387	100	360	144
Peak Hour Factor	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	135	30	33	61	30	91	162	101	26	94	37
Total Analysis Volume [veh/h]	170	541	121	132	245	119	363	647	403	104	375	150
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	14	30	30	14	30	30	44	67	67	9	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	43	52	10	43	63	16	46	60	5	35	35
g / C, Green / Cycle	0.08	0.36	0.43	0.08	0.36	0.52	0.13	0.39	0.50	0.04	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.16	0.08	0.08	0.07	0.08	0.11	0.36	0.26	0.03	0.15	0.15
s, saturation flow rate [veh/h]	3329	3427	1530	1714	3427	1530	3329	1800	1530	3329	1800	1628
c, Capacity [veh/h]	277	1221	660	143	1221	803	451	694	768	139	525	475
d1, Uniform Delay [s]	53.13	29.53	21.08	54.62	26.79	14.68	50.33	35.37	20.19	56.88	35.51	35.59
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.24	0.49	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.19	1.17	0.61	20.64	0.37	0.39	3.42	12.09	2.51	7.85	0.81	0.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	0.44	0.18	0.92	0.20	0.15	0.80	0.93	0.52	0.75	0.52	0.53
d, Delay for Lane Group [s/veh]	55.32	30.70	21.69	75.26	27.16	15.07	53.75	47.46	22.69	64.73	36.32	36.50
Lane Group LOS	E	C	C	E	C	B	D	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.56	6.17	2.22	4.78	2.51	1.76	5.50	20.11	8.04	1.71	6.81	6.26
50th-Percentile Queue Length [ft/ln]	64.08	154.1	55.61	119.4	62.84	44.03	137.5	502.6	200.8	42.78	170.2	156.5
95th-Percentile Queue Length [veh/ln]	4.61	10.24	4.00	8.36	4.52	3.17	9.35	27.46	12.68	3.08	11.09	10.36
95th-Percentile Queue Length [ft/ln]	115.3	255.9	100.1	209.0	113.1	79.26	233.7	686.5	317.1	77.00	277.2	259.1

Movement, Approach, & Intersection Results

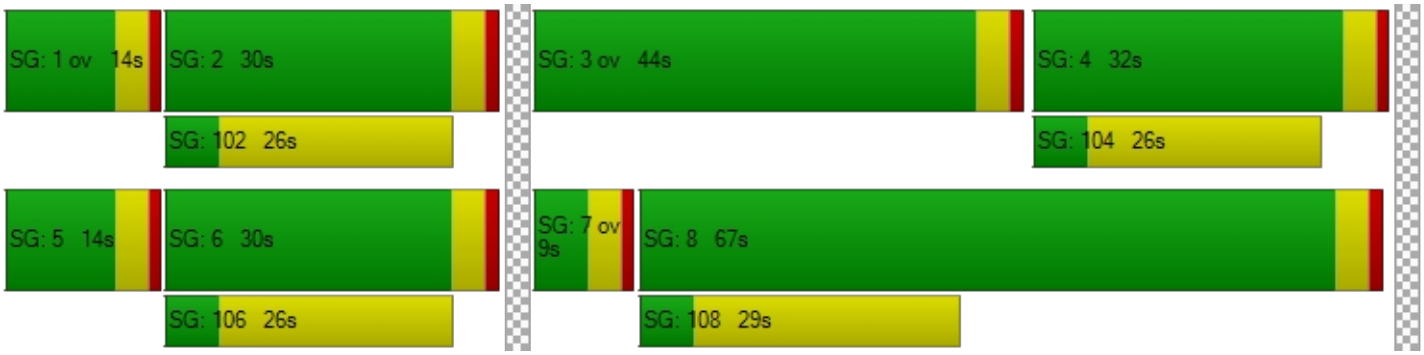
d_M, Delay for Movement [s/veh]	55.32	30.70	21.69	75.26	27.16	15.07	53.75	47.46	22.69	64.73	36.37	36.50
Movement LOS	E	C	C	E	C	B	D	D	C	E	D	D
d_A, Approach Delay [s/veh]	34.42			37.06			42.01			41.09		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	39.24											
Intersection LOS	D											
Intersection V/C	0.626											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.830	2.720	2.898	2.717
Crosswalk LOS	C	B	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	1050	467
d_b, Bicycle Delay [s]	36.82	36.82	13.54	35.27
l_b,int, Bicycle LOS Score for Intersection	2.246	1.969	3.891	2.079
Bicycle LOS	B	A	D	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	43.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.728

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	138	1069	219	69	777	93	84	606	98	116	542	59
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	1069	219	69	777	93	84	606	98	116	542	59
Peak Hour Factor	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	36	279	57	18	203	24	22	158	26	30	141	15
Total Analysis Volume [veh/h]	144	1115	228	72	810	97	88	632	102	121	565	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	42	0	10	36	0	12	54	0	14	56	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	44	44	6	38	38	8	44	44	10	47	47
g / C, Green / Cycle	0.10	0.36	0.36	0.05	0.32	0.32	0.06	0.37	0.37	0.08	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.26	0.04	0.18	0.18	0.05	0.35	0.07	0.07	0.31	0.04
s, saturation flow rate [veh/h]	1714	3427	1648	1714	3427	1704	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	169	1246	599	86	1079	537	110	665	566	143	700	595
d1, Uniform Delay [s]	53.21	33.04	33.04	56.52	34.19	34.23	55.40	36.73	25.54	54.25	32.65	23.35
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.35	0.11	0.11	0.26	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.26	3.75	7.56	18.87	2.10	4.24	12.53	19.34	0.15	12.72	5.27	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.73	0.73	0.84	0.56	0.56	0.80	0.95	0.18	0.85	0.81	0.10
d, Delay for Lane Group [s/veh]	64.48	36.79	40.60	75.40	36.29	38.47	67.93	56.08	25.69	66.97	37.92	23.42
Lane Group LOS	E	D	D	E	D	D	E	E	C	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.80	11.94	12.12	2.61	7.63	7.96	3.01	21.25	2.01	4.11	15.43	1.14
50th-Percentile Queue Length [ft/ln]	119.9	298.4	302.9	65.31	190.7	198.9	75.23	531.2	50.17	102.6	385.8	28.58
95th-Percentile Queue Length [veh/ln]	8.39	17.60	17.83	4.70	12.16	12.58	5.42	28.81	3.61	7.39	21.88	2.06
95th-Percentile Queue Length [ft/ln]	209.8	440.1	445.6	117.5	304.0	314.5	135.4	720.2	90.30	184.8	546.9	51.44

Movement, Approach, & Intersection Results

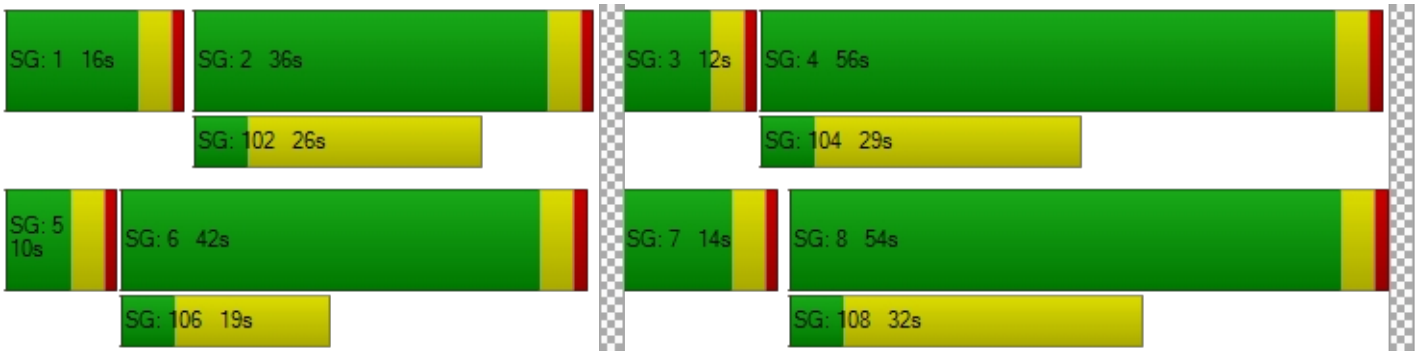
d_M, Delay for Movement [s/veh]	64.48	37.50	40.60	75.40	36.84	38.47	67.93	56.08	25.69	66.97	37.92	23.42
Movement LOS	E	D	D	E	D	D	E	E	C	E	D	C
d_A, Approach Delay [s/veh]	40.59			39.84			53.58			41.42		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.21											
Intersection LOS	D											
Intersection V/C	0.728											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.048	2.922	2.733	2.556
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	533	833	867
d_b, Bicycle Delay [s]	28.02	32.27	20.42	19.27
l_b,int, Bicycle LOS Score for Intersection	2.377	2.098	2.916	2.794
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	24.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.517

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	96	151	218	18	141	22	31	636	65	90	429	27
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	151	218	18	141	22	31	636	65	90	429	27
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	25	39	57	5	37	6	8	166	17	23	112	7
Total Analysis Volume [veh/h]	100	157	227	19	147	23	32	663	68	94	447	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	36	0	0	36	0	0	84	0	0	84	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	53	53	53	53	53	53	59	59	59	59	59	59
g / C, Green / Cycle	0.44	0.44	0.44	0.44	0.44	0.44	0.49	0.49	0.49	0.49	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.08	0.09	0.15	0.02	0.08	0.02	0.03	0.37	0.04	0.13	0.25	0.02
s, saturation flow rate [veh/h]	1234	1800	1530	1015	1800	1530	934	1800	1530	736	1800	1530
c, Capacity [veh/h]	538	790	671	450	790	671	330	890	757	174	890	757
d1, Uniform Delay [s]	24.50	20.71	22.20	23.21	20.58	19.19	31.36	24.26	16.04	49.09	20.39	15.61
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.14	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.76	0.56	1.36	0.18	0.52	0.10	0.13	1.61	0.05	2.58	0.44	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.20	0.34	0.04	0.19	0.03	0.10	0.74	0.09	0.54	0.50	0.04
d, Delay for Lane Group [s/veh]	25.27	21.27	23.56	23.39	21.10	19.29	31.49	25.87	16.09	51.67	20.83	15.63
Lane Group LOS	C	C	C	C	C	B	C	C	B	D	C	B
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.02	2.84	4.47	0.36	2.64	0.39	0.70	15.07	1.01	2.85	8.42	0.40
50th-Percentile Queue Length [ft/ln]	50.51	71.08	111.7	9.09	66.12	9.67	17.53	376.7	25.13	71.25	210.5	10.07
95th-Percentile Queue Length [veh/ln]	3.64	5.12	7.94	0.65	4.76	0.70	1.26	21.44	1.81	5.13	13.18	0.73
95th-Percentile Queue Length [ft/ln]	90.92	127.9	198.3	16.36	119.0	17.41	31.56	535.8	45.24	128.2	329.4	18.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.27	21.27	23.56	23.39	21.10	19.29	31.49	25.87	16.09	51.67	20.83	15.63
Movement LOS	C	C	C	C	C	B	C	C	B	D	C	B
d_A, Approach Delay [s/veh]	23.17			21.11			25.24			25.67		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	24.47											
Intersection LOS	C											
Intersection V/C	0.517											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.473	2.291	2.613	2.630
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	533	1333	1333
d_b, Bicycle Delay [s]	32.27	32.27	6.67	6.67
l_b,int, Bicycle LOS Score for Intersection	2.358	1.871	2.819	2.498
Bicycle LOS	B	A	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	39.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.637

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	175	861	169	138	729	67	78	565	168	144	309	92
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	861	169	138	729	67	78	565	168	144	309	92
Peak Hour Factor	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	45	219	43	35	186	17	20	144	43	37	79	23
Total Analysis Volume [veh/h]	178	878	172	141	743	68	80	576	171	147	315	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	27	48	0	16	37	0	27	40	0	16	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	57	57	12	54	54	7	23	23	12	28	28
g / C, Green / Cycle	0.12	0.48	0.48	0.10	0.45	0.45	0.06	0.19	0.19	0.10	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.10	0.30	0.30	0.08	0.23	0.23	0.05	0.17	0.11	0.09	0.18	0.06
s, saturation flow rate [veh/h]	1714	1800	1699	1714	1800	1748	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	207	857	809	166	813	790	104	665	297	171	420	357
d1, Uniform Delay [s]	51.75	23.53	23.57	53.33	23.37	23.37	55.52	46.85	43.88	53.16	42.76	37.59
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.92	3.50	3.74	11.33	2.24	2.31	11.14	3.58	1.76	11.57	2.72	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.63	0.63	0.85	0.51	0.51	0.77	0.87	0.58	0.86	0.75	0.26
d, Delay for Lane Group [s/veh]	61.67	27.03	27.31	64.66	25.61	25.68	66.66	50.43	45.65	64.72	45.48	37.98
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.82	12.05	11.49	4.70	8.71	8.47	2.71	8.64	4.76	4.91	8.97	2.31
50th-Percentile Queue Length [ft/ln]	145.5	301.3	287.2	117.6	217.6	211.6	67.75	215.9	119.1	122.7	224.2	57.70
95th-Percentile Queue Length [veh/ln]	9.78	17.75	17.05	8.26	13.54	13.24	4.88	13.46	8.34	8.54	13.88	4.15
95th-Percentile Queue Length [ft/ln]	244.4	443.6	426.1	206.5	338.6	330.9	121.9	336.3	208.6	213.6	346.9	103.8

Movement, Approach, & Intersection Results

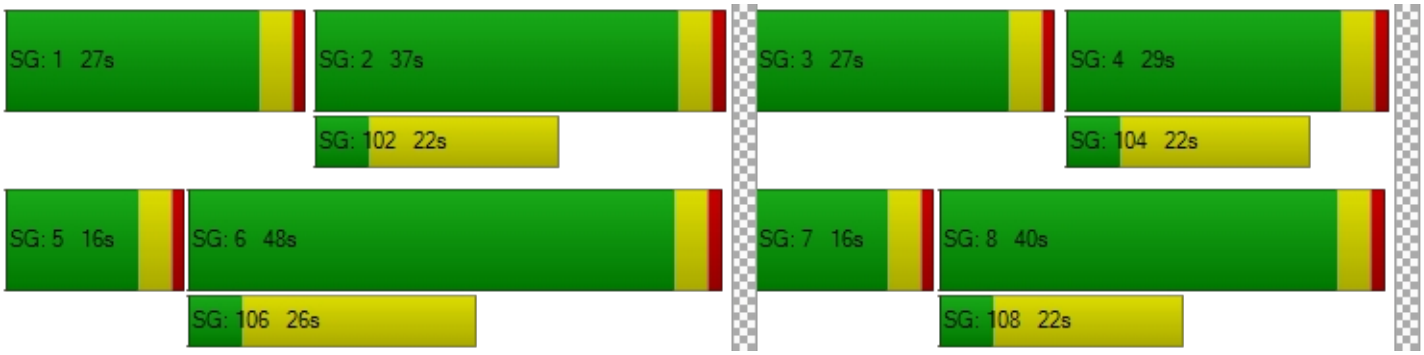
d_M, Delay for Movement [s/veh]	61.67	27.14	27.31	64.66	25.64	25.68	66.66	50.43	45.65	64.72	45.48	37.98
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	32.17			31.43			51.01			49.30		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.02											
Intersection LOS	D											
Intersection V/C	0.637											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.761	2.706	2.586	2.703
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	550	600	417
d_b, Bicycle Delay [s]	24.07	31.54	29.40	37.60
l_b,int, Bicycle LOS Score for Intersection	2.573	2.345	2.242	2.477
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	85	770	56	108	507	77	101	475	89	64	311	53
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	85	770	56	108	507	77	101	475	89	64	311	53
Peak Hour Factor	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	23	204	15	29	134	20	27	126	24	17	82	14
Total Analysis Volume [veh/h]	90	817	59	115	538	82	107	504	94	68	330	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	42	0	18	44	0	26	45	0	15	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	65	65	10	67	67	9	23	23	6	20	20
g / C, Green / Cycle	0.07	0.54	0.54	0.08	0.56	0.56	0.08	0.19	0.19	0.05	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.25	0.07	0.18	0.18	0.06	0.17	0.17	0.04	0.11	0.11
s, saturation flow rate [veh/h]	1714	1800	1758	1714	1800	1718	1714	1800	1703	1714	1800	1711
c, Capacity [veh/h]	113	970	947	140	999	953	134	351	332	87	302	287
d1, Uniform Delay [s]	55.27	16.92	16.92	54.22	14.42	14.43	54.38	46.86	46.90	56.28	46.66	46.74
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.02	1.55	1.59	11.07	0.83	0.88	10.29	6.83	7.37	13.87	2.37	2.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.46	0.46	0.82	0.32	0.32	0.80	0.87	0.88	0.78	0.65	0.66
d, Delay for Lane Group [s/veh]	67.29	18.47	18.51	65.29	15.26	15.31	64.67	53.69	54.28	70.15	49.03	49.34
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.06	7.74	7.57	3.85	4.82	4.62	3.56	9.52	9.10	2.37	5.68	5.50
50th-Percentile Queue Length [ft/ln]	76.53	193.5	189.2	96.24	120.3	115.5	89.08	238.0	227.5	59.31	142.0	137.5
95th-Percentile Queue Length [veh/ln]	5.51	12.31	12.08	6.93	8.41	8.15	6.41	14.58	14.05	4.27	9.59	9.35
95th-Percentile Queue Length [ft/ln]	137.7	307.6	302.1	173.2	210.3	203.7	160.3	364.5	351.2	106.7	239.8	233.7

Movement, Approach, & Intersection Results

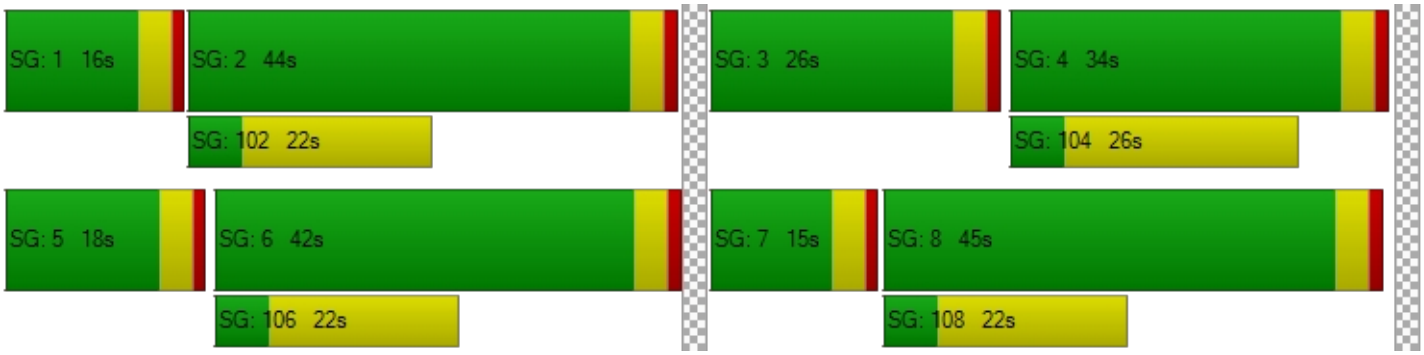
d_M, Delay for Movement [s/veh]	67.29	18.49	18.51	65.29	15.28	15.31	64.67	53.92	54.28	70.15	49.15	49.34
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	23.04			23.10			55.60			52.32		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	35.73											
Intersection LOS	D											
Intersection V/C	0.524											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.640	2.747	2.550	2.536
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	667	683	500
d_b, Bicycle Delay [s]	28.02	26.67	26.00	33.75
l_b,int, Bicycle LOS Score for Intersection	2.357	2.166	2.141	1.934
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	24.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	664	283	196	515	0	0	0	0	201	0	88
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	664	283	196	515	0	0	0	0	201	0	88
Peak Hour Factor	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	173	74	51	134	0	0	0	0	52	0	23
Total Analysis Volume [veh/h]	0	691	294	204	536	0	0	0	0	209	0	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	47	0	47	85	0	0	26	0	0	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	70	70	16	87	87	21	21	21	21
g / C, Green / Cycle	0.00	0.59	0.59	0.14	0.72	0.72	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.38	0.19	0.12	0.30	0.00	0.00	0.00	0.16	0.06
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1530	1644	1530	1303	1530
c, Capacity [veh/h]	1	1054	896	237	1302	1107	319	269	289	269
d1, Uniform Delay [s]	0.00	16.71	12.75	50.57	6.54	0.00	0.00	0.00	49.62	43.35
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.19	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	3.18	0.98	8.86	0.96	0.00	0.00	0.00	5.81	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.66	0.33	0.86	0.41	0.00	0.00	0.00	0.72	0.34
d, Delay for Lane Group [s/veh]	0.00	19.89	13.72	59.43	7.50	0.00	0.00	0.00	55.42	44.10
Lane Group LOS	A	B	B	E	A	A	A	A	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	13.17	4.21	6.57	5.19	0.00	0.00	0.00	6.61	2.46
50th-Percentile Queue Length [ft/ln]	0.00	329.2	105.3	164.3	129.6	0.00	0.00	0.00	165.25	61.53
95th-Percentile Queue Length [veh/ln]	0.00	19.12	7.58	10.78	8.92	0.00	0.00	0.00	10.83	4.43
95th-Percentile Queue Length [ft/ln]	0.00	478.0	189.5	269.4	223.0	0.00	0.00	0.00	270.66	110.75

Movement, Approach, & Intersection Results

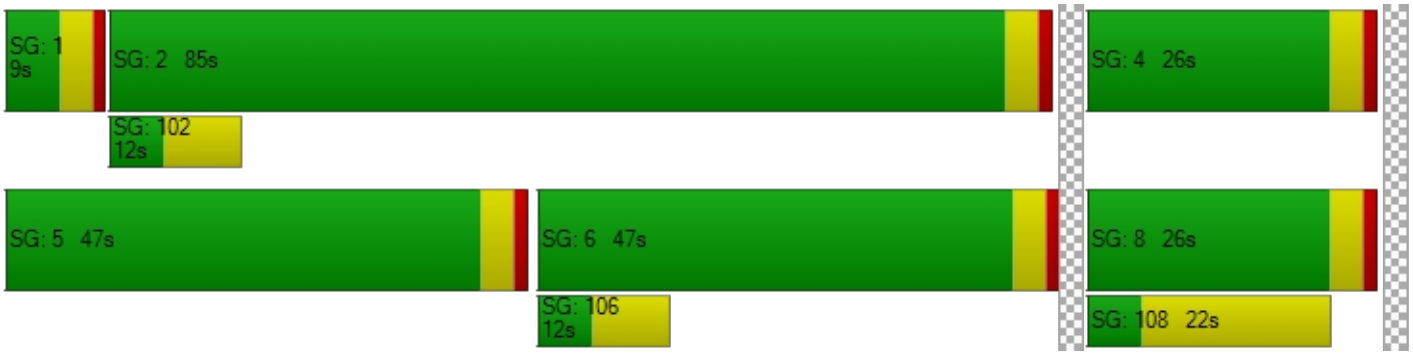
d_M, Delay for Movement [s/veh]	0.00	19.89	13.72	59.43	7.50	0.00	0.00	0.00	0.00	55.42	55.42	44.10
Movement LOS	A	B	B	E	A	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	18.05			21.82			0.00			51.96		
Approach LOS	B			C			A			D		
d_I, Intersection Delay [s/veh]	24.46											
Intersection LOS	C											
Intersection V/C	0.663											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.950	0.000	1.955	2.215
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	1350	367	367
d_b, Bicycle Delay [s]	24.70	6.34	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	3.185	2.781	1.560	2.056
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	36.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	143	1366	112	38	688	56	87	141	294	122	67	73
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	143	1366	112	38	688	56	87	141	294	122	67	73
Peak Hour Factor	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	37	349	29	10	176	14	22	36	75	31	17	19
Total Analysis Volume [veh/h]	146	1395	114	39	703	57	89	144	300	125	68	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	33	58	0	9	34	0	17	39	0	14	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	64	64	4	56	56	8	26	26	10	28
g / C, Green / Cycle	0.10	0.54	0.54	0.03	0.47	0.47	0.07	0.22	0.22	0.08	0.23
(v / s)_i Volume / Saturation Flow Rate	0.09	0.42	0.43	0.02	0.21	0.04	0.05	0.08	0.20	0.07	0.09
s, saturation flow rate [veh/h]	1714	1800	1753	1714	3427	1530	1714	1800	1530	1714	1648
c, Capacity [veh/h]	176	967	942	52	1593	711	112	388	330	143	385
d1, Uniform Delay [s]	52.78	22.24	22.45	57.71	21.63	17.86	55.29	40.12	45.91	54.38	38.58
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.21	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.43	6.40	6.93	18.79	0.89	0.22	11.92	0.59	16.63	15.04	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.79	0.80	0.75	0.44	0.08	0.79	0.37	0.91	0.88	0.37
d, Delay for Lane Group [s/veh]	62.21	28.64	29.39	76.50	22.52	18.08	67.21	40.70	62.53	69.42	39.17
Lane Group LOS	E	C	C	E	C	B	E	D	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.78	18.20	18.22	1.45	6.80	0.93	3.03	3.70	10.21	4.33	3.61
50th-Percentile Queue Length [ft/ln]	119.4	454.8	455.5	36.19	170.0	23.19	75.64	92.62	255.1	108.19	90.28
95th-Percentile Queue Length [veh/ln]	8.36	25.19	25.22	2.61	11.08	1.67	5.45	6.67	15.44	7.74	6.50
95th-Percentile Queue Length [ft/ln]	209.0	629.7	630.6	65.14	276.9	41.74	136.1	166.7	386.1	193.48	162.50

Movement, Approach, & Intersection Results

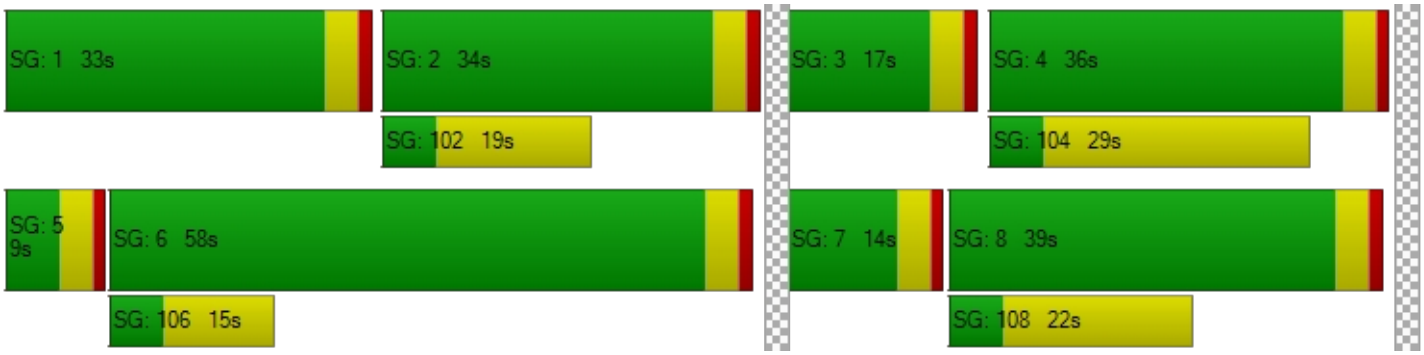
d_M, Delay for Movement [s/veh]	62.21	28.98	29.39	76.50	22.52	18.08	67.21	40.70	62.53	69.42	39.17	39.17
Movement LOS	E	C	C	E	C	B	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	31.94			24.84			57.42			53.28		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	36.12											
Intersection LOS	D											
Intersection V/C	0.719											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.920	2.938	2.342	2.139
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	500	583	533
d_b, Bicycle Delay [s]	18.15	33.75	30.10	32.27
l_b,int, Bicycle LOS Score for Intersection	2.925	2.219	2.439	2.002
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	35.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.427

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	88	400	0	0	314	39	80	0	165	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	400	0	0	314	39	80	0	165	0	0	0
Peak Hour Factor	0.921	0.921	1.000	1.000	0.921	0.921	0.921	1.000	0.921	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	109	0	0	85	11	22	0	45	0	0	0
Total Analysis Volume [veh/h]	96	434	0	0	341	42	87	0	179	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.26	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.30	0.00	0.00	0.00	0.00	0.00	35.23	0.00	12.07	0.00	0.00	0.00
Movement LOS	A	A			A	A	E		B			
95th-Percentile Queue Length [veh/ln]	0.26	0.26	0.00	0.00	0.00	0.00	1.97	0.00	1.04	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.59	6.59	0.00	0.00	0.00	0.00	49.25	0.00	25.99	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1.50			0.00			19.65			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	5.11											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.519

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	907	60	95	571	0	5	0	30	191	0	49
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	907	60	95	571	0	5	0	30	191	0	49
Peak Hour Factor	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	255	17	27	160	0	1	0	8	54	0	14
Total Analysis Volume [veh/h]	0	1019	67	107	642	0	6	0	34	215	0	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	9	0	29	29	0	0	25	0	0	57	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	73	73	9	83	83	4	4	18	18
g / C, Green / Cycle	0.00	0.61	0.61	0.08	0.69	0.69	0.03	0.03	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.00	0.30	0.30	0.06	0.18	0.18	0.00	0.02	0.13	0.04
s, saturation flow rate [veh/h]	1714	1800	1761	1714	1800	1800	1714	1392	1687	1530
c, Capacity [veh/h]	0	1100	1076	133	1239	1239	54	44	248	225
d1, Uniform Delay [s]	0.00	13.07	13.07	54.45	7.10	7.10	56.51	57.72	50.03	45.29
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	1.62	1.66	10.75	0.51	0.51	0.91	25.41	8.90	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.50	0.50	0.80	0.26	0.26	0.11	0.78	0.87	0.24
d, Delay for Lane Group [s/veh]	0.00	14.69	14.73	65.21	7.60	7.60	57.42	83.13	58.93	45.84
Lane Group LOS	A	B	B	E	A	A	E	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	8.44	8.27	3.58	3.10	3.10	0.19	1.33	6.91	1.49
50th-Percentile Queue Length [ft/ln]	0.00	211.0	206.8	89.44	77.50	77.50	4.77	33.31	172.74	37.32
95th-Percentile Queue Length [veh/ln]	0.00	13.21	12.99	6.44	5.58	5.58	0.34	2.40	11.22	2.69
95th-Percentile Queue Length [ft/ln]	0.00	330.1	324.8	160.9	139.5	139.5	8.58	59.95	280.52	67.18

Movement, Approach, & Intersection Results

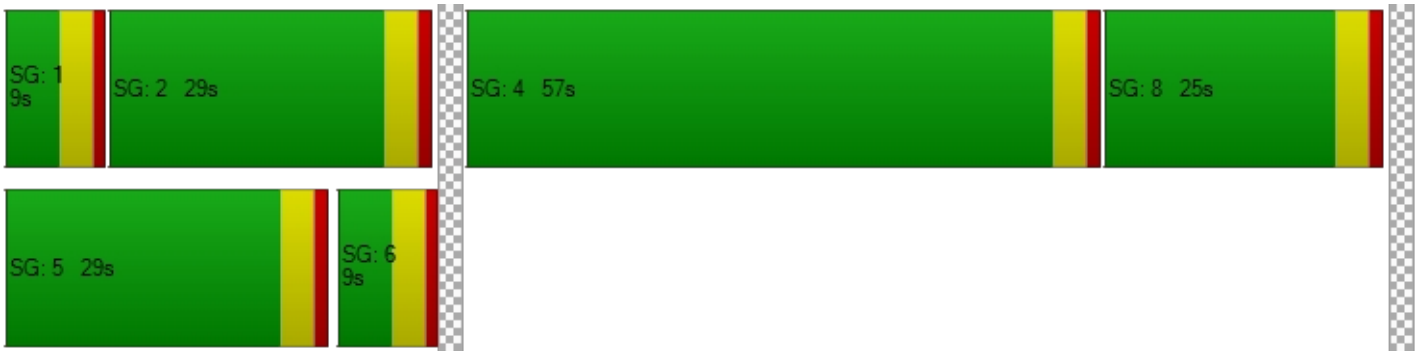
d_M, Delay for Movement [s/veh]	0.00	14.71	14.73	65.21	7.60	7.60	57.42	70.27	83.13	58.93	58.93	45.84
Movement LOS	A	B	B	E	A	A	E	E	F	E	E	D
d_A, Approach Delay [s/veh]	14.71			15.83			79.27			56.26		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	21.54											
Intersection LOS	C											
Intersection V/C	0.519											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	417	350	883
d_b, Bicycle Delay [s]	55.10	37.60	40.84	18.70
I_b,int, Bicycle LOS Score for Intersection	2.456	2.178	1.593	2.005
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	25.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	1	1458	200	199	841	1	0	1	0	107	0	206
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1458	200	199	841	1	0	1	0	107	0	206
Peak Hour Factor	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	385	53	53	222	0	0	0	0	28	0	54
Total Analysis Volume [veh/h]	1	1541	211	210	889	1	0	1	0	113	0	218
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	12	0	28	31	0	9	30	0	50	71	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	68	68	17	84	84	0	10	10	19
g / C, Green / Cycle	0.00	0.57	0.57	0.14	0.70	0.70	0.00	0.08	0.08	0.16
(v / s)_i Volume / Saturation Flow Rate	0.00	0.45	0.14	0.12	0.26	0.00	0.00	0.00	0.07	0.14
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1714	1530
c, Capacity [veh/h]	3	1937	865	239	2408	1075	1	143	142	248
d1, Uniform Delay [s]	59.83	20.61	13.16	50.67	7.16	5.30	0.00	50.90	54.01	49.15
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	59.63	3.48	0.67	10.07	0.44	0.00	0.00	0.02	9.56	9.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.80	0.24	0.88	0.37	0.00	0.00	0.01	0.79	0.88
d, Delay for Lane Group [s/veh]	119.4	24.09	13.83	60.74	7.59	5.31	0.00	50.92	63.58	58.90
Lane Group LOS	F	C	B	E	A	A	A	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.08	17.15	3.00	6.85	4.35	0.01	0.00	0.03	3.73	7.04
50th-Percentile Queue Length [ft/ln]	1.95	428.8	74.90	171.1	108.6	0.19	0.00	0.71	93.25	176.11
95th-Percentile Queue Length [veh/ln]	0.14	23.94	5.39	11.14	7.76	0.01	0.00	0.05	6.71	11.40
95th-Percentile Queue Length [ft/ln]	3.52	598.6	134.8	278.4	194.1	0.34	0.00	1.29	167.85	284.93

Movement, Approach, & Intersection Results

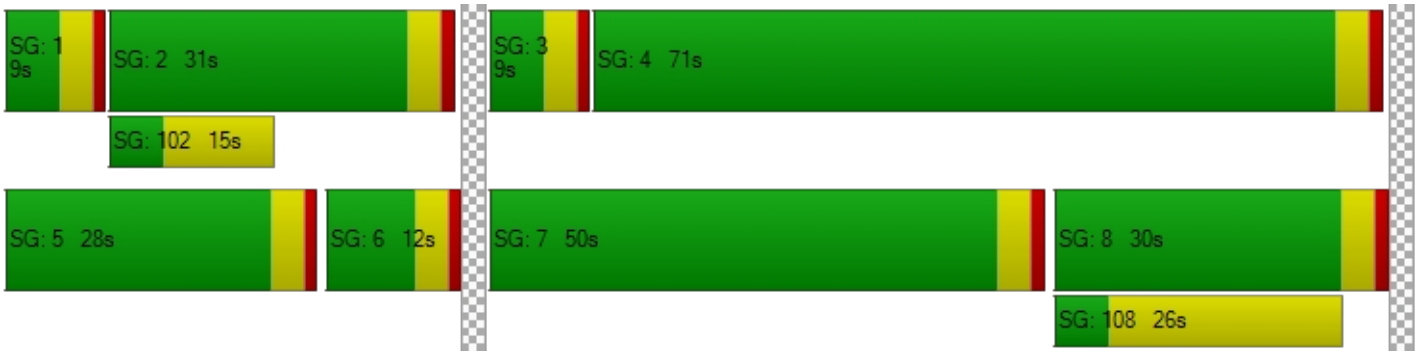
d_M, Delay for Movement [s/veh]	119.4	24.09	13.83	60.74	7.59	5.31	0.00	50.92	50.92	63.58	58.90	58.90
Movement LOS	F	C	B	E	A	A	A	D	D	E	E	E
d_A, Approach Delay [s/veh]	22.91			17.74			50.92			60.50		
Approach LOS	C			B			D			E		
d_I, Intersection Delay [s/veh]	25.04											
Intersection LOS	C											
Intersection V/C	0.715											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.993	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	133	450	433	1117
d_b, Bicycle Delay [s]	52.27	36.04	36.82	11.70
l_b,int, Bicycle LOS Score for Intersection	3.006	2.467	1.561	2.106
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	31.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.877

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	30	215	48	118	172	40	129	224	33	32	148	129
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	215	48	118	172	40	129	224	33	32	148	129
Peak Hour Factor	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	58	13	32	47	11	35	61	9	9	40	35
Total Analysis Volume [veh/h]	33	234	52	128	187	44	140	244	36	35	161	140
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	427	471	442	438	492	420	464
Degree of Utilization, x	0.63	0.11	0.81	0.88	0.07	0.47	0.30

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.15	0.37	7.54	9.10	0.24	2.42	1.26
95th-Percentile Queue Length [ft]	103.82	9.26	188.62	227.46	5.89	60.54	31.45
Approach Delay [s/veh]	22.12		38.07	43.50		16.59	
Approach LOS	C		E	E		C	
Intersection Delay [s/veh]	31.08						
Intersection LOS	D						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.527

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	45	922	34	78	735	100	139	250	53	29	195	136
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	922	34	78	735	100	139	250	53	29	195	136
Peak Hour Factor	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	12	246	9	21	196	27	37	67	14	8	52	36
Total Analysis Volume [veh/h]	48	983	36	83	784	107	148	267	57	31	208	145
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	54	0	13	55	0	25	40	0	13	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	69	69	7	72	72	12	24	24	3	15	15
g / C, Green / Cycle	0.04	0.57	0.57	0.06	0.60	0.60	0.10	0.20	0.20	0.03	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.28	0.28	0.05	0.25	0.25	0.09	0.08	0.04	0.02	0.10	0.11
s, saturation flow rate [veh/h]	1714	1800	1778	1714	1800	1725	1714	3427	1530	1714	1800	1563
c, Capacity [veh/h]	62	1033	1021	104	1078	1033	176	700	312	47	232	201
d1, Uniform Delay [s]	57.37	15.22	15.22	55.63	12.92	12.92	52.85	41.20	39.46	57.78	50.73	51.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.65	1.70	1.72	12.91	1.21	1.27	10.06	0.34	0.28	14.31	6.12	8.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.50	0.50	0.80	0.42	0.42	0.84	0.38	0.18	0.66	0.80	0.84
d, Delay for Lane Group [s/veh]	76.02	16.92	16.94	68.54	14.13	14.19	62.91	41.55	39.74	72.09	56.85	59.83
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.76	8.58	8.48	2.85	6.73	6.47	4.87	3.46	1.42	1.12	5.78	5.43
50th-Percentile Queue Length [ft/ln]	44.11	214.4	212.0	71.32	168.2	161.6	121.7	86.43	35.61	28.02	144.4	135.7
95th-Percentile Queue Length [veh/ln]	3.18	13.38	13.26	5.13	10.99	10.64	8.49	6.22	2.56	2.02	9.72	9.25
95th-Percentile Queue Length [ft/ln]	79.39	334.5	331.4	128.3	274.6	265.9	212.2	155.5	64.09	50.43	242.9	231.2

Movement, Approach, & Intersection Results

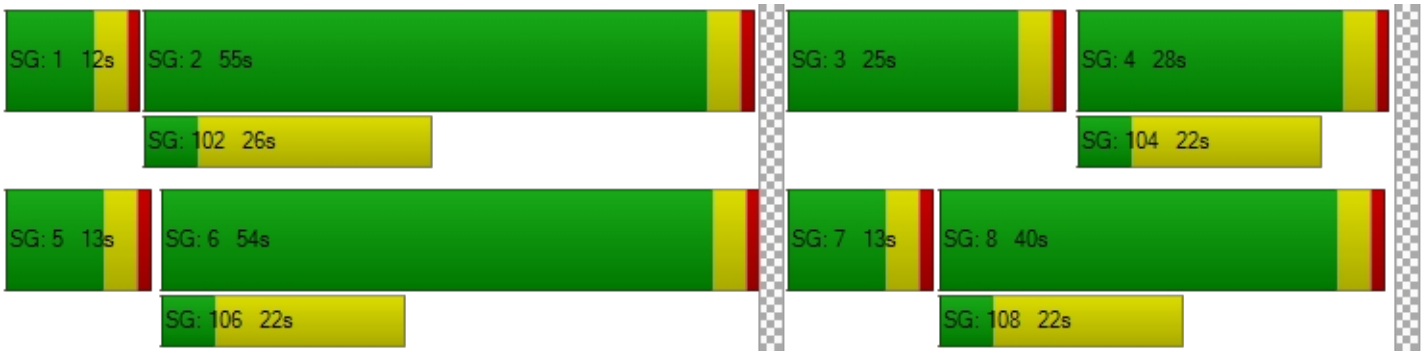
d_M, Delay for Movement [s/veh]	76.02	16.93	16.94	68.54	14.16	14.19	62.91	41.55	39.74	72.09	57.19	59.83
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	19.59			18.79			48.03			59.39		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	29.23											
Intersection LOS	C											
Intersection V/C	0.527											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.693	2.834	2.604	2.593
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	850	600	400
d_b, Bicycle Delay [s]	20.42	19.84	29.40	38.40
l_b,int, Bicycle LOS Score for Intersection	2.440	2.363	1.949	1.876
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	41.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.554

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	833	164	64	696	56	75	453	101	111	270	46
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	833	164	64	696	56	75	453	101	111	270	46
Peak Hour Factor	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	29	211	42	16	176	14	19	115	26	28	68	12
Total Analysis Volume [veh/h]	115	845	166	65	706	57	76	459	102	113	274	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	63	0	13	62	0	11	30	0	14	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	38	38	6	34	34	7	51	51	10	53	53
g / C, Green / Cycle	0.08	0.32	0.32	0.05	0.28	0.28	0.06	0.42	0.42	0.08	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.07	0.29	0.29	0.04	0.21	0.21	0.04	0.16	0.16	0.07	0.09	0.09
s, saturation flow rate [veh/h]	1714	1800	1699	1714	1800	1753	1714	1800	1688	1714	1800	1710
c, Capacity [veh/h]	139	571	539	84	513	499	96	758	711	137	801	761
d1, Uniform Delay [s]	54.31	39.34	39.37	56.42	39.07	39.08	55.98	23.96	23.99	54.39	20.32	20.36
k, delay calibration	0.11	0.14	0.14	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.70	7.58	8.09	14.17	2.27	2.34	13.76	1.45	1.57	11.71	0.57	0.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.91	0.91	0.78	0.75	0.75	0.80	0.38	0.38	0.83	0.20	0.21
d, Delay for Lane Group [s/veh]	66.02	46.93	47.46	70.59	41.34	41.41	69.74	25.41	25.56	66.10	20.90	20.97
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.87	15.74	14.95	2.28	10.64	10.38	2.64	5.94	5.64	3.81	2.93	2.84
50th-Percentile Queue Length [ft/ln]	96.81	393.4	373.8	56.94	266.0	259.5	65.98	148.4	140.9	95.18	73.24	70.94
95th-Percentile Queue Length [veh/ln]	6.97	22.24	21.30	4.10	15.99	15.67	4.75	9.93	9.53	6.85	5.27	5.11
95th-Percentile Queue Length [ft/ln]	174.2	556.0	532.4	102.4	399.8	391.7	118.7	248.3	238.3	171.3	131.8	127.7

Movement, Approach, & Intersection Results

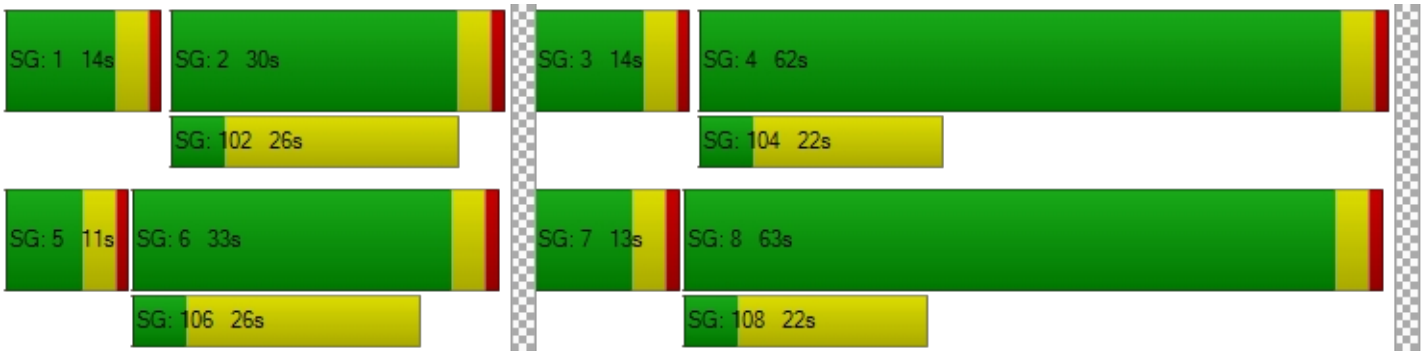
d_M, Delay for Movement [s/veh]	66.02	47.13	47.46	70.59	41.38	41.41	69.74	25.47	25.56	66.10	20.93	20.97
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	49.11			43.67			30.76			32.70		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	41.40											
Intersection LOS	D											
Intersection V/C	0.554											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.801	2.760	2.526	2.534
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	967	433	483
d_b, Bicycle Delay [s]	15.50	16.02	36.82	34.50
l_b,int, Bicycle LOS Score for Intersection	2.489	2.243	2.085	1.918
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	22.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.448

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	18	868	69	34	681	106	136	178	9	42	83	20
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	868	69	34	681	106	136	178	9	42	83	20
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	238	19	9	186	29	37	49	2	12	23	5
Total Analysis Volume [veh/h]	20	951	76	37	746	116	149	195	10	46	91	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	44	0	10	45	0	40	50	0	16	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	80	80	4	81	81	12	16	16	4	8	8
g / C, Green / Cycle	0.02	0.67	0.67	0.03	0.68	0.68	0.10	0.14	0.14	0.03	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.01	0.29	0.29	0.02	0.25	0.25	0.09	0.11	0.01	0.03	0.05	0.01
s, saturation flow rate [veh/h]	1714	1800	1754	1714	1800	1717	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	35	1197	1166	51	1214	1157	179	247	210	59	121	103
d1, Uniform Delay [s]	58.25	9.47	9.47	57.74	8.43	8.43	52.69	50.08	44.94	57.47	54.97	52.95
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.77	1.15	1.18	17.78	0.84	0.89	9.51	5.55	0.09	19.14	8.94	1.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.43	0.43	0.73	0.36	0.36	0.83	0.79	0.05	0.78	0.75	0.21
d, Delay for Lane Group [s/veh]	72.03	10.62	10.65	75.51	9.27	9.32	62.20	55.63	45.04	76.60	63.90	53.97
Lane Group LOS	E	B	B	E	A	A	E	E	D	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.74	6.42	6.27	1.37	4.93	4.71	4.88	6.04	0.27	1.70	3.01	0.66
50th-Percentile Queue Length [ft/ln]	18.41	160.5	156.6	34.14	123.1	117.8	121.9	151.0	6.65	42.50	75.13	16.48
95th-Percentile Queue Length [veh/ln]	1.33	10.58	10.37	2.46	8.57	8.27	8.50	10.07	0.48	3.06	5.41	1.19
95th-Percentile Queue Length [ft/ln]	33.14	264.3	259.2	61.45	214.2	206.8	212.4	251.8	11.97	76.51	135.2	29.66

Movement, Approach, & Intersection Results

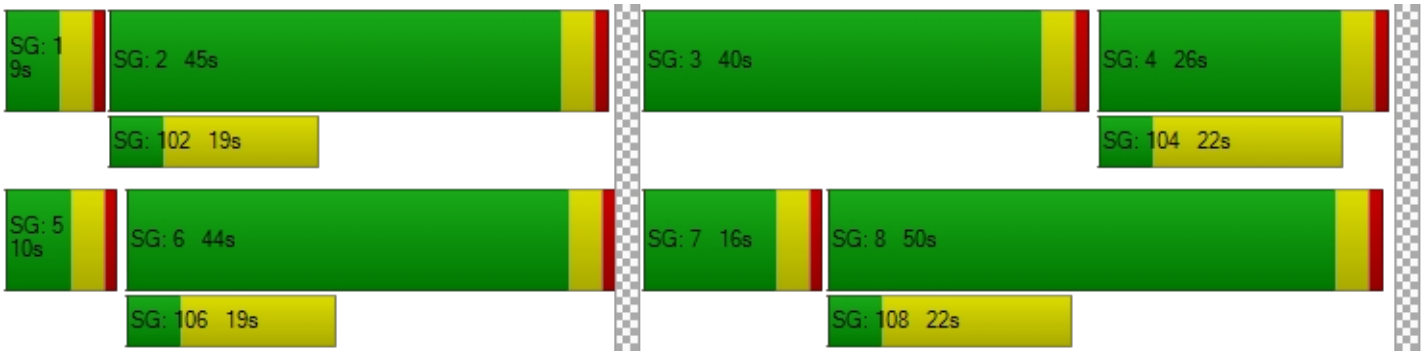
d_M, Delay for Movement [s/veh]	72.03	10.63	10.65	75.51	9.29	9.32	62.20	55.63	45.04	76.60	63.90	53.97
Movement LOS	E	B	B	E	A	A	E	E	D	E	E	D
d_A, Approach Delay [s/veh]	11.80			12.02			58.09			66.20		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	22.06											
Intersection LOS	C											
Intersection V/C	0.448											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.676	2.709	2.288	2.260
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	683	767	367
d_b, Bicycle Delay [s]	26.67	26.00	22.82	40.02
l_b,int, Bicycle LOS Score for Intersection	2.423	2.301	2.144	1.822
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.525

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	16	1461	163	160	882	2	5	2	5	165	0	124
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	1461	163	160	882	2	5	2	5	165	0	124
Peak Hour Factor	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	4	376	42	41	227	1	1	1	1	42	0	32
Total Analysis Volume [veh/h]	16	1503	168	165	907	2	5	2	5	170	0	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	40	0	22	31	0	13	33	0	25	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	76	76	13	87	87	1	1	14	14
g / C, Green / Cycle	0.02	0.63	0.63	0.11	0.72	0.72	0.01	0.01	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.33	0.33	0.10	0.18	0.00	0.00	0.00	0.10	0.08
s, saturation flow rate [veh/h]	1714	3427	1709	1714	4903	1530	1714	1599	1714	1530
c, Capacity [veh/h]	30	2160	1077	192	3553	1109	11	15	198	180
d1, Uniform Delay [s]	58.45	12.16	12.17	52.36	5.59	4.56	59.39	59.17	52.12	50.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.60	0.88	1.77	10.63	0.17	0.00	25.44	22.44	10.34	5.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.52	0.52	0.86	0.26	0.00	0.45	0.48	0.86	0.71
d, Delay for Lane Group [s/veh]	72.05	13.04	13.94	62.98	5.76	4.56	84.83	81.61	62.47	56.00
Lane Group LOS	E	B	B	E	A	A	F	F	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.60	8.06	8.31	5.44	2.39	0.01	0.23	0.30	5.59	3.96
50th-Percentile Queue Length [ft/ln]	14.92	201.3	207.8	136.1	59.69	0.34	5.77	7.57	139.72	98.96
95th-Percentile Queue Length [veh/ln]	1.07	12.71	13.04	9.27	4.30	0.02	0.42	0.55	9.47	7.13
95th-Percentile Queue Length [ft/ln]	26.85	317.7	326.0	231.7	107.4	0.61	10.38	13.63	236.65	178.14

Movement, Approach, & Intersection Results

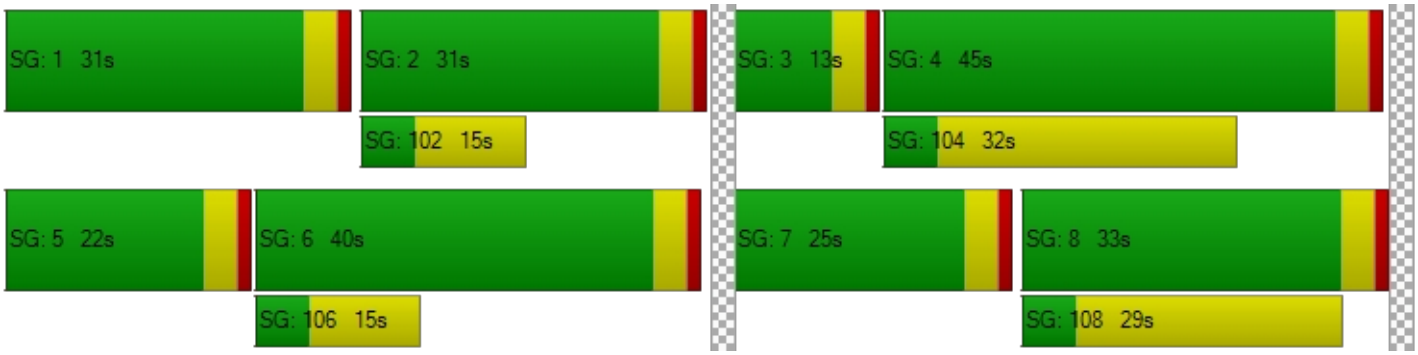
d_M, Delay for Movement [s/veh]	72.05	13.27	13.94	62.98	5.76	4.56	84.83	81.61	81.61	62.47	56.00	56.00
Movement LOS	E	B	B	E	A	A	F	F	F	E	E	E
d_A, Approach Delay [s/veh]	13.90			14.55			82.95			59.69		
Approach LOS	B			B			F			E		
d_I, Intersection Delay [s/veh]	18.84											
Intersection LOS	B											
Intersection V/C	0.525											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.995	3.246	1.965	2.161
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	450	483	683
d_b, Bicycle Delay [s]	29.40	36.04	34.50	26.00
l_b,int, Bicycle LOS Score for Intersection	2.487	2.150	1.579	2.051
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	12.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.434

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	15	213	12	34	162	31	62	171	22	10	113	42
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	213	12	34	162	31	62	171	22	10	113	42
Peak Hour Factor	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	4	57	3	9	44	8	17	46	6	3	30	11
Total Analysis Volume [veh/h]	16	229	13	37	174	33	67	184	24	11	122	45
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	636	638	634	628
Degree of Utilization, x	0.41	0.38	0.43	0.28

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.96	1.80	2.19	1.16
95th-Percentile Queue Length [ft]	49.07	44.89	54.76	29.09
Approach Delay [s/veh]	12.45	12.11	12.95	10.99
Approach LOS	B	B	B	B
Intersection Delay [s/veh]	12.24			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	15.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	33	51	48	20	4	12	42	7	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	33	51	48	20	4	12	42	7	1
Peak Hour Factor	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	9	14	13	5	1	3	11	2	0
Total Analysis Volume [veh/h]	0	35	55	51	21	4	13	45	7	1
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	530	498
Degree of Utilization, x	0.31	0.14

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.29	0.49
95th-Percentile Queue Length [ft]	32.16	12.14
Approach Delay [s/veh]	12.77	11.40
Approach LOS	B	B
Intersection Delay [s/veh]	15.36	
Intersection LOS	C	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	39	2	143	22	4	12	39	142	7	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	2	143	22	4	12	39	142	7	5
Peak Hour Factor	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	1	38	6	1	3	10	38	2	1
Total Analysis Volume [veh/h]	42	2	153	24	4	13	42	152	7	5
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	518	513
Degree of Utilization, x	0.43	0.43

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.18	2.11
95th-Percentile Queue Length [ft]	54.42	52.83
Approach Delay [s/veh]	15.19	15.14
Approach LOS	C	C
Intersection Delay [s/veh]	15.36	
Intersection LOS	C	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	3	16	240	40	0	5	39	95	31	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	16	240	40	0	5	39	95	31	7
Peak Hour Factor	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	64	11	0	1	10	25	8	2
Total Analysis Volume [veh/h]	3	17	257	43	0	5	42	102	33	7
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	532	486	551
Degree of Utilization, x	0.60	0.31	0.07

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.94	1.29	0.23
95th-Percentile Queue Length [ft]	98.52	32.14	5.85
Approach Delay [s/veh]	19.45	12.58	
Approach LOS	C	B	
Intersection Delay [s/veh]	15.36		
Intersection LOS	C		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.413

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	50	874	82	66	634	13	20	165	39	57	148	63
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	874	82	66	634	13	20	165	39	57	148	63
Peak Hour Factor	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	224	21	17	163	3	5	42	10	15	38	16
Total Analysis Volume [veh/h]	51	896	84	68	650	13	21	169	40	58	152	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	50	0	24	52	0	9	26	0	20	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	83	83	6	84	84	3	10	10	5	12	12
g / C, Green / Cycle	0.04	0.69	0.69	0.05	0.70	0.70	0.02	0.08	0.08	0.04	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.03	0.28	0.28	0.04	0.18	0.18	0.01	0.05	0.03	0.03	0.08	0.04
s, saturation flow rate [veh/h]	1714	1800	1746	1714	1800	1788	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	67	1243	1206	88	1265	1256	36	278	124	75	187	159
d1, Uniform Delay [s]	57.13	7.95	7.95	56.22	6.50	6.50	58.20	53.29	52.02	56.77	52.63	50.32
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.60	0.96	0.99	13.24	0.51	0.51	13.79	2.14	1.48	15.23	8.25	1.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.40	0.40	0.77	0.26	0.26	0.58	0.61	0.32	0.77	0.81	0.41
d, Delay for Lane Group [s/veh]	73.73	8.92	8.95	69.46	7.00	7.01	71.99	55.43	53.50	72.00	60.88	52.01
Lane Group LOS	E	A	A	E	A	A	E	E	D	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.84	5.43	5.28	2.36	3.03	3.01	0.77	2.55	1.19	2.06	4.91	1.91
50th-Percentile Queue Length [ft/ln]	46.00	135.6	131.8	58.99	75.76	75.31	19.28	63.73	29.77	51.47	122.7	47.68
95th-Percentile Queue Length [veh/ln]	3.31	9.25	9.04	4.25	5.45	5.42	1.39	4.59	2.14	3.71	8.55	3.43
95th-Percentile Queue Length [ft/ln]	82.79	231.1	226.0	106.1	136.3	135.5	34.71	114.7	53.59	92.64	213.6	85.82

Movement, Approach, & Intersection Results

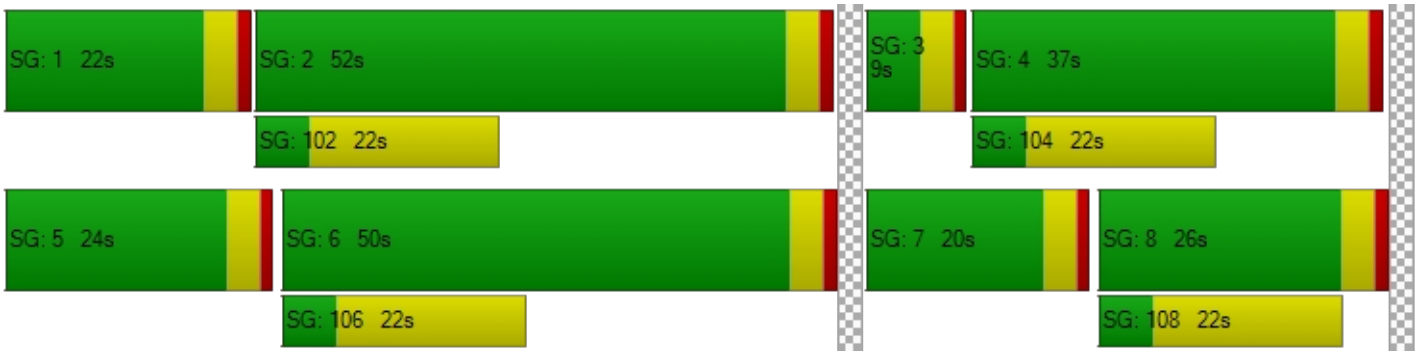
d_M, Delay for Movement [s/veh]	73.73	8.93	8.95	69.46	7.01	7.01	71.99	55.43	53.50	72.00	60.88	52.01
Movement LOS	E	A	A	E	A	A	E	E	D	E	E	D
d_A, Approach Delay [s/veh]	12.14			12.82			56.60			61.13		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	22.81											
Intersection LOS	C											
Intersection V/C	0.413											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.662	2.649	2.402	2.565
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	800	367	550
d_b, Bicycle Delay [s]	22.82	21.60	40.02	31.54
l_b,int, Bicycle LOS Score for Intersection	2.410	2.163	1.749	2.013
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	68	1025	112	64	785	62	76	231	66	117	164	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	1025	112	64	785	62	76	231	66	117	164	58
Peak Hour Factor	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	272	30	17	208	16	20	61	17	31	43	15
Total Analysis Volume [veh/h]	72	1087	119	68	832	66	81	245	70	124	174	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	57	0	11	57	0	12	33	0	19	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	74	74	6	74	74	7	14	14	10	17	17
g / C, Green / Cycle	0.05	0.62	0.62	0.05	0.61	0.61	0.06	0.11	0.11	0.09	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.04	0.34	0.34	0.04	0.25	0.25	0.05	0.09	0.09	0.07	0.07	0.07
s, saturation flow rate [veh/h]	1714	1800	1738	1714	1800	1754	1714	1800	1666	1714	1800	1643
c, Capacity [veh/h]	91	1108	1070	86	1103	1075	101	204	189	150	255	233
d1, Uniform Delay [s]	56.17	13.44	13.47	56.36	12.04	12.04	55.74	51.81	51.95	53.85	47.39	47.52
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.22	1.99	2.07	14.69	1.14	1.17	13.23	6.74	8.13	10.85	1.37	1.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.55	0.55	0.79	0.41	0.41	0.80	0.79	0.81	0.83	0.48	0.49
d, Delay for Lane Group [s/veh]	70.39	15.43	15.54	71.04	13.18	13.21	68.97	58.55	60.08	64.70	48.77	49.12
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.51	9.81	9.54	2.39	6.43	6.28	2.79	5.12	4.94	4.13	3.45	3.28
50th-Percentile Queue Length [ft/ln]	62.86	245.1	238.5	59.72	160.8	156.9	69.85	127.9	123.4	103.3	86.16	81.98
95th-Percentile Queue Length [veh/ln]	4.53	14.94	14.61	4.30	10.59	10.39	5.03	8.83	8.58	7.44	6.20	5.90
95th-Percentile Queue Length [ft/ln]	113.1	373.5	365.2	107.5	264.8	259.6	125.7	220.6	214.6	185.9	155.0	147.5

Movement, Approach, & Intersection Results

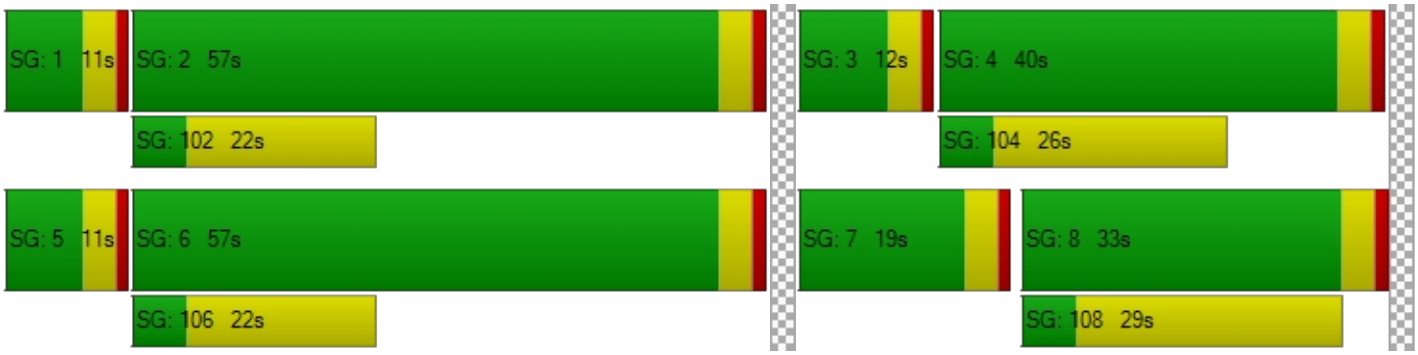
d_M, Delay for Movement [s/veh]	70.39	15.48	15.54	71.04	13.19	13.21	68.97	59.07	60.08	64.70	48.87	49.12
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	18.58			17.27			61.28			54.37		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	28.09											
Intersection LOS	C											
Intersection V/C	0.546											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.930	2.825	2.453	2.470
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	883	883	483	600
d_b, Bicycle Delay [s]	18.70	18.70	34.50	29.40
l_b,int, Bicycle LOS Score for Intersection	2.614	2.357	1.886	1.857
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	45.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.803

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	119	208	360	107	282	534	817	1020	94	152	605	306
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	208	360	107	282	534	817	1020	94	152	605	306
Peak Hour Factor	0.926	0.926	0.926	0.926	0.926	0.926	0.926	0.926	0.926	0.926	0.926	0.926
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	32	56	97	29	76	144	221	275	25	41	163	83
Total Analysis Volume [veh/h]	129	225	389	116	305	577	882	1102	102	164	653	330
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	36	0	13	30	0	40	59	0	12	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	33	33	9	31	31	31	34	54	54	8	28	28
g / C, Green / Cycle	0.09	0.28	0.28	0.08	0.26	0.26	0.26	0.28	0.45	0.45	0.06	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.08	0.07	0.25	0.07	0.17	0.19	0.19	0.26	0.22	0.07	0.05	0.13	0.22
s, saturation flow rate [veh/h]	1714	3427	1530	171	180	153	153	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	156	944	422	129	467	397	397	944	2212	690	216	1140	356
d1, Uniform Delay [s]	53.62	33.70	42.23	55.0	39.6	40.5	40.5	41.90	23.31	19.36	55.18	40.77	45.06
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.35
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.56	0.60	28.17	19.3	6.93	11.0	11.0	5.01	0.17	0.10	5.38	0.46	25.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.24	0.92	0.90	0.65	0.73	0.73	0.93	0.50	0.15	0.76	0.57	0.93
d, Delay for Lane Group [s/veh]	64.19	34.30	70.40	74.4	46.5	51.5	51.5	46.90	23.49	19.46	60.56	41.22	70.50
Lane Group LOS	E	C	E	E	D	D	D	D	C	B	E	D	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.28	2.64	14.39	4.17	8.90	8.96	8.96	13.26	7.33	1.70	2.60	5.75	12.06
50th-Percentile Queue Length [ft/ln]	107.1	65.98	359.8	104.	222.	224.	224.	331.3	183.3	42.55	65.03	143.6	301.5
95th-Percentile Queue Length [veh/ln]	7.68	4.75	20.62	7.51	13.7	13.8	13.8	19.23	11.78	3.06	4.68	9.68	17.76
95th-Percentile Queue Length [ft/ln]	191.9	118.7	515.4	187.	344.	346.	346.	480.6	294.3	76.59	117.0	241.9	443.9

Movement, Approach, & Intersection Results

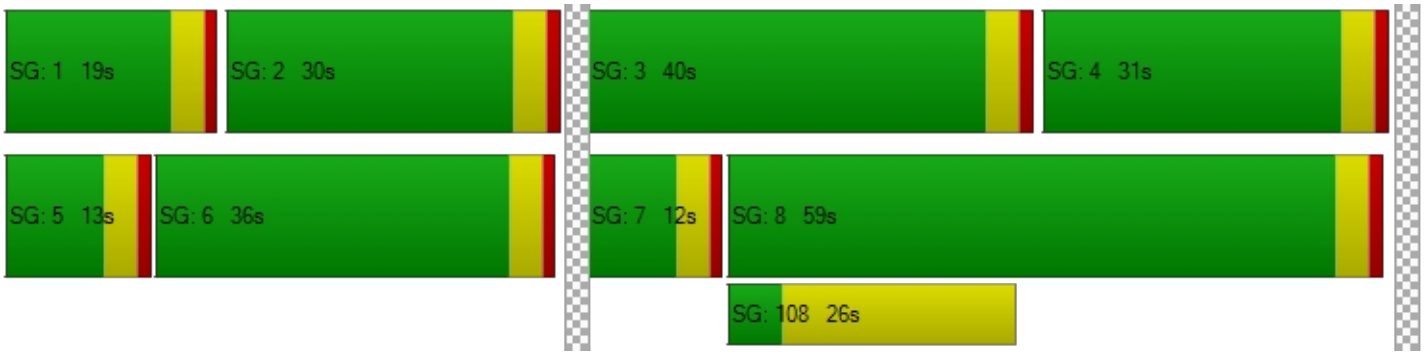
d_M, Delay for Movement [s/veh]	64.19	34.30	70.40	74.44	46.53	51.56	46.90	23.49	19.46	60.56	41.22	70.50
Movement LOS	E	C	E	E	D	D	D	C	B	E	D	E
d_A, Approach Delay [s/veh]	58.39			52.68			33.19			52.41		
Approach LOS	E			D			C			D		
d_I, Intersection Delay [s/veh]	45.30											
Intersection LOS	D											
Intersection V/C	0.803											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.682	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	433	917	450
d_b, Bicycle Delay [s]	32.27	36.82	17.60	36.04
l_b,int, Bicycle LOS Score for Intersection	2.173	2.383	2.707	2.190
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	33.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.560

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	74	48	43	114	42	359	674	752	63	37	631	140
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	48	43	114	42	359	674	752	63	37	631	140
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	13	11	30	11	94	177	198	17	10	166	37
Total Analysis Volume [veh/h]	78	51	45	120	44	378	709	792	66	39	664	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	28	0	29	23	0	36	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	8	19	19	19	29	73	73	4	48	48
g / C, Green / Cycle	0.06	0.06	0.06	0.16	0.16	0.16	0.24	0.61	0.61	0.03	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.03	0.05	0.05	0.14	0.21	0.16	0.04	0.02	0.16	0.16
s, saturation flow rate [veh/h]	1714	1800	1538	1714	1759	2708	3329	4903	1530	1714	3427	1640
c, Capacity [veh/h]	111	116	99	274	281	433	801	2996	935	54	1377	659
d1, Uniform Delay [s]	54.99	53.97	54.14	44.46	44.45	49.23	43.98	10.83	9.49	57.62	25.55	25.62
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.87	2.43	3.41	0.59	0.58	5.64	3.52	0.22	0.15	17.09	0.86	1.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.42	0.47	0.30	0.30	0.87	0.89	0.26	0.07	0.73	0.40	0.40
d, Delay for Lane Group [s/veh]	62.86	56.40	57.55	45.05	45.03	54.87	47.49	11.05	9.64	74.71	26.40	27.45
Lane Group LOS	E	E	E	D	D	D	D	B	A	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.56	1.51	1.46	2.18	2.23	5.86	10.49	3.23	0.73	1.43	5.70	5.73
50th-Percentile Queue Length [ft/ln]	63.88	37.83	36.44	54.50	55.87	146.4	262.3	80.68	18.29	35.71	142.4	143.2
95th-Percentile Queue Length [veh/ln]	4.60	2.72	2.62	3.92	4.02	9.83	15.81	5.81	1.32	2.57	9.61	9.66
95th-Percentile Queue Length [ft/ln]	114.9	68.09	65.59	98.11	100.5	245.6	395.2	145.2	32.93	64.28	240.3	241.3

Movement, Approach, & Intersection Results

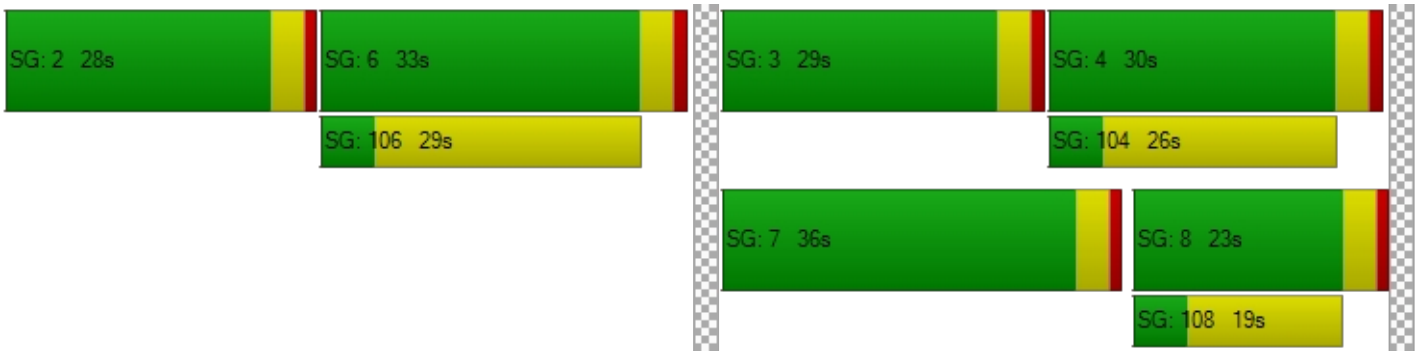
d_M, Delay for Movement [s/veh]	62.86	56.44	57.55	45.05	45.03	54.87	47.49	11.05	9.64	74.71	26.59	27.45
Movement LOS	E	E	E	D	D	D	D	B	A	E	C	C
d_A, Approach Delay [s/veh]	59.61			51.90			27.48			28.95		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	33.88											
Intersection LOS	C											
Intersection V/C	0.560											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.225	2.704	0.000	2.861
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	400	317	433
d_b, Bicycle Delay [s]	34.50	38.40	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.703	2.454	2.421	2.027
Bicycle LOS	A	B	B	B

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	35.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.496

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	158	754	90	148	608	171	182	575	229	108	268	65
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	754	90	148	608	171	182	575	229	108	268	65
Peak Hour Factor	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	201	24	40	162	46	49	154	61	29	72	17
Total Analysis Volume [veh/h]	169	806	96	158	650	183	194	614	245	115	286	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Unsig	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	36	0	16	36	0	29	56	0	12	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	65	8	65	65	9	25	25	6	22	22
g / C, Green / Cycle	0.07	0.54	0.06	0.54	0.54	0.08	0.21	0.21	0.05	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.24	0.05	0.19	0.12	0.06	0.18	0.16	0.03	0.10	0.10
s, saturation flow rate [veh/h]	3329	3427	3329	3427	1530	3329	3427	1530	3329	1800	1682
c, Capacity [veh/h]	226	1862	215	1850	826	262	715	319	167	324	303
d1, Uniform Delay [s]	54.92	16.37	55.11	15.67	14.43	54.07	45.77	44.73	56.07	44.87	44.96
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.88	0.74	4.81	0.53	0.62	4.08	3.14	3.87	4.99	1.52	1.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.43	0.73	0.35	0.22	0.74	0.86	0.77	0.69	0.56	0.57
d, Delay for Lane Group [s/veh]	59.80	17.11	59.93	16.20	15.05	58.15	48.91	48.60	61.06	46.39	46.66
Lane Group LOS	E	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.66	6.68	2.49	5.12	2.72	3.02	9.10	7.20	1.83	5.08	4.86
50th-Percentile Queue Length [ft/ln]	66.57	166.98	62.28	127.9	68.12	75.43	227.6	180.0	45.74	127.1	121.4
95th-Percentile Queue Length [veh/ln]	4.79	10.92	4.48	8.83	4.90	5.43	14.05	11.60	3.29	8.78	8.47
95th-Percentile Queue Length [ft/ln]	119.83	272.94	112.1	220.7	122.6	135.7	351.3	290.0	82.34	219.5	211.7

Movement, Approach, & Intersection Results

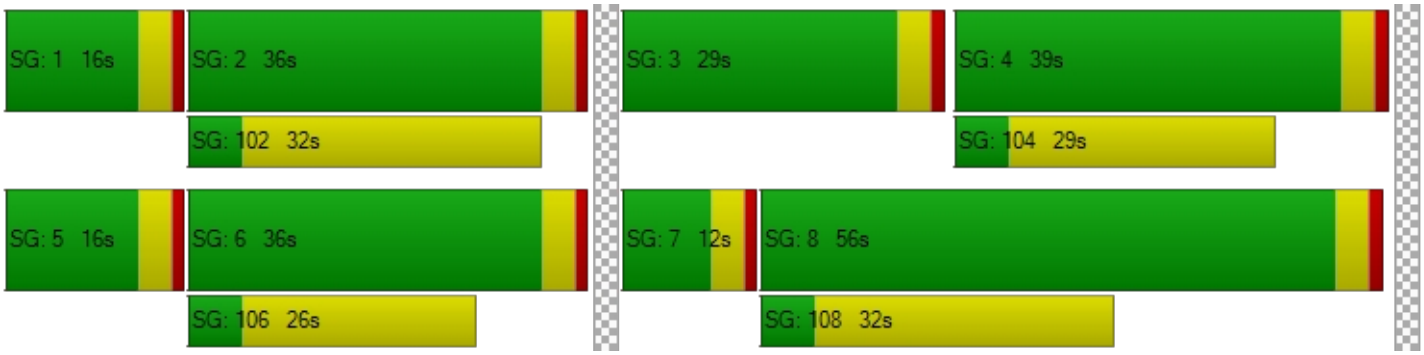
d_M, Delay for Movement [s/veh]	59.80	17.11	0.00	59.93	16.20	15.05	58.15	48.91	48.60	61.06	46.49	46.66
Movement LOS	E	B		E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	24.51			22.96			50.54			50.08		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.37											
Intersection LOS	D											
Intersection V/C	0.496											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.983	2.896	2.947	2.670
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	533	867	583
d_b, Bicycle Delay [s]	32.27	32.27	19.27	30.10
l_b,int, Bicycle LOS Score for Intersection	2.364	2.377	2.428	1.947
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	39.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.746

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	46	3	492	3	0	1	0	791	45	140	261	2
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	3	492	3	0	1	0	791	45	140	261	2
Peak Hour Factor	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	1	142	1	0	0	0	228	13	40	75	1
Total Analysis Volume [veh/h]	53	3	568	3	0	1	0	913	52	162	301	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	52	76	0	9	33	0	9	26	0	9	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	47	52	0	43	43	13	56	56
g / C, Green / Cycle	0.43	0.43	0.39	0.43	0.00	0.35	0.35	0.11	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.37	0.00	0.00	0.27	0.03	0.09	0.08	0.08
s, saturation flow rate [veh/h]	1439	1488	1530	860	1714	3427	1530	1714	1800	1796
c, Capacity [veh/h]	628	761	600	470	0	1217	543	189	838	836
d1, Uniform Delay [s]	19.62	19.58	35.25	19.37	0.00	34.02	25.83	52.44	18.72	18.72
k, delay calibration	0.11	0.11	0.16	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	0.02	11.74	0.01	0.00	4.28	0.35	10.51	0.47	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.04	0.95	0.01	0.00	0.75	0.10	0.86	0.18	0.18
d, Delay for Lane Group [s/veh]	19.65	19.60	46.99	19.37	0.00	38.30	26.18	62.95	19.20	19.20
Lane Group LOS	B	B	D	B	A	D	C	E	B	B
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.43	0.50	17.65	0.06	0.00	12.32	1.06	5.34	2.58	2.58
50th-Percentile Queue Length [ft/ln]	10.66	12.40	441.3	1.62	0.00	307.8	26.39	133.4	64.55	64.45
95th-Percentile Queue Length [veh/ln]	0.77	0.89	24.54	0.12	0.00	18.07	1.90	9.13	4.65	4.64
95th-Percentile Queue Length [ft/ln]	19.20	22.33	613.5	2.92	0.00	451.7	47.50	228.1	116.1	116.0

Movement, Approach, & Intersection Results

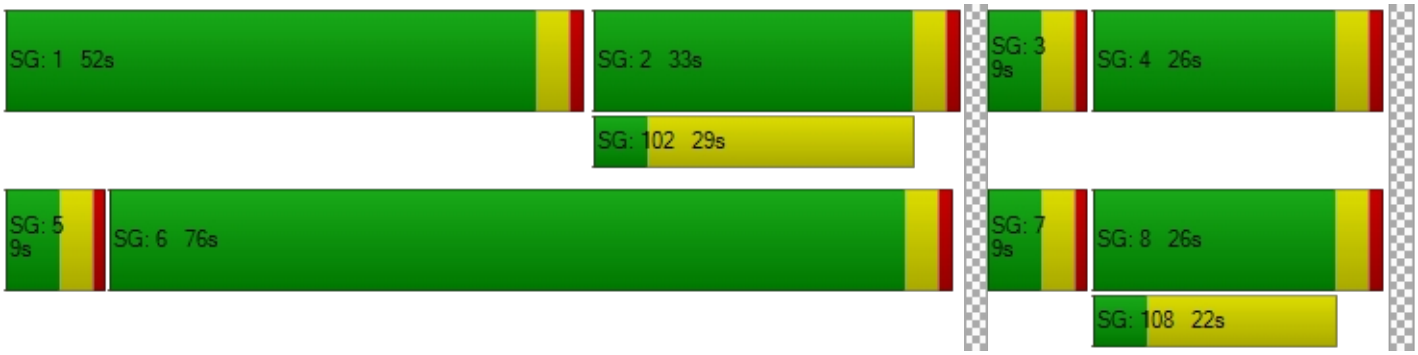
d_M, Delay for Movement [s/veh]	19.65	19.60	46.99	19.37	19.37	19.37	0.00	38.30	26.18	62.95	19.20	19.20
Movement LOS	B	B	D	B	B	B	A	D	C	E	B	B
d_A, Approach Delay [s/veh]	44.53			19.37			37.64			34.44		
Approach LOS	D			B			D			C		
d_I, Intersection Delay [s/veh]	38.97											
Intersection LOS	D											
Intersection V/C	0.746											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.479	0.000	2.873	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1350	1217	367	367
d_b, Bicycle Delay [s]	6.34	9.20	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	2.589	1.566	2.356	1.943
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	1295	400	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1295	400	0
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	340	105	0
Total Analysis Volume [veh/h]	0	0	0	1360	420	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	22.17	9.49	8.17	0.00	0.00	0.00
Movement LOS	C	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	15.83		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	37.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.669

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	1021	140	76	775	225	468	667	302	75	184	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	1021	140	76	775	225	468	667	302	75	184	58
Peak Hour Factor	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	277	38	21	211	61	127	181	82	20	50	16
Total Analysis Volume [veh/h]	71	1110	152	83	842	245	509	725	328	82	200	63
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	29	0	11	30	30	44	40	0	40	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	48	48	7	49	90	38	42	7	12	12
g / C, Green / Cycle	0.05	0.40	0.40	0.06	0.41	0.75	0.31	0.35	0.06	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.04	0.25	0.25	0.05	0.17	0.16	0.30	0.21	0.05	0.07	0.08
s, saturation flow rate [veh/h]	1714	3427	1691	1714	4903	1530	1714	3427	1714	1800	1656
c, Capacity [veh/h]	86	1361	672	100	1988	1151	537	1196	107	176	162
d1, Uniform Delay [s]	56.49	28.95	28.95	55.91	25.61	4.39	40.23	32.25	55.42	52.79	52.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.38	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.79	2.14	4.29	15.75	0.66	0.42	23.21	0.50	10.96	6.76	8.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.62	0.62	0.83	0.42	0.21	0.95	0.61	0.77	0.77	0.79
d, Delay for Lane Group [s/veh]	74.28	31.08	33.24	71.66	26.27	4.81	63.44	32.75	66.37	59.55	61.29
Lane Group LOS	E	C	C	E	C	A	E	C	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.56	10.05	10.32	2.92	5.86	1.70	17.95	8.73	2.77	4.29	4.16
50th-Percentile Queue Length [ft/ln]	63.89	251.1	258.0	73.09	146.4	42.50	448.64	218.22	69.26	107.3	103.9
95th-Percentile Queue Length [veh/ln]	4.60	15.25	15.59	5.26	9.83	3.06	24.89	13.57	4.99	7.69	7.48
95th-Percentile Queue Length [ft/ln]	115.0	381.1	389.7	131.5	245.6	76.49	622.32	339.35	124.6	192.2	187.1

Movement, Approach, & Intersection Results

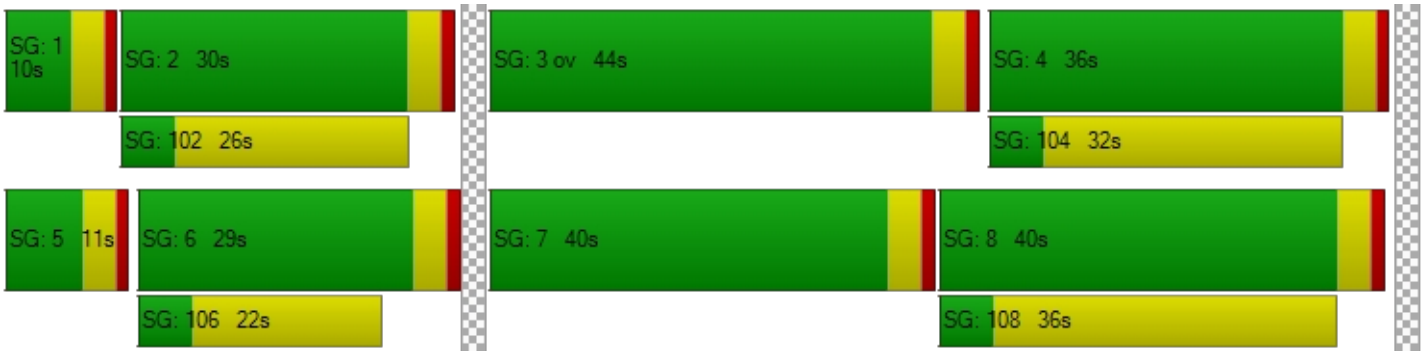
d_M, Delay for Movement [s/veh]	74.28	31.60	33.24	71.66	26.27	4.81	63.44	32.75	0.00	66.37	60.12	61.29
Movement LOS	E	C	C	E	C	A	E	C		E	E	E
d_A, Approach Delay [s/veh]	34.06			25.00			45.41			61.82		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	37.24											
Intersection LOS	D											
Intersection V/C	0.669											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.109	3.088	2.752	2.570
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	433	600	533
d_b, Bicycle Delay [s]	37.60	36.82	29.40	32.27
l_b,int, Bicycle LOS Score for Intersection	2.293	2.203	2.578	1.844
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	35.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.476

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	17	158	25	39	100	35	68	546	12	13	227	35
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	158	25	39	100	35	68	546	12	13	227	35
Peak Hour Factor	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	43	7	11	27	10	19	149	3	4	62	10
Total Analysis Volume [veh/h]	19	173	27	43	109	38	74	597	13	14	248	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	23	0	0	23	0	78	88	0	9	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	63	63	7	43	2	38	38
g / C, Green / Cycle	0.52	0.52	0.06	0.36	0.02	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.13	0.12	0.04	0.34	0.01	0.14	0.02
s, saturation flow rate [veh/h]	1720	1599	1714	1793	1714	1800	1530
c, Capacity [veh/h]	935	875	98	645	27	573	487
d1, Uniform Delay [s]	15.49	15.22	55.75	37.27	58.62	32.33	28.59
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.59	0.57	11.19	7.91	14.83	0.52	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.22	0.76	0.95	0.52	0.43	0.08
d, Delay for Lane Group [s/veh]	16.07	15.79	66.95	45.18	73.44	32.85	28.66
Lane Group LOS	B	B	E	D	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.39	2.90	2.51	18.48	0.53	5.78	0.78
50th-Percentile Queue Length [ft/ln]	84.85	72.58	62.85	462.00	13.32	144.5	19.53
95th-Percentile Queue Length [veh/ln]	6.11	5.23	4.53	25.53	0.96	9.72	1.41
95th-Percentile Queue Length [ft/ln]	152.74	130.64	113.13	638.25	23.98	243.1	35.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.07	16.07	16.07	15.79	15.79	15.79	66.95	45.18	45.18	73.44	32.85	28.66
Movement LOS	B	B	B	B	B	B	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	16.07			15.79			47.53			34.21		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	35.39											
Intersection LOS	D											
Intersection V/C	0.476											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	1.903	1.962	2.414	0.000
Crosswalk LOS	A	A	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	1400	250
d_b, Bicycle Delay [s]	42.50	42.50	5.40	45.94
l_b,int, Bicycle LOS Score for Intersection	1.921	1.873	2.688	2.055
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.438

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	5	19	54	26	3	0	14	23	8	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	19	54	26	3	0	14	23	8	12
Peak Hour Factor	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	14	7	1	0	4	6	2	3
Total Analysis Volume [veh/h]	5	20	57	28	3	0	15	24	8	13
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	10	10
g / C, Green / Cycle	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.07	0.04
s, saturation flow rate [veh/h]	1696	1630
c, Capacity [veh/h]	174	170
d1, Uniform Delay [s]	54.19	52.52
k, delay calibration	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	4.02	1.25
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.35
d, Delay for Lane Group [s/veh]	58.20	53.77
Lane Group LOS	E	D
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	3.55	1.79
50th-Percentile Queue Length [ft/ln]	88.77	44.64
95th-Percentile Queue Length [veh/ln]	6.39	3.21
95th-Percentile Queue Length [ft/ln]	159.78	80.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.20	58.20	58.20	58.20	58.20	53.77	53.77	53.77	53.77	53.77
Movement LOS	E	E	E	E	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	58.20					53.77				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	27.02									
Intersection LOS	C									
Intersection V/C	0.438									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.848	1.971
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250
d_b, Bicycle Delay [s]	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.708	1.612
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	8	128	402	18	1	6	12	184	18	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	128	402	18	1	6	12	184	18	9
Peak Hour Factor	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	34	107	5	0	2	3	49	5	2
Total Analysis Volume [veh/h]	8	136	426	19	1	6	13	195	19	10
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	58	0	0	9	0	58	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	82	76	82	73	73
g / C, Green / Cycle	0.68	0.63	0.68	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.12	0.25	0.02	0.11	0.02
s, saturation flow rate [veh/h]	1225	1786	999	1800	1530
c, Capacity [veh/h]	861	1127	643	1087	924
d1, Uniform Delay [s]	6.75	10.89	7.17	10.54	9.58
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	1.04	0.02	0.36	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.40	0.03	0.18	0.03
d, Delay for Lane Group [s/veh]	7.17	11.93	7.19	10.91	9.65
Lane Group LOS	A	B	A	B	A
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.30	5.91	0.15	2.36	0.32
50th-Percentile Queue Length [ft/ln]	32.48	147.76	3.74	58.96	8.01
95th-Percentile Queue Length [veh/ln]	2.34	9.90	0.27	4.24	0.58
95th-Percentile Queue Length [ft/ln]	58.46	247.44	6.74	106.12	14.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.17	7.17	11.93	11.93	11.93	7.19	7.19	10.91	9.65	9.65
Movement LOS	A	A	B	B	B	A	A	B	A	A
d_A, Approach Delay [s/veh]	10.77					10.46				
Approach LOS	B					B				
d_I, Intersection Delay [s/veh]	27.02									
Intersection LOS	C									
Intersection V/C	0.438									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.315	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	900
d_b, Bicycle Delay [s]	18.15	18.15
l_b,int, Bicycle LOS Score for Intersection	2.307	1.923
Bicycle LOS	B	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	7	16	152	12	4	4	7	52	62	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	16	152	12	4	4	7	52	62	2
Peak Hour Factor	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	4	40	3	1	1	2	14	16	1
Total Analysis Volume [veh/h]	7	17	161	13	4	4	7	55	66	2
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	34	0	0	0	0	34	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	16
g / C, Green / Cycle	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.12	0.04	0.04
s, saturation flow rate [veh/h]	1716	1683	1530
c, Capacity [veh/h]	265	262	206
d1, Uniform Delay [s]	50.84	46.64	47.02
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	4.55	0.50	0.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.25	0.33
d, Delay for Lane Group [s/veh]	55.38	47.14	47.94
Lane Group LOS	E	D	D
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.28	1.82	1.90
50th-Percentile Queue Length [ft/ln]	156.88	45.38	47.51
95th-Percentile Queue Length [veh/ln]	10.38	3.27	3.42
95th-Percentile Queue Length [ft/ln]	259.59	81.68	85.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.38	55.38	55.38	55.38	55.38	47.14	47.14	47.14	47.94	47.94
Movement LOS	E	E	E	E	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	55.38					47.54				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	27.02									
Intersection LOS	C									
Intersection V/C	0.438									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.922	2.257
Crosswalk LOS	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	500
d_b, Bicycle Delay [s]	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	1.843	1.771
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	30.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	173	956	47	48	575	25	53	305	64	44	212	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	956	47	48	575	25	53	305	64	44	212	71
Peak Hour Factor	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	45	249	12	13	150	7	14	80	17	11	55	19
Total Analysis Volume [veh/h]	180	997	49	50	600	26	55	318	67	46	221	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	30	66	0	15	51	0	13	28	0	11	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	80	80	5	69	69	5	16	16	4	15	15
g / C, Green / Cycle	0.12	0.66	0.66	0.04	0.58	0.58	0.04	0.13	0.13	0.03	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.11	0.29	0.29	0.03	0.18	0.18	0.03	0.11	0.11	0.03	0.08	0.09
s, saturation flow rate [veh/h]	1714	1800	1770	1714	1800	1774	1714	1800	1694	1714	1800	1650
c, Capacity [veh/h]	210	1193	1173	65	1040	1025	71	237	223	59	225	206
d1, Uniform Delay [s]	51.62	9.66	9.66	57.21	12.95	12.95	56.98	50.77	50.89	57.49	50.17	50.34
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.66	1.19	1.21	17.18	0.75	0.76	16.46	7.26	8.41	19.68	3.48	4.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.44	0.44	0.77	0.30	0.30	0.78	0.83	0.84	0.78	0.67	0.70
d, Delay for Lane Group [s/veh]	61.28	10.84	10.87	74.39	13.70	13.72	73.43	58.03	59.30	77.17	53.65	54.56
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.87	6.60	6.51	1.81	4.48	4.42	1.98	6.23	6.05	1.71	4.56	4.38
50th-Percentile Queue Length [ft/ln]	146.7	165.1	162.8	45.34	111.9	110.5	49.40	155.8	151.1	42.68	114.0	109.5
95th-Percentile Queue Length [veh/ln]	9.84	10.82	10.70	3.26	7.95	7.87	3.56	10.33	10.08	3.07	8.06	7.81
95th-Percentile Queue Length [ft/ln]	246.0	270.4	267.4	81.62	198.6	196.7	88.92	258.1	251.9	76.83	201.5	195.3

Movement, Approach, & Intersection Results

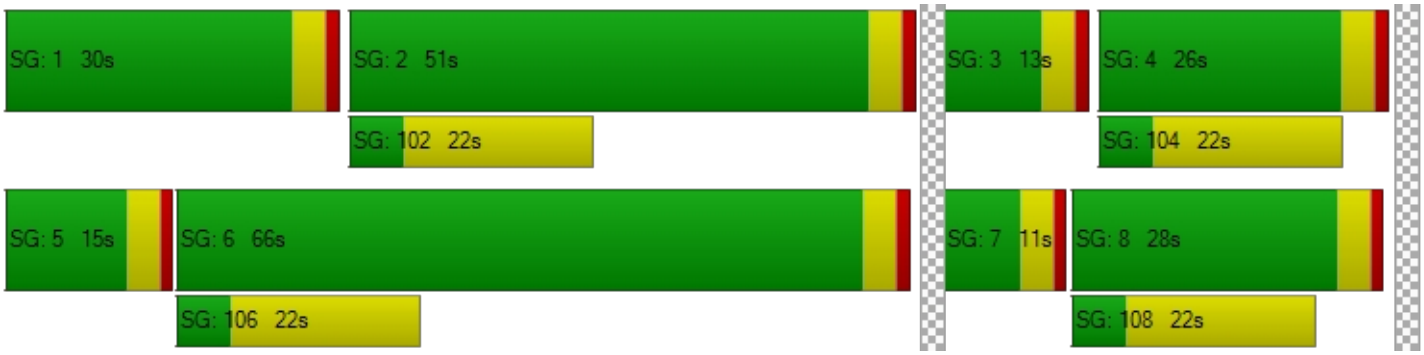
d_M, Delay for Movement [s/veh]	61.28	10.86	10.87	74.39	13.71	13.72	73.43	58.51	59.30	77.17	53.94	54.56
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	18.26			18.20			60.50			57.21		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	30.12											
Intersection LOS	C											
Intersection V/C	0.460											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.693	2.666	2.484	2.591
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	783	400	367
d_b, Bicycle Delay [s]	14.02	22.20	38.40	40.02
l_b,int, Bicycle LOS Score for Intersection	2.571	2.117	1.923	1.841
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	36.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	182	958	368	67	880	54	92	340	135	232	281	75
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	182	958	368	67	880	54	92	340	135	232	281	75
Peak Hour Factor	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	46	243	93	17	223	14	23	86	34	59	71	19
Total Analysis Volume [veh/h]	185	972	373	68	892	55	93	345	137	235	285	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	30	47	0	10	27	0	29	36	0	27	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	60	60	6	51	51	8	20	20	18	30	30
g / C, Green / Cycle	0.13	0.50	0.50	0.05	0.42	0.42	0.07	0.16	0.16	0.15	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.11	0.28	0.24	0.04	0.26	0.04	0.05	0.14	0.14	0.14	0.10	0.10
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1629	1714	1800	1672
c, Capacity [veh/h]	215	1710	764	86	1452	648	119	296	268	263	446	414
d1, Uniform Delay [s]	51.45	21.02	19.91	56.39	26.94	20.67	54.91	48.70	48.83	49.84	37.85	37.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.12	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.67	1.38	2.23	15.00	1.95	0.26	10.38	6.73	8.08	11.15	0.62	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.57	0.49	0.79	0.61	0.08	0.78	0.85	0.86	0.89	0.42	0.42
d, Delay for Lane Group [s/veh]	61.12	22.39	22.14	71.39	28.90	20.93	65.29	55.43	56.90	60.99	38.47	38.58
Lane Group LOS	E	C	C	E	C	C	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.03	9.69	7.28	2.40	10.22	0.98	3.11	7.84	7.32	7.72	4.68	4.41
50th-Percentile Queue Length [ft/ln]	150.7	242.2	181.9	59.88	255.5	24.41	77.82	196.0	183.0	192.8	117.0	110.1
95th-Percentile Queue Length [veh/ln]	10.05	14.79	11.70	4.31	15.46	1.76	5.60	12.43	11.76	12.27	8.23	7.85
95th-Percentile Queue Length [ft/ln]	251.3	369.8	292.6	107.7	386.6	43.93	140.0	310.8	294.0	306.7	205.7	196.2

Movement, Approach, & Intersection Results

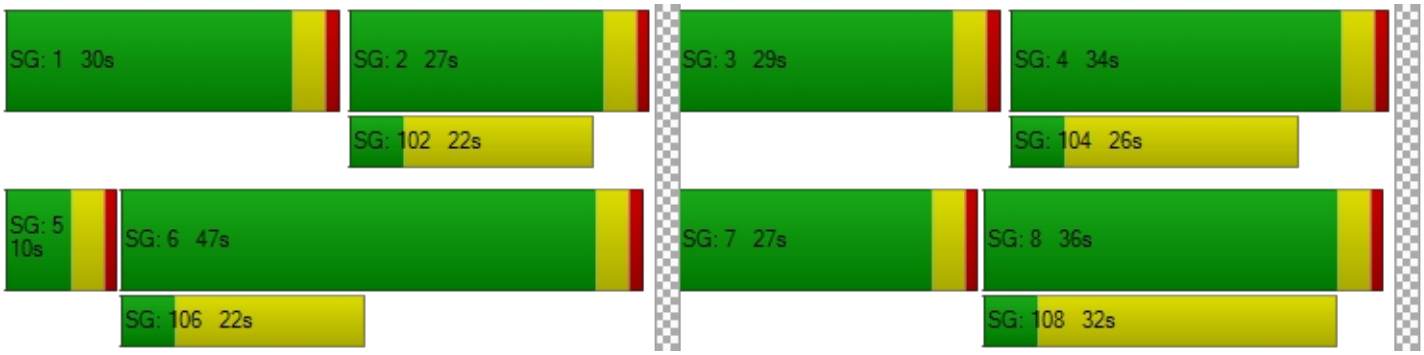
d_M, Delay for Movement [s/veh]	61.12	22.39	22.14	71.39	28.90	20.93	65.29	55.83	56.90	60.99	38.51	38.58
Movement LOS	E	C	C	E	C	C	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	27.01			31.31			57.62			47.38		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	36.19											
Intersection LOS	D											
Intersection V/C	0.647											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.081	2.818	2.530	2.585
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	383	533	500
d_b, Bicycle Delay [s]	24.70	39.20	32.27	33.75
l_b,int, Bicycle LOS Score for Intersection	2.822	2.397	2.034	2.051
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.321

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	164	64	4	101	23	42	130	1	7	77	12
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	164	64	4	101	23	42	130	1	7	77	12
Peak Hour Factor	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	44	17	1	27	6	11	35	0	2	21	3
Total Analysis Volume [veh/h]	0	177	69	4	109	25	45	140	1	8	83	13
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	767	735	698	629	725
Degree of Utilization, x	0.32	0.19	0.27	0.14	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.39	0.69	1.07	0.50	0.05
95th-Percentile Queue Length [ft]	34.67	17.18	26.83	12.59	1.37
Approach Delay [s/veh]	9.89	9.03	10.03	9.19	
Approach LOS	A	A	B	A	
Intersection Delay [s/veh]	9.64				
Intersection LOS	A				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.547

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	257	937	121	64	940	30	75	256	340	136	91	88
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	257	937	121	64	940	30	75	256	340	136	91	88
Peak Hour Factor	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	67	244	31	17	244	8	19	67	88	35	24	23
Total Analysis Volume [veh/h]	267	974	126	67	977	31	78	266	353	141	95	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	45	0	12	39	0	18	51	0	12	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	61	61	6	55	55	7	30	30	7	30	30
g / C, Green / Cycle	0.10	0.51	0.51	0.05	0.46	0.46	0.06	0.25	0.25	0.06	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.21	0.21	0.04	0.19	0.19	0.05	0.08	0.23	0.04	0.03	0.06
s, saturation flow rate [veh/h]	3329	3427	1696	1714	3427	1772	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	324	1729	856	86	1566	810	101	870	389	194	868	388
d1, Uniform Delay [s]	53.14	18.76	18.76	56.36	21.94	21.95	55.67	36.21	43.41	55.56	34.41	35.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.15	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.24	0.77	1.55	14.29	0.84	1.63	11.69	0.20	10.93	5.12	0.06	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.43	0.43	0.78	0.42	0.42	0.77	0.31	0.91	0.73	0.11	0.23
d, Delay for Lane Group [s/veh]	58.38	19.53	20.31	70.65	22.79	23.58	67.36	36.40	54.34	60.68	34.46	35.88
Lane Group LOS	E	B	C	E	C	C	E	D	D	E	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.18	6.56	6.68	2.35	6.44	6.84	2.66	3.20	11.27	2.24	1.08	2.16
50th-Percentile Queue Length [ft/ln]	104.6	163.9	166.9	58.68	161.0	171.1	66.45	79.90	281.8	55.92	27.04	54.04
95th-Percentile Queue Length [veh/ln]	7.53	10.76	10.92	4.23	10.60	11.14	4.78	5.75	16.78	4.03	1.95	3.89
95th-Percentile Queue Length [ft/ln]	188.3	268.9	272.9	105.6	265.0	278.3	119.6	143.8	419.5	100.6	48.67	97.28

Movement, Approach, & Intersection Results

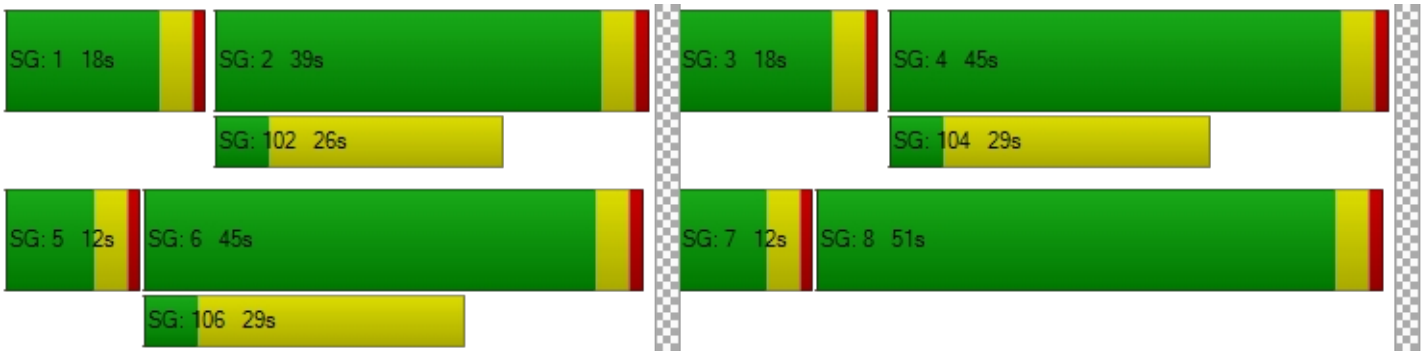
d_M, Delay for Movement [s/veh]	58.38	19.72	20.31	70.65	23.04	23.58	67.36	36.40	54.34	60.68	34.46	35.88
Movement LOS	E	B	C	E	C	C	E	D	D	E	C	D
d_A, Approach Delay [s/veh]	27.32			26.02			48.95			46.16		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.05											
Intersection LOS	C											
Intersection V/C	0.547											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.918	2.645	2.719
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	583	783	683
d_b, Bicycle Delay [s]	26.00	30.10	22.20	26.00
l_b,int, Bicycle LOS Score for Intersection	2.311	2.151	2.135	1.829
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	46.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	32	371	673	11	254	25	40	443	23	718	443	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	371	673	11	254	25	40	443	23	718	443	71
Peak Hour Factor	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	97	176	3	66	7	10	116	6	188	116	19
Total Analysis Volume [veh/h]	34	388	705	12	266	26	42	464	24	752	464	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	59	0	9	59	0	29	21	0	31	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	58	58	2	57	57	4	17	17	27	40	40
g / C, Green / Cycle	0.03	0.49	0.49	0.01	0.47	0.47	0.03	0.14	0.14	0.23	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.01	0.22	0.46	0.01	0.08	0.08	0.02	0.14	0.02	0.23	0.14	0.05
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1745	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	94	875	744	24	849	823	56	486	217	749	1144	511
d1, Uniform Delay [s]	57.23	20.20	29.39	58.75	18.24	18.27	57.54	51.13	44.91	46.50	30.79	27.97
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.30	1.63	22.50	15.32	0.44	0.47	17.73	11.10	0.22	16.22	0.23	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.44	0.95	0.50	0.17	0.18	0.75	0.96	0.11	1.00	0.41	0.14
d, Delay for Lane Group [s/veh]	59.53	21.83	51.89	74.06	18.69	18.73	75.27	62.22	45.13	62.72	31.02	28.10
Lane Group LOS	E	C	D	E	B	B	E	E	D	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.54	7.44	23.27	0.46	2.47	2.43	1.54	7.65	0.64	12.78	5.21	1.52
50th-Percentile Queue Length [ft/ln]	13.42	186.0	581.7	11.60	61.64	60.79	38.54	191.2	16.02	319.4	130.3	37.97
95th-Percentile Queue Length [veh/ln]	0.97	11.91	31.18	0.84	4.44	4.38	2.77	12.19	1.15	18.68	8.96	2.73
95th-Percentile Queue Length [ft/ln]	24.16	297.8	779.5	20.89	110.9	109.4	69.37	304.7	28.83	467.0	223.9	68.35

Movement, Approach, & Intersection Results

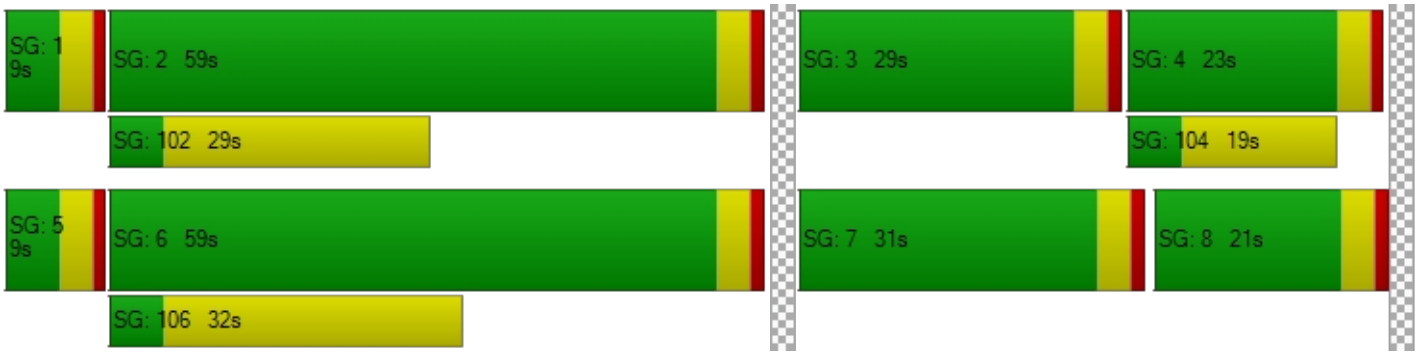
d_M, Delay for Movement [s/veh]	59.53	21.83	51.89	74.06	18.71	18.73	75.27	62.22	45.13	62.72	31.02	28.10
Movement LOS	E	C	D	E	B	B	E	E	D	F	C	C
d_A, Approach Delay [s/veh]	41.78			20.89			62.48			49.34		
Approach LOS	D			C			E			D		
d_I, Intersection Delay [s/veh]	46.20											
Intersection LOS	D											
Intersection V/C	0.829											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.343	2.756	3.042
Crosswalk LOS	F	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	917	283	317
d_b, Bicycle Delay [s]	17.60	17.60	44.20	42.50
l_b,int, Bicycle LOS Score for Intersection	3.419	1.810	1.997	2.624
Bicycle LOS	C	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	39.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	247	951	696	98	948	67	178	452	354	395	240	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	247	951	696	98	948	67	178	452	354	395	240	82
Peak Hour Factor	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	64	245	179	25	244	17	46	116	91	102	62	21
Total Analysis Volume [veh/h]	254	978	716	101	975	69	183	465	364	406	247	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	22	48	0	12	38	0	24	40	40	20	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	60	60	8	50	50	9	20	42	16	27	27
g / C, Green / Cycle	0.15	0.50	0.50	0.07	0.42	0.42	0.07	0.17	0.35	0.13	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.08	0.29	0.47	0.06	0.20	0.05	0.05	0.14	0.24	0.12	0.10	0.10
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1646
c, Capacity [veh/h]	499	1717	767	114	2048	639	248	567	534	444	404	370
d1, Uniform Delay [s]	46.93	20.90	28.07	55.54	25.39	21.30	54.40	48.34	33.38	51.33	39.91	39.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.42	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.80	1.38	19.88	18.98	0.80	0.34	4.30	3.00	5.77	7.80	0.71	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.57	0.93	0.88	0.48	0.11	0.74	0.82	0.68	0.91	0.43	0.43
d, Delay for Lane Group [s/veh]	47.73	22.27	47.94	74.52	26.18	21.64	58.69	51.34	39.15	59.13	40.62	40.72
Lane Group LOS	D	C	D	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.55	9.72	22.71	3.63	6.85	1.25	2.86	6.95	9.85	6.49	4.46	4.11
50th-Percentile Queue Length [ft/ln]	88.87	243.0	567.7	90.80	171.1	31.33	71.44	173.6	246.3	162.3	111.5	102.7
95th-Percentile Queue Length [veh/ln]	6.40	14.84	30.53	6.54	11.14	2.26	5.14	11.27	15.00	10.67	7.92	7.40
95th-Percentile Queue Length [ft/ln]	159.9	370.9	763.1	163.4	278.4	56.40	128.5	281.7	374.9	266.8	198.1	184.9

Movement, Approach, & Intersection Results

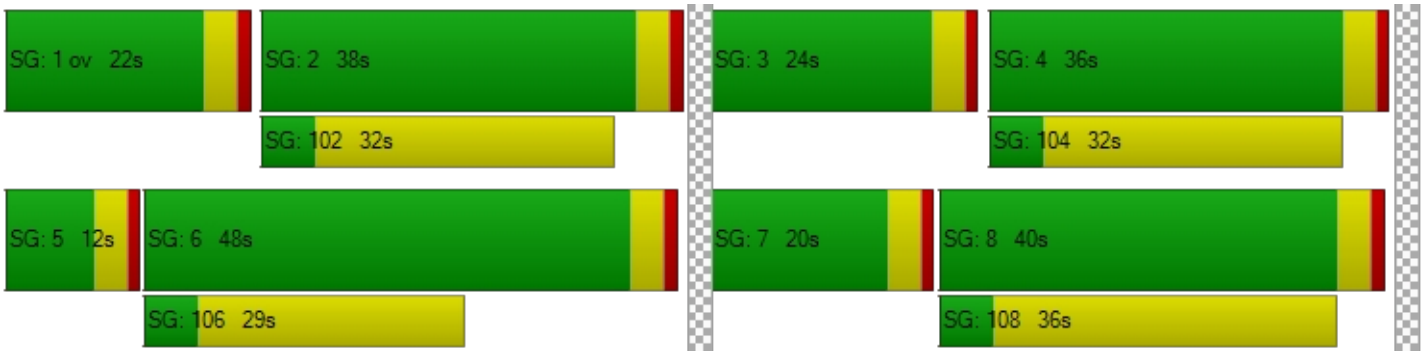
d_M, Delay for Movement [s/veh]	47.73	22.27	47.94	74.52	26.18	21.64	58.69	51.34	39.15	59.13	40.65	40.72
Movement LOS	D	C	D	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	35.03			30.17			48.29			50.84		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.06											
Intersection LOS	D											
Intersection V/C	0.847											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.265	3.032	2.933	2.890
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	567	600	533
d_b, Bicycle Delay [s]	24.07	30.82	29.40	32.27
l_b,int, Bicycle LOS Score for Intersection	3.167	2.189	2.395	2.168
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	14.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.464

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	15	5	4	23	3	46	4	21	43	157	1081	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	5	4	23	3	46	4	21	43	157	1081	15
Peak Hour Factor	0.923	0.923	0.923	0.923	0.923	0.923	0.923	0.923	0.923	0.923	0.923	0.923
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	4	1	1	6	1	12	1	6	12	43	293	4
Total Analysis Volume [veh/h]	16	5	4	25	3	50	4	23	47	170	1171	16
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	Permi
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	90	84	84
g / C, Green / Cycle	0.06	0.06	0.75	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.03	0.05	0.24	0.33	0.33
s, saturation flow rate [veh/h]	1676	1525	911	1800	1791
c, Capacity [veh/h]	145	146	699	1259	1253
d1, Uniform Delay [s]	54.34	55.53	4.99	8.10	8.10
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.40	3.19	1.15	1.27	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.55	0.31	0.47	0.47
d, Delay for Lane Group [s/veh]	55.75	58.72	6.14	9.37	9.38
Lane Group LOS	E	E	A	A	A
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.52	2.52	1.61	6.76	6.74
50th-Percentile Queue Length [ft/ln]	37.94	62.99	40.13	169.01	168.50
95th-Percentile Queue Length [veh/ln]	2.73	4.54	2.89	11.02	11.00
95th-Percentile Queue Length [ft/ln]	68.29	113.38	72.24	275.61	274.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.75	55.75	55.75	55.75	58.72	58.72	58.72	58.72	6.14	6.14	9.38	9.38
Movement LOS	E	E	E	E	E	E	E	E	A	A	A	A
d_A, Approach Delay [s/veh]	55.75				58.72				8.88			
Approach LOS	E				E				A			
d_I, Intersection Delay [s/veh]	14.77											
Intersection LOS	B											
Intersection V/C	0.464											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.773	0.000	2.828
Crosswalk LOS	A	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1100
d_b, Bicycle Delay [s]	45.94	45.94	12.15
l_b,int, Bicycle LOS Score for Intersection	1.601	1.609	2.578
Bicycle LOS	A	A	B

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	10	487	53	23	5	6	94	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	487	53	23	5	6	94	2
Peak Hour Factor	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	132	14	6	1	2	25	1
Total Analysis Volume [veh/h]	11	528	57	25	5	7	102	2
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	70	0	0	0	22	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	79	79	79	11
g / C, Green / Cycle	0.01	0.66	0.66	0.66	0.09
(v / s)_i Volume / Saturation Flow Rate	0.01	0.12	0.18	0.05	0.07
s, saturation flow rate [veh/h]	1714	1800	1800	1530	1551
c, Capacity [veh/h]	23	1183	1183	1006	141
d1, Uniform Delay [s]	58.75	8.00	8.55	7.45	53.62
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.81	0.33	0.55	0.16	11.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.18	0.27	0.08	0.82
d, Delay for Lane Group [s/veh]	72.56	8.33	9.10	7.61	64.98
Lane Group LOS	E	A	A	A	E
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	2.17	3.44	0.78	3.89
50th-Percentile Queue Length [ft/ln]	10.56	54.16	85.99	19.58	97.13
95th-Percentile Queue Length [veh/ln]	0.76	3.90	6.19	1.41	6.99
95th-Percentile Queue Length [ft/ln]	19.00	97.50	154.77	35.24	174.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.56	8.79	9.10	7.61	64.98	64.98	64.98	64.98
Movement LOS	E	A	A	A	E	E	E	E
d_A, Approach Delay [s/veh]	9.76				64.98			
Approach LOS	A				E			
d_I, Intersection Delay [s/veh]	14.77							
Intersection LOS	B							
Intersection V/C	0.464							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.169
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1100	300
d_b, Bicycle Delay [s]	12.15	43.35
l_b,int, Bicycle LOS Score for Intersection	2.051	1.748
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	188.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.992

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	4	2	18	74	0	20	117	1003	7	7	509	125
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	2	18	74	0	20	117	1003	7	7	509	125
Peak Hour Factor	0.928	0.928	0.928	0.928	0.928	0.928	0.928	0.928	0.928	0.928	0.928	0.928
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	1	5	20	0	5	32	270	2	2	137	34
Total Analysis Volume [veh/h]	4	2	19	80	0	22	126	1081	8	8	548	135
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

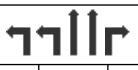
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.04	0.04	0.99	0.00	0.03	0.14	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	69.44	82.03	16.01	188.9	211.2	10.64	9.54	0.00	0.00	10.62	0.00	0.00
Movement LOS	F	F	C	F	F	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.50	0.50	0.50	5.44	5.44	0.10	0.47	0.00	0.00	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.60	12.60	12.60	135.8	135.8	2.58	11.85	0.00	0.00	0.94	0.00	0.00
d_A, Approach Delay [s/veh]	29.84			150.45			0.99			0.12		
Approach LOS	D			F			A			A		
d_I, Intersection Delay [s/veh]	8.55											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	43.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.689

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	553	970	285	96	540	41	70	663	405	158	753	183
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	553	970	285	96	540	41	70	663	405	158	753	183
Peak Hour Factor	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	146	257	75	25	143	11	19	175	107	42	199	48
Total Analysis Volume [veh/h]	585	1026	302	102	571	43	74	702	429	167	797	194
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	49	0	13	33	0	9	47	0	11	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	51	51	9	37	37	5	37	37	7	39	39
g / C, Green / Cycle	0.19	0.43	0.43	0.07	0.31	0.31	0.04	0.31	0.31	0.06	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.18	0.30	0.20	0.06	0.17	0.17	0.02	0.20	0.28	0.05	0.28	0.29
s, saturation flow rate [veh/h]	3329	3427	1530	1714	1800	1756	3329	3427	1530	3329	1800	1680
c, Capacity [veh/h]	644	1468	655	125	554	540	128	1052	470	194	589	549
d1, Uniform Delay [s]	47.35	27.99	24.43	54.83	34.74	34.76	56.75	36.23	40.03	56.01	37.97	38.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.30	0.11	0.28	0.28
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.30	2.79	2.33	12.05	4.06	4.18	4.11	0.74	16.97	10.53	9.82	10.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.70	0.46	0.82	0.56	0.56	0.58	0.67	0.91	0.86	0.87	0.87
d, Delay for Lane Group [s/veh]	52.65	30.78	26.76	66.88	38.81	38.93	60.86	36.97	57.00	66.55	47.79	48.63
Lane Group LOS	D	C	C	E	D	D	E	D	E	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.99	12.40	6.50	3.46	8.19	8.03	1.18	9.04	14.27	2.79	15.60	14.73
50th-Percentile Queue Length [ft/ln]	224.8	309.9	162.5	86.43	204.8	200.6	29.42	225.9	356.8	69.75	389.9	368.1
95th-Percentile Queue Length [veh/ln]	13.91	18.17	10.68	6.22	12.89	12.67	2.12	13.97	20.47	5.02	22.08	21.02
95th-Percentile Queue Length [ft/ln]	347.8	454.3	267.1	155.5	322.1	316.8	52.96	349.1	511.7	125.5	551.9	525.4

Movement, Approach, & Intersection Results

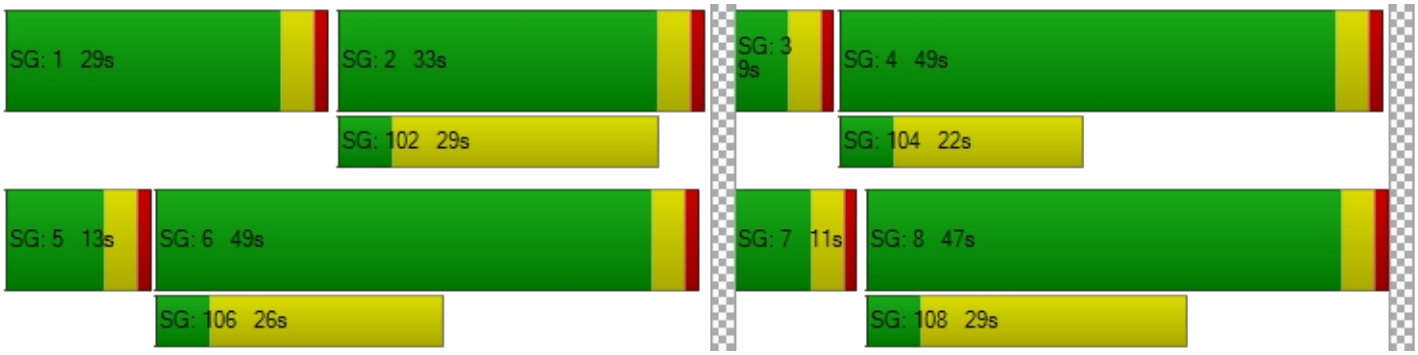
d_M, Delay for Movement [s/veh]	52.65	30.78	26.76	66.88	38.86	38.93	60.86	36.97	57.00	66.55	48.09	48.63
Movement LOS	D	C	C	E	D	D	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	36.83			42.86			45.56			50.84		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.05											
Intersection LOS	D											
Intersection V/C	0.689											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.038	2.707	2.975	3.017
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	483	717	750
d_b, Bicycle Delay [s]	23.44	34.50	24.70	23.44
l_b,int, Bicycle LOS Score for Intersection	3.138	2.150	2.554	2.515
Bicycle LOS	C	B	B	B

Sequence

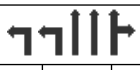
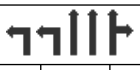
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	42.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.841

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	236	1176	727	154	1201	87	267	863	219	633	638	106
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	236	1176	727	154	1201	87	267	863	219	633	638	106
Peak Hour Factor	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	60	299	185	39	305	22	68	219	56	161	162	27
Total Analysis Volume [veh/h]	240	1195	739	157	1221	88	271	877	223	643	648	108
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	40	40	10	37	0	25	43	0	27	45	45
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	45	72	6	42	42	12	30	30	23	41	51
g / C, Green / Cycle	0.08	0.38	0.60	0.05	0.35	0.35	0.10	0.25	0.25	0.19	0.34	0.42
(v / s)_i Volume / Saturation Flow Rate	0.07	0.24	0.48	0.05	0.25	0.25	0.08	0.22	0.22	0.19	0.19	0.04
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1739	3329	3427	1619	3329	3427	2708
c, Capacity [veh/h]	250	1848	921	166	1206	612	340	851	402	638	1157	1140
d1, Uniform Delay [s]	55.33	30.81	18.40	56.83	33.76	33.76	52.65	43.37	43.37	48.50	32.46	20.95
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.22	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.66	1.76	7.34	21.20	3.73	7.17	4.28	3.12	11.56	18.45	0.43	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.65	0.80	0.94	0.72	0.72	0.80	0.88	0.88	1.01	0.56	0.09
d, Delay for Lane Group [s/veh]	73.98	32.57	25.74	78.03	37.50	40.93	56.92	46.48	54.93	66.95	32.89	20.99
Lane Group LOS	E	C	C	E	D	D	E	D	D	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.26	9.72	16.71	2.86	11.51	12.26	4.19	10.96	11.31	11.13	7.73	0.93
50th-Percentile Queue Length [ft/ln]	106.5	242.9	417.7	71.54	287.6	306.4	104.8	274.1	282.7	278.2	193.2	23.20
95th-Percentile Queue Length [veh/ln]	7.65	14.83	23.41	5.15	17.07	18.00	7.55	16.39	16.82	16.67	12.29	1.67
95th-Percentile Queue Length [ft/ln]	191.1	370.7	585.3	128.7	426.7	450.0	188.7	409.8	420.6	416.7	307.2	41.76

Movement, Approach, & Intersection Results

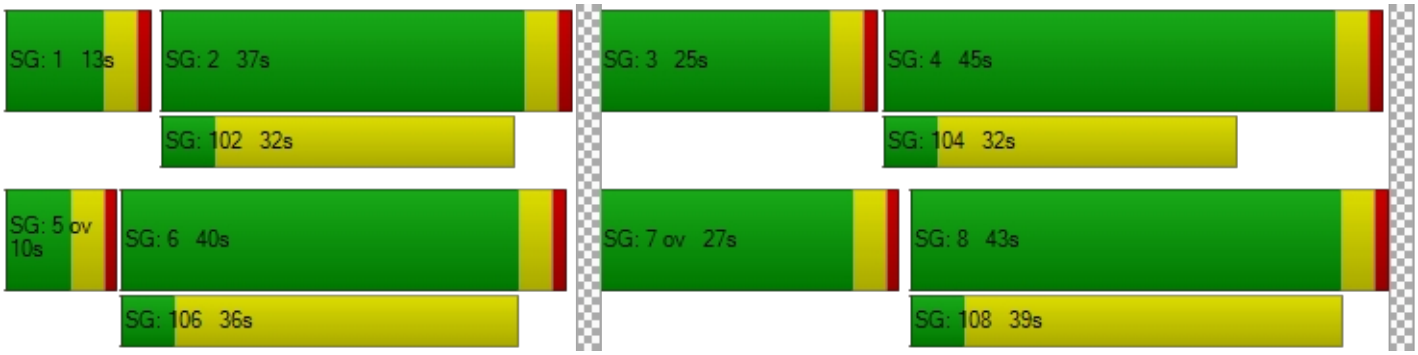
d_M, Delay for Movement [s/veh]	73.98	32.57	25.74	78.03	38.49	40.93	56.92	47.74	54.93	66.95	32.89	20.99
Movement LOS	E	C	C	E	D	D	E	D	D	F	C	C
d_A, Approach Delay [s/veh]	34.82			42.87			50.72			47.62		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	42.86											
Intersection LOS	D											
Intersection V/C	0.841											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.397	3.111	3.027	3.208
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	550	650	683
d_b, Bicycle Delay [s]	29.40	31.54	27.34	26.00
l_b,int, Bicycle LOS Score for Intersection	2.755	2.366	2.314	2.714
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.472

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	986	622	0	1033	422	0	0	0	347	0	432
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	986	622	0	1033	422	0	0	0	347	0	432
Peak Hour Factor	1.000	0.959	0.959	1.000	0.959	0.959	1.000	1.000	1.000	0.959	1.000	0.959
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	257	162	0	269	110	0	0	0	90	0	113
Total Analysis Volume [veh/h]	0	1028	649	0	1077	440	0	0	0	362	0	450
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	50	0	0	50	0	0	0	0	70	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	88	88		24	24	24
g / C, Green / Cycle	0.73	0.73		0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.30	0.22		0.16	0.17	0.17
s, saturation flow rate [veh/h]	3427	4903		1714	1581	1530
c, Capacity [veh/h]	2505	3584		347	320	310
d1, Uniform Delay [s]	6.20	5.57		45.65	45.97	46.10
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.50	0.22		4.53	5.82	6.47
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.30		0.81	0.84	0.85
d, Delay for Lane Group [s/veh]	6.70	5.78		50.18	51.78	52.56
Lane Group LOS	A	A		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.62	2.86		8.41	8.18	8.09
50th-Percentile Queue Length [ft/ln]	115.52	71.45		210.1	204.4	202.3
95th-Percentile Queue Length [veh/ln]	8.15	5.14		13.16	12.87	12.76
95th-Percentile Queue Length [ft/ln]	203.65	128.61		329.0	321.7	318.9

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.70	0.00	0.00	5.78	0.00	0.00	0.00	0.00	50.57	0.00	52.25
Movement LOS		A			A					D		D
d_A, Approach Delay [s/veh]	6.70			5.78			0.00			51.48		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	18.83											
Intersection LOS	B											
Intersection V/C	0.472											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	767	0	1100
d_b, Bicycle Delay [s]	22.82	22.82	60.00	12.15
I_b,int, Bicycle LOS Score for Intersection	2.408	2.152	4.132	2.899
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.629

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1339	389	0	1805	0	0	0	0	518	0	492
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1339	389	0	1805	0	0	0	0	518	0	492
Peak Hour Factor	1.000	0.949	0.949	1.000	0.949	0.949	0.949	0.949	0.949	0.949	1.000	0.949
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	353	102	0	476	0	0	0	0	136	0	130
Total Analysis Volume [veh/h]	0	1411	410	0	1902	0	0	0	0	546	0	518
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	35	0	0	35	0	0	0	0	85	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	68	68		44	44
g / C, Green / Cycle	0.56	0.56		0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.29	0.29		0.16	0.34
s, saturation flow rate [veh/h]	4903	6538		3329	1530
c, Capacity [veh/h]	2762	3682		1232	566
d1, Uniform Delay [s]	16.07	16.14		28.48	36.00
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.68	0.52		0.25	6.34
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.52		0.44	0.91
d, Delay for Lane Group [s/veh]	16.75	16.66		28.73	42.33
Lane Group LOS	B	B		C	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	7.86	7.94		5.97	15.20
50th-Percentile Queue Length [ft/ln]	196.60	198.57		149.18	380.10
95th-Percentile Queue Length [veh/ln]	12.46	12.56		9.97	21.60
95th-Percentile Queue Length [ft/ln]	311.58	314.12		249.33	539.96

Movement, Approach, & Intersection Results

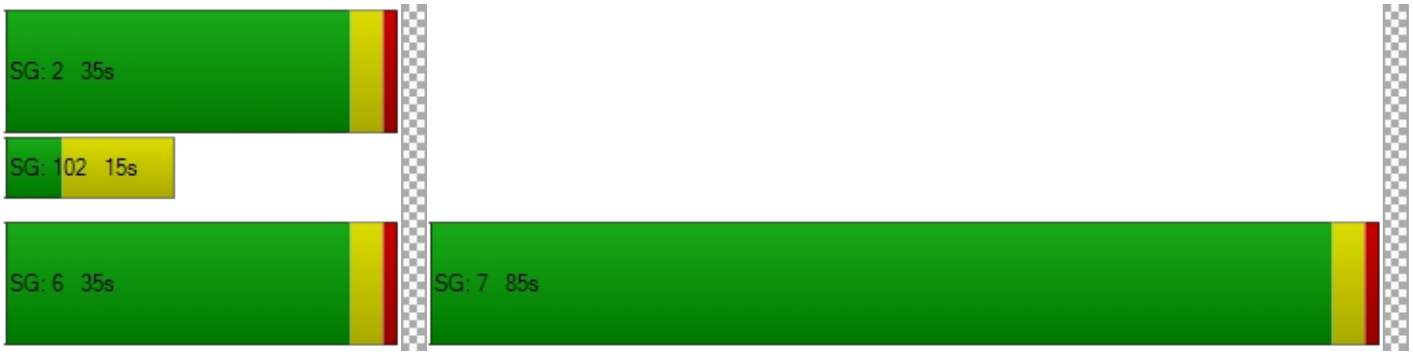
d_M, Delay for Movement [s/veh]	0.00	16.75	0.00	0.00	16.66	0.00	0.00	0.00	0.00	28.73	0.00	42.33
Movement LOS		B			B					C		D
d_A, Approach Delay [s/veh]	16.75			16.66			0.00			35.35		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	21.23											
Intersection LOS	C											
Intersection V/C	0.629											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	517	0	1350
d_b, Bicycle Delay [s]	33.00	33.00	60.00	6.34
l_b,int, Bicycle LOS Score for Intersection	2.336	2.344	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.477

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1075	256	0	892	474	0	0	0	240	0	498
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1075	256	0	892	474	0	0	0	240	0	498
Peak Hour Factor	1.000	0.930	0.930	1.000	0.930	0.930	1.000	1.000	1.000	0.930	1.000	0.930
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	289	69	0	240	127	0	0	0	65	0	134
Total Analysis Volume [veh/h]	0	1156	275	0	959	510	0	0	0	258	0	535
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	69	0	0	69	0	0	0	0	51	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	85	85		27	27
g / C, Green / Cycle	0.71	0.71		0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.24	0.28		0.15	0.20
s, saturation flow rate [veh/h]	4903	3427		1714	2708
c, Capacity [veh/h]	3464	2421		389	615
d1, Uniform Delay [s]	6.77	7.18		42.21	44.69
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.26	0.49		1.94	3.98
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.40		0.66	0.87
d, Delay for Lane Group [s/veh]	7.03	7.67		44.16	48.67
Lane Group LOS	A	A		D	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	3.55	4.74		7.17	7.98
50th-Percentile Queue Length [ft/ln]	88.75	118.54		179.21	199.45
95th-Percentile Queue Length [veh/ln]	6.39	8.31		11.56	12.61
95th-Percentile Queue Length [ft/ln]	159.76	207.81		288.99	315.25

Movement, Approach, & Intersection Results

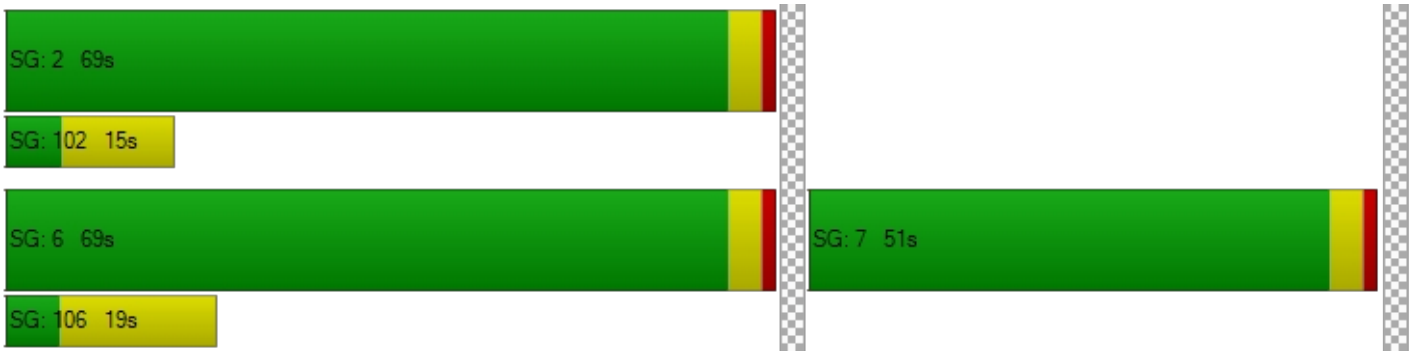
d_M, Delay for Movement [s/veh]	0.00	7.03	0.00	0.00	7.67	0.00	0.00	0.00	0.00	44.16	0.00	48.67
Movement LOS		A			A					D		D
d_A, Approach Delay [s/veh]	7.03			7.67			0.00			47.20		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	18.19											
Intersection LOS	B											
Intersection V/C	0.477											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.340
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1083	1083	0	783
d_b, Bicycle Delay [s]	12.60	12.60	60.00	22.20
l_b,int, Bicycle LOS Score for Intersection	2.195	2.351	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.569

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1287	562	0	969	394	298	0	392	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1287	562	0	969	394	298	0	392	0	0	0
Peak Hour Factor	1.000	0.946	0.946	1.000	0.946	0.946	0.946	1.000	0.946	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	340	149	0	256	104	79	0	104	0	0	0
Total Analysis Volume [veh/h]	0	1360	594	0	1024	416	315	0	414	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	34	0	0	34	0	86	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	76	76	36	36	
g / C, Green / Cycle	0.64	0.64	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.28	0.30	0.09	0.27	
s, saturation flow rate [veh/h]	4903	3427	3329	1530	
c, Capacity [veh/h]	3118	2179	990	455	
d1, Uniform Delay [s]	11.01	11.35	32.70	40.59	
k, delay calibration	0.50	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.45	0.73	0.18	7.28	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.44	0.47	0.32	0.91	
d, Delay for Lane Group [s/veh]	11.46	12.08	32.89	47.88	
Lane Group LOS	B	B	C	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	5.92	6.96	3.60	12.59	
50th-Percentile Queue Length [ft/ln]	147.94	173.97	90.04	314.75	
95th-Percentile Queue Length [veh/ln]	9.91	11.29	6.48	18.41	
95th-Percentile Queue Length [ft/ln]	247.68	282.13	162.07	460.23	

Movement, Approach, & Intersection Results

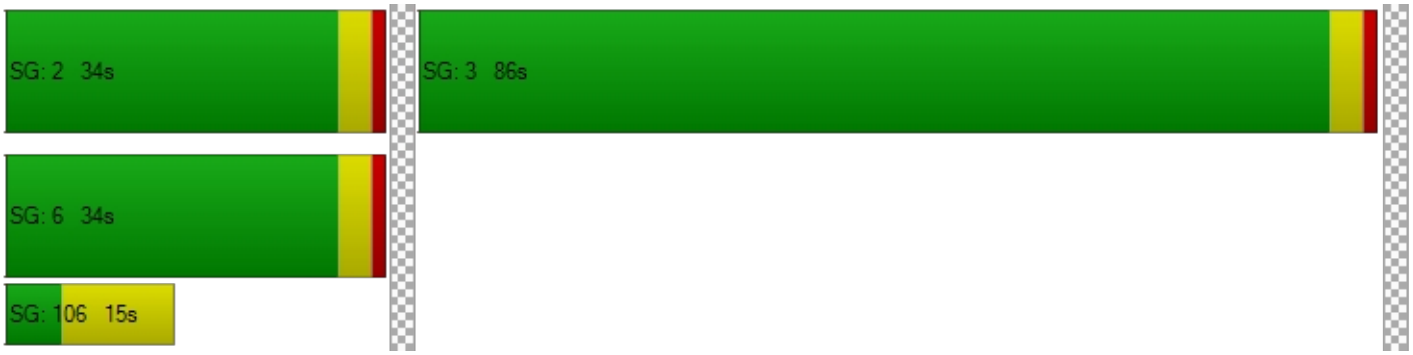
d_M, Delay for Movement [s/veh]	0.00	11.46	0.00	0.00	12.08	0.00	32.89	0.00	47.88	0.00	0.00	0.00
Movement LOS		B			B		C		D			
d_A, Approach Delay [s/veh]	11.46			12.08			41.40			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	18.67											
Intersection LOS	B											
Intersection V/C	0.569											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	500	1367	0
d_b, Bicycle Delay [s]	33.75	33.75	6.02	60.00
l_b,int, Bicycle LOS Score for Intersection	2.308	2.404	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	30.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.688

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1236	419	513	1182	0	509	43	548	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1236	419	513	1182	0	509	43	548	0	0	0
Peak Hour Factor	1.000	0.970	0.970	0.970	0.970	1.000	0.970	0.970	0.970	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	319	108	132	305	0	131	11	141	0	0	0
Total Analysis Volume [veh/h]	0	1274	432	529	1219	0	525	44	565	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	31	0	31	62	0	0	58	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	53	53	22	78	34	34	34	
g / C, Green / Cycle	0.44	0.44	0.18	0.65	0.28	0.28	0.28	
(v / s)_i Volume / Saturation Flow Rate	0.26	0.28	0.16	0.25	0.22	0.23	0.25	
s, saturation flow rate [veh/h]	4903	1530	3329	4903	1714	1626	1530	
c, Capacity [veh/h]	2154	672	600	3201	481	456	429	
d1, Uniform Delay [s]	25.49	26.29	47.94	9.62	39.85	40.47	41.26	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	0.13	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.20	4.68	4.46	0.35	2.89	3.92	7.17	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.59	0.64	0.88	0.38	0.79	0.83	0.88	
d, Delay for Lane Group [s/veh]	26.69	30.97	52.39	9.97	42.74	44.39	48.43	
Lane Group LOS	C	C	D	A	D	D	D	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.29	10.37	8.06	4.79	10.63	10.90	11.46	
50th-Percentile Queue Length [ft/ln]	232.31	259.31	201.52	119.78	265.6	272.4	286.4	
95th-Percentile Queue Length [veh/ln]	14.29	15.65	12.72	8.38	15.97	16.31	17.01	
95th-Percentile Queue Length [ft/ln]	357.30	391.35	317.92	209.52	399.2	407.7	425.1	

Movement, Approach, & Intersection Results

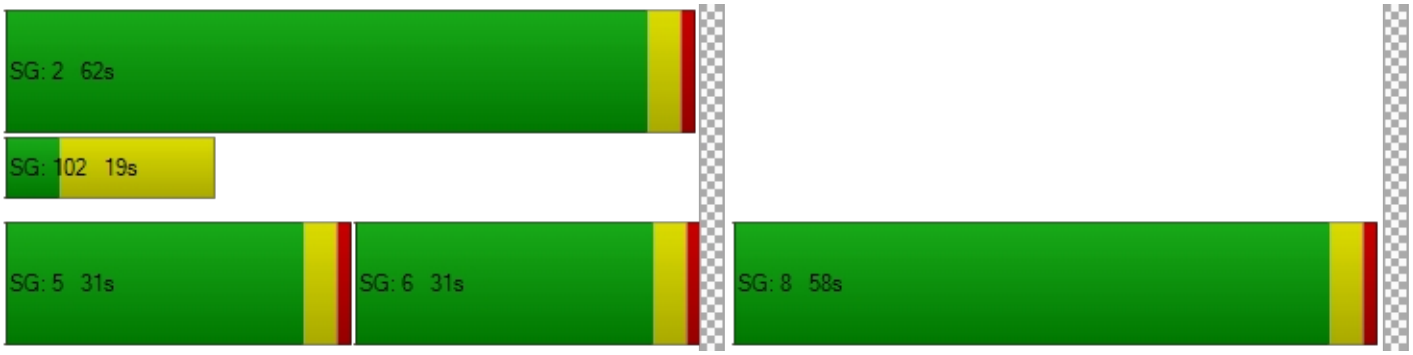
d_M, Delay for Movement [s/veh]	0.00	26.69	30.97	52.39	9.97	0.00	43.20	44.39	47.09	0.00	0.00	0.00
Movement LOS		C	C	D	A		D	D	D			
d_A, Approach Delay [s/veh]	27.77			22.81			45.19			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	30.18											
Intersection LOS	C											
Intersection V/C	0.688											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.423	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	450	967	900	0
d_b, Bicycle Delay [s]	36.04	16.02	18.15	60.00
l_b,int, Bicycle LOS Score for Intersection	2.498	2.521	3.431	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	893	509	501	647	0	451	7	212	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	893	509	501	647	0	451	7	212	0	0	0
Peak Hour Factor	1.000	0.948	0.948	0.948	0.948	1.000	0.948	0.948	0.948	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	235	134	132	171	0	119	2	56	0	0	0
Total Analysis Volume [veh/h]	0	942	537	528	682	0	476	7	224	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	56	0	35	91	0	0	29	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	65	65	22	91	21	21	
g / C, Green / Cycle	0.55	0.55	0.18	0.76	0.17	0.17	
(v / s)_i Volume / Saturation Flow Rate	0.27	0.35	0.16	0.20	0.14	0.15	
s, saturation flow rate [veh/h]	3427	1530	3329	3427	3329	1537	
c, Capacity [veh/h]	1866	833	607	2605	577	266	
d1, Uniform Delay [s]	17.17	19.19	47.68	4.31	47.85	48.26	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.16	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.98	3.83	4.02	0.24	3.06	11.66	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.50	0.64	0.87	0.26	0.83	0.87	
d, Delay for Lane Group [s/veh]	18.15	23.02	51.70	4.56	50.91	59.92	
Lane Group LOS	B	C	D	A	D	E	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	8.23	11.04	7.99	2.26	7.10	7.57	
50th-Percentile Queue Length [ft/ln]	205.67	276.06	199.78	56.55	177.49	189.32	
95th-Percentile Queue Length [veh/ln]	12.93	16.49	12.63	4.07	11.47	12.09	
95th-Percentile Queue Length [ft/ln]	323.27	412.30	315.69	101.79	286.73	302.15	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	18.15	23.02	51.70	4.56	0.00	50.91	59.92	59.92	0.00	0.00	0.00
Movement LOS		B	C	D	A		D	E	E			
d_A, Approach Delay [s/veh]	19.92			25.13			53.85			0.00		
Approach LOS	B			C			D			A		
d_I, Intersection Delay [s/veh]	28.84											
Intersection LOS	C											
Intersection V/C	0.660											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	1450	417	0
d_b, Bicycle Delay [s]	19.27	4.54	37.60	60.00
l_b,int, Bicycle LOS Score for Intersection	2.373	2.558	2.726	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	29.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	512	1223	467	480	861	796	914	0	457	463	0	566
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	512	1223	467	480	861	796	914	0	457	463	0	566
Peak Hour Factor	0.977	0.977	0.977	0.977	0.977	0.977	0.977	1.000	0.977	0.977	1.000	0.977
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	131	313	119	123	220	204	234	0	117	118	0	145
Total Analysis Volume [veh/h]	524	1252	478	491	881	815	936	0	468	474	0	579
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	81	0	0	81	0	39	0	0	39	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	77	77	77	77	35	35
g / C, Green / Cycle	0.64	0.64	0.64	0.64	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.42	0.26	0.56	0.18	0.28	0.14
s, saturation flow rate [veh/h]	1243	4903	875	4903	3329	3329
c, Capacity [veh/h]	741	3146	501	3146	971	971
d1, Uniform Delay [s]	21.23	10.35	32.83	9.39	41.88	35.10
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.64	0.38	35.52	0.22	7.37	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.40	0.98	0.28	0.96	0.49
d, Delay for Lane Group [s/veh]	26.87	10.72	68.35	9.61	49.24	35.48
Lane Group LOS	C	B	E	A	D	D
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.10	5.19	9.95	3.31	14.49	5.78
50th-Percentile Queue Length [ft/ln]	152.61	129.69	248.68	82.71	362.19	144.48
95th-Percentile Queue Length [veh/ln]	10.16	8.92	15.12	5.95	20.73	9.72
95th-Percentile Queue Length [ft/ln]	253.91	223.08	377.99	148.87	518.24	243.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.87	10.72	0.00	68.35	9.61	0.00	49.24	0.00	0.00	35.48	0.00	0.00
Movement LOS	C	B		E	A		D			D		
d_A, Approach Delay [s/veh]	15.49			30.63			49.24			35.48		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	29.06											
Intersection LOS	C											
Intersection V/C	0.842											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.345	3.202
Crosswalk LOS	F	F	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1283	1283	583	583
d_b, Bicycle Delay [s]	7.70	7.70	30.10	30.10
l_b,int, Bicycle LOS Score for Intersection	2.536	2.314	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	37.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	174	1468	329	62	520	118	237	979	186	107	541	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	174	1468	329	62	520	118	237	979	186	107	541	102
Peak Hour Factor	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	46	386	86	16	137	31	62	257	49	28	142	27
Total Analysis Volume [veh/h]	183	1544	346	65	547	124	249	1029	196	113	569	107
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	43	0	9	18	0	43	55	0	13	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	51	51	4	46	46	20	40	40	9	29	29
g / C, Green / Cycle	0.07	0.42	0.42	0.04	0.38	0.38	0.16	0.33	0.33	0.07	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.05	0.31	0.23	0.02	0.11	0.08	0.15	0.30	0.13	0.07	0.17	0.07
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	250	2070	646	123	1883	588	280	1140	509	129	836	373
d1, Uniform Delay [s]	54.31	29.24	25.88	56.76	25.62	24.77	49.11	38.20	30.66	54.96	41.13	36.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.11	2.50	3.17	3.49	0.39	0.82	9.27	2.97	0.48	16.78	0.98	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.75	0.54	0.53	0.29	0.21	0.89	0.90	0.39	0.88	0.68	0.29
d, Delay for Lane Group [s/veh]	58.42	31.73	29.05	60.25	26.01	25.59	58.37	41.17	31.14	71.74	42.11	37.30
Lane Group LOS	E	C	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.85	12.78	7.89	1.03	3.69	2.51	8.01	14.71	4.42	3.98	7.73	2.61
50th-Percentile Queue Length [ft/ln]	71.25	319.4	197.2	25.70	92.16	62.81	200.1	367.7	110.5	99.51	193.1	65.26
95th-Percentile Queue Length [veh/ln]	5.13	18.64	12.50	1.85	6.64	4.52	12.65	21.00	7.87	7.16	12.28	4.70
95th-Percentile Queue Length [ft/ln]	128.2	466.0	312.3	46.27	165.8	113.0	316.1	524.9	196.7	179.1	307.1	117.4

Movement, Approach, & Intersection Results

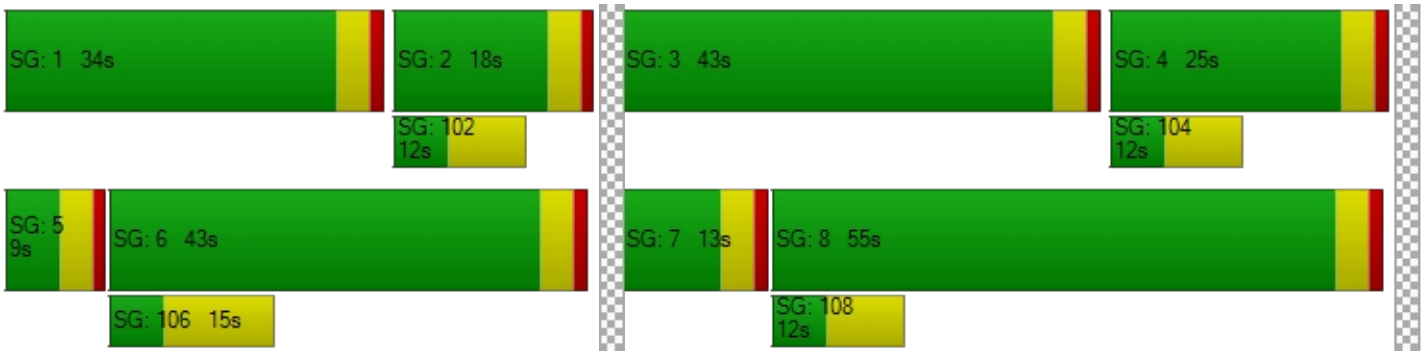
d_M, Delay for Movement [s/veh]	58.42	31.73	29.05	60.25	26.01	25.59	58.37	41.17	31.14	71.74	42.11	37.30
Movement LOS	E	C	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	33.64			28.97			42.74			45.70		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.48											
Intersection LOS	D											
Intersection V/C	0.701											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.182	3.150	2.850	2.830
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	233	850	350
d_b, Bicycle Delay [s]	27.34	46.82	19.84	40.84
l_b,int, Bicycle LOS Score for Intersection	2.700	1.964	2.776	2.211
Bicycle LOS	B	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.642

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	55	791	257	87	219	179	347	879	21	68	490	173
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	791	257	87	219	179	347	879	21	68	490	173
Peak Hour Factor	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	202	66	22	56	46	89	225	5	17	125	44
Total Analysis Volume [veh/h]	56	810	263	89	224	183	355	900	21	70	502	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	18	33	0	11	26	26	46	67	0	9	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	49	49	7	51	82	27	44	44	5	21	32
g / C, Green / Cycle	0.04	0.41	0.41	0.06	0.42	0.69	0.23	0.36	0.36	0.04	0.17	0.26
(v / s)_i Volume / Saturation Flow Rate	0.03	0.24	0.17	0.05	0.07	0.12	0.21	0.26	0.26	0.02	0.15	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1786	3329	3427	1530
c, Capacity [veh/h]	73	1395	623	100	1449	1048	393	654	649	125	590	404
d1, Uniform Delay [s]	56.84	27.62	25.47	56.12	21.39	6.76	44.98	32.70	32.71	56.76	48.17	36.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.16	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.10	1.77	2.09	21.83	0.23	0.36	10.97	1.41	1.43	3.84	3.56	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.58	0.42	0.89	0.15	0.17	0.90	0.71	0.71	0.56	0.85	0.44
d, Delay for Lane Group [s/veh]	71.94	29.38	27.56	77.95	21.62	7.12	55.95	34.12	34.14	60.59	51.74	37.52
Lane Group LOS	E	C	C	E	C	A	E	C	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.99	9.29	5.72	3.28	2.00	1.68	11.41	11.66	11.58	1.11	7.56	4.42
50th-Percentile Queue Length [ft/ln]	49.71	232.2	142.9	82.06	50.06	42.10	285.3	291.5	289.5	27.77	188.9	110.4
95th-Percentile Queue Length [veh/ln]	3.58	14.29	9.64	5.91	3.60	3.03	16.95	17.26	17.17	2.00	12.07	7.87
95th-Percentile Queue Length [ft/ln]	89.48	357.1	241.0	147.7	90.12	75.77	423.8	431.5	429.1	49.98	301.7	196.6

Movement, Approach, & Intersection Results

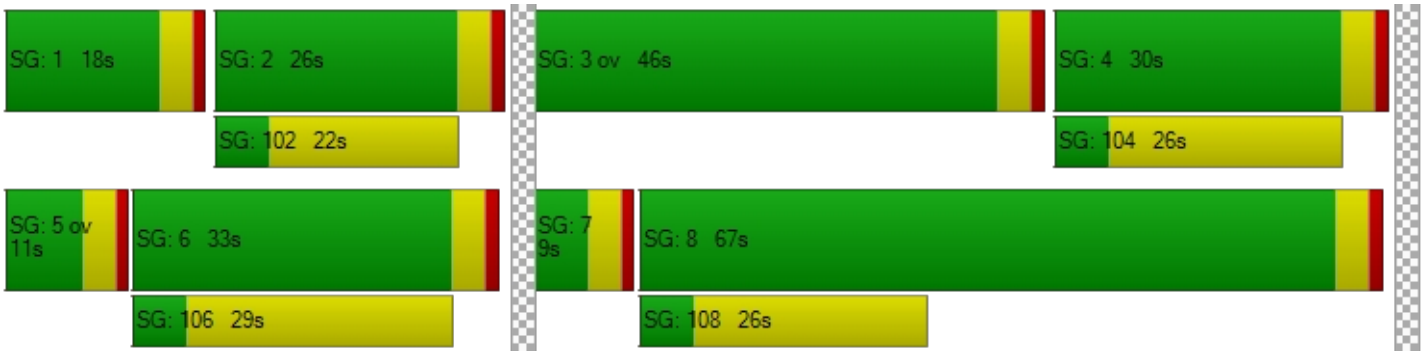
d_M, Delay for Movement [s/veh]	71.94	29.38	27.56	77.95	21.62	7.12	55.95	34.13	34.14	60.59	51.74	37.52
Movement LOS	E	C	C	E	C	A	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	31.07			26.38			40.20			49.20		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.35											
Intersection LOS	D											
Intersection V/C	0.642											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.703	2.767	2.708	2.888
Crosswalk LOS	B	C	B	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	367	1050	433
d_b, Bicycle Delay [s]	34.50	40.02	13.54	36.82
l_b,int, Bicycle LOS Score for Intersection	2.491	1.969	2.612	2.178
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	34.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	35	857	66	377	983	405	440	672	84	60	177	364
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	35	857	66	377	983	405	440	672	84	60	177	364
Peak Hour Factor	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	222	17	98	255	105	114	174	22	16	46	94
Total Analysis Volume [veh/h]	36	888	68	391	1019	420	456	696	87	62	183	377
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	9	33	0	20	44	44	24	58	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	4	54	54	16	66	89	19	30	30	4	15	35
g / C, Green / Cycle	0.03	0.45	0.45	0.13	0.55	0.74	0.16	0.25	0.25	0.04	0.13	0.29
(v / s)_i Volume / Saturation Flow Rate	0.02	0.18	0.19	0.12	0.21	0.27	0.14	0.22	0.22	0.02	0.05	0.25
s, saturation flow rate [veh/h]	1714	3427	1735	3329	4903	1530	3329	1800	1731	3329	3427	1530
c, Capacity [veh/h]	50	1539	779	444	2712	1137	521	446	429	121	438	451
d1, Uniform Delay [s]	57.75	22.34	22.36	51.06	15.13	5.47	49.48	43.61	43.64	56.76	48.21	39.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.27
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.23	0.82	1.62	5.84	0.40	0.93	4.85	6.46	6.84	3.29	0.64	9.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.41	0.41	0.88	0.38	0.37	0.88	0.89	0.90	0.51	0.42	0.84
d, Delay for Lane Group [s/veh]	74.97	23.16	23.98	56.91	15.53	6.39	54.32	50.07	50.48	60.05	48.85	49.23
Lane Group LOS	E	C	C	E	B	A	D	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.32	6.19	6.47	6.12	5.24	3.58	7.02	12.17	11.78	0.98	2.57	11.53
50th-Percentile Queue Length [ft/ln]	33.11	154.7	161.7	153.0	131.1	89.47	175.4	304.1	294.6	24.47	64.27	288.1
95th-Percentile Queue Length [veh/ln]	2.38	10.27	10.64	10.18	9.00	6.44	11.36	17.89	17.41	1.76	4.63	17.10
95th-Percentile Queue Length [ft/ln]	59.59	256.7	266.0	254.4	225.0	161.0	284.0	447.1	435.3	44.05	115.6	427.3

Movement, Approach, & Intersection Results

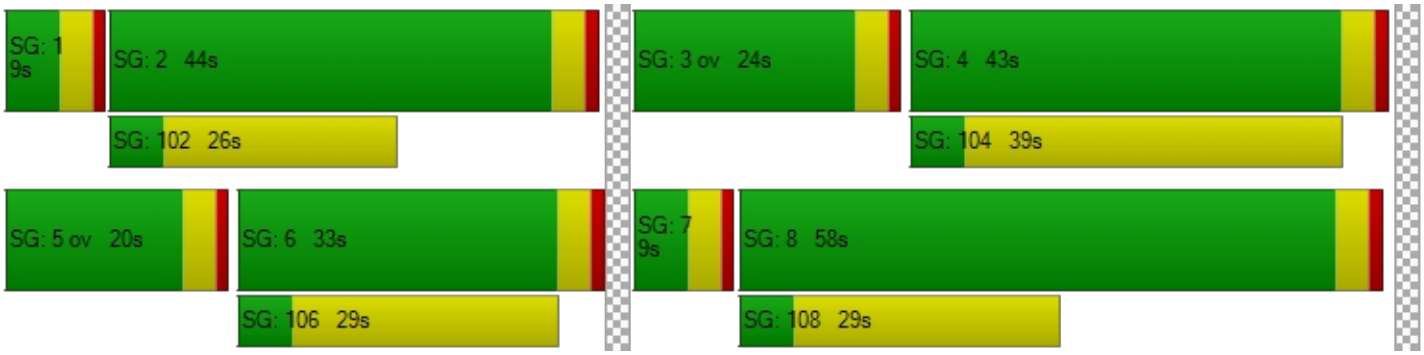
d_M, Delay for Movement [s/veh]	74.97	23.39	23.98	56.91	15.53	6.39	54.32	50.25	50.48	60.05	48.85	49.23
Movement LOS	E	C	C	E	B	A	D	D	D	E	D	D
d_A, Approach Delay [s/veh]	25.31			22.27			51.76			50.20		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.43											
Intersection LOS	C											
Intersection V/C	0.601											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.004	3.328	2.773	2.857
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	667	900	650
d_b, Bicycle Delay [s]	34.50	26.67	18.15	27.34
l_b,int, Bicycle LOS Score for Intersection	2.105	2.566	2.582	2.073
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	460.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	30.565

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	8	601	29	67	890	130	243	49	30	13	21	83
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	601	29	67	890	130	243	49	30	13	21	83
Peak Hour Factor	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	157	8	18	232	34	63	13	8	3	5	22
Total Analysis Volume [veh/h]	8	628	30	70	930	136	254	51	31	14	22	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	12	12	5	16	16	91	91	91	91
g / C, Green / Cycle	0.01	0.10	0.10	0.04	0.13	0.13	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.00	0.13	0.13	0.04	0.21	0.21	30.35	0.02	0.57	0.06
s, saturation flow rate [veh/h]	1714	3427	1758	1714	3427	1685	10	1530	63	1530
c, Capacity [veh/h]	17	346	178	71	455	224	63	1159	90	1159
d1, Uniform Delay [s]	59.11	53.94	53.94	57.45	52.03	52.03	51.27	3.61	35.68	3.75
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.29	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.69	135.8	155.1	44.71	265.8	278.0	1778.15	0.01	7.60	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	1.25	1.26	0.98	1.57	1.57	4.87	0.03	0.40	0.08
d, Delay for Lane Group [s/veh]	78.80	189.7	209.1	102.1	317.9	330.0	1829.42	3.61	43.28	3.77
Lane Group LOS	E	F	F	F	F	F	F	A	D	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.33	11.74	13.01	3.01	23.65	24.02	32.82	0.17	1.07	0.49
50th-Percentile Queue Length [ft/ln]	8.34	293.5	325.1	75.20	591.3	600.4	820.58	4.18	26.68	12.18
95th-Percentile Queue Length [veh/ln]	0.60	18.84	20.60	5.41	37.20	37.73	59.08	0.30	1.92	0.88
95th-Percentile Queue Length [ft/ln]	15.01	471.0	515.0	135.3	929.8	943.3	1477.04	7.52	48.03	21.93

Movement, Approach, & Intersection Results

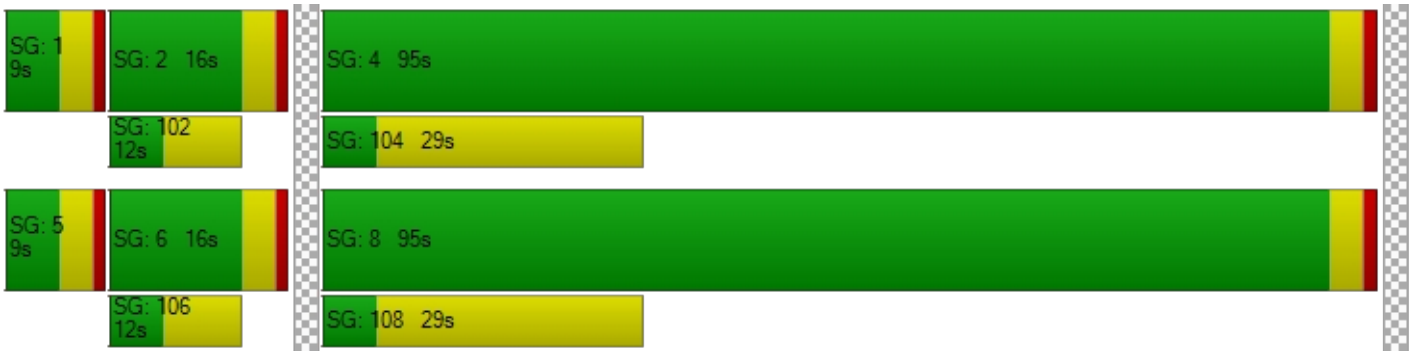
d_M, Delay for Movement [s/veh]	78.80	195.7	209.1	102.1	320.7	330.0	1829.	1829.	3.61	43.28	43.28	3.77
Movement LOS	E	F	F	F	F	F	F	F	A	D	D	A
d_A, Approach Delay [s/veh]	194.94			308.38			1660.97			15.34		
Approach LOS	F			F			F			B		
d_I, Intersection Delay [s/veh]	460.03											
Intersection LOS	F											
Intersection V/C	30.565											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.858	3.264	2.119	2.044
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	1.926	2.184	2.114	1.763
Bicycle LOS	A	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	40	40	0	24	24	24	0	33	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	104	0	104	112	0	0	0	0	0
g / C, Green / Cycle	0.00	0.87	0.87	0.00	0.87	0.93	0.00	0.00	0.00	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1687	3373	1772	1687	3373	1506	1687	1772	2665	1687	1772
c, Capacity [veh/h]	1	2920	1533	1	2919	1405	1	1	1	1	1
d1, Uniform Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Group LOS	A	A	A	A	A	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	No	No	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement, Approach, & Intersection Results

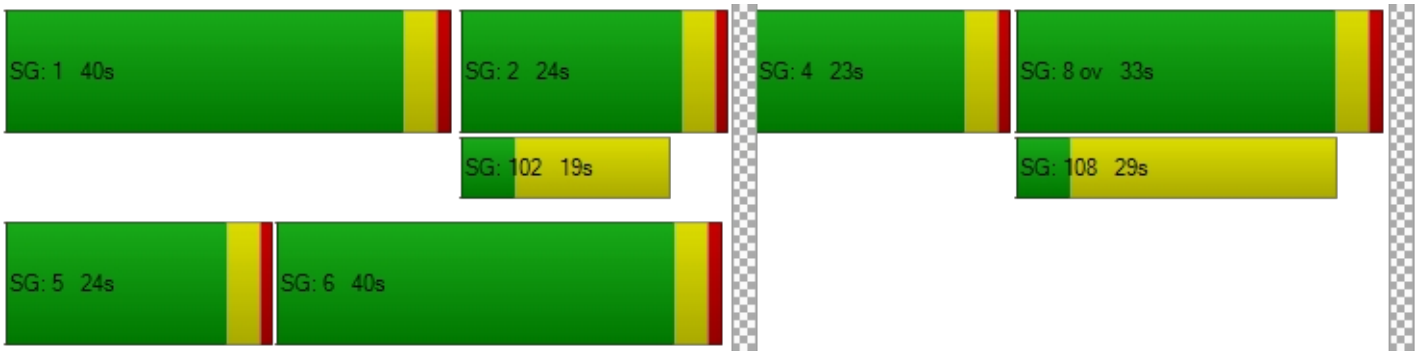
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											
Intersection V/C	0.000											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.609	0.000	2.468	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	333	483	317
d_b, Bicycle Delay [s]	29.40	41.67	34.50	42.50
l_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560	1.560
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-2

INTERSECTION ANALYSIS
WORKSHEETS –
OPENING YEAR 2024

Speedway Commerce Center

Vistro File: K:\...\Speedway CC AM.vistro
Report File: K:\...\3 OY 2024 CUM AM.pdf

Scenario 3 OY 2024 CUM AM
1/13/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.575	30.0	C
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.587	25.9	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.483	19.6	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.575	24.1	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.712	29.2	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.495	17.6	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.427	31.7	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.631	36.6	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.597	32.0	C
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	WB Right	0.785	55.6	E
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.470	21.5	C
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.525	30.3	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.725	38.4	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.493	39.9	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	EB Left	0.872	47.9	D
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.580	33.7	C
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.617	47.4	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.896	32.8	C
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.663	25.4	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.772	42.6	D
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.676	40.5	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	1.928	863.1	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.768	47.5	D
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	NB Left	0.696	41.9	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.746	42.2	D
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.744	42.4	D
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.497	26.0	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.742	44.9	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	SB Left	0.592	37.1	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.647	24.6	C
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.771	37.4	D
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.369	36.5	E
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.460	19.5	B
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.589	24.0	C
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	WB Thru	0.836	29.0	D
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.543	29.4	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	SB Left	0.587	39.8	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.463	20.7	C

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.640	35.0	C
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	WB Thru	1.064	67.8	F
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	WB Thru	0.799	25.1	D
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.563	33.2	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	NB Left	0.562	28.5	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Left	0.775	44.6	D
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	SB Right	0.674	51.8	D
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.536	34.1	C
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	EB Left	0.518	34.7	C
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.287	13.8	B
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.620	34.8	C
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	EB Left	0.505	33.0	C
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	SWB Right	0.325	32.3	C
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.647	38.2	D
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	NB Left	0.670	30.0	C
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	WB Thru	0.323	9.9	A
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.462	26.8	C
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	SB Left	0.447	29.5	C
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.738	43.3	D
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.521	27.8	C
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Thru	0.020	67.0	F
			HCM 6th				

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Right	0.824	51.6	D
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	SB Left	0.729	34.2	C
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.513	23.7	C
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	SB Thru	0.862	34.1	C
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.560	21.2	C
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.797	30.0	C
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	EB Right	0.817	35.2	D
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.735	33.2	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	EB Left	0.710	25.6	C
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	EB Left	0.698	38.3	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	SB Left	0.692	36.8	D
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.688	33.6	C
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	39.736	657.8	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition		0.000	0.0	A
998543	New Intersection	Unknown	?		?	?	?
998552	New Intersection	Unknown	?		?	?	?
998555	New Intersection	Unknown	?		?	?	?

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	166	303	0	0	712	200	0	0	0	360	4	252
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	14	6	0	0	4	0	0	0	0	17	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	327	0	0	759	212	0	0	0	399	4	267
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	50	86	0	0	200	56	0	0	0	105	1	70
Total Analysis Volume [veh/h]	200	344	0	0	799	223	0	0	0	420	4	281
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	20	52	0	0	32	0	0	0	0	0	68	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	16	79	60	60		33	33
g / C, Green / Cycle	0.13	0.66	0.50	0.50		0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.12	0.10	0.20	0.21		0.25	0.18
s, saturation flow rate [veh/h]	1714	3427	3427	1614		1715	1530
c, Capacity [veh/h]	225	2264	1699	800		468	417
d1, Uniform Delay [s]	51.25	7.69	19.04	19.34		42.14	38.86
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	11.22	0.14	0.71	1.66		6.89	1.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.15	0.40	0.43		0.91	0.67
d, Delay for Lane Group [s/veh]	62.47	7.83	19.75	20.99		49.04	40.76
Lane Group LOS	E	A	B	C		D	D
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	6.60	1.65	6.08	6.37		12.94	7.58
50th-Percentile Queue Length [ft/ln]	165.11	41.31	151.90	159.25		323.44	189.47
95th-Percentile Queue Length [veh/ln]	10.82	2.97	10.12	10.51		18.84	12.09
95th-Percentile Queue Length [ft/ln]	270.48	74.36	252.96	262.72		470.91	302.34

Movement, Approach, & Intersection Results

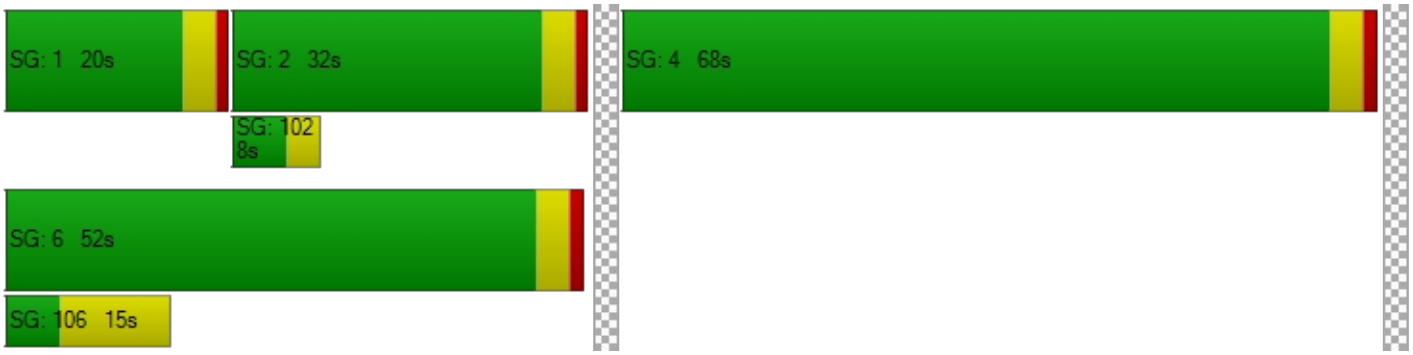
d_M, Delay for Movement [s/veh]	62.47	7.83	0.00	0.00	19.93	20.99	0.00	0.00	0.00	49.04	49.04	40.76
Movement LOS	E	A			B	C				D	D	D
d_A, Approach Delay [s/veh]	27.92			20.16			0.00			45.74		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	29.96											
Intersection LOS	C											
Intersection V/C	0.575											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.855	2.185
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	467	0	1067
d_b, Bicycle Delay [s]	21.60	35.27	60.00	13.07
l_b,int, Bicycle LOS Score for Intersection	2.008	2.122	4.132	2.723
Bicycle LOS	B	B	D	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	302	906	0	0	822	355	0	0	0	421	1	309
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	0	6	0	0	4	0	0	0	0	5	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	320	966	0	0	875	376	0	0	0	451	1	328
Peak Hour Factor	0.964	0.964	1.000	1.000	0.964	0.964	1.000	1.000	1.000	0.964	0.964	0.964
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	83	251	0	0	227	98	0	0	0	117	0	85
Total Analysis Volume [veh/h]	332	1002	0	0	908	390	0	0	0	468	1	340
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	20	66	0	0	46	0	0	0	0	0	54	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	14	82	64	64		30	30	30
g / C, Green / Cycle	0.12	0.68	0.53	0.53		0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.10	0.29	0.26	0.25		0.14	0.14	0.22
s, saturation flow rate [veh/h]	3329	3427	3427	1530		1714	1715	1530
c, Capacity [veh/h]	389	2343	1828	816		428	428	382
d1, Uniform Delay [s]	51.98	8.49	17.78	17.54		39.12	39.12	43.41
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	0.57	0.97	2.00		1.09	1.09	7.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.43	0.50	0.48		0.55	0.55	0.89
d, Delay for Lane Group [s/veh]	57.37	9.07	18.74	19.54		40.21	40.21	51.16
Lane Group LOS	E	A	B	B		D	D	D
Critical Lane Group	Yes	No	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.19	5.60	8.06	7.07		6.15	6.15	10.50
50th-Percentile Queue Length [ft/ln]	129.71	139.96	201.38	176.80		153.6	153.6	262.5
95th-Percentile Queue Length [veh/ln]	8.92	9.48	12.71	11.43		10.21	10.21	15.82
95th-Percentile Queue Length [ft/ln]	223.10	236.97	317.75	285.84		255.2	255.2	395.4

Movement, Approach, & Intersection Results

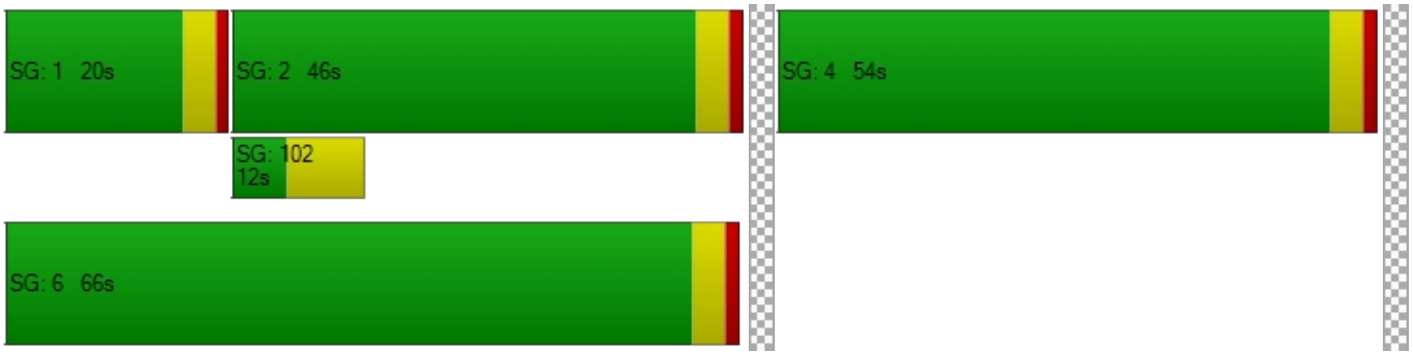
d_M, Delay for Movement [s/veh]	57.37	9.07	0.00	0.00	18.74	19.54	0.00	0.00	0.00	40.21	40.21	51.16
Movement LOS	E	A			B	B				D	D	D
d_A, Approach Delay [s/veh]	21.09			18.98			0.00			44.81		
Approach LOS	C			B			A			D		
d_I, Intersection Delay [s/veh]	25.87											
Intersection LOS	C											
Intersection V/C	0.587											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.083	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	700	0	833
d_b, Bicycle Delay [s]	14.02	25.35	60.00	20.42
l_b,int, Bicycle LOS Score for Intersection	2.660	2.630	4.132	2.894
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.483

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	792	0	0	1079	0	0	0	0	510	0	291
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	0	6	0	0	4	0	0	0	0	2	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	846	0	0	1148	0	0	0	0	543	0	308
Peak Hour Factor	1.000	0.869	1.000	1.000	0.869	1.000	1.000	1.000	1.000	0.869	0.869	0.869
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	243	0	0	330	0	0	0	0	156	0	89
Total Analysis Volume [veh/h]	0	974	0	0	1321	0	0	0	0	625	0	354
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	63	0	0	63	0	0	0	0	0	57	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	83	83		29	29	29
g / C, Green / Cycle	0.69	0.69		0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.20	0.27		0.19	0.19	0.21
s, saturation flow rate [veh/h]	4903	4903		1714	1697	1530
c, Capacity [veh/h]	3375	3375		420	416	375
d1, Uniform Delay [s]	7.27	7.98		42.24	42.35	43.48
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.34		3.13	3.30	6.30
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.39		0.78	0.78	0.87
d, Delay for Lane Group [s/veh]	7.49	8.32		45.37	45.65	49.78
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.10	4.61		9.36	9.40	9.91
50th-Percentile Queue Length [ft/ln]	77.42	115.34		233.9	234.8	247.7
95th-Percentile Queue Length [veh/ln]	5.57	8.14		14.37	14.42	15.07
95th-Percentile Queue Length [ft/ln]	139.36	203.40		359.3	360.5	376.8

Movement, Approach, & Intersection Results

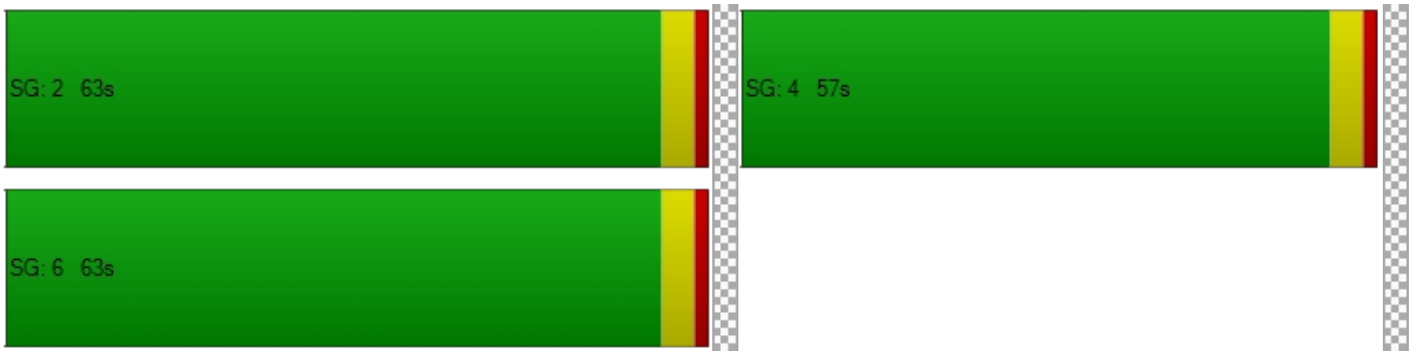
d_M, Delay for Movement [s/veh]	0.00	7.49	0.00	0.00	8.32	0.00	0.00	0.00	0.00	45.51	45.65	49.45
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	7.49			8.32			0.00			46.93		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	19.62											
Intersection LOS	B											
Intersection V/C	0.483											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	983	0	883
d_b, Bicycle Delay [s]	15.50	15.50	60.00	18.70
l_b,int, Bicycle LOS Score for Intersection	2.095	2.286	4.132	3.175
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	24.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	427	319	160	805	0	153	5	296	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	20	22	0	21	0	0	0	12	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	473	360	170	874	0	162	5	326	0	0	0
Peak Hour Factor	1.000	0.952	0.952	0.952	0.952	1.000	0.952	0.952	0.952	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	124	95	45	230	0	43	1	86	0	0	0
Total Analysis Volume [veh/h]	0	497	378	179	918	0	170	5	342	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	49	0	23	72	0	0	48	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	64	64	14	83	29	29	
g / C, Green / Cycle	0.53	0.53	0.12	0.69	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	0.15	0.25	0.10	0.27	0.10	0.22	
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1717	1530	
c, Capacity [veh/h]	1829	816	207	2357	421	376	
d1, Uniform Delay [s]	15.26	17.33	51.78	7.99	38.04	43.99	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.37	1.89	10.20	0.49	0.65	12.82	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.27	0.46	0.86	0.39	0.42	0.91	
d, Delay for Lane Group [s/veh]	15.63	19.22	61.98	8.47	38.69	56.81	
Lane Group LOS	B	B	E	A	D	E	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	3.77	6.77	5.87	4.86	4.42	11.15	
50th-Percentile Queue Length [ft/ln]	94.13	169.26	146.76	121.61	110.46	278.79	
95th-Percentile Queue Length [veh/ln]	6.78	11.04	9.84	8.48	7.87	16.63	
95th-Percentile Queue Length [ft/ln]	169.43	275.94	246.10	212.04	196.64	415.70	

Movement, Approach, & Intersection Results

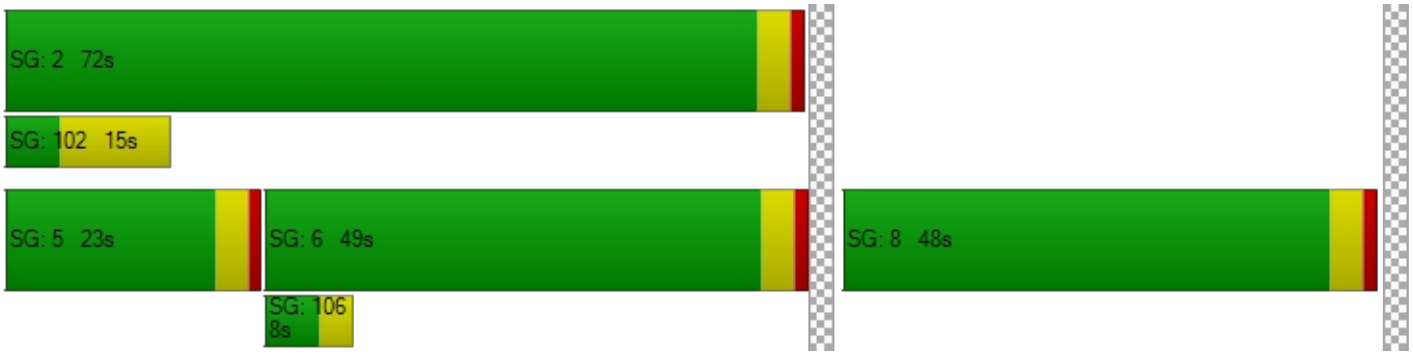
d_M, Delay for Movement [s/veh]	0.00	15.63	19.22	61.98	8.47	0.00	38.69	38.69	56.81	0.00	0.00	0.00
Movement LOS		B	B	E	A		D	D	E			
d_A, Approach Delay [s/veh]	17.18			17.20			50.68			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	24.15											
Intersection LOS	C											
Intersection V/C	0.575											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.123	1.987
Crosswalk LOS	F	F	B	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	1133	733	0
d_b, Bicycle Delay [s]	23.44	11.27	24.07	60.00
l_b,int, Bicycle LOS Score for Intersection	2.041	2.465	2.413	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	817	408	302	931	0	411	3	402	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	6	7	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	872	439	320	996	0	436	3	426	0	0	0
Peak Hour Factor	1.000	0.966	0.966	0.966	0.966	1.000	0.966	0.966	0.966	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	226	114	83	258	0	113	1	110	0	0	0
Total Analysis Volume [veh/h]	0	903	454	331	1031	0	451	3	441	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	60	0	18	78	0	0	42	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	68	68	14	86	26	26	26	
g / C, Green / Cycle	0.57	0.57	0.11	0.71	0.22	0.22	0.22	
(v / s)_i Volume / Saturation Flow Rate	0.38	0.42	0.10	0.30	0.18	0.18	0.19	
s, saturation flow rate [veh/h]	1800	1610	3329	3427	1714	1618	1530	
c, Capacity [veh/h]	1017	909	382	2443	378	357	337	
d1, Uniform Delay [s]	18.24	19.64	52.22	7.08	44.31	44.70	45.09	
k, delay calibration	0.50	0.50	0.11	0.50	0.13	0.15	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.47	5.55	6.02	0.54	4.90	7.03	10.02	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.75	0.87	0.42	0.80	0.84	0.87	
d, Delay for Lane Group [s/veh]	21.71	25.19	58.23	7.61	49.21	51.73	55.12	
Lane Group LOS	C	C	E	A	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	13.62	15.01	5.21	5.10	9.05	9.15	9.32	
50th-Percentile Queue Length [ft/ln]	340.44	375.27	130.31	127.50	226.1	228.7	232.8	
95th-Percentile Queue Length [veh/ln]	19.67	21.36	8.96	8.80	13.98	14.11	14.32	
95th-Percentile Queue Length [ft/ln]	491.73	534.12	223.91	220.09	349.5	352.8	358.0	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	22.58	25.19	58.23	7.61	0.00	50.05	51.73	54.01	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	D			
d_A, Approach Delay [s/veh]	23.45			19.91			51.98			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	29.18											
Intersection LOS	C											
Intersection V/C	0.712											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.364	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	1233	633	0
d_b, Bicycle Delay [s]	17.07	8.82	28.02	60.00
l_b,int, Bicycle LOS Score for Intersection	2.679	2.683	3.036	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.495

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	946	463	0	1265	26	160	0	553	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.000	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	6	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1009	491	0	1347	26	170	0	586	0	0	0
Peak Hour Factor	1.000	0.942	0.942	1.000	0.942	1.000	0.942	0.942	0.942	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	268	130	0	357	7	45	0	156	0	0	0
Total Analysis Volume [veh/h]	0	1071	521	0	1430	26	180	0	622	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	67	0	0	67	0	0	53	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	84	84	28	28	28	
g / C, Green / Cycle	0.70	0.70	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.29	0.11	0.20	0.20	
s, saturation flow rate [veh/h]	4903	4903	1714	1530	1530	
c, Capacity [veh/h]	3436	3436	399	356	356	
d1, Uniform Delay [s]	6.88	7.59	39.47	44.34	44.34	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.24	0.37	0.80	6.75	6.75	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.31	0.42	0.45	0.87	0.87	
d, Delay for Lane Group [s/veh]	7.12	7.96	40.27	51.09	51.09	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	3.30	4.87	4.66	9.54	9.54	
50th-Percentile Queue Length [ft/ln]	82.58	121.85	116.4	238.4	238.4	
95th-Percentile Queue Length [veh/ln]	5.95	8.49	8.20	14.60	14.60	
95th-Percentile Queue Length [ft/ln]	148.65	212.36	204.9	365.0	365.0	

Movement, Approach, & Intersection Results

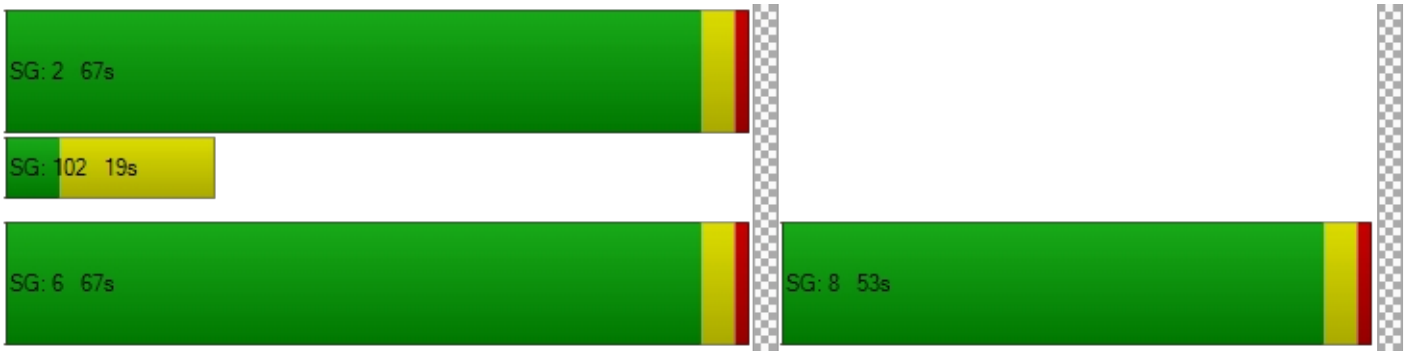
d_M, Delay for Movement [s/veh]	0.00	7.12	0.00	0.00	7.96	0.00	40.27	51.09	51.09	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	7.12			7.96			48.67			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	17.57											
Intersection LOS	B											
Intersection V/C	0.495											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.342	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	1050	817	0
d_b, Bicycle Delay [s]	13.54	13.54	21.00	60.00
l_b,int, Bicycle LOS Score for Intersection	2.149	2.346	2.883	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.427

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	37	570	67	55	502	93	117	199	75	90	208	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	604	71	58	532	99	124	211	80	95	220	65
Peak Hour Factor	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	169	20	16	149	28	35	59	22	27	62	18
Total Analysis Volume [veh/h]	44	678	80	65	597	111	139	237	90	107	247	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	36	0	10	35	0	48	29	0	45	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	73	73	6	75	75	12	16	16	9	14	14
g / C, Green / Cycle	0.03	0.61	0.61	0.05	0.62	0.62	0.10	0.13	0.13	0.08	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.03	0.21	0.21	0.04	0.20	0.20	0.08	0.09	0.10	0.06	0.09	0.09
s, saturation flow rate [veh/h]	1714	1800	1734	1714	1800	1703	1714	1800	1635	1714	1800	1662
c, Capacity [veh/h]	56	1090	1050	82	1117	1057	170	242	220	135	206	190
d1, Uniform Delay [s]	57.62	11.90	11.90	56.52	10.82	10.82	53.02	49.62	49.75	54.29	51.78	51.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.96	0.90	0.94	15.31	0.77	0.82	9.35	3.65	4.34	9.83	6.93	8.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.35	0.35	0.79	0.33	0.33	0.82	0.70	0.72	0.79	0.80	0.82
d, Delay for Lane Group [s/veh]	78.58	12.80	12.84	71.83	11.59	11.65	62.36	53.26	54.09	64.12	58.72	60.24
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.65	5.31	5.13	2.30	4.67	4.45	4.55	5.10	4.80	3.55	5.22	5.01
50th-Percentile Queue Length [ft/ln]	41.30	132.6	128.2	57.48	116.8	111.1	113.7	127.4	119.9	88.67	130.4	125.3
95th-Percentile Queue Length [veh/ln]	2.97	9.08	8.84	4.14	8.22	7.90	8.05	8.80	8.39	6.38	8.96	8.68
95th-Percentile Queue Length [ft/ln]	74.34	227.0	221.0	103.4	205.4	197.6	201.2	220.0	209.7	159.6	224.0	217.1

Movement, Approach, & Intersection Results

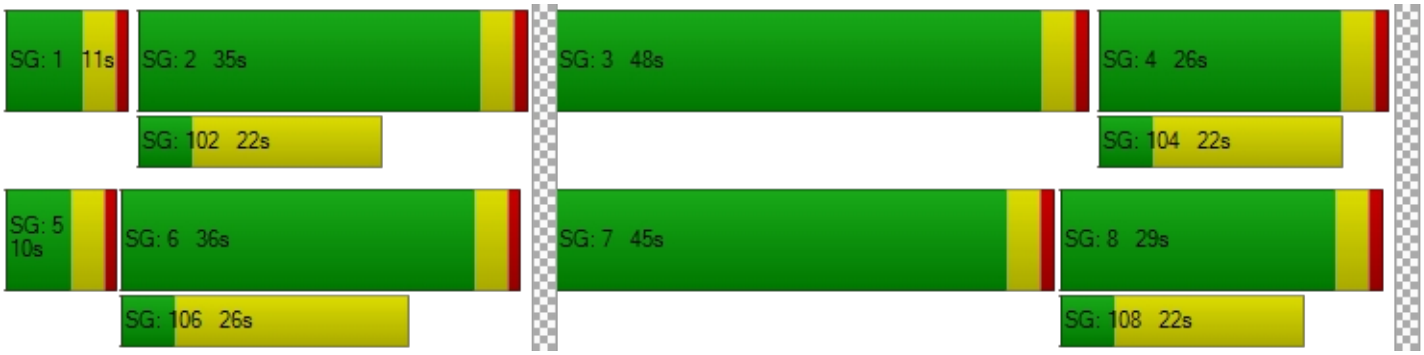
d_M, Delay for Movement [s/veh]	78.58	12.82	12.84	71.83	11.61	11.65	62.36	53.50	54.09	64.12	59.23	60.24
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	16.43			16.68			56.26			60.63		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	31.68											
Intersection LOS	C											
Intersection V/C	0.427											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.626	2.639	2.484	2.600
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	517	417	367
d_b, Bicycle Delay [s]	32.27	33.00	37.60	40.02
l_b,int, Bicycle LOS Score for Intersection	2.221	2.197	1.944	1.912
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	36.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.631

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	75	725	72	337	942	150	215	192	53	91	197	246
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	13	0	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	782	76	357	1008	159	228	204	56	96	209	261
Peak Hour Factor	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	22	213	21	97	275	43	62	56	15	26	57	71
Total Analysis Volume [veh/h]	87	852	83	389	1098	173	248	222	61	105	228	284
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	39	0	21	48	0	15	39	0	21	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	52	52	16	61	61	11	27	27	9	25	25
g / C, Green / Cycle	0.06	0.44	0.44	0.13	0.51	0.51	0.09	0.22	0.22	0.08	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.05	0.12	0.32	0.11	0.07	0.06	0.04	0.06	0.13	0.19
s, saturation flow rate [veh/h]	1714	3427	1530	3329	3427	1530	3329	3427	1530	1714	1800	1530
c, Capacity [veh/h]	108	1491	665	443	1730	772	300	760	339	132	376	319
d1, Uniform Delay [s]	55.47	25.50	20.26	51.07	21.65	16.59	53.68	38.86	37.85	54.45	43.02	46.13
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.82	1.60	0.39	5.75	1.79	0.67	5.78	0.21	0.25	10.31	1.58	9.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.57	0.12	0.88	0.63	0.22	0.83	0.29	0.18	0.80	0.61	0.89
d, Delay for Lane Group [s/veh]	68.29	27.10	20.64	56.82	23.44	17.26	59.46	39.07	38.10	64.76	44.60	55.35
Lane Group LOS	E	C	C	E	C	B	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.98	9.36	1.47	6.08	11.41	2.80	3.92	2.76	1.49	3.50	6.30	9.02
50th-Percentile Queue Length [ft/ln]	74.59	233.9	36.72	152.1	285.3	69.91	97.95	68.97	37.21	87.49	157.6	225.4
95th-Percentile Queue Length [veh/ln]	5.37	14.38	2.64	10.13	16.96	5.03	7.05	4.97	2.68	6.30	10.42	13.94
95th-Percentile Queue Length [ft/ln]	134.2	359.4	66.09	253.2	423.8	125.8	176.3	124.1	66.98	157.4	260.5	348.5

Movement, Approach, & Intersection Results

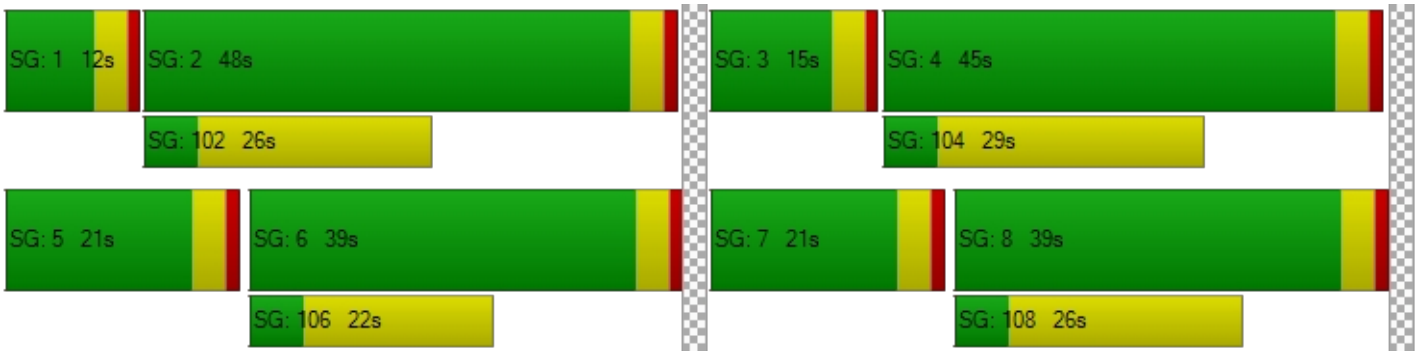
d_M, Delay for Movement [s/veh]	68.29	27.10	20.64	56.82	23.44	17.26	59.46	39.07	38.10	64.76	44.60	55.35
Movement LOS	E	C	C	E	C	B	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	30.08			30.62			48.48			52.98		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.55											
Intersection LOS	D											
Intersection V/C	0.631											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.840	3.033	2.751	2.681
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	733	583	683
d_b, Bicycle Delay [s]	30.10	24.07	30.10	26.00
l_b,int, Bicycle LOS Score for Intersection	2.403	2.929	1.998	2.578
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	32.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.597

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	160	919	38	219	1191	403	291	252	173	16	252	199
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	9	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	170	983	40	232	1268	427	308	267	183	17	267	211
Peak Hour Factor	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	45	262	11	62	338	114	82	71	49	5	71	56
Total Analysis Volume [veh/h]	181	1048	43	247	1352	455	328	285	195	18	285	225
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	36	0	23	47	0	19	52	0	9	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	59	59	11	62	62	14	32	32	2	20	20
g / C, Green / Cycle	0.07	0.49	0.49	0.09	0.52	0.52	0.11	0.27	0.27	0.02	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.05	0.21	0.03	0.07	0.28	0.30	0.10	0.08	0.13	0.01	0.08	0.15
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	222	2393	747	311	2525	788	382	911	407	64	584	261
d1, Uniform Delay [s]	55.27	20.00	16.18	53.25	19.49	20.09	52.16	35.27	37.06	58.04	45.05	48.43
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.13	0.58	0.15	4.56	0.82	3.07	5.66	0.19	0.88	2.38	0.63	8.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.44	0.06	0.79	0.54	0.58	0.86	0.31	0.48	0.28	0.49	0.86
d, Delay for Lane Group [s/veh]	62.41	20.58	16.33	57.81	20.31	23.17	57.82	35.46	37.93	60.42	45.69	56.76
Lane Group LOS	E	C	B	E	C	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.92	6.42	0.66	3.84	8.45	9.26	5.14	3.38	4.93	0.29	3.90	7.14
50th-Percentile Queue Length [ft/ln]	73.03	160.4	16.42	96.12	211.1	231.6	128.6	84.53	123.1	7.27	97.60	178.5
95th-Percentile Queue Length [veh/ln]	5.26	10.57	1.18	6.92	13.21	14.26	8.86	6.09	8.57	0.52	7.03	11.52
95th-Percentile Queue Length [ft/ln]	131.4	264.3	29.55	173.0	330.3	356.4	221.6	152.1	214.1	13.09	175.6	288.1

Movement, Approach, & Intersection Results

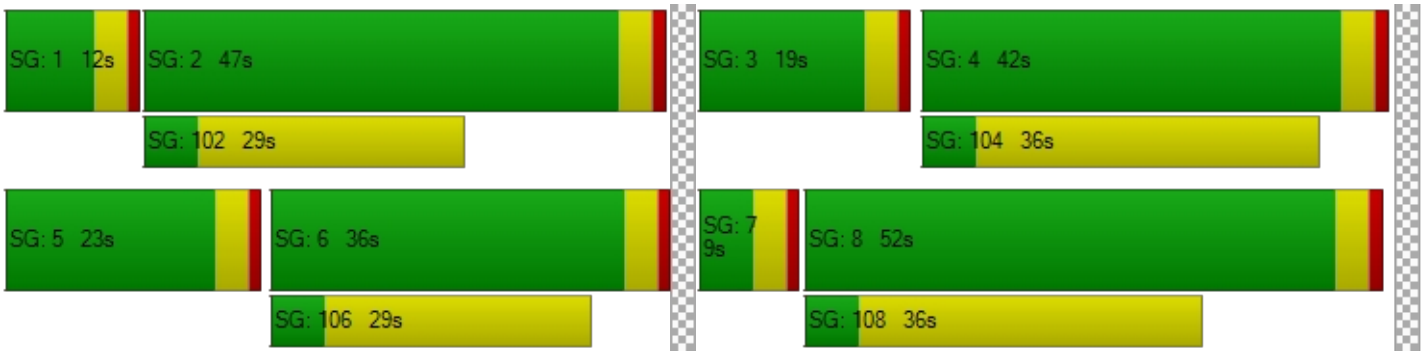
d_M, Delay for Movement [s/veh]	62.41	20.58	16.33	57.81	20.31	23.17	57.82	35.46	37.93	60.42	45.69	56.76
Movement LOS	E	C	B	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	26.39			25.45			45.13			50.91		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	32.00											
Intersection LOS	C											
Intersection V/C	0.597											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.172	3.260	2.850	2.763
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	717	800	633
d_b, Bicycle Delay [s]	32.27	24.70	21.60	28.02
l_b,int, Bicycle LOS Score for Intersection	2.259	2.689	2.226	1.995
Bicycle LOS	B	B	B	A

Sequence

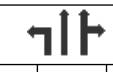
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	55.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	268	102	147	286	257	107	507	78	172	1112	236
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	6	6	0	0	4	0	0	0	4	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	126	290	108	156	307	272	113	537	87	182	1179	250
Peak Hour Factor	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	34	77	29	42	82	73	30	143	23	49	315	67
Total Analysis Volume [veh/h]	135	310	115	167	328	291	121	574	93	194	1260	267
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	36	36	16	41	0	13	51	0	17	55	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	32	45	12	37	37	9	51	51	9	51	51
g / C, Green / Cycle	0.06	0.27	0.38	0.10	0.31	0.31	0.08	0.42	0.42	0.08	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.04	0.17	0.08	0.10	0.18	0.19	0.07	0.13	0.13	0.06	0.43	0.44
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1530	1714	3427	1676	3329	1800	1694
c, Capacity [veh/h]	187	480	579	171	559	475	129	1446	707	260	765	720
d1, Uniform Delay [s]	55.71	38.98	25.09	53.85	34.88	35.22	55.24	23.05	23.11	54.14	34.50	34.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.48	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.21	6.57	0.77	26.25	4.47	5.79	24.92	0.12	0.25	4.22	34.48	46.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.65	0.20	0.97	0.59	0.61	0.94	0.31	0.31	0.75	1.01	1.05
d, Delay for Lane Group [s/veh]	60.92	45.55	25.86	80.10	39.34	41.01	80.15	23.17	23.36	58.37	68.98	81.00
Lane Group LOS	E	D	C	F	D	D	F	C	C	E	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.15	8.95	2.35	6.27	8.75	7.99	4.53	4.22	4.22	3.02	28.99	29.69
50th-Percentile Queue Length [ft/ln]	53.65	223.7	58.65	156.6	218.8	199.6	113.2	105.4	105.4	75.59	724.7	742.2
95th-Percentile Queue Length [veh/ln]	3.86	13.86	4.22	10.37	13.61	12.62	8.02	7.58	7.59	5.44	38.13	39.98
95th-Percentile Queue Length [ft/ln]	96.56	346.4	105.5	259.3	340.1	315.5	200.4	189.5	189.6	136.0	953.2	999.5

Movement, Approach, & Intersection Results

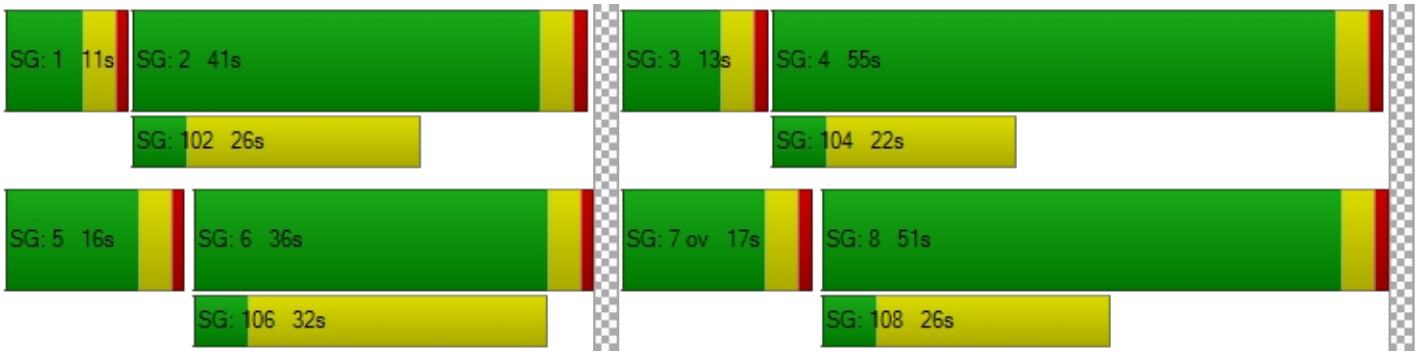
d_M, Delay for Movement [s/veh]	60.92	45.55	25.86	80.10	39.34	41.01	80.15	23.22	23.36	58.37	73.62	81.00
Movement LOS	E	D	C	F	D	D	F	C	C	E	E	F
d_A, Approach Delay [s/veh]	45.21			48.62			31.97			73.05		
Approach LOS	D			D			C			E		
d_I, Intersection Delay [s/veh]	55.63											
Intersection LOS	E											
Intersection V/C	0.785											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.659	2.604	2.870	3.055
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	617	783	850
d_b, Bicycle Delay [s]	32.27	28.70	22.20	19.84
l_b,int, Bicycle LOS Score for Intersection	2.484	2.208	1.993	2.979
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.470

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	367	0	567	0	537	236	0	946	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.000	1.060	1.060	1.000	1.060	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	389	0	601	0	569	250	0	1003	0
Peak Hour Factor	1.000	1.000	1.000	0.908	1.000	0.908	1.000	0.908	0.908	1.000	0.908	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	107	0	165	0	157	69	0	276	0
Total Analysis Volume [veh/h]	0	0	0	428	0	662	0	627	275	0	1105	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Split	Permi	Split	Permi	Permi	Unsig	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	71	0	0	0	49	0	0	49	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		34	34	78	78
g / C, Green / Cycle		0.28	0.28	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate		0.13	0.24	0.13	0.23
s, saturation flow rate [veh/h]		3329	2708	4903	4903
c, Capacity [veh/h]		936	761	3198	3198
d1, Uniform Delay [s]		35.57	41.03	8.32	9.37
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.35	3.22	0.14	0.30
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.46	0.87	0.20	0.35
d, Delay for Lane Group [s/veh]		35.92	44.25	8.46	9.67
Lane Group LOS		D	D	A	A
Critical Lane Group		No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		5.23	9.59	2.12	4.22
50th-Percentile Queue Length [ft/ln]		130.70	239.65	53.04	105.42
95th-Percentile Queue Length [veh/ln]		8.98	14.66	3.82	7.58
95th-Percentile Queue Length [ft/ln]		224.44	366.59	95.47	189.62

Movement, Approach, & Intersection Results

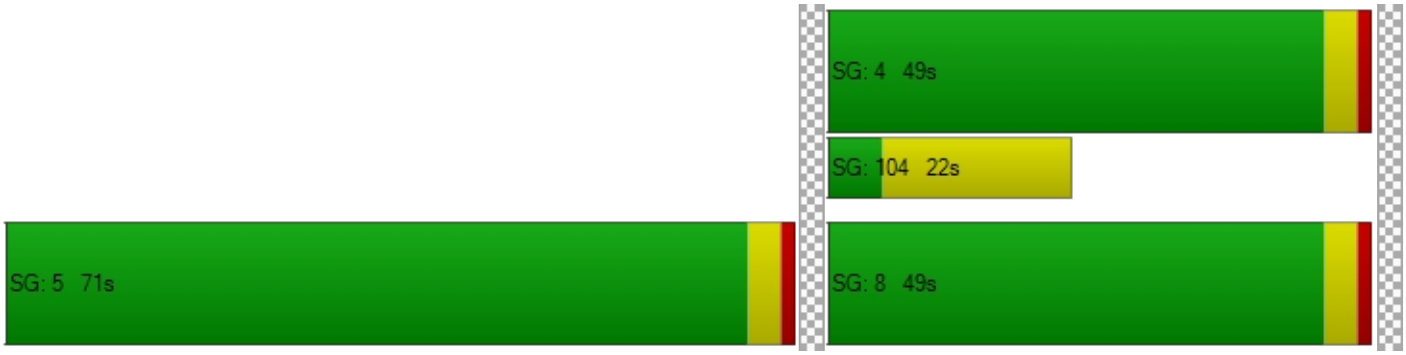
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	35.92	0.00	44.25	0.00	8.46	0.00	0.00	9.67	0.00
Movement LOS				D		D		A			A	
d_A, Approach Delay [s/veh]	0.00			40.98			8.46			9.67		
Approach LOS	A			D			A			A		
d_I, Intersection Delay [s/veh]	21.50											
Intersection LOS	C											
Intersection V/C	0.470											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.528	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1117	750	750
d_b, Bicycle Delay [s]	60.00	11.70	23.44	23.44
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	1.904	2.167
Bicycle LOS	D	A	A	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	30.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.525

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	278	2	306	0	0	0	354	565	0	0	1595	179
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	295	2	324	0	0	0	375	599	0	0	1691	190
Peak Hour Factor	0.952	0.952	0.952	1.000	1.000	1.000	0.952	0.952	1.000	1.000	0.952	0.952
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	77	1	85	0	0	0	98	157	0	0	444	50
Total Analysis Volume [veh/h]	310	2	340	0	0	0	394	629	0	0	1776	200
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Unsig
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	28	0	0	0	0	32	92	0	0	60	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	45		17	67	46
g / C, Green / Cycle	0.37	0.37	0.37		0.14	0.56	0.38
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.14		0.12	0.13	0.27
s, saturation flow rate [veh/h]	1714	1596	1530		3329	4903	6538
c, Capacity [veh/h]	642	598	573		471	2741	2512
d1, Uniform Delay [s]	27.11	27.14	27.16		50.17	13.39	31.24
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	1.55	1.69	1.77		4.02	0.04	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.36	0.36		0.84	0.23	0.71
d, Delay for Lane Group [s/veh]	28.66	28.83	28.93		54.19	13.43	31.61
Lane Group LOS	C	C	C		D	B	C
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.03	4.75	4.59		6.02	2.86	10.81
50th-Percentile Queue Length [ft/ln]	125.8	118.6	114.6		150.49	71.44	270.34
95th-Percentile Queue Length [veh/ln]	8.71	8.32	8.10		10.04	5.14	16.21
95th-Percentile Queue Length [ft/ln]	217.7	208.0	202.4		251.09	128.59	405.17

Movement, Approach, & Intersection Results

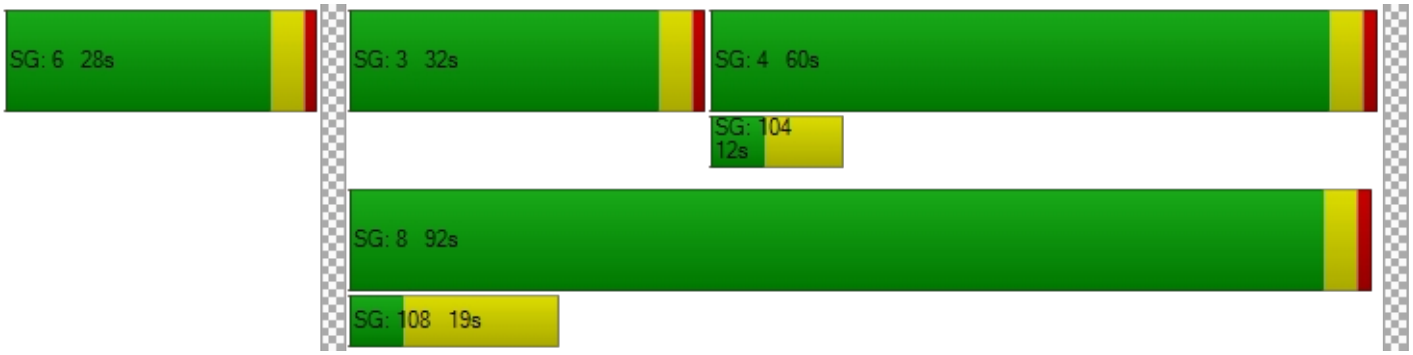
d_M, Delay for Movement [s/veh]	28.71	28.83	28.89	0.00	0.00	0.00	54.19	13.43	0.00	0.00	31.61	0.00
Movement LOS	C	C	C				D	B			C	
d_A, Approach Delay [s/veh]	28.80			0.00			29.13			31.61		
Approach LOS	C			A			C			C		
d_I, Intersection Delay [s/veh]	30.34											
Intersection LOS	C											
Intersection V/C	0.525											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.305	1.923	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	0	1467	933
d_b, Bicycle Delay [s]	38.40	60.00	4.27	17.07
l_b,int, Bicycle LOS Score for Intersection	2.635	4.132	2.122	2.292
Bicycle LOS	B	D	B	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	38.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.725

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	63	529	155	69	828	410	232	502	139	414	1336	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	42	45	0	32	0	0	0	0	33	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	603	209	73	910	435	246	532	147	472	1416	70
Peak Hour Factor	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	164	57	20	247	118	67	145	40	128	385	19
Total Analysis Volume [veh/h]	73	655	227	79	989	473	267	578	160	513	1539	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	43	0	9	43	0	23	40	0	28	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	44	44	5	45	45	12	34	34	21	43	43
g / C, Green / Cycle	0.04	0.37	0.37	0.04	0.37	0.37	0.10	0.28	0.28	0.17	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.02	0.13	0.15	0.02	0.20	0.31	0.08	0.12	0.10	0.15	0.31	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	127	1817	567	129	1820	568	331	1394	435	576	1754	547
d1, Uniform Delay [s]	56.76	27.43	27.91	56.79	29.71	34.33	52.89	34.84	34.32	48.51	36.06	26.04
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	0.56	2.10	4.65	1.17	13.39	4.63	0.20	0.52	4.99	1.54	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.36	0.40	0.61	0.54	0.83	0.81	0.41	0.37	0.89	0.88	0.14
d, Delay for Lane Group [s/veh]	60.85	27.99	30.01	61.44	30.88	47.73	57.52	35.04	34.84	53.50	37.60	26.15
Lane Group LOS	E	C	C	E	C	D	E	D	C	D	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.16	4.65	5.16	1.26	7.66	14.49	4.15	4.60	3.81	7.88	14.09	1.50
50th-Percentile Queue Length [ft/ln]	29.02	116.3	128.8	31.58	191.5	362.2	103.8	115.1	95.22	197.1	352.2	37.44
95th-Percentile Queue Length [veh/ln]	2.09	8.19	8.88	2.27	12.20	20.73	7.47	8.12	6.86	12.49	20.24	2.70
95th-Percentile Queue Length [ft/ln]	52.24	204.8	221.9	56.84	305.0	518.3	186.8	203.0	171.3	312.2	506.0	67.39

Movement, Approach, & Intersection Results

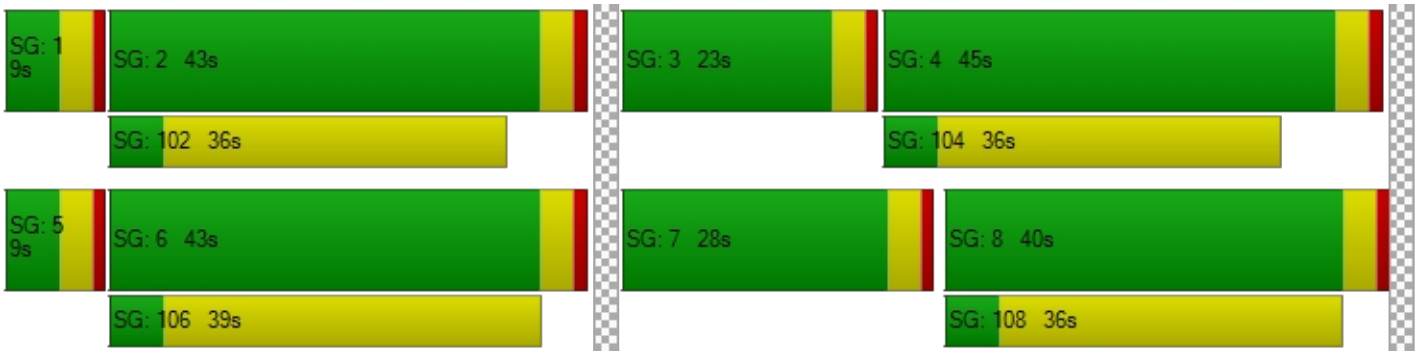
d_M, Delay for Movement [s/veh]	60.85	27.99	30.01	61.44	30.88	47.73	57.52	35.04	34.84	53.50	37.60	26.15
Movement LOS	E	C	C	E	C	D	E	D	C	D	D	C
d_A, Approach Delay [s/veh]	30.98			37.62			40.98			41.03		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	38.38											
Intersection LOS	D											
Intersection V/C	0.725											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.148	3.140	3.367	3.275
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	650	600	683
d_b, Bicycle Delay [s]	27.34	27.34	29.40	26.00
l_b,int, Bicycle LOS Score for Intersection	2.085	2.407	2.112	2.730
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.493

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	239	13	94	239	197	132	419	37	45	589	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	38	0	0	27	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	253	14	100	253	209	140	482	39	48	651	87
Peak Hour Factor	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	21	76	4	30	76	63	42	146	12	14	197	26
Total Analysis Volume [veh/h]	83	306	17	121	306	252	169	582	47	58	786	105
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	36	0	16	40	0	26	44	0	24	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	56	56	10	59	59	14	33	33	5	24	24
g / C, Green / Cycle	0.06	0.46	0.46	0.08	0.49	0.49	0.12	0.27	0.27	0.04	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.01	0.07	0.17	0.17	0.10	0.12	0.03	0.03	0.17	0.17
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1772	1512	1714	4903	1506	1687	3427	1694
c, Capacity [veh/h]	104	1585	707	146	863	736	198	1342	412	77	699	345
d1, Uniform Delay [s]	55.65	19.04	17.54	54.04	19.00	19.06	52.08	35.90	32.66	56.62	46.02	46.09
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.10	0.27	0.06	11.32	1.10	1.32	9.99	0.22	0.12	13.99	3.05	6.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.19	0.02	0.83	0.35	0.35	0.85	0.43	0.11	0.76	0.85	0.86
d, Delay for Lane Group [s/veh]	68.75	19.31	17.60	65.36	20.11	20.38	62.08	36.13	32.78	70.60	49.08	52.29
Lane Group LOS	E	B	B	E	C	C	E	D	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.86	2.58	0.27	4.05	5.38	4.70	5.54	4.72	1.05	2.04	8.81	9.09
50th-Percentile Queue Length [ft/ln]	71.44	64.56	6.76	101.3	134.4	117.5	138.4	117.9	26.20	50.94	220.3	227.1
95th-Percentile Queue Length [veh/ln]	5.14	4.65	0.49	7.30	9.18	8.26	9.40	8.28	1.89	3.67	13.68	14.03
95th-Percentile Queue Length [ft/ln]	128.5	116.2	12.17	182.4	229.4	206.5	234.9	207.0	47.16	91.68	342.0	350.7

Movement, Approach, & Intersection Results

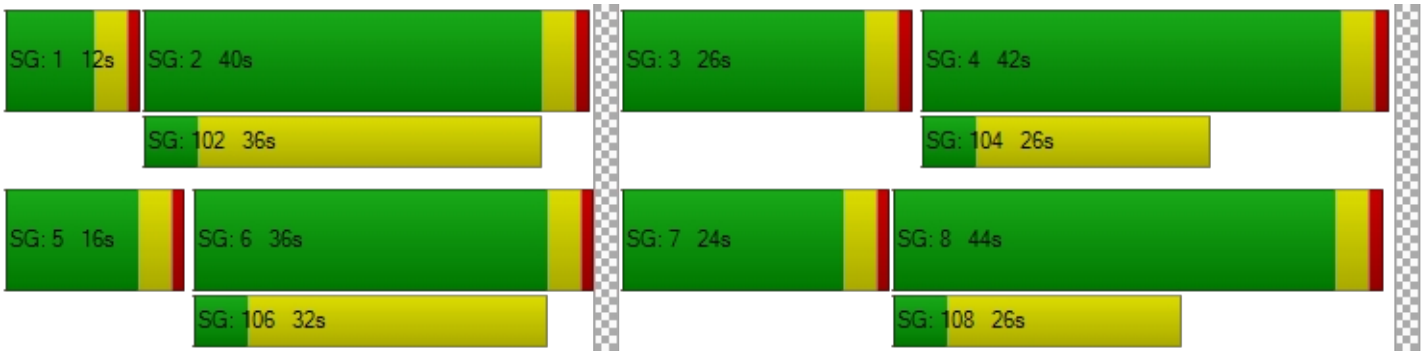
d_M, Delay for Movement [s/veh]	68.75	19.31	17.60	65.36	20.11	20.38	62.08	36.13	32.78	70.60	49.86	52.29
Movement LOS	E	B	B	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	29.35			28.28			41.43			51.39		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.88											
Intersection LOS	D											
Intersection V/C	0.493											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.601	2.673	3.072	2.944
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	667	633
d_b, Bicycle Delay [s]	32.27	29.40	26.67	28.02
l_b,int, Bicycle LOS Score for Intersection	1.895	2.120	1.999	2.082
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	47.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	120	571	733	124	771	237	274	346	109	156	659	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	2	2	0	0	9	11	21	0	2	14	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	607	779	131	817	260	301	388	116	167	713	108
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	34	161	207	35	217	69	80	103	31	44	189	29
Total Analysis Volume [veh/h]	135	644	827	139	867	276	320	412	123	177	757	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	24	61	0	14	51	0	15	26	0	19	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	11	61	61	10	60	60	11	24	24	9	22	36
g / C, Green / Cycle	0.09	0.51	0.51	0.08	0.50	0.50	0.09	0.20	0.20	0.07	0.18	0.30
(v / s)_i Volume / Saturation Flow Rate	0.08	0.36	0.54	0.08	0.25	0.18	0.10	0.08	0.08	0.05	0.15	0.08
s, saturation flow rate [veh/h]	1714	1800	1530	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	163	921	783	143	1714	765	305	982	306	237	882	454
d1, Uniform Delay [s]	53.34	22.27	29.29	54.87	20.07	18.29	54.50	41.89	41.73	54.66	47.73	32.11
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.19	4.40	48.00	28.98	1.07	1.32	37.78	0.29	0.85	4.63	2.57	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.70	1.06	0.97	0.51	0.36	1.05	0.42	0.40	0.75	0.86	0.25
d, Delay for Lane Group [s/veh]	63.53	26.66	77.30	83.85	21.14	19.62	92.28	42.18	42.58	59.29	50.30	32.40
Lane Group LOS	E	C	F	F	C	B	F	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.46	14.55	31.91	5.34	8.24	4.92	6.20	3.59	3.25	2.78	7.51	2.59
50th-Percentile Queue Length [ft/ln]	111.5	363.6	797.7	133.3	206.0	122.8	155.0	89.74	81.28	69.44	187.7	64.86
95th-Percentile Queue Length [veh/ln]	7.92	20.80	43.01	9.12	12.95	8.55	10.46	6.46	5.85	5.00	12.00	4.67
95th-Percentile Queue Length [ft/ln]	198.1	520.0	1075.	228.1	323.7	213.7	261.6	161.5	146.3	124.9	300.0	116.7

Movement, Approach, & Intersection Results

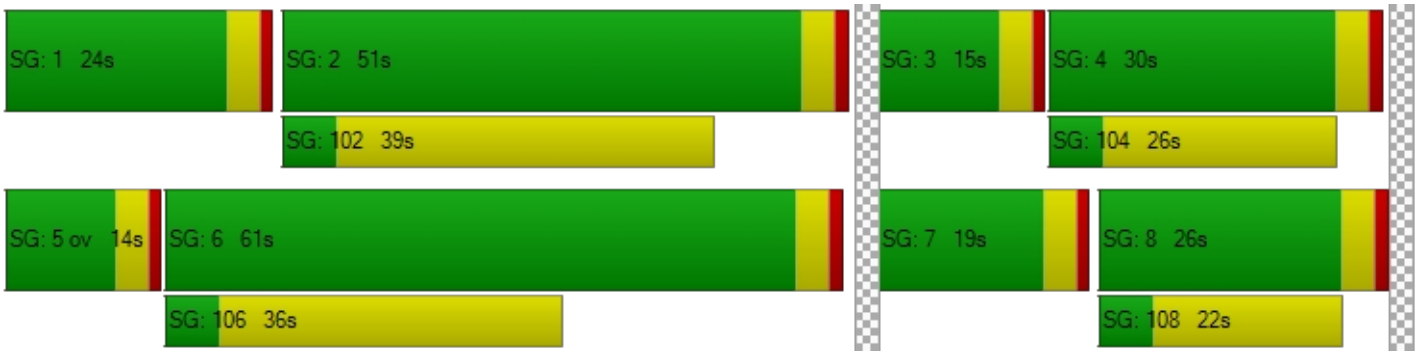
d_M, Delay for Movement [s/veh]	63.53	26.66	77.30	83.85	21.14	19.62	92.28	42.18	42.58	59.29	50.30	32.40
Movement LOS	E	C	F	F	C	B	F	D	D	E	D	C
d_A, Approach Delay [s/veh]	55.83			27.61			60.99			49.85		
Approach LOS	E			C			E			D		
d_I, Intersection Delay [s/veh]	47.89											
Intersection LOS	D											
Intersection V/C	0.872											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.856	2.852	3.084	3.218
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	783	367	433
d_b, Bicycle Delay [s]	16.54	22.20	40.02	36.82
l_b,int, Bicycle LOS Score for Intersection	2.885	2.617	2.030	2.137
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	33.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	157	629	56	220	1054	104	94	405	109	90	492	139
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	5	0	0	4	6	10	6	0	0	4	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	672	59	233	1121	116	110	435	116	95	526	147
Peak Hour Factor	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	47	189	17	65	315	33	31	122	33	27	148	41
Total Analysis Volume [veh/h]	186	754	66	262	1258	130	123	488	130	107	590	165
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	40	0	23	50	0	10	48	0	9	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	68	68	12	71	71	6	19	19	5	18	18
g / C, Green / Cycle	0.07	0.57	0.57	0.10	0.59	0.59	0.05	0.16	0.16	0.04	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.06	0.15	0.04	0.08	0.37	0.08	0.04	0.10	0.08	0.03	0.12	0.11
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	239	2783	868	325	2034	908	166	783	244	139	742	232
d1, Uniform Delay [s]	54.77	13.26	11.73	53.02	15.66	10.83	56.23	47.04	46.29	56.93	49.12	48.43
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.47	0.24	0.17	4.69	1.42	0.33	6.28	0.82	1.79	8.72	1.98	4.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.27	0.08	0.81	0.62	0.14	0.74	0.62	0.53	0.77	0.79	0.71
d, Delay for Lane Group [s/veh]	60.24	13.50	11.90	57.71	17.08	11.16	62.50	47.86	48.09	65.65	51.10	52.46
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.95	3.48	0.84	4.08	10.99	1.60	1.98	4.60	3.69	1.77	5.82	4.96
50th-Percentile Queue Length [ft/ln]	73.63	87.06	20.89	101.9	274.6	39.92	49.58	114.9	92.32	44.36	145.4	123.9
95th-Percentile Queue Length [veh/ln]	5.30	6.27	1.50	7.34	16.42	2.87	3.57	8.12	6.65	3.19	9.77	8.61
95th-Percentile Queue Length [ft/ln]	132.5	156.7	37.59	183.5	410.5	71.85	89.24	202.9	166.1	79.85	244.3	215.2

Movement, Approach, & Intersection Results

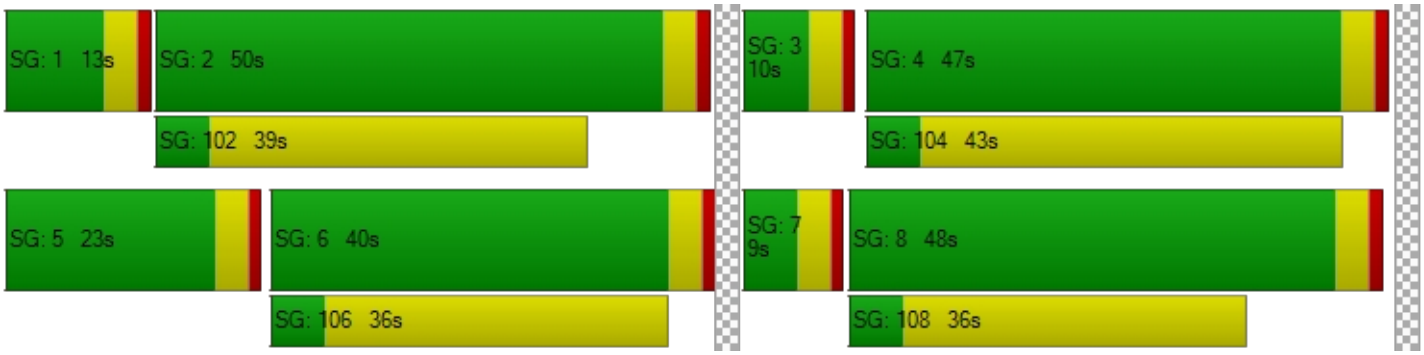
d_M, Delay for Movement [s/veh]	60.24	13.50	11.90	57.71	17.08	11.16	62.50	47.86	48.09	65.65	51.10	52.46
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	22.04			23.06			50.33			53.17		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.66											
Intersection LOS	C											
Intersection V/C	0.580											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.135	3.332	3.142	3.046
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	767	733	717
d_b, Bicycle Delay [s]	29.40	22.82	24.07	24.70
l_b,int, Bicycle LOS Score for Intersection	2.113	2.921	1.967	2.034
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	47.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.617

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	141	239	145	76	282	121	87	249	108	94	464	69
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	12	1	0	8	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	265	155	81	307	128	92	264	114	100	492	73
Peak Hour Factor	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	44	79	46	24	91	38	27	78	34	30	146	22
Total Analysis Volume [veh/h]	177	314	184	96	364	152	109	313	135	119	584	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	29	0	12	23	23	0	28	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	41	41	8	35	35	23	23	31	31
g / C, Green / Cycle	0.12	0.35	0.35	0.07	0.30	0.30	0.19	0.19	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.10	0.15	0.15	0.06	0.11	0.10	0.17	0.17	0.24	0.24
s, saturation flow rate [veh/h]	1714	1800	1581	1714	3427	1530	1768	1499	1775	1573
c, Capacity [veh/h]	200	620	545	114	1010	451	343	291	464	411
d1, Uniform Delay [s]	52.21	30.19	30.25	55.37	33.40	33.15	46.92	47.04	42.85	42.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.17	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.12	2.13	2.47	14.82	1.00	2.02	6.97	8.74	9.93	11.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.43	0.43	0.84	0.36	0.34	0.87	0.88	0.90	0.90
d, Delay for Lane Group [s/veh]	64.33	32.32	32.72	70.18	34.40	35.16	53.89	55.78	52.78	53.94
Lane Group LOS	E	C	C	E	C	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.92	6.22	5.59	3.34	4.34	3.73	9.32	8.15	13.20	11.84
50th-Percentile Queue Length [ft/ln]	147.9	155.5	139.6	83.52	108.4	93.30	232.91	203.85	329.94	296.02
95th-Percentile Queue Length [veh/ln]	9.90	10.31	9.46	6.01	7.75	6.72	14.32	12.84	19.16	17.48
95th-Percentile Queue Length [ft/ln]	247.6	257.8	236.5	150.3	193.8	167.9	358.06	320.93	478.89	437.10

Movement, Approach, & Intersection Results

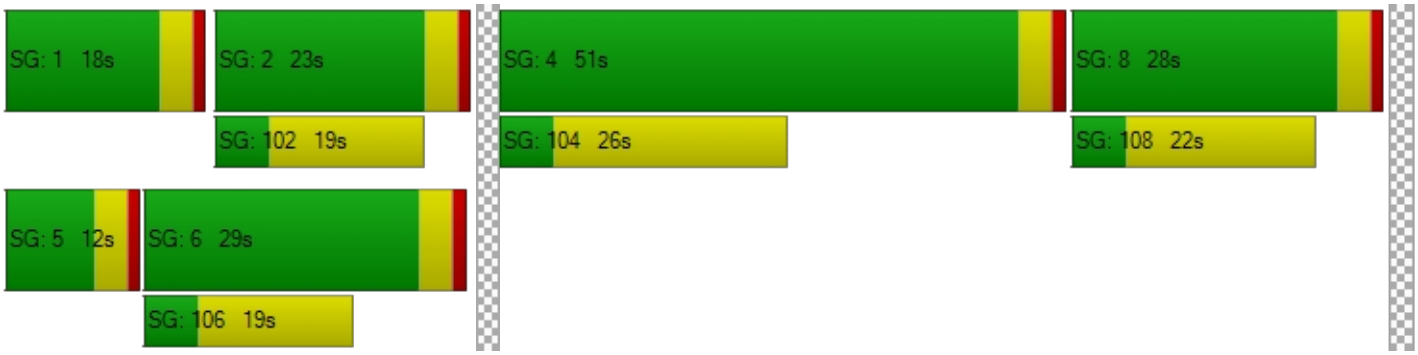
d_M, Delay for Movement [s/veh]	64.33	32.39	32.72	70.18	34.40	35.16	53.89	54.63	55.78	52.78	53.35	53.94
Movement LOS	E	C	C	E	C	D	D	D	E	D	D	D
d_A, Approach Delay [s/veh]	40.85			40.20			54.76			53.33		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	47.39											
Intersection LOS	D											
Intersection V/C	0.617											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.567	2.650	2.505	2.483
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	317	400	783
d_b, Bicycle Delay [s]	37.60	42.50	38.40	22.20
l_b,int, Bicycle LOS Score for Intersection	2.116	2.065	2.019	2.211
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	32.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.896

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	150	0	849	0	520	798	0	1435	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.000	1.060	1.060	1.000	1.060	1.000
In-Process Volume [veh/h]	0	0	0	26	0	0	0	12	0	0	16	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	185	0	900	0	563	846	0	1537	0
Peak Hour Factor	1.000	1.000	1.000	0.945	1.000	0.945	1.000	0.945	0.945	1.000	0.945	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	49	0	238	0	149	224	0	407	0
Total Analysis Volume [veh/h]	0	0	0	196	0	952	0	596	895	0	1626	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	43	0	0	0	77	0	0	77	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		39	39	39	73	73	73
g / C, Green / Cycle		0.32	0.32	0.32	0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate		0.11	0.31	0.31	0.12	0.58	0.33
s, saturation flow rate [veh/h]		1714	1530	1530	4903	1530	4903
c, Capacity [veh/h]		555	495	495	2989	933	2989
d1, Uniform Delay [s]		30.98	39.83	39.83	10.41	22.04	13.69
k, delay calibration		0.11	0.43	0.43	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.38	28.98	28.98	0.15	21.19	0.72
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.35	0.96	0.96	0.20	0.96	0.54
d, Delay for Lane Group [s/veh]		31.36	68.81	68.81	10.56	43.23	14.40
Lane Group LOS		C	E	E	B	D	B
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		4.41	17.57	17.57	2.33	27.33	8.41
50th-Percentile Queue Length [ft/ln]		110.2	439.3	439.3	58.29	683.18	210.25
95th-Percentile Queue Length [veh/ln]		7.85	24.45	24.45	4.20	35.90	13.17
95th-Percentile Queue Length [ft/ln]		196.3	611.2	611.2	104.93	897.51	329.15

Movement, Approach, & Intersection Results

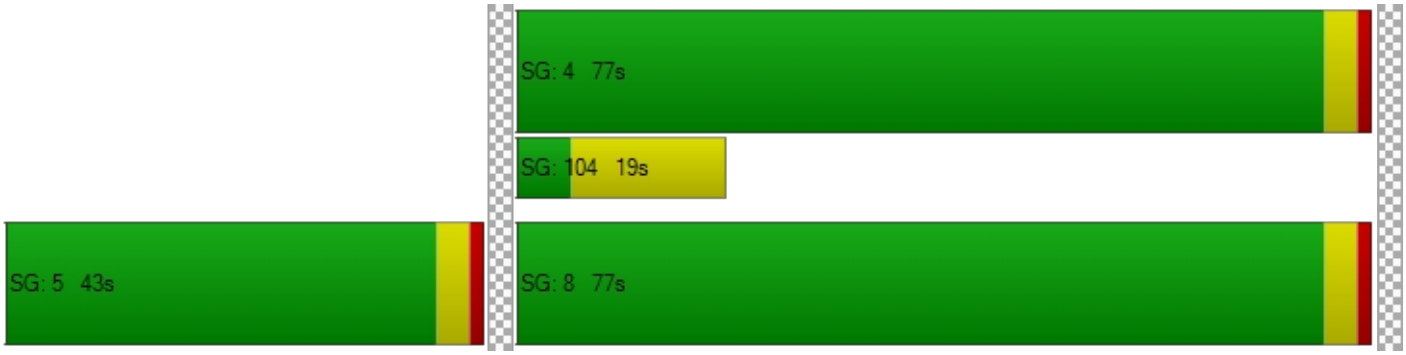
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	31.36	0.00	68.81	0.00	10.56	43.23	0.00	14.40	0.00
Movement LOS				C		E		B	D		B	
d_A, Approach Delay [s/veh]	0.00			62.42			30.17			14.40		
Approach LOS	A			E			C			B		
d_I, Intersection Delay [s/veh]	32.84											
Intersection LOS	C											
Intersection V/C	0.896											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.426	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	650	1217	1217
d_b, Bicycle Delay [s]	60.00	27.34	9.20	9.20
l_b,int, Bicycle LOS Score for Intersection	4.132	3.454	2.380	2.454
Bicycle LOS	D	C	B	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	873	0	494	0	0	0	0	441	0	0	1219	197
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	38	0	0	16	36
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	925	0	524	0	0	0	0	505	0	0	1308	245
Peak Hour Factor	0.879	1.000	0.879	1.000	1.000	1.000	1.000	0.879	1.000	1.000	0.879	0.879
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	263	0	149	0	0	0	0	144	0	0	372	70
Total Analysis Volume [veh/h]	1052	0	596	0	0	0	0	575	0	0	1488	279
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	97	0	0	0	0	0	0	23	0	0	23	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	48	48	48		64	64	64
g / C, Green / Cycle	0.40	0.40	0.40		0.53	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.32	0.32	0.36		0.12	0.30	0.18
s, saturation flow rate [veh/h]	1714	1697	1530		4903	4903	1530
c, Capacity [veh/h]	686	679	612		2615	2615	816
d1, Uniform Delay [s]	31.79	31.94	33.70		14.80	18.76	15.98
k, delay calibration	0.11	0.11	0.11		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.23	2.37	5.03		0.19	0.90	1.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.81	0.90		0.22	0.57	0.34
d, Delay for Lane Group [s/veh]	34.02	34.31	38.73		14.99	19.66	17.12
Lane Group LOS	C	C	D		B	B	B
Critical Lane Group	No	No	Yes		No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.28	14.37	15.54		2.79	9.23	4.57
50th-Percentile Queue Length [ft/ln]	357.0	359.2	388.5		69.83	230.64	114.36
95th-Percentile Queue Length [veh/ln]	20.48	20.59	22.01		5.03	14.21	8.08
95th-Percentile Queue Length [ft/ln]	511.9	514.6	550.2		125.69	355.17	202.05

Movement, Approach, & Intersection Results

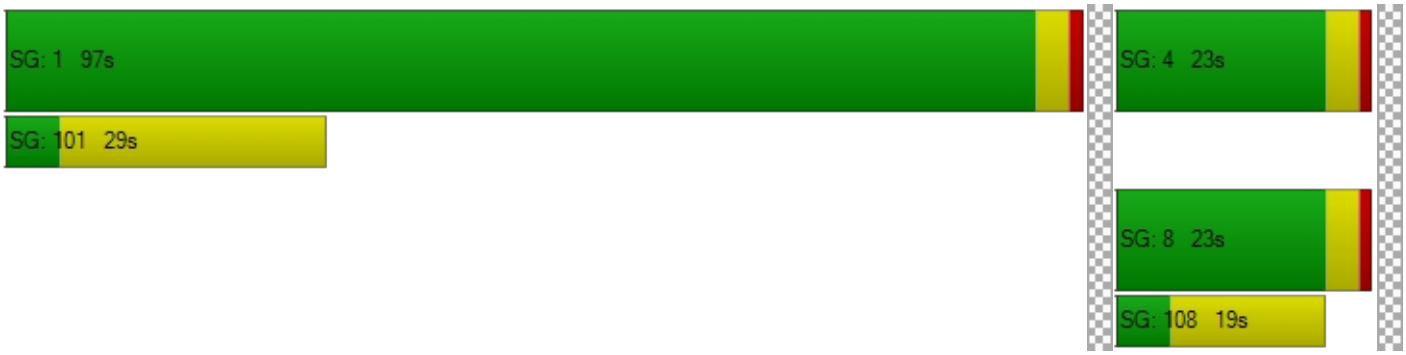
d_M, Delay for Movement [s/veh]	34.16	0.00	38.38	0.00	0.00	0.00	0.00	14.99	0.00	0.00	19.66	17.12
Movement LOS	C		D					B			B	B
d_A, Approach Delay [s/veh]	35.68			0.00			14.99			19.26		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	25.43											
Intersection LOS	C											
Intersection V/C	0.663											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.548	0.000	0.000	3.018
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1550	0	317	317
d_b, Bicycle Delay [s]	3.04	60.00	42.50	42.50
l_b,int, Bicycle LOS Score for Intersection	4.279	4.132	1.876	2.531
Bicycle LOS	E	D	A	B

Sequence

Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	42.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.772

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	153	199	67	50	341	230	100	448	210	342	1200	115
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	52	13	1	0	8	0	0	0	38	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	214	224	72	53	369	244	106	475	261	363	1272	122
Peak Hour Factor	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	58	61	20	14	100	66	29	129	71	99	345	33
Total Analysis Volume [veh/h]	232	243	78	58	401	265	115	516	283	394	1381	132
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	47	0	10	36	0	9	41	41	22	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	44	44	5	32	32	5	39	60	16	50	50
g / C, Green / Cycle	0.14	0.37	0.37	0.04	0.27	0.27	0.04	0.32	0.50	0.14	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.05	0.03	0.20	0.20	0.03	0.15	0.18	0.12	0.40	0.09
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1565	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	243	659	560	75	483	420	139	1098	758	454	1423	635
d1, Uniform Delay [s]	51.12	27.87	25.41	56.79	40.03	40.11	57.08	32.61	18.74	50.76	34.37	22.46
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.26	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.70	1.59	0.52	15.41	9.58	11.23	11.79	0.31	0.73	5.17	6.15	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.37	0.14	0.77	0.74	0.74	0.83	0.47	0.37	0.87	0.97	0.21
d, Delay for Lane Group [s/veh]	69.82	29.46	25.93	72.19	49.61	51.34	68.87	32.93	19.47	55.93	40.52	22.62
Lane Group LOS	E	C	C	E	D	D	E	C	B	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.16	5.41	1.58	2.06	10.79	9.66	1.96	6.04	4.98	6.12	20.43	2.43
50th-Percentile Queue Length [ft/ln]	204.1	135.3	39.48	51.55	269.7	241.5	48.95	151.1	124.6	152.9	510.6	60.70
95th-Percentile Queue Length [veh/ln]	12.85	9.23	2.84	3.71	16.18	14.76	3.52	10.08	8.65	10.18	27.84	4.37
95th-Percentile Queue Length [ft/ln]	321.2	230.6	71.06	92.79	404.4	368.9	88.10	251.9	216.1	254.4	695.9	109.2

Movement, Approach, & Intersection Results

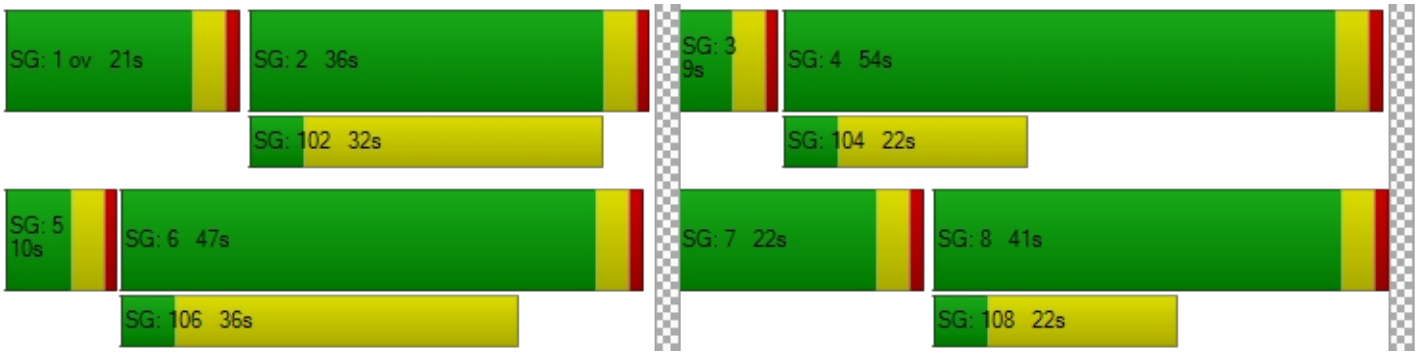
d_M, Delay for Movement [s/veh]	69.82	29.46	25.93	72.19	49.81	51.34	68.87	32.93	19.47	55.93	40.52	22.62
Movement LOS	E	C	C	E	D	D	E	C	B	E	D	C
d_A, Approach Delay [s/veh]	45.90			52.16			33.28			42.46		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	42.59											
Intersection LOS	D											
Intersection V/C	0.772											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.633	2.552	3.081	3.142
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	533	617	833
d_b, Bicycle Delay [s]	24.70	32.27	28.70	20.42
l_b,int, Bicycle LOS Score for Intersection	2.472	2.157	2.314	3.133
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	214	404	115	164	793	203	183	414	153	284	1138	98
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	91	29	0	72	0	1	0	0	19	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	227	519	151	174	913	215	195	439	162	320	1206	104
Peak Hour Factor	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	62	141	41	47	248	58	53	119	44	87	327	28
Total Analysis Volume [veh/h]	246	563	164	189	990	233	211	476	176	347	1308	113
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	25	43	0	22	40	40	13	36	0	19	42	42
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	19	44	44	15	40	53	9	30	30	14	36	55
g / C, Green / Cycle	0.16	0.37	0.37	0.13	0.34	0.45	0.08	0.25	0.25	0.12	0.30	0.46
(v / s)_i Volume / Saturation Flow Rate	0.14	0.11	0.11	0.11	0.20	0.15	0.06	0.10	0.12	0.10	0.27	0.07
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	273	1804	563	219	1649	680	250	1232	384	400	1452	699
d1, Uniform Delay [s]	49.53	27.08	26.85	51.33	33.12	21.83	54.81	37.26	38.01	51.87	40.53	19.10
k, delay calibration	0.14	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.92	0.45	1.31	9.78	1.63	1.37	7.65	0.20	0.85	5.85	2.30	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.31	0.29	0.86	0.60	0.34	0.85	0.39	0.46	0.87	0.90	0.16
d, Delay for Lane Group [s/veh]	62.45	27.53	28.16	61.12	34.74	23.20	62.47	37.46	38.87	57.71	42.83	19.20
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.20	3.93	3.54	6.16	8.20	4.55	3.41	3.90	4.48	5.45	12.55	1.88
50th-Percentile Queue Length [ft/ln]	205.0	98.14	88.51	154.0	204.8	113.7	85.34	97.57	112.0	136.2	313.7	47.00
95th-Percentile Queue Length [veh/ln]	12.90	7.07	6.37	10.23	12.89	8.05	6.14	7.03	7.95	9.28	18.36	3.38
95th-Percentile Queue Length [ft/ln]	322.5	176.6	159.3	255.8	322.2	201.1	153.6	175.6	198.8	231.8	459.0	84.61

Movement, Approach, & Intersection Results

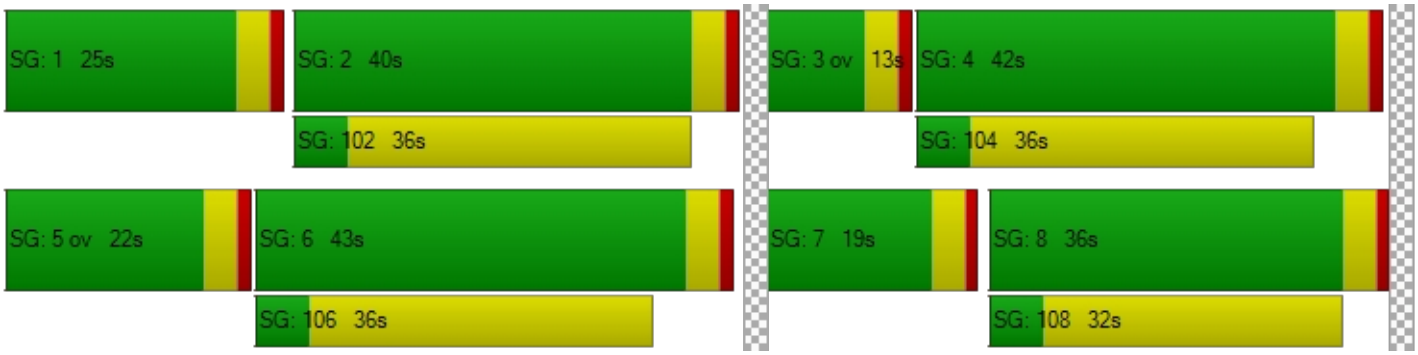
d_M, Delay for Movement [s/veh]	62.45	27.53	28.16	61.12	34.74	23.20	62.47	37.46	38.87	57.71	42.83	19.20
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	B
d_A, Approach Delay [s/veh]	36.47			36.37			43.86			44.24		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.45											
Intersection LOS	D											
Intersection V/C	0.676											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.044	3.114	3.152	3.146
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	600	533	633
d_b, Bicycle Delay [s]	27.34	29.40	32.27	28.02
l_b,int, Bicycle LOS Score for Intersection	2.095	2.336	2.034	2.532
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	863.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.928

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	21	0	102	0	0	0	0	621	36	198	1526	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	1	0	0	0	0	29	0	2	19	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	0	109	0	0	0	0	687	38	212	1637	0
Peak Hour Factor	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	0	33	0	0	0	0	209	12	64	497	0
Total Analysis Volume [veh/h]	27	0	132	0	0	0	0	835	46	258	1989	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.93	0.00	0.23	0.00	0.00	0.00	0.00	0.01	0.00	0.33	0.02	0.00
d_M, Delay for Movement [s/veh]	863.1	1288.	612.3	904.7	711.6	19.57	17.27	0.00	0.00	11.93	0.00	0.00
Movement LOS	F	F	F	F	F	C	C	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	14.72	14.72	14.72	0.00	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00
95th-Percentile Queue Length [ft/ln]	368.0	368.0	368.0	0.00	0.00	0.00	0.00	0.00	0.00	36.54	0.00	0.00
d_A, Approach Delay [s/veh]	654.94			545.32			0.00			1.37		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	32.62											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	47.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	143	515	78	132	724	162	149	428	114	235	797	78
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	0	0	2	0	0	23	0	0	15	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	152	550	83	140	769	172	158	477	121	249	860	83
Peak Hour Factor	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	150	23	38	210	47	43	130	33	68	235	23
Total Analysis Volume [veh/h]	166	602	91	153	841	188	173	522	132	272	941	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	44	0	16	43	0	18	33	0	27	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	43	43	12	42	42	14	28	28	21	35	35
g / C, Green / Cycle	0.11	0.36	0.36	0.10	0.35	0.35	0.12	0.24	0.24	0.17	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.10	0.20	0.20	0.09	0.29	0.30	0.10	0.15	0.09	0.16	0.27	0.06
s, saturation flow rate [veh/h]	1714	1800	1718	1714	1800	1688	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	186	639	610	171	624	585	198	812	362	300	1015	453
d1, Uniform Delay [s]	52.82	31.10	31.11	53.36	36.33	36.38	52.19	41.22	38.24	48.54	40.97	31.60
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.18	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.70	3.46	3.62	14.49	13.65	14.62	11.21	0.86	0.61	15.51	4.30	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.56	0.56	0.89	0.85	0.85	0.87	0.64	0.36	0.91	0.93	0.20
d, Delay for Lane Group [s/veh]	66.52	34.56	34.73	67.86	49.98	51.00	63.39	42.08	38.85	64.05	45.27	31.81
Lane Group LOS	E	C	C	E	D	D	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.64	8.82	8.46	5.25	16.56	15.74	5.73	7.04	3.32	9.26	13.96	2.02
50th-Percentile Queue Length [ft/ln]	140.9	220.5	211.4	131.1	413.9	393.4	143.3	176.0	82.99	231.4	349.1	50.50
95th-Percentile Queue Length [veh/ln]	9.53	13.69	13.23	9.00	23.23	22.24	9.66	11.39	5.98	14.25	20.09	3.64
95th-Percentile Queue Length [ft/ln]	238.3	342.3	330.6	225.0	580.8	556.1	241.5	284.7	149.3	356.2	502.3	90.89

Movement, Approach, & Intersection Results

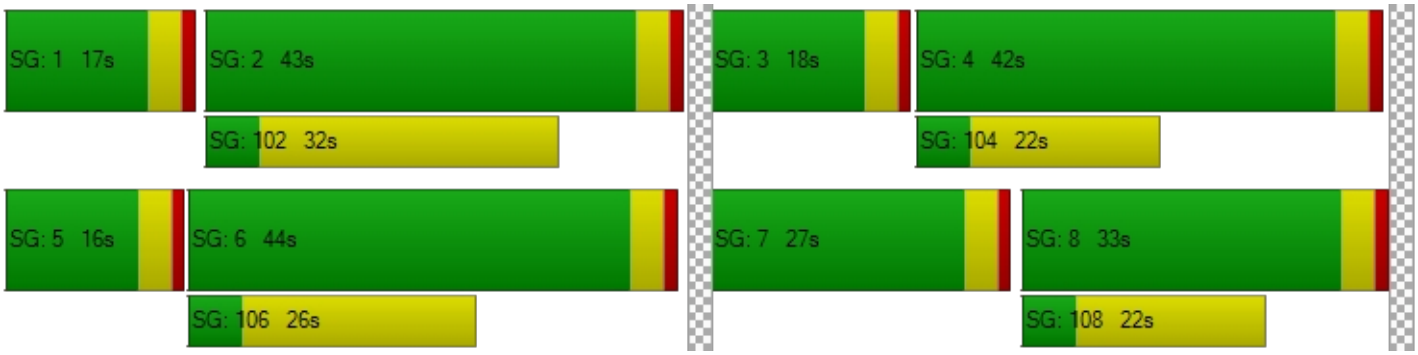
d_M, Delay for Movement [s/veh]	66.52	34.63	34.73	67.86	50.36	51.00	63.39	42.08	38.85	64.05	45.27	31.81
Movement LOS	E	C	C	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	40.80			52.72			46.02			48.25		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	47.54											
Intersection LOS	D											
Intersection V/C	0.768											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.725	2.714	2.813	2.804
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	650	483	633
d_b, Bicycle Delay [s]	26.67	27.34	34.50	28.02
l_b,int, Bicycle LOS Score for Intersection	2.268	2.535	2.242	2.635
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	41.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	79	436	79	192	814	126	211	375	100	151	611	125
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	9	2	0	8	2	3	14	0	3	9	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	471	86	204	871	136	227	412	106	163	657	133
Peak Hour Factor	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	23	131	24	57	241	38	63	114	29	45	182	37
Total Analysis Volume [veh/h]	93	522	95	226	966	151	252	457	118	181	728	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	30	0	24	42	0	30	37	0	29	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	38	38	18	48	48	20	34	34	15	29	29
g / C, Green / Cycle	0.07	0.32	0.32	0.15	0.40	0.40	0.16	0.28	0.28	0.12	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.05	0.15	0.06	0.13	0.28	0.10	0.15	0.13	0.08	0.11	0.21	0.10
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	114	1085	484	253	1362	608	281	956	427	212	817	365
d1, Uniform Delay [s]	55.26	33.05	29.87	50.23	30.34	24.17	49.14	36.00	33.81	51.51	44.19	38.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.15	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.89	1.53	0.90	10.63	3.15	0.98	12.76	0.37	0.35	9.35	3.62	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.48	0.20	0.89	0.71	0.25	0.90	0.48	0.28	0.85	0.89	0.40
d, Delay for Lane Group [s/veh]	68.15	34.58	30.78	60.86	33.49	25.15	61.90	36.38	34.16	60.86	47.81	39.22
Lane Group LOS	E	C	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.18	6.35	2.13	7.39	12.16	3.04	8.38	5.62	2.74	5.88	10.81	3.73
50th-Percentile Queue Length [ft/ln]	79.62	158.7	53.37	184.8	303.9	76.11	209.5	140.5	68.61	147.0	270.2	93.30
95th-Percentile Queue Length [veh/ln]	5.73	10.48	3.84	11.85	17.87	5.48	13.13	9.51	4.94	9.86	16.20	6.72
95th-Percentile Queue Length [ft/ln]	143.3	262.0	96.07	296.3	446.8	137.0	328.2	237.8	123.4	246.5	405.0	167.9

Movement, Approach, & Intersection Results

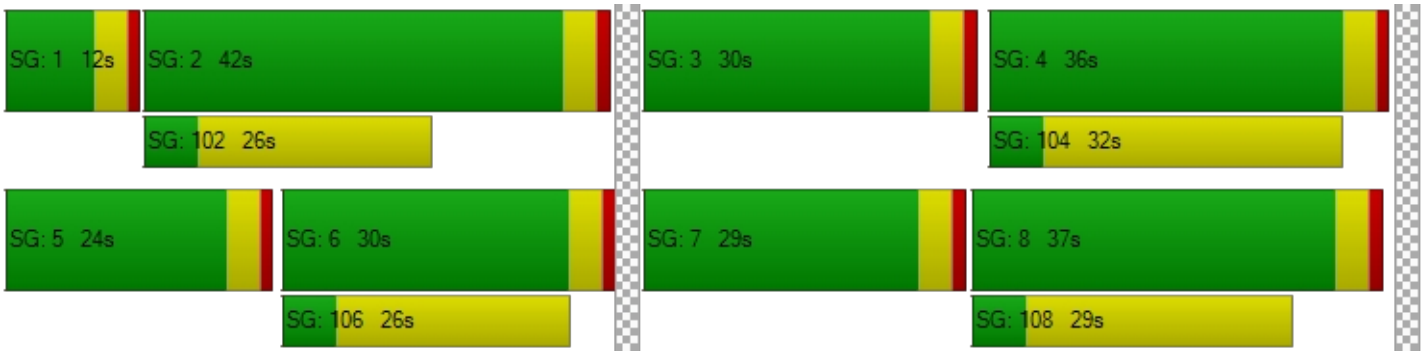
d_M, Delay for Movement [s/veh]	68.15	34.58	30.78	60.86	33.49	25.15	61.90	36.38	34.16	60.86	47.81	39.22
Movement LOS	E	C	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	38.47			37.16			43.84			48.85		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.93											
Intersection LOS	D											
Intersection V/C	0.696											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.884	3.017	2.760	2.766
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	633	550	533
d_b, Bicycle Delay [s]	36.82	28.02	31.54	32.27
l_b,int, Bicycle LOS Score for Intersection	2.145	2.668	2.242	2.431
Bicycle LOS	B	B	B	B

Sequence

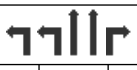
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	42.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.746

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	325	161	36	120	324	392	93	245	148	141	699	133
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	18	66	0	0	46	0	0	0	12	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	363	237	38	127	389	416	99	260	169	149	741	141
Peak Hour Factor	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	105	68	11	37	112	120	29	75	49	43	214	41
Total Analysis Volume [veh/h]	420	274	44	147	450	481	114	301	195	172	857	163
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	22	30	30	22	30	30	10	50	50	18	58	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	48	60	12	43	53	6	36	57	8	38	38
g / C, Green / Cycle	0.14	0.40	0.50	0.10	0.36	0.44	0.05	0.30	0.47	0.07	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.13	0.08	0.03	0.09	0.13	0.31	0.03	0.17	0.13	0.05	0.29	0.29
s, saturation flow rate [veh/h]	3329	3427	1530	1714	3427	1530	3329	1800	1530	3329	1800	1701
c, Capacity [veh/h]	476	1355	764	175	1216	670	166	537	726	235	574	543
d1, Uniform Delay [s]	50.44	23.84	15.48	52.89	28.75	27.63	56.07	35.47	18.98	54.65	39.25	39.29
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.20	0.21
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.57	0.34	0.14	10.10	0.87	6.49	4.91	0.92	0.20	4.35	10.52	11.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.20	0.06	0.84	0.37	0.72	0.68	0.56	0.27	0.73	0.91	0.91
d, Delay for Lane Group [s/veh]	56.01	24.17	15.63	62.98	29.62	34.12	60.98	36.39	19.18	59.00	49.77	50.60
Lane Group LOS	E	C	B	E	C	C	E	D	B	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.54	2.63	0.66	4.84	4.97	12.32	1.81	7.54	3.31	2.69	16.32	15.60
50th-Percentile Queue Length [ft/ln]	163.5	65.78	16.39	121.0	124.1	307.9	45.31	188.5	82.67	67.29	407.9	389.9
95th-Percentile Queue Length [veh/ln]	10.74	4.74	1.18	8.45	8.62	18.07	3.26	12.05	5.95	4.85	22.94	22.08
95th-Percentile Queue Length [ft/ln]	268.3	118.4	29.51	211.2	215.5	451.8	81.55	301.2	148.8	121.1	573.5	551.8

Movement, Approach, & Intersection Results

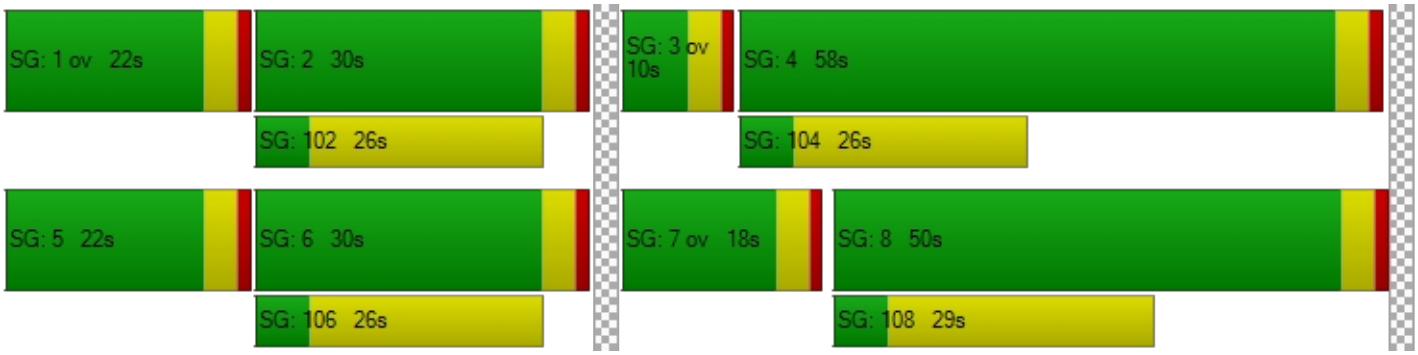
d_M, Delay for Movement [s/veh]	56.01	24.17	15.63	62.98	29.62	34.12	60.98	36.39	19.18	59.00	50.09	50.60
Movement LOS	E	C	B	E	C	C	E	D	B	E	D	D
d_A, Approach Delay [s/veh]	41.78			36.18			35.48			51.45		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.23											
Intersection LOS	D											
Intersection V/C	0.746											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.826	2.733	2.939	2.742
Crosswalk LOS	C	B	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	767	900
d_b, Bicycle Delay [s]	36.82	36.82	22.82	18.15
l_b,int, Bicycle LOS Score for Intersection	2.168	2.449	2.566	2.543
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	42.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	103	671	122	53	1008	95	70	390	93	154	601	59
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	121	20	0	91	0	0	0	0	13	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	109	832	149	56	1159	101	74	413	99	176	637	63
Peak Hour Factor	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	29	219	39	15	306	27	20	109	26	46	168	17
Total Analysis Volume [veh/h]	115	878	157	59	1223	107	78	436	104	186	672	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	39	0	9	35	0	10	52	0	20	62	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	46	46	5	42	42	6	38	38	15	47	47
g / C, Green / Cycle	0.08	0.38	0.38	0.04	0.35	0.35	0.05	0.32	0.32	0.12	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.07	0.20	0.20	0.03	0.26	0.26	0.05	0.24	0.07	0.11	0.37	0.04
s, saturation flow rate [veh/h]	1714	3427	1664	1714	3427	1727	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	129	1307	635	71	1193	601	86	574	488	213	708	602
d1, Uniform Delay [s]	55.03	28.80	28.83	57.07	34.36	34.36	56.73	36.70	29.84	51.60	35.22	23.07
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.16	0.11	0.11	0.30	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.46	1.56	3.20	20.49	4.17	8.02	27.37	3.13	0.22	10.55	16.52	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.53	0.53	0.83	0.74	0.74	0.91	0.76	0.21	0.87	0.95	0.11
d, Delay for Lane Group [s/veh]	73.49	30.36	32.03	77.55	38.53	42.38	84.11	39.84	30.06	62.15	51.74	23.15
Lane Group LOS	E	C	C	E	D	D	F	D	C	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.10	8.02	8.11	2.18	11.91	12.64	3.00	11.90	2.24	6.12	21.86	1.21
50th-Percentile Queue Length [ft/ln]	102.6	200.3	202.6	54.55	297.6	316.1	75.10	297.5	56.02	152.9	546.5	30.26
95th-Percentile Queue Length [veh/ln]	7.39	12.66	12.77	3.93	17.57	18.48	5.41	17.56	4.03	10.17	29.53	2.18
95th-Percentile Queue Length [ft/ln]	184.7	316.4	319.3	98.20	439.1	461.9	135.1	439.0	100.8	254.2	738.2	54.47

Movement, Approach, & Intersection Results

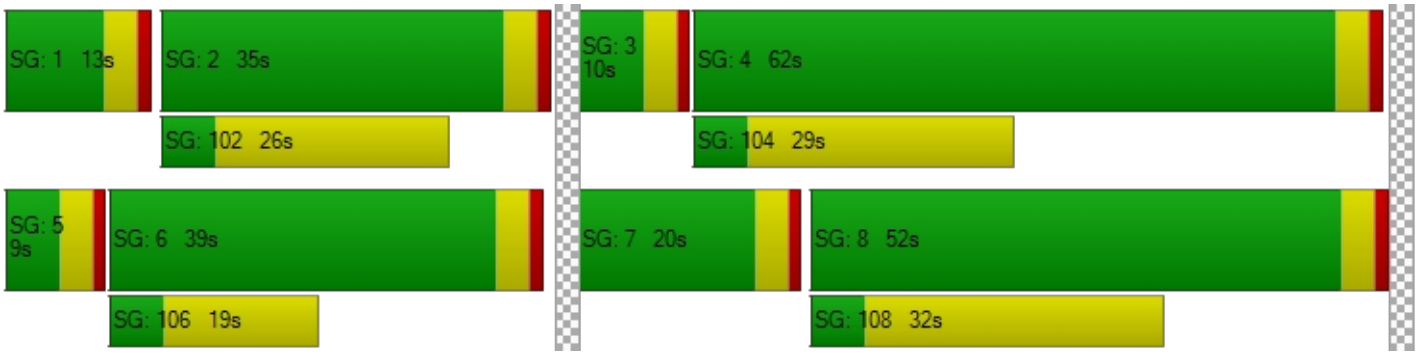
d_M, Delay for Movement [s/veh]	73.49	30.70	32.03	77.55	39.60	42.38	84.11	39.84	30.06	62.15	51.74	23.15
Movement LOS	E	C	C	E	D	D	F	D	C	E	D	C
d_A, Approach Delay [s/veh]	35.16			41.42			43.78			51.80		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.36											
Intersection LOS	D											
Intersection V/C	0.744											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.065	2.945	2.714	2.530
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	517	800	967
d_b, Bicycle Delay [s]	30.10	33.00	21.60	16.02
l_b,int, Bicycle LOS Score for Intersection	2.192	2.324	2.579	3.084
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.497

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	83	127	114	14	154	84	41	337	58	140	598	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	1	3	0	2	0	0	20	0	2	13	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	136	124	15	165	89	43	377	61	150	647	23
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	37	34	4	45	25	12	104	17	41	178	6
Total Analysis Volume [veh/h]	97	150	137	17	182	98	47	416	67	165	713	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	27	0	0	27	0	0	93	0	0	93	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	55	55	55	55	55	55	57	57	57	57	57	57
g / C, Green / Cycle	0.46	0.46	0.46	0.46	0.46	0.46	0.48	0.48	0.48	0.48	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.09	0.08	0.09	0.02	0.10	0.06	0.06	0.23	0.04	0.18	0.40	0.02
s, saturation flow rate [veh/h]	1117	1800	1530	1109	1800	1530	732	1800	1530	927	1800	1530
c, Capacity [veh/h]	498	824	700	508	824	700	127	856	728	324	856	728
d1, Uniform Delay [s]	24.27	19.24	19.37	21.68	19.62	18.85	52.86	21.46	17.26	37.29	27.33	16.78
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.13	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.87	0.49	0.62	0.12	0.62	0.42	1.78	0.43	0.05	1.23	2.55	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.18	0.20	0.03	0.22	0.14	0.37	0.49	0.09	0.51	0.83	0.03
d, Delay for Lane Group [s/veh]	25.14	19.73	20.00	21.80	20.24	19.26	54.64	21.89	17.31	38.52	29.87	16.80
Lane Group LOS	C	B	B	C	C	B	D	C	B	D	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.96	2.59	2.40	0.31	3.21	1.67	1.44	8.01	1.03	4.32	17.86	0.38
50th-Percentile Queue Length [ft/ln]	49.12	64.85	60.11	7.76	80.34	41.75	35.97	200.2	25.87	107.9	446.4	9.38
95th-Percentile Queue Length [veh/ln]	3.54	4.67	4.33	0.56	5.78	3.01	2.59	12.65	1.86	7.73	24.79	0.68
95th-Percentile Queue Length [ft/ln]	88.41	116.7	108.2	13.97	144.6	75.15	64.75	316.2	46.57	193.1	619.7	16.89

Movement, Approach, & Intersection Results

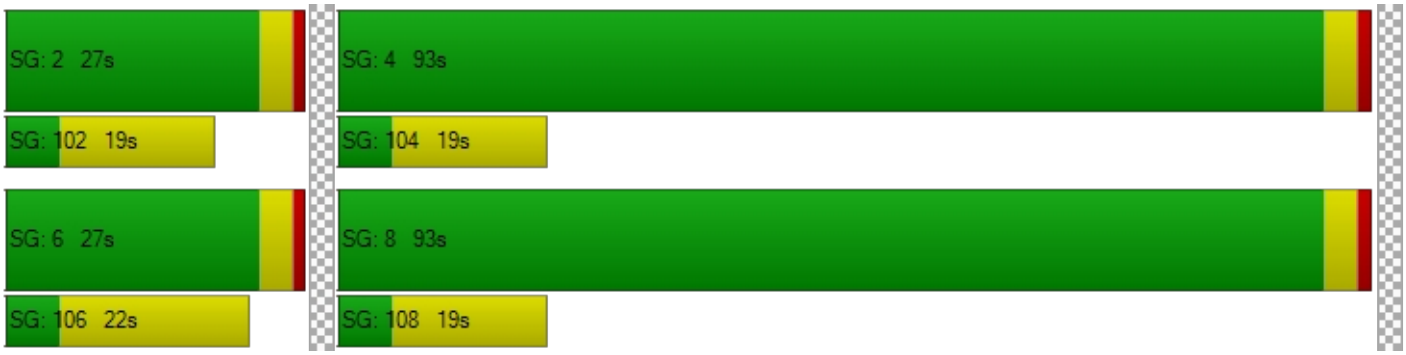
d_M, Delay for Movement [s/veh]	25.14	19.73	20.00	21.80	20.24	19.26	54.64	21.89	17.31	38.52	29.87	16.80
Movement LOS	C	B	B	C	C	B	D	C	B	D	C	B
d_A, Approach Delay [s/veh]	21.19			20.01			24.22			31.09		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.01											
Intersection LOS	C											
Intersection V/C	0.497											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.576	2.340	2.635	2.627
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	383	1483	1483
d_b, Bicycle Delay [s]	39.20	39.20	4.00	4.00
l_b,int, Bicycle LOS Score for Intersection	2.193	2.050	2.434	3.050
Bicycle LOS	B	B	B	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	44.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	208	617	205	96	791	141	73	255	105	226	437	131
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	3	0	2	0	0	11	0	2	7	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	220	658	220	102	840	149	77	281	111	242	470	139
Peak Hour Factor	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	57	170	57	26	217	39	20	73	29	63	122	36
Total Analysis Volume [veh/h]	228	681	228	106	870	154	80	291	115	251	487	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	52	0	13	43	0	10	26	0	29	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	54	54	9	46	46	6	21	21	20	35	35
g / C, Green / Cycle	0.15	0.45	0.45	0.08	0.38	0.38	0.05	0.18	0.18	0.16	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.13	0.26	0.26	0.06	0.29	0.29	0.05	0.08	0.08	0.15	0.27	0.09
s, saturation flow rate [veh/h]	1714	1800	1648	1714	1800	1707	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	253	813	744	129	682	647	86	603	269	281	522	444
d1, Uniform Delay [s]	50.28	24.49	24.51	54.72	32.66	32.68	56.80	44.53	44.06	49.12	41.47	33.39
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.15	0.31	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.19	3.05	3.34	12.29	8.17	8.63	31.16	0.60	1.07	12.38	18.39	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.58	0.58	0.82	0.77	0.77	0.93	0.48	0.43	0.89	0.93	0.32
d, Delay for Lane Group [s/veh]	61.47	27.53	27.85	67.01	40.83	41.31	87.96	45.13	45.14	61.49	59.86	33.81
Lane Group LOS	E	C	C	E	D	D	F	D	D	E	E	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.50	10.58	9.78	3.60	14.75	14.09	3.16	3.96	3.14	8.32	16.55	3.36
50th-Percentile Queue Length [ft/ln]	187.5	264.6	244.4	89.92	368.6	352.2	78.93	98.94	78.40	208.0	413.7	83.95
95th-Percentile Queue Length [veh/ln]	11.99	15.92	14.91	6.47	21.05	20.25	5.68	7.12	5.64	13.05	23.22	6.04
95th-Percentile Queue Length [ft/ln]	299.7	397.9	372.6	161.8	526.1	506.2	142.0	178.0	141.1	326.2	580.6	151.1

Movement, Approach, & Intersection Results

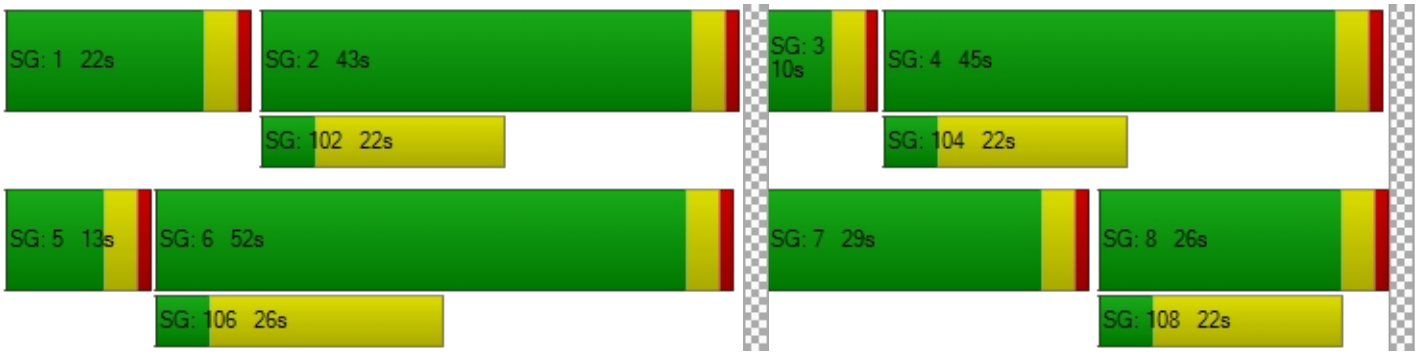
d_M, Delay for Movement [s/veh]	61.47	27.63	27.85	67.01	41.02	41.31	87.96	45.13	45.14	61.49	59.86	33.81
Movement LOS	E	C	C	E	D	D	F	D	D	E	E	C
d_A, Approach Delay [s/veh]	34.46			43.50			52.18			56.07		
Approach LOS	C			D			D			E		
d_I, Intersection Delay [s/veh]	44.88											
Intersection LOS	D											
Intersection V/C	0.742											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.778	2.712	2.579	2.713
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	650	367	683
d_b, Bicycle Delay [s]	21.60	27.34	40.02	26.00
l_b,int, Bicycle LOS Score for Intersection	2.498	2.492	1.961	3.015
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	37.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	87	511	35	58	717	69	67	402	82	69	527	55
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	11	3	0	11	0	0	3	0	2	2	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	92	553	40	61	771	73	71	429	87	75	561	58
Peak Hour Factor	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	161	12	18	225	21	21	125	25	22	163	17
Total Analysis Volume [veh/h]	107	645	47	71	899	85	83	500	101	87	654	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	46	0	10	43	0	11	52	0	12	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	64	64	6	61	61	7	27	27	8	27	27
g / C, Green / Cycle	0.08	0.53	0.53	0.05	0.50	0.50	0.06	0.22	0.22	0.06	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.19	0.04	0.28	0.28	0.05	0.17	0.17	0.05	0.20	0.20
s, saturation flow rate [veh/h]	1714	1800	1757	1714	1800	1746	1714	1800	1697	1714	1800	1741
c, Capacity [veh/h]	129	951	929	86	906	879	100	405	382	108	414	400
d1, Uniform Delay [s]	54.76	16.55	16.56	56.49	20.47	20.47	55.91	43.50	43.55	55.47	44.70	44.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.83	1.10	1.12	17.79	2.41	2.48	15.75	3.00	3.24	12.82	6.54	6.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.37	0.37	0.83	0.55	0.55	0.83	0.76	0.77	0.80	0.89	0.89
d, Delay for Lane Group [s/veh]	67.58	17.65	17.68	74.28	22.87	22.95	71.66	46.50	46.79	68.29	51.24	51.49
Lane Group LOS	E	B	B	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.65	5.85	5.73	2.56	10.03	9.75	2.92	8.90	8.46	2.98	11.26	10.93
50th-Percentile Queue Length [ft/ln]	91.19	146.3	143.1	63.89	250.8	243.8	73.09	222.3	211.4	74.59	281.5	273.3
95th-Percentile Queue Length [veh/ln]	6.57	9.82	9.65	4.60	15.23	14.87	5.26	13.79	13.23	5.37	16.77	16.36
95th-Percentile Queue Length [ft/ln]	164.1	245.5	241.2	115.0	380.6	371.8	131.5	344.6	330.7	134.2	419.1	408.9

Movement, Approach, & Intersection Results

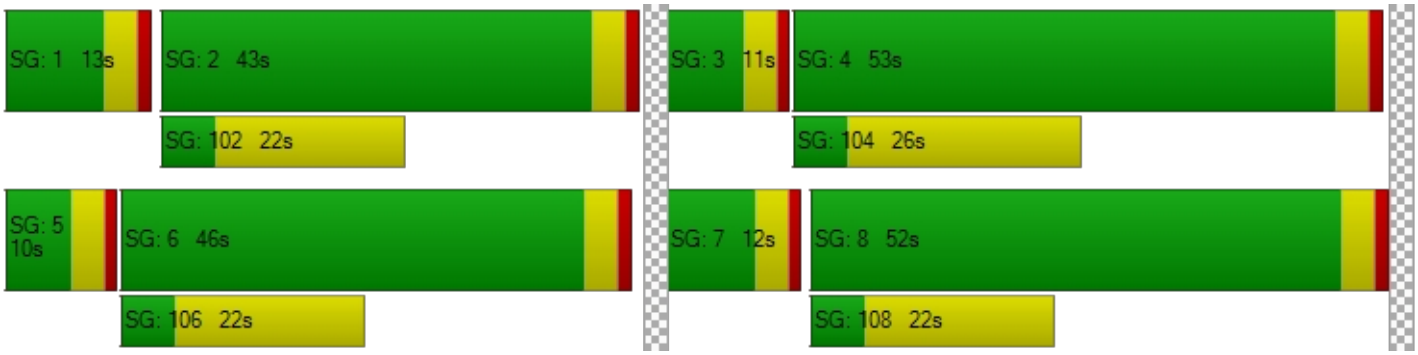
d_M, Delay for Movement [s/veh]	67.58	17.67	17.68	74.28	22.91	22.95	71.66	46.61	46.79	68.29	51.35	51.49
Movement LOS	E	B	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	24.35			26.37			49.67			53.18		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.13											
Intersection LOS	D											
Intersection V/C	0.592											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.683	2.769	2.613	2.593
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	650	800	817
d_b, Bicycle Delay [s]	25.35	27.34	21.60	21.00
l_b,int, Bicycle LOS Score for Intersection	2.219	2.430	2.124	2.227
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	418	151	65	572	0	0	0	0	234	0	137
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	84	0	0	58	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	527	160	69	664	0	0	0	0	248	0	145
Peak Hour Factor	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	154	47	20	194	0	0	0	0	72	0	42
Total Analysis Volume [veh/h]	0	615	187	81	775	0	0	0	0	289	0	169
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	59	0	27	77	0	0	34	0	0	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	73	73	7	80	80	28	28	28	28
g / C, Green / Cycle	0.00	0.61	0.61	0.06	0.67	0.67	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.00	0.34	0.12	0.05	0.43	0.00	0.00	0.00	0.22	0.11
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1530	1693	1530	1332	1530
c, Capacity [veh/h]	1	1092	928	104	1201	1021	424	356	370	356
d1, Uniform Delay [s]	0.00	14.10	10.57	55.57	11.68	0.00	0.00	0.00	46.23	39.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.35	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	2.10	0.49	11.79	2.68	0.00	0.00	0.00	11.06	0.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.56	0.20	0.78	0.65	0.00	0.00	0.00	0.78	0.47
d, Delay for Lane Group [s/veh]	0.00	16.20	11.06	67.35	14.36	0.00	0.00	0.00	57.29	40.70
Lane Group LOS	A	B	B	E	B	A	A	A	E	D
Critical Lane Group	No	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	10.20	2.31	2.76	12.10	0.00	0.00	0.00	9.54	4.40
50th-Percentile Queue Length [ft/ln]	0.00	254.9	57.66	68.96	302.4	0.00	0.00	0.00	238.59	110.12
95th-Percentile Queue Length [veh/ln]	0.00	15.44	4.15	4.97	17.80	0.00	0.00	0.00	14.61	7.85
95th-Percentile Queue Length [ft/ln]	0.00	385.8	103.7	124.1	445.0	0.00	0.00	0.00	365.25	196.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	16.20	11.06	67.35	14.36	0.00	0.00	0.00	0.00	57.29	57.29	40.70
Movement LOS	A	B	B	E	B	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	15.00			19.38			0.00			51.17		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	24.60											
Intersection LOS	C											
Intersection V/C	0.647											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.090	0.000	1.955	2.191
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	1217	500	500
d_b, Bicycle Delay [s]	17.60	9.20	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	2.883	2.972	1.560	2.315
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	37.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.771

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	186	806	132	35	1068	89	30	30	200	150	136	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	140	0	0	104	0	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	994	140	37	1236	94	32	32	212	160	144	72
Peak Hour Factor	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	54	271	38	10	337	26	9	9	58	44	39	20
Total Analysis Volume [veh/h]	215	1084	153	40	1348	103	35	35	231	174	157	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	67	0	9	55	0	10	26	0	18	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	66	66	4	53	53	4	20	20	14	30
g / C, Green / Cycle	0.14	0.55	0.55	0.03	0.44	0.44	0.03	0.17	0.17	0.12	0.25
(v / s)_i Volume / Saturation Flow Rate	0.13	0.35	0.35	0.02	0.39	0.07	0.02	0.02	0.15	0.10	0.14
s, saturation flow rate [veh/h]	1714	1800	1723	1714	3427	1530	1714	1800	1530	1714	1700
c, Capacity [veh/h]	240	994	952	54	1520	679	51	300	255	199	430
d1, Uniform Delay [s]	50.74	18.48	18.59	57.64	30.61	19.91	57.63	42.48	49.06	52.16	38.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.16	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.22	3.06	3.28	18.14	8.00	0.47	14.58	0.17	15.72	11.27	1.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.63	0.64	0.74	0.89	0.15	0.68	0.12	0.91	0.87	0.55
d, Delay for Lane Group [s/veh]	61.95	21.54	21.87	75.78	38.61	20.39	72.21	42.65	64.78	63.43	39.98
Lane Group LOS	E	C	C	E	D	C	E	D	E	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	7.09	12.46	12.16	1.48	19.08	1.82	1.26	0.90	7.89	5.77	6.16
50th-Percentile Queue Length [ft/ln]	177.1	311.4	304.1	36.89	476.9	45.44	31.54	22.57	197.2	144.25	154.03
95th-Percentile Queue Length [veh/ln]	11.45	18.24	17.88	2.66	26.24	3.27	2.27	1.63	12.50	9.71	10.23
95th-Percentile Queue Length [ft/ln]	286.3	456.1	447.1	66.41	655.9	81.79	56.77	40.63	312.3	242.74	255.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.95	21.68	21.87	75.78	38.61	20.39	72.21	42.65	64.78	63.43	39.98	39.98
Movement LOS	E	C	C	E	D	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	27.66			38.35			63.07			49.93		
Approach LOS	C			D			E			D		
d_I, Intersection Delay [s/veh]	37.44											
Intersection LOS	D											
Intersection V/C	0.771											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.989	2.984	2.335	2.163
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	850	367	500
d_b, Bicycle Delay [s]	13.54	19.84	40.02	33.75
l_b,int, Bicycle LOS Score for Intersection	2.758	2.790	2.056	2.236
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	36.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.369

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	134	290	0	0	261	111	57	0	66	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.060	1.000	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	0	3	1	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	311	0	0	280	119	60	0	70	0	0	0
Peak Hour Factor	0.913	0.913	1.000	1.000	0.913	0.913	0.913	1.000	0.913	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	39	85	0	0	77	33	16	0	19	0	0	0
Total Analysis Volume [veh/h]	156	341	0	0	307	130	66	0	77	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.11	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.68	0.00	0.00	0.00	0.00	0.00	36.50	0.00	10.98	0.00	0.00	0.00
Movement LOS	A	A			A	A	E		B			
95th-Percentile Queue Length [veh/ln]	0.48	0.48	0.00	0.00	0.00	0.00	1.58	0.00	0.38	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	11.92	11.92	0.00	0.00	0.00	0.00	39.50	0.00	9.55	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	2.73			0.00			22.76			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	4.28											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	1	551	201	49	753	1	0	0	2	174	0	40
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	73	58	0	0	0	0	0	9	0	84
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	584	286	110	798	1	0	0	2	193	0	126
Peak Hour Factor	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	154	76	29	211	0	0	0	1	51	0	33
Total Analysis Volume [veh/h]	1	617	302	116	844	1	0	0	2	204	0	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	9	0	48	31	0	0	9	0	0	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	77	77	10	86	86	0	0	17	17
g / C, Green / Cycle	0.00	0.64	0.64	0.08	0.72	0.72	0.00	0.00	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.00	0.27	0.27	0.07	0.23	0.23	0.00	0.00	0.12	0.09
s, saturation flow rate [veh/h]	1714	1800	1603	1714	1800	1799	1800	1392	1687	1530
c, Capacity [veh/h]	4	1148	1022	144	1296	1295	5	4	240	217
d1, Uniform Delay [s]	59.79	10.79	10.79	53.99	6.16	6.16	59.66	59.75	50.24	48.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	38.17	1.15	1.29	10.00	0.67	0.67	0.00	75.25	8.27	2.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.42	0.42	0.80	0.33	0.33	0.00	0.51	0.85	0.61
d, Delay for Lane Group [s/veh]	97.95	11.93	12.08	63.99	6.83	6.83	59.66	135.00	58.52	51.15
Lane Group LOS	F	B	B	E	A	A	E	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.07	6.47	5.81	3.84	3.80	3.80	0.00	0.14	6.52	3.91
50th-Percentile Queue Length [ft/ln]	1.70	161.8	145.1	96.03	94.91	94.88	0.00	3.59	162.99	97.86
95th-Percentile Queue Length [veh/ln]	0.12	10.64	9.76	6.91	6.83	6.83	0.00	0.26	10.71	7.05
95th-Percentile Queue Length [ft/ln]	3.07	266.1	243.9	172.8	170.8	170.7	0.00	6.45	267.68	176.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	97.95	11.96	12.08	63.99	6.83	6.83	59.66	59.66	135.0	58.52	58.52	51.15
Movement LOS	F	B	B	E	A	A	E	E	F	E	E	D
d_A, Approach Delay [s/veh]	12.09			13.73			135.00			55.61		
Approach LOS	B			B			F			E		
d_I, Intersection Delay [s/veh]	19.52											
Intersection LOS	B											
Intersection V/C	0.460											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	450	83	833
d_b, Bicycle Delay [s]	55.10	36.04	55.10	20.42
l_b,int, Bicycle LOS Score for Intersection	2.319	2.352	1.561	2.116
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	24.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	3	813	117	130	1237	0	0	0	0	145	0	253
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	813	117	138	1237	0	0	0	0	145	0	268
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	223	32	38	339	0	0	0	0	40	0	73
Total Analysis Volume [veh/h]	3	890	128	151	1355	0	0	0	0	159	0	294
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	42	0	25	58	0	10	30	0	23	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	66	66	13	78	78	0	12	13	25
g / C, Green / Cycle	0.00	0.55	0.55	0.10	0.65	0.65	0.00	0.10	0.11	0.21
(v / s)_i Volume / Saturation Flow Rate	0.00	0.26	0.08	0.09	0.40	0.00	0.00	0.00	0.09	0.19
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1714	1530
c, Capacity [veh/h]	7	1888	843	179	2231	996	1	185	186	323
d1, Uniform Delay [s]	59.59	16.34	13.20	52.78	12.08	0.00	0.00	0.00	52.53	46.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.02	0.85	0.38	10.26	1.24	0.00	0.00	0.00	10.44	9.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.47	0.15	0.84	0.61	0.00	0.00	0.00	0.85	0.91
d, Delay for Lane Group [s/veh]	92.62	17.19	13.58	63.03	13.32	0.00	0.00	0.00	62.97	56.13
Lane Group LOS	F	B	B	E	B	A	A	A	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	7.48	1.78	4.98	10.17	0.00	0.00	0.00	5.24	9.41
50th-Percentile Queue Length [ft/ln]	3.95	186.9	44.39	124.4	254.2	0.00	0.00	0.00	131.05	235.24
95th-Percentile Queue Length [veh/ln]	0.28	11.96	3.20	8.63	15.40	0.00	0.00	0.00	9.00	14.44
95th-Percentile Queue Length [ft/ln]	7.11	299.0	79.89	215.8	384.9	0.00	0.00	0.00	224.92	361.00

Movement, Approach, & Intersection Results

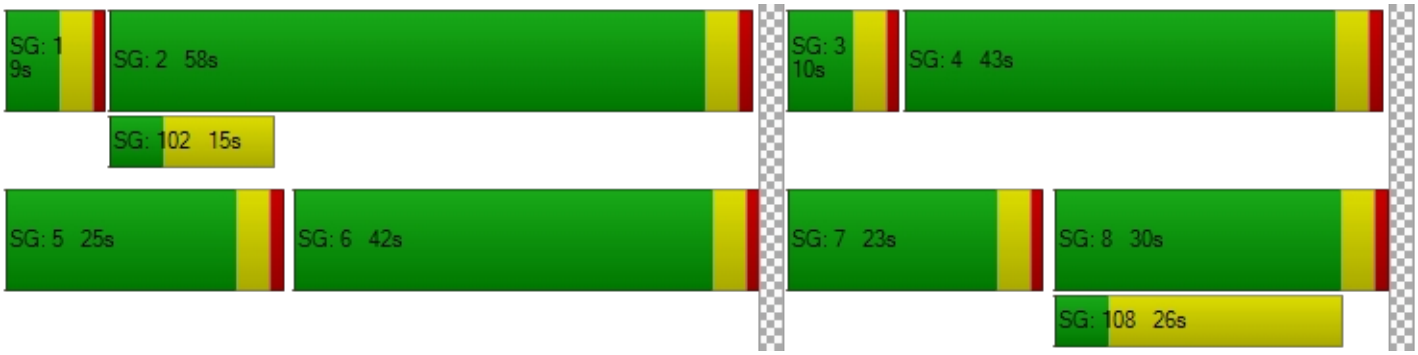
d_M, Delay for Movement [s/veh]	92.62	17.19	13.58	63.03	13.32	0.00	0.00	0.00	0.00	62.97	56.13	56.13
Movement LOS	F	B	B	E	B	A	A	A	A	E	E	E
d_A, Approach Delay [s/veh]	16.96			18.31			0.00			58.53		
Approach LOS	B			B			A			E		
d_I, Intersection Delay [s/veh]	23.96											
Intersection LOS	C											
Intersection V/C	0.589											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.962	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	900	433	650
d_b, Bicycle Delay [s]	28.02	18.15	36.82	27.34
l_b,int, Bicycle LOS Score for Intersection	2.402	2.802	1.560	2.307
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	29.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.836

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	51	162	58	56	145	76	103	129	56	67	230	153
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	0	0	3	0	0	11	0	0	7	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	176	61	59	157	81	109	148	59	71	251	162
Peak Hour Factor	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	50	17	17	44	23	31	42	17	20	71	46
Total Analysis Volume [veh/h]	61	199	69	67	177	91	123	167	67	80	283	183
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	414	458	436	415	465	434	483
Degree of Utilization, x	0.63	0.15	0.77	0.70	0.14	0.84	0.38

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.17	0.53	6.54	5.24	0.50	8.03	1.75
95th-Percentile Queue Length [ft]	104.18	13.16	163.49	131.00	12.51	200.74	43.69
Approach Delay [s/veh]	22.26		33.70	26.02		32.14	
Approach LOS	C		D	D		D	
Intersection Delay [s/veh]	29.00						
Intersection LOS	D						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	29.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.543

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	51	676	27	61	902	92	147	156	48	43	206	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	7	1	0	4	0	0	11	0	1	7	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	724	30	65	960	98	156	176	51	47	225	109
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	189	8	17	250	26	41	46	13	12	59	28
Total Analysis Volume [veh/h]	56	754	31	68	1000	102	163	183	53	49	234	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	51	0	11	52	0	32	36	0	22	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	69	69	6	71	71	13	24	24	4	15	15
g / C, Green / Cycle	0.04	0.58	0.58	0.05	0.59	0.59	0.11	0.20	0.20	0.04	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.22	0.22	0.04	0.31	0.31	0.10	0.05	0.03	0.03	0.10	0.10
s, saturation flow rate [veh/h]	1714	1800	1775	1714	1800	1742	1714	3427	1530	1714	1800	1607
c, Capacity [veh/h]	71	1041	1026	86	1056	1022	193	686	306	65	226	201
d1, Uniform Delay [s]	56.98	13.68	13.68	56.36	14.86	14.87	52.18	40.55	39.76	57.15	51.02	51.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.02	1.05	1.07	14.69	1.90	1.97	9.49	0.21	0.27	15.73	6.44	8.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.38	0.38	0.79	0.53	0.53	0.84	0.27	0.17	0.75	0.80	0.83
d, Delay for Lane Group [s/veh]	73.99	14.73	14.75	71.04	16.76	16.84	61.67	40.76	40.03	72.88	57.45	59.79
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.02	5.95	5.87	2.39	9.38	9.11	5.32	2.32	1.33	1.76	5.68	5.39
50th-Percentile Queue Length [ft/ln]	50.49	148.7	146.8	59.72	234.4	227.7	133.0	57.95	33.20	43.96	141.9	134.7
95th-Percentile Queue Length [veh/ln]	3.64	9.95	9.85	4.30	14.40	14.06	9.10	4.17	2.39	3.17	9.58	9.20
95th-Percentile Queue Length [ft/ln]	90.88	248.7	246.2	107.5	359.9	351.5	227.5	104.3	59.76	79.13	239.5	229.9

Movement, Approach, & Intersection Results

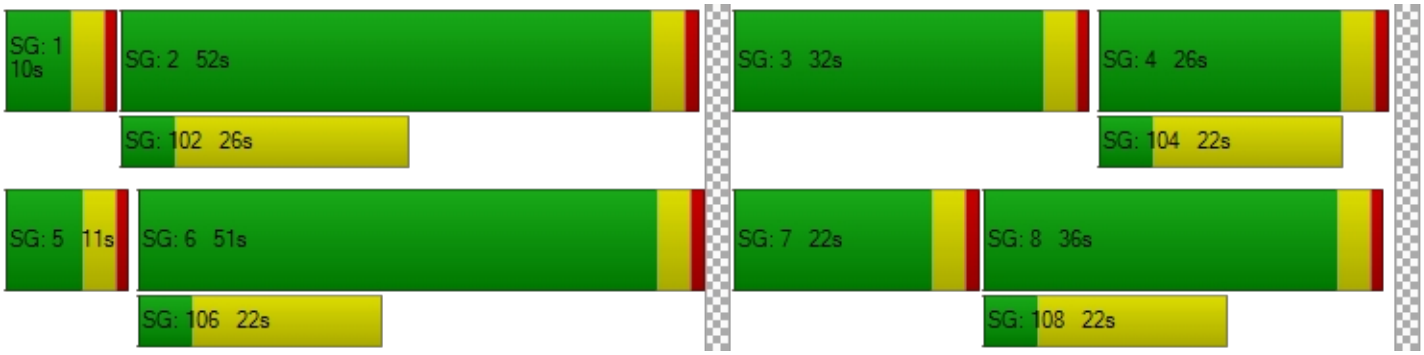
d_M, Delay for Movement [s/veh]	73.99	14.74	14.75	71.04	16.80	16.84	61.67	40.76	40.03	72.88	57.99	59.79
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	18.68			19.95			49.21			60.34		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	29.44											
Intersection LOS	C											
Intersection V/C	0.543											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.694	2.826	2.597	2.578
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	800	533	367
d_b, Bicycle Delay [s]	22.20	21.60	32.27	40.02
l_b,int, Bicycle LOS Score for Intersection	2.253	2.525	1.889	1.887
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	39.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	57	568	91	33	877	42	50	340	93	134	370	43
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	1	5	0	0	5	12	15	6	2	0	4	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	607	96	35	935	57	68	366	101	142	396	46
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	167	26	10	258	16	19	101	28	39	109	13
Total Analysis Volume [veh/h]	67	669	106	39	1031	63	75	404	111	157	437	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	63	0	10	63	0	11	30	0	17	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	42	42	4	40	40	7	45	45	13	51	51
g / C, Green / Cycle	0.05	0.35	0.35	0.03	0.34	0.34	0.06	0.38	0.38	0.11	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.22	0.02	0.31	0.31	0.04	0.15	0.15	0.09	0.14	0.14
s, saturation flow rate [veh/h]	1714	1800	1715	1714	1800	1764	1714	1800	1669	1714	1800	1735
c, Capacity [veh/h]	85	637	607	54	604	592	95	675	626	182	767	740
d1, Uniform Delay [s]	56.42	32.15	32.16	57.58	38.19	38.20	56.01	27.49	27.54	52.75	22.90	22.92
k, delay calibration	0.11	0.11	0.11	0.11	0.19	0.19	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.96	1.00	1.06	16.45	9.59	9.80	13.74	1.72	1.89	11.22	1.12	1.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.62	0.62	0.72	0.91	0.91	0.79	0.39	0.40	0.86	0.32	0.32
d, Delay for Lane Group [s/veh]	71.38	33.16	33.22	74.04	47.78	48.01	69.75	29.21	29.43	63.97	24.02	24.08
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.36	9.67	9.24	1.42	16.98	16.68	2.61	5.91	5.58	5.22	4.90	4.75
50th-Percentile Queue Length [ft/ln]	59.01	241.8	230.9	35.53	424.4	417.0	65.13	147.7	139.4	130.4	122.5	118.8
95th-Percentile Queue Length [veh/ln]	4.25	14.78	14.22	2.56	23.73	23.38	4.69	9.90	9.45	8.96	8.53	8.33
95th-Percentile Queue Length [ft/ln]	106.2	369.3	355.5	63.95	593.3	584.5	117.2	247.4	236.2	224.1	213.2	208.2

Movement, Approach, & Intersection Results

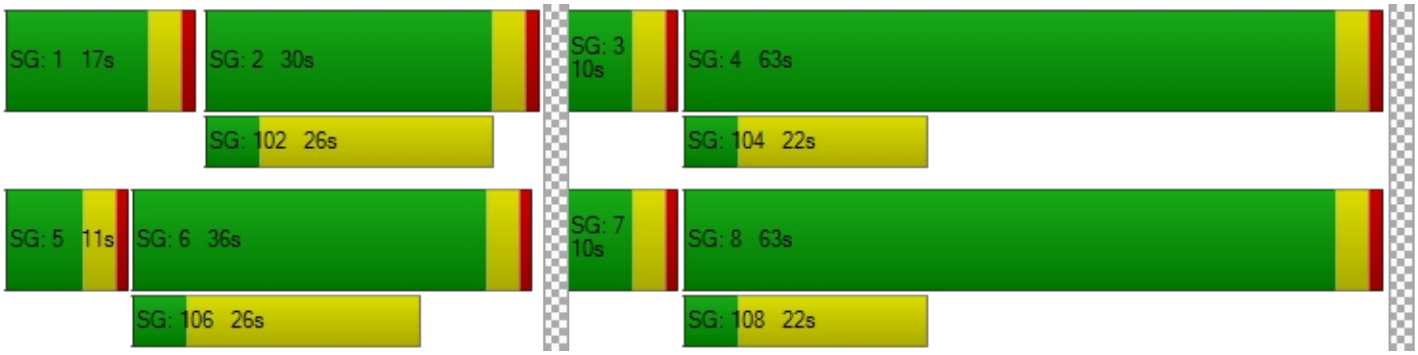
d_M, Delay for Movement [s/veh]	71.38	33.18	33.22	74.04	47.89	48.01	69.75	29.28	29.43	63.97	24.05	24.08
Movement LOS	E	C	C	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	36.22			48.79			34.45			33.77		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	39.84											
Intersection LOS	D											
Intersection V/C	0.587											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.816	2.781	2.541	2.548
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	983	433	533
d_b, Bicycle Delay [s]	15.50	15.50	36.82	32.27
l_b,int, Bicycle LOS Score for Intersection	2.254	2.494	2.046	2.092
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.463

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	20	645	75	23	871	122	103	90	11	74	78	31
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	2	0	0	3	2	6	12	0	5	5	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	686	80	24	926	131	115	107	12	83	88	33
Peak Hour Factor	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	6	185	22	6	250	35	31	29	3	22	24	9
Total Analysis Volume [veh/h]	23	742	86	26	1001	142	124	116	13	90	95	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	49	0	9	49	0	36	26	0	36	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	82	82	3	82	82	11	11	11	8	8	8
g / C, Green / Cycle	0.02	0.68	0.68	0.02	0.69	0.69	0.09	0.09	0.09	0.07	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.01	0.23	0.23	0.02	0.32	0.32	0.07	0.06	0.01	0.05	0.05	0.02
s, saturation flow rate [veh/h]	1714	1800	1735	1714	1800	1723	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	39	1229	1185	42	1232	1179	153	166	141	115	127	108
d1, Uniform Delay [s]	58.11	7.88	7.88	58.00	8.83	8.84	53.67	52.85	49.87	55.08	54.73	53.09
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.91	0.76	0.79	14.32	1.31	1.37	9.86	5.23	0.28	10.74	8.48	1.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.34	0.34	0.62	0.47	0.47	0.81	0.70	0.09	0.78	0.75	0.33
d, Delay for Lane Group [s/veh]	72.03	8.65	8.68	72.32	10.14	10.21	63.53	58.08	50.15	65.82	63.21	54.88
Lane Group LOS	E	A	A	E	B	B	E	E	D	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.84	4.48	4.33	0.95	7.01	6.75	4.09	3.64	0.37	3.03	3.12	1.09
50th-Percentile Queue Length [ft/ln]	21.03	111.9	108.2	23.70	175.2	168.6	102.3	90.91	9.25	75.63	77.96	27.25
95th-Percentile Queue Length [veh/ln]	1.51	7.95	7.74	1.71	11.35	11.01	7.37	6.55	0.67	5.45	5.61	1.96
95th-Percentile Queue Length [ft/ln]	37.86	198.6	193.5	42.67	283.8	275.1	184.2	163.6	16.65	136.1	140.3	49.05

Movement, Approach, & Intersection Results

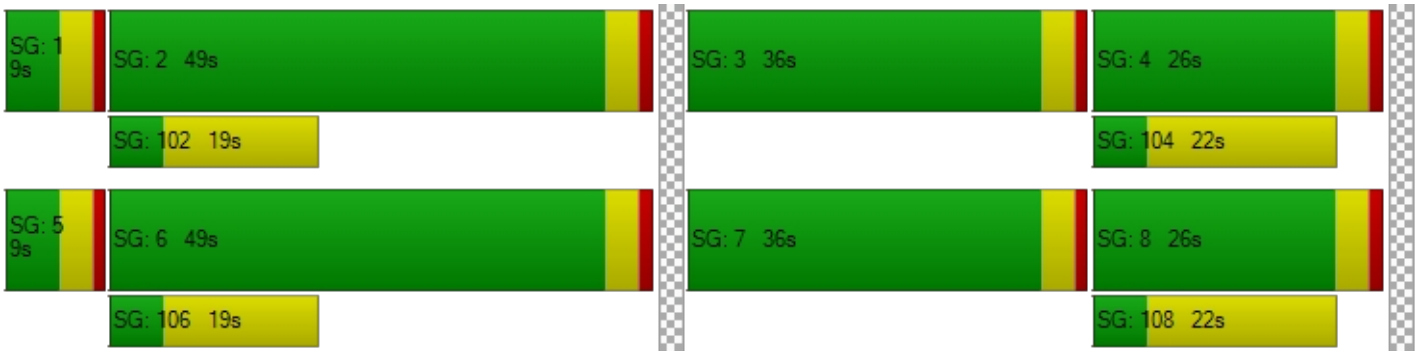
d_M, Delay for Movement [s/veh]	72.03	8.66	8.68	72.32	10.17	10.21	63.53	58.08	50.15	65.82	63.21	54.88
Movement LOS	E	A	A	E	B	B	E	E	D	E	E	D
d_A, Approach Delay [s/veh]	10.37			11.55			60.34			62.92		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	20.65											
Intersection LOS	C											
Intersection V/C	0.463											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.696	2.719	2.271	2.256
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	750	367	367
d_b, Bicycle Delay [s]	23.44	23.44	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	2.262	2.524	1.977	1.924
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	35.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.640

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	10	838	104	156	1207	9	0	1	0	214	0	109
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.060	1.060	1.060	1.000
In-Process Volume [veh/h]	117	0	0	0	0	0	0	123	96	0	97	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	838	110	156	1207	9	0	124	96	227	97	109
Peak Hour Factor	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	35	229	30	43	330	2	0	34	26	62	27	30
Total Analysis Volume [veh/h]	140	916	120	170	1319	10	0	136	105	248	106	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	33	0	25	43	0	18	33	0	29	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	51	51	14	54	54	0	19	19	39
g / C, Green / Cycle	0.09	0.43	0.43	0.12	0.45	0.45	0.00	0.16	0.16	0.32
(v / s)_i Volume / Saturation Flow Rate	0.08	0.20	0.20	0.10	0.27	0.01	0.00	0.14	0.14	0.14
s, saturation flow rate [veh/h]	1714	3427	1695	1714	4903	1530	1714	1671	1714	1646
c, Capacity [veh/h]	157	1467	726	198	2215	691	2	271	276	531
d1, Uniform Delay [s]	53.91	24.61	24.62	52.10	24.67	18.15	0.00	49.22	49.37	31.92
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.14	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.39	1.09	2.21	10.25	1.19	0.04	0.00	9.67	12.70	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.47	0.47	0.86	0.60	0.01	0.00	0.89	0.90	0.42
d, Delay for Lane Group [s/veh]	69.29	25.70	26.83	62.35	25.86	18.19	0.00	58.89	62.07	32.46
Lane Group LOS	E	C	C	E	C	B	A	E	E	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.85	7.24	7.41	5.58	9.50	0.16	0.00	7.78	8.25	5.21
50th-Percentile Queue Length [ft/ln]	121.2	181.0	185.2	139.6	237.4	4.05	0.00	194.54	206.16	130.31
95th-Percentile Queue Length [veh/ln]	8.46	11.66	11.87	9.46	14.55	0.29	0.00	12.36	12.96	8.96
95th-Percentile Queue Length [ft/ln]	211.4	291.4	296.8	236.4	363.7	7.30	0.00	308.91	323.90	223.92

Movement, Approach, & Intersection Results

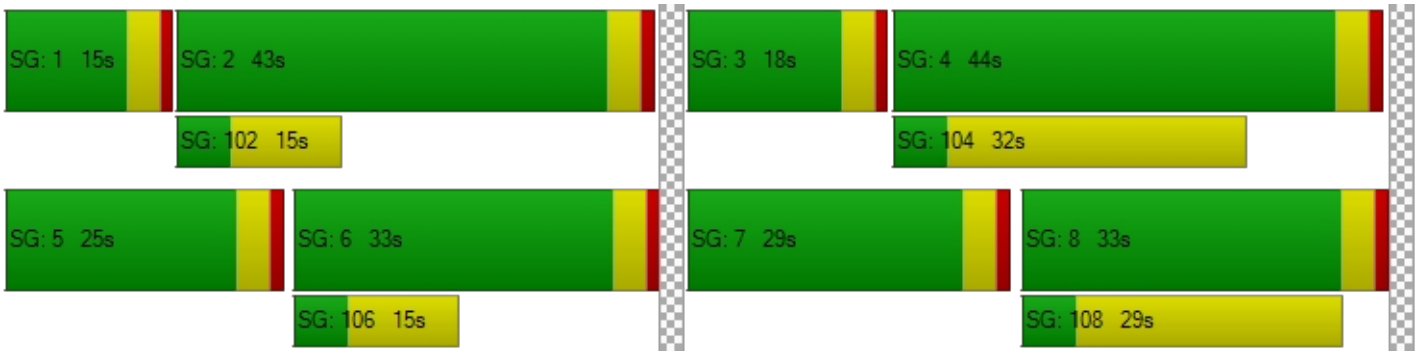
d_M, Delay for Movement [s/veh]	69.29	25.98	26.83	62.35	25.86	18.19	0.00	58.89	58.89	62.07	32.46	32.46
Movement LOS	E	C	C	E	C	B	A	E	E	E	C	C
d_A, Approach Delay [s/veh]	31.22			29.94			58.89			47.98		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	34.96											
Intersection LOS	C											
Intersection V/C	0.640											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.006	3.229	2.117	2.248
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	650	483	667
d_b, Bicycle Delay [s]	34.50	27.34	34.50	26.67
l_b,int, Bicycle LOS Score for Intersection	2.206	2.384	1.957	2.340
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	67.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.064

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	17	193	42	6	194	82	55	115	18	31	173	39
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	4	0	0	0	0	3	4	129	8	0	102	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	205	45	6	206	90	62	251	27	33	285	41
Peak Hour Factor	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	61	13	2	61	27	18	75	8	10	85	12
Total Analysis Volume [veh/h]	26	244	54	7	245	107	74	299	32	39	339	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	392	403	406	427
Degree of Utilization, x	0.83	0.89	1.00	1.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.58	9.18	12.23	14.37
95th-Percentile Queue Length [ft]	189.47	229.53	305.81	359.13
Approach Delay [s/veh]	43.57	52.12	74.07	93.53
Approach LOS	E	F	F	F
Intersection Delay [s/veh]	67.83			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	25.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.799

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	4	43	60	69	61	1	41	86	14	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	46	64	73	65	1	43	91	15	10
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	12	17	19	17	0	11	24	4	3
Total Analysis Volume [veh/h]	4	48	67	77	68	1	45	96	16	11
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	470	439
Degree of Utilization, x	0.56	0.39

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.40	1.79
95th-Percentile Queue Length [ft]	85.08	44.67
Approach Delay [s/veh]	20.07	16.27
Approach LOS	C	C
Intersection Delay [s/veh]	25.11	
Intersection LOS	D	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	46	6	95	57	0	27	55	146	14	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	17	105	0	0	0	0	89	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	23	206	60	0	29	58	244	15	4
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	6	54	16	0	8	15	64	4	1
Total Analysis Volume [veh/h]	51	24	216	63	0	30	61	256	16	4
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	462	460
Degree of Utilization, x	0.77	0.80

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.62	7.30
95th-Percentile Queue Length [ft]	165.54	182.43
Approach Delay [s/veh]	32.16	35.31
Approach LOS	D	E
Intersection Delay [s/veh]	25.11	
Intersection LOS	D	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	2	13	66	23	1	13	45	123	26	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	7	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	14	70	24	1	14	48	130	35	6
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	18	6	0	4	13	34	9	2
Total Analysis Volume [veh/h]	2	15	74	25	1	15	50	137	37	6
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	444	439	491
Degree of Utilization, x	0.26	0.46	0.09

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.05	2.37	0.29
95th-Percentile Queue Length [ft]	26.18	59.21	7.16
Approach Delay [s/veh]	13.99	16.48	
Approach LOS	B	C	
Intersection Delay [s/veh]	25.11		
Intersection LOS	D		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	33.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.563

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	591	196	103	849	50	80	110	135	123	108	67
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	39	0	0	0	0	8	2	60	42	0	42	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	626	208	109	900	61	87	177	185	130	156	71
Peak Hour Factor	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	40	158	52	27	227	15	22	45	47	33	39	18
Total Analysis Volume [veh/h]	160	631	210	110	907	61	88	178	186	131	157	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	25	47	0	20	42	0	27	38	0	15	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	67	67	9	63	63	8	17	17	11	20	20
g / C, Green / Cycle	0.11	0.55	0.55	0.08	0.52	0.52	0.07	0.14	0.14	0.09	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.09	0.24	0.24	0.06	0.27	0.27	0.05	0.05	0.12	0.08	0.09	0.05
s, saturation flow rate [veh/h]	1714	1800	1648	1714	1800	1760	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	189	997	913	136	941	921	113	490	219	156	302	256
d1, Uniform Delay [s]	52.42	15.79	15.79	54.37	18.74	18.75	55.16	46.49	50.18	53.71	45.56	43.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.07	1.41	1.54	10.88	2.05	2.10	10.75	0.45	8.95	11.48	1.39	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.44	0.44	0.81	0.52	0.52	0.78	0.36	0.85	0.84	0.52	0.28
d, Delay for Lane Group [s/veh]	62.50	17.21	17.34	65.25	20.79	20.84	65.91	46.95	59.13	65.19	46.95	44.23
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.26	7.34	6.75	3.68	9.26	9.07	2.96	2.44	5.99	4.39	4.39	1.92
50th-Percentile Queue Length [ft/ln]	131.4	183.3	168.7	92.01	231.5	226.8	74.02	61.09	149.6	109.6	109.8	48.01
95th-Percentile Queue Length [veh/ln]	9.02	11.78	11.01	6.62	14.25	14.01	5.33	4.40	10.00	7.82	7.83	3.46
95th-Percentile Queue Length [ft/ln]	225.3	294.4	275.2	165.6	356.3	350.3	133.2	109.9	249.9	195.5	195.7	86.41

Movement, Approach, & Intersection Results

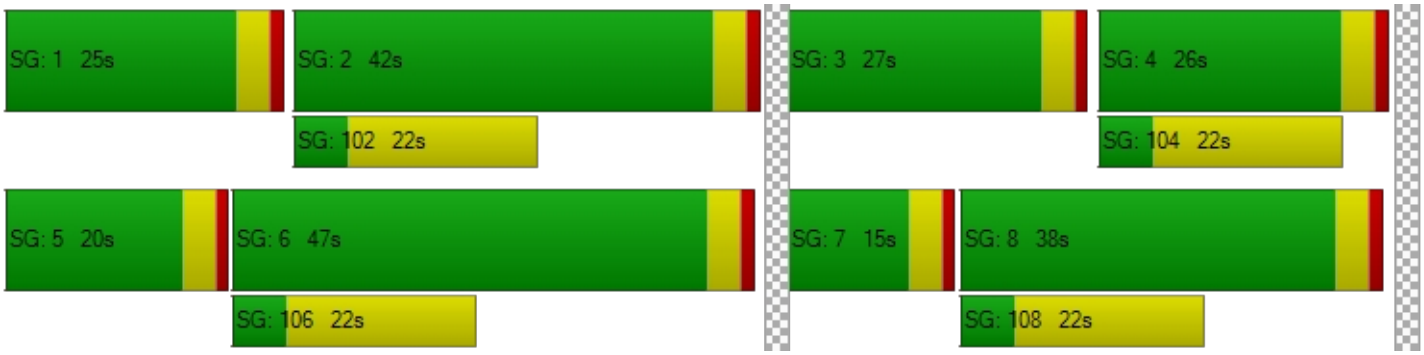
d_M, Delay for Movement [s/veh]	62.50	17.25	17.34	65.25	20.82	20.84	65.91	46.95	59.13	65.19	46.95	44.23
Movement LOS	E	B	B	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	24.50			25.35			55.65			53.04		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	33.24											
Intersection LOS	C											
Intersection V/C	0.563											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.749	2.680	2.477	2.608
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	633	567	367
d_b, Bicycle Delay [s]	24.70	28.02	30.82	40.02
l_b,int, Bicycle LOS Score for Intersection	2.385	2.449	1.933	2.154
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	28.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.562

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	31	725	49	22	1043	36	57	200	93	134	203	50
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	20	0	0	0	0	8	9	6	32	0	4	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	769	52	23	1106	46	69	218	131	142	219	53
Peak Hour Factor	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	199	13	6	287	12	18	57	34	37	57	14
Total Analysis Volume [veh/h]	55	798	54	24	1147	48	72	226	136	147	227	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	56	0	9	54	0	20	34	0	21	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	73	73	3	71	71	6	16	16	12	21	21
g / C, Green / Cycle	0.04	0.61	0.61	0.02	0.59	0.59	0.05	0.13	0.13	0.10	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.03	0.24	0.24	0.01	0.33	0.33	0.04	0.11	0.11	0.09	0.08	0.08
s, saturation flow rate [veh/h]	1714	1800	1760	1714	1800	1775	1714	1800	1580	1714	1800	1681
c, Capacity [veh/h]	70	1100	1075	40	1068	1053	93	236	207	174	321	300
d1, Uniform Delay [s]	57.01	11.94	11.94	58.06	14.92	14.92	56.01	50.64	50.87	52.97	44.06	44.14
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.98	1.05	1.07	13.74	2.15	2.19	12.61	6.28	8.49	10.53	0.99	1.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.39	0.39	0.60	0.56	0.56	0.77	0.80	0.83	0.84	0.45	0.46
d, Delay for Lane Group [s/veh]	73.99	12.99	13.02	71.80	17.07	17.11	68.62	56.92	59.36	63.50	45.05	45.24
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.98	6.02	5.89	0.87	10.26	10.14	2.48	5.93	5.55	4.86	3.93	3.77
50th-Percentile Queue Length [ft/ln]	49.61	150.4	147.2	21.86	256.5	253.4	62.00	148.3	138.7	121.5	98.37	94.18
95th-Percentile Queue Length [veh/ln]	3.57	10.04	9.87	1.57	15.51	15.36	4.46	9.93	9.41	8.48	7.08	6.78
95th-Percentile Queue Length [ft/ln]	89.29	250.9	246.8	39.35	387.8	384.0	111.6	248.1	235.2	211.9	177.0	169.5

Movement, Approach, & Intersection Results

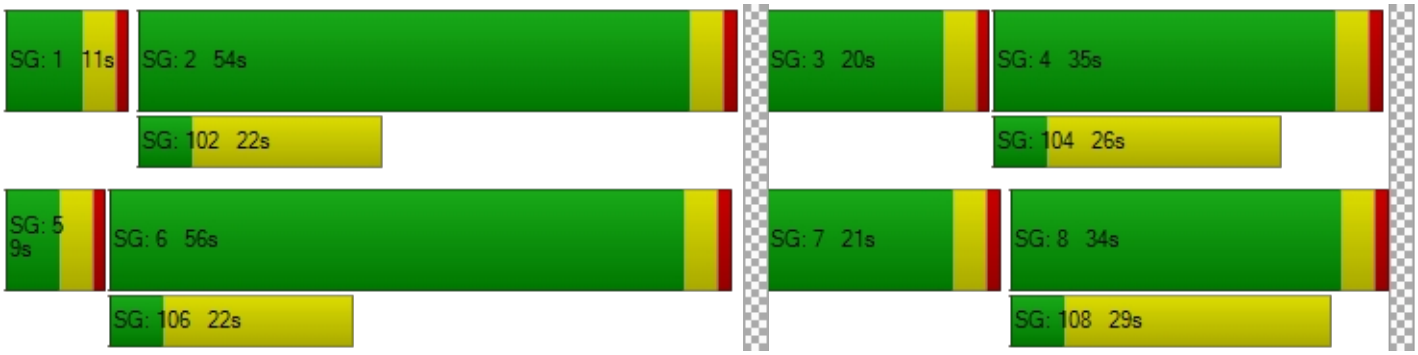
d_M, Delay for Movement [s/veh]	73.99	13.00	13.02	71.80	17.09	17.11	68.62	57.31	59.36	63.50	45.11	45.24
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	16.70			18.17			59.83			51.43		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	28.55											
Intersection LOS	C											
Intersection V/C	0.562											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.935	2.817	2.464	2.458
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	833	500	517
d_b, Bicycle Delay [s]	19.27	20.42	33.75	33.00
l_b,int, Bicycle LOS Score for Intersection	2.308	2.565	1.918	1.914
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	44.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	86	48	77	136	246	885	267	400	59	134	1190	220
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	4	0	0	6	47
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	91	51	82	144	261	938	283	428	63	142	1267	280
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	25	14	23	40	72	259	78	118	17	39	349	77
Total Analysis Volume [veh/h]	100	56	90	159	288	1034	312	472	69	157	1397	309
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	12	0	50	50	0	17	47	0	11	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	41	41	13	47	47	47	13	42	42	7	36	36
g / C, Green / Cycle	0.07	0.34	0.34	0.11	0.39	0.39	0.39	0.11	0.35	0.35	0.06	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.06	0.02	0.06	0.09	0.16	0.34	0.34	0.09	0.10	0.05	0.05	0.28	0.20
s, saturation flow rate [veh/h]	1714	3427	1530	171	180	153	153	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	114	1176	525	190	698	593	593	361	1736	542	194	1491	465
d1, Uniform Delay [s]	55.50	26.32	27.50	52.2	26.8	34.0	34.0	52.64	27.69	26.21	55.84	40.63	36.40
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.20
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.04	0.08	0.71	9.22	1.80	16.1	16.1	6.27	0.08	0.10	7.75	3.45	3.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.05	0.17	0.84	0.41	0.87	0.87	0.87	0.27	0.13	0.81	0.94	0.66
d, Delay for Lane Group [s/veh]	73.54	26.39	28.21	61.4	28.6	50.1	50.1	58.90	27.78	26.31	63.59	44.07	39.45
Lane Group LOS	E	C	C	E	C	D	D	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.57	0.55	1.92	5.18	6.36	16.3	16.3	4.93	3.26	1.36	2.56	13.70	8.26
50th-Percentile Queue Length [ft/ln]	89.25	13.83	47.98	129.	159.	408.	408.	123.3	81.48	34.07	63.94	342.5	206.4
95th-Percentile Queue Length [veh/ln]	6.43	1.00	3.45	8.91	10.5	22.9	22.9	8.58	5.87	2.45	4.60	19.77	12.97
95th-Percentile Queue Length [ft/ln]	160.6	24.89	86.37	222.	262.	574.	574.	214.4	146.6	61.33	115.0	494.3	324.2

Movement, Approach, & Intersection Results

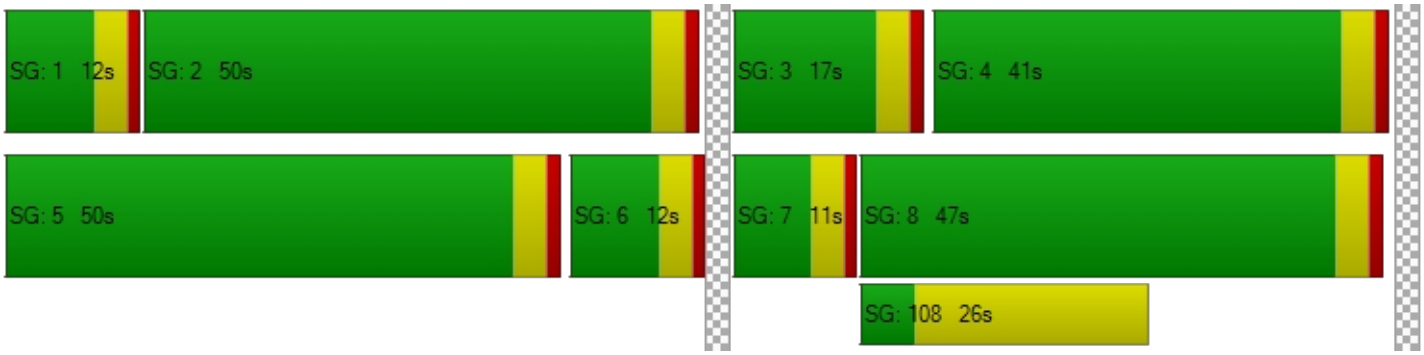
d_M, Delay for Movement [s/veh]	73.54	26.39	28.21	61.48	28.60	50.15	58.90	27.78	26.31	63.59	44.07	39.45
Movement LOS	E	C	C	E	C	D	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	46.22			47.17			39.04			44.95		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.63											
Intersection LOS	D											
Intersection V/C	0.775											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.592	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	133	767	717	617
d_b, Bicycle Delay [s]	52.27	22.82	24.70	28.70
l_b,int, Bicycle LOS Score for Intersection	1.763	2.781	2.029	2.584
Bicycle LOS	A	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	51.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	44	25	34	338	49	955	255	331	25	30	552	95
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	45	0	0	0	4	0	0	53	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	27	36	403	52	1012	270	355	27	32	638	101
Peak Hour Factor	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	7	10	108	14	271	72	95	7	9	171	27
Total Analysis Volume [veh/h]	50	29	39	432	56	1086	290	381	29	34	685	108
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	48	0	9	23	0	16	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	6	44	44	44	13	51	51	3	42	42
g / C, Green / Cycle	0.05	0.05	0.05	0.37	0.37	0.37	0.11	0.43	0.43	0.03	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.03	0.14	0.14	0.40	0.09	0.08	0.02	0.02	0.15	0.16
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1733	2708	3329	4903	1530	1714	3427	1678
c, Capacity [veh/h]	80	84	71	629	636	993	356	2084	650	49	1188	582
d1, Uniform Delay [s]	56.17	55.43	55.96	28.06	28.01	38.00	52.43	21.51	20.22	57.79	30.31	30.38
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.13	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.77	2.43	6.38	0.39	0.38	46.95	4.57	0.19	0.13	16.51	1.22	2.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.35	0.55	0.39	0.38	1.09	0.82	0.18	0.04	0.70	0.45	0.45
d, Delay for Lane Group [s/veh]	63.95	57.86	62.34	28.45	28.39	84.95	56.99	21.70	20.35	74.30	31.53	32.91
Lane Group LOS	E	E	E	C	C	F	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.66	0.91	1.28	5.25	5.24	20.76	4.49	2.28	0.50	1.25	6.13	6.30
50th-Percentile Queue Length [ft/ln]	41.52	22.71	32.07	131.3	131.0	519.1	112.3	56.96	12.61	31.17	153.2	157.6
95th-Percentile Queue Length [veh/ln]	2.99	1.64	2.31	9.01	9.00	29.96	7.97	4.10	0.91	2.24	10.19	10.42
95th-Percentile Queue Length [ft/ln]	74.74	40.88	57.73	225.3	224.9	748.9	199.2	102.5	22.70	56.10	254.7	260.5

Movement, Approach, & Intersection Results

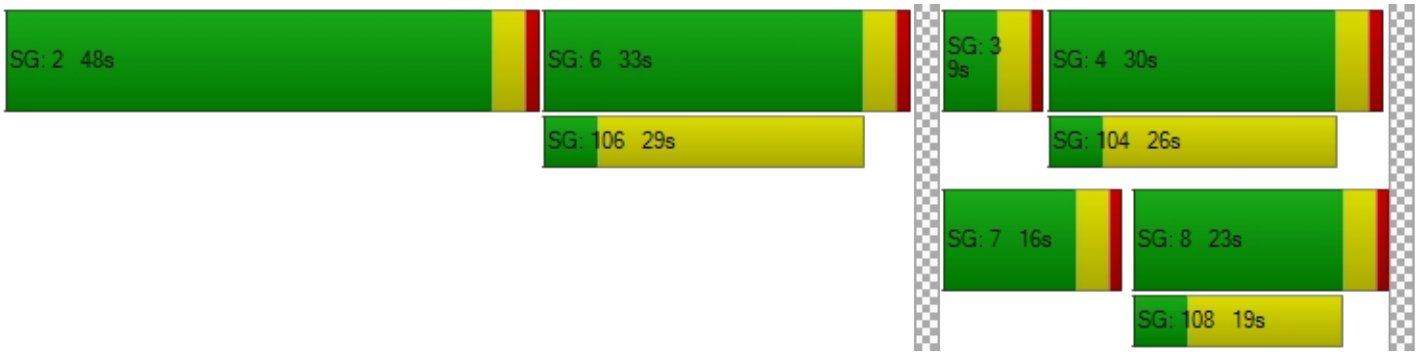
d_M, Delay for Movement [s/veh]	63.95	57.86	62.34	28.43	28.39	84.95	56.99	21.70	20.35	74.30	31.84	32.91
Movement LOS	E	E	E	C	C	F	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	61.92			67.43			36.27			33.73		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	51.79											
Intersection LOS	D											
Intersection V/C	0.674											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.204	2.793	0.000	2.843
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	733	317	433
d_b, Bicycle Delay [s]	34.50	24.07	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.657	4.157	1.945	2.014
Bicycle LOS	A	D	A	B

Sequence

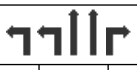
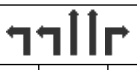
Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.536

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	228	643	85	59	766	139	149	155	92	143	309	42
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	7	2	0	1	2	27	22	0	12	51	35
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	242	689	92	63	813	149	185	186	98	164	379	80
Peak Hour Factor	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	65	186	25	17	219	40	50	50	26	44	102	22
Total Analysis Volume [veh/h]	261	743	99	68	877	161	200	201	106	177	409	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Unsig	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	44	0	9	37	0	14	38	0	29	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	71	4	64	64	9	20	20	9	20	20
g / C, Green / Cycle	0.09	0.59	0.04	0.53	0.53	0.08	0.17	0.17	0.07	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.08	0.22	0.02	0.26	0.11	0.06	0.06	0.07	0.05	0.14	0.14
s, saturation flow rate [veh/h]	3329	3427	3329	3427	1530	3329	3427	1530	3329	1800	1693
c, Capacity [veh/h]	314	2013	125	1818	811	253	578	258	245	299	281
d1, Uniform Delay [s]	53.41	13.05	56.75	17.78	14.79	54.49	44.06	44.57	54.40	48.62	48.66
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.69	0.52	3.69	0.92	0.55	5.43	0.36	1.05	4.04	6.80	7.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.37	0.55	0.48	0.20	0.79	0.35	0.41	0.72	0.85	0.86
d, Delay for Lane Group [s/veh]	59.10	13.57	60.44	18.70	15.34	59.92	44.42	45.62	58.44	55.41	56.09
Lane Group LOS	E	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.11	5.29	1.08	7.74	2.42	3.16	2.68	2.90	2.76	7.95	7.58
50th-Percentile Queue Length [ft/ln]	102.87	132.27	26.93	193.5	60.41	79.02	66.99	72.58	68.92	198.8	189.4
95th-Percentile Queue Length [veh/ln]	7.41	9.06	1.94	12.30	4.35	5.69	4.82	5.23	4.96	12.58	12.09
95th-Percentile Queue Length [ft/ln]	185.17	226.58	48.48	307.6	108.7	142.2	120.5	130.6	124.0	314.4	302.2

Movement, Approach, & Intersection Results

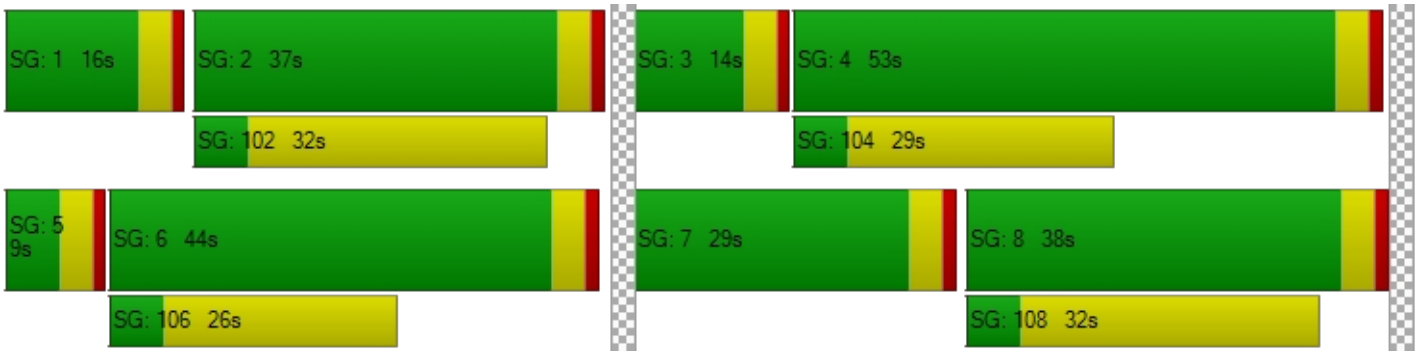
d_M, Delay for Movement [s/veh]	59.10	13.57	0.00	60.44	18.70	15.34	59.92	44.42	45.62	58.44	55.67	56.09
Movement LOS	E	B		E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	25.41			20.78			50.78			56.45		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	34.11											
Intersection LOS	C											
Intersection V/C	0.536											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.004	2.907	2.904	2.621
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	550	567	817
d_b, Bicycle Delay [s]	26.67	31.54	30.82	21.00
l_b,int, Bicycle LOS Score for Intersection	2.388	2.472	1.978	2.114
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.518

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	46	3	220	4	8	0	1	182	33	263	473	2
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	35	0	39	0	0	0	0	24	0	86	62	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	3	272	4	8	0	1	217	35	365	563	2
Peak Hour Factor	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	23	1	76	1	2	0	0	61	10	102	157	1
Total Analysis Volume [veh/h]	94	3	304	4	9	0	1	242	39	408	629	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	33	0	9	33	0	51	26	0	52	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33	26	33	0	44	44	31	75	75
g / C, Green / Cycle	0.28	0.28	0.22	0.28	0.00	0.37	0.37	0.26	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.20	0.01	0.00	0.07	0.03	0.24	0.18	0.18
s, saturation flow rate [veh/h]	1428	1379	1530	1418	1714	3427	1530	1714	1800	1798
c, Capacity [veh/h]	373	497	331	443	4	1260	563	441	1121	1119
d1, Uniform Delay [s]	33.06	33.10	45.96	31.78	59.78	25.81	24.62	43.47	10.37	10.37
k, delay calibration	0.11	0.26	0.28	0.11	0.11	0.50	0.50	0.12	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	0.23	21.66	0.03	36.23	0.34	0.24	9.79	0.63	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.11	0.92	0.03	0.27	0.19	0.07	0.93	0.28	0.28
d, Delay for Lane Group [s/veh]	33.19	33.34	67.62	31.81	96.01	26.15	24.85	53.26	11.00	11.00
Lane Group LOS	C	C	E	C	F	C	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.94	1.27	10.81	0.28	0.07	2.43	0.77	12.92	3.90	3.90
50th-Percentile Queue Length [ft/ln]	23.50	31.82	270.1	7.05	1.68	60.67	19.13	322.8	97.52	97.41
95th-Percentile Queue Length [veh/ln]	1.69	2.29	16.20	0.51	0.12	4.37	1.38	18.81	7.02	7.01
95th-Percentile Queue Length [ft/ln]	42.30	57.28	404.9	12.69	3.02	109.2	34.43	470.2	175.5	175.3

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.19	33.34	67.62	31.81	31.81	31.81	96.01	26.15	24.85	53.26	11.00	11.00
Movement LOS	C	C	E	C	C	C	F	C	C	D	B	B
d_A, Approach Delay [s/veh]	59.31			31.81			26.22			27.59		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	34.73											
Intersection LOS	C											
Intersection V/C	0.518											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.482	0.000	2.887	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	633	367	383
d_b, Bicycle Delay [s]	28.02	28.02	40.02	39.20
l_b,int, Bicycle LOS Score for Intersection	2.221	1.581	1.792	2.417
Bicycle LOS	B	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	13.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.287

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	3	0	397	746	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	146	0	60	3	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	149	0	481	794	1
Peak Hour Factor	0.9060	0.9060	1.0000	0.9060	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	41	0	133	219	0
Total Analysis Volume [veh/h]	0	164	0	531	876	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.29	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	25.79	13.81	9.70	0.00	0.00	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.18	1.18	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	29.49	29.49	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.81		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.44					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	34.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.620

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	111	854	95	88	904	383	181	80	118	143	332	79
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	88	0	12	131	3	60	0	0	0	0	10
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	118	993	101	105	1089	409	252	85	125	152	352	94
Peak Hour Factor	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	32	271	28	29	298	112	69	23	34	42	96	26
Total Analysis Volume [veh/h]	129	1085	110	115	1190	447	275	93	137	166	385	103
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	38	0	14	37	37	32	40	0	28	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	53	53	10	52	78	22	28	14	20	20
g / C, Green / Cycle	0.09	0.44	0.44	0.08	0.43	0.65	0.18	0.23	0.11	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.08	0.23	0.23	0.07	0.24	0.29	0.16	0.03	0.10	0.14	0.14
s, saturation flow rate [veh/h]	1714	3427	1716	1714	4903	1530	1714	3427	1714	1800	1671
c, Capacity [veh/h]	154	1498	750	139	2101	989	317	804	195	295	274
d1, Uniform Delay [s]	53.78	24.76	24.77	54.32	25.87	10.58	47.49	36.14	52.15	48.79	48.85
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.19	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.48	1.35	2.69	11.73	1.11	1.49	11.71	0.06	9.80	7.04	7.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.53	0.53	0.83	0.57	0.45	0.87	0.12	0.85	0.86	0.86
d, Delay for Lane Group [s/veh]	65.26	26.12	27.46	66.04	26.99	12.07	59.20	36.20	61.94	55.83	56.73
Lane Group LOS	E	C	C	E	C	B	E	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.32	8.50	8.80	3.87	8.67	6.02	8.99	1.09	5.43	7.91	7.47
50th-Percentile Queue Length [ft/ln]	108.0	212.5	219.9	96.82	216.7	150.4	224.78	27.23	135.8	197.6	186.6
95th-Percentile Queue Length [veh/ln]	7.73	13.28	13.66	6.97	13.50	10.04	13.91	1.96	9.25	12.52	11.95
95th-Percentile Queue Length [ft/ln]	193.2	332.1	341.5	174.2	337.4	251.0	347.72	49.02	231.3	312.9	298.6

Movement, Approach, & Intersection Results

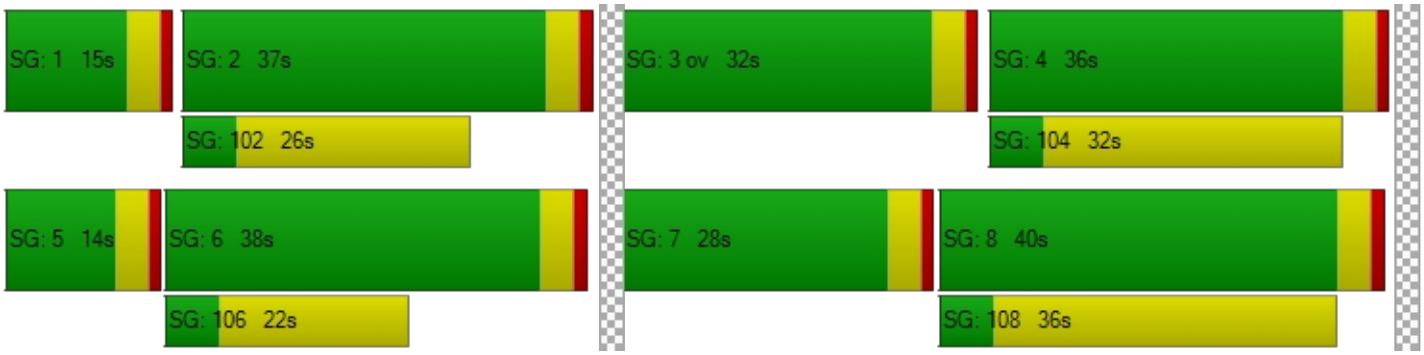
d_M, Delay for Movement [s/veh]	65.26	26.47	27.46	66.04	26.99	12.07	59.20	36.20	0.00	61.94	56.14	56.73
Movement LOS	E	C	C	E	C	B	E	D		E	E	E
d_A, Approach Delay [s/veh]	30.33			25.74			53.39			57.71		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	34.81											
Intersection LOS	C											
Intersection V/C	0.620											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.155	3.133	2.684	2.505
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	550	600	533
d_b, Bicycle Delay [s]	30.82	31.54	29.40	32.27
l_b,int, Bicycle LOS Score for Intersection	2.288	2.523	1.863	2.099
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.505

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	29	126	6	43	129	75	30	216	16	7	341	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	2	0	0	0	6	0	0	6	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	134	6	48	137	80	32	235	17	7	367	70
Peak Hour Factor	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	44	2	16	45	26	10	76	6	2	119	23
Total Analysis Volume [veh/h]	40	174	8	63	178	104	42	306	22	9	478	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	37	0	9	74	0	9	74	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	70	70	4	37	1	34	34
g / C, Green / Cycle	0.58	0.58	0.03	0.31	0.01	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.14	0.22	0.02	0.18	0.01	0.27	0.06
s, saturation flow rate [veh/h]	1617	1604	1714	1779	1714	1800	1530
c, Capacity [veh/h]	975	967	54	547	20	517	440
d1, Uniform Delay [s]	12.03	13.19	57.67	35.30	58.91	41.49	32.40
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.54	1.03	20.28	1.06	14.68	7.51	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.36	0.77	0.60	0.45	0.92	0.21
d, Delay for Lane Group [s/veh]	12.57	14.22	77.95	36.36	73.58	49.00	32.63
Lane Group LOS	B	B	E	D	E	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.95	5.05	1.57	8.29	0.35	14.68	2.05
50th-Percentile Queue Length [ft/ln]	73.74	126.25	39.30	207.29	8.86	366.9	51.24
95th-Percentile Queue Length [veh/ln]	5.31	8.74	2.83	13.01	0.64	20.96	3.69
95th-Percentile Queue Length [ft/ln]	132.73	218.39	70.74	325.35	15.94	524.0	92.24

Movement, Approach, & Intersection Results

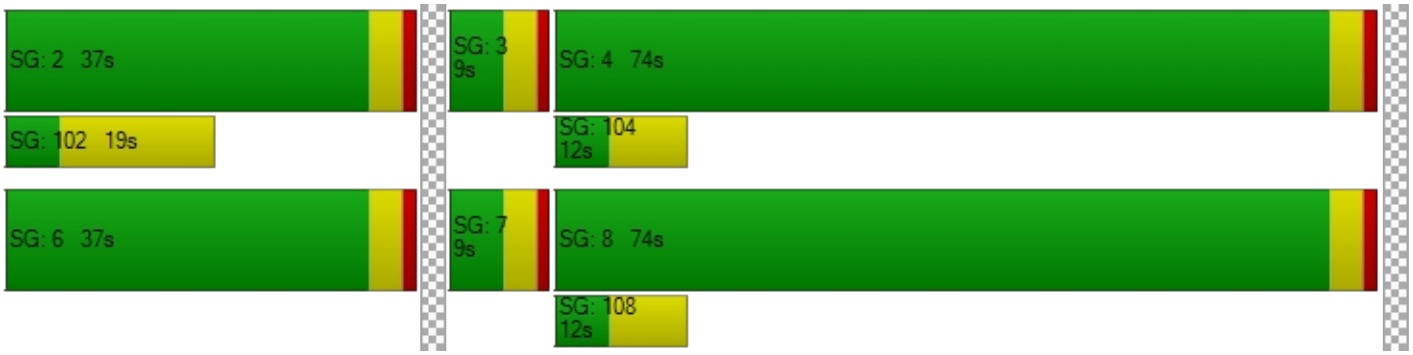
d_M, Delay for Movement [s/veh]	12.57	12.57	12.57	14.22	14.22	14.22	77.95	36.36	36.36	73.58	49.00	32.63
Movement LOS	B	B	B	B	B	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	12.57			14.22			41.08			46.81		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	32.97											
Intersection LOS	C											
Intersection V/C	0.505											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	1.940	2.048	2.445	0.000
Crosswalk LOS	A	B	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	550	1167	1167
d_b, Bicycle Delay [s]	31.54	31.54	10.42	10.42
l_b,int, Bicycle LOS Score for Intersection	1.926	2.129	2.170	2.513
Bicycle LOS	A	B	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.325

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	1	21	14	9	8	0	42	34	21	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	6	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	28	15	10	8	0	45	36	22	16
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	9	5	3	3	0	14	11	7	5
Total Analysis Volume [veh/h]	1	36	19	13	10	0	57	46	28	20
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	31	0	0	0	0	31	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	13	13
g / C, Green / Cycle	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09
s, saturation flow rate [veh/h]	1377	1600
c, Capacity [veh/h]	197	219
d1, Uniform Delay [s]	49.98	52.21
k, delay calibration	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	1.32	3.84
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.69
d, Delay for Lane Group [s/veh]	51.30	56.05
Lane Group LOS	D	E
Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	2.31	4.69
50th-Percentile Queue Length [ft/ln]	57.71	117.28
95th-Percentile Queue Length [veh/ln]	4.16	8.24
95th-Percentile Queue Length [ft/ln]	103.88	206.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.30	51.30	51.30	51.30	51.30	56.05	56.05	56.05	56.05	56.05
Movement LOS	D	D	D	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	51.30					56.05				
Approach LOS	D					E				
d_I, Intersection Delay [s/veh]	32.25									
Intersection LOS	C									
Intersection V/C	0.325									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.859	1.917
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	450	450
d_b, Bicycle Delay [s]	36.04	36.04
l_b,int, Bicycle LOS Score for Intersection	1.614	1.682
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	9	42	159	11	5	1	9	169	11	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	1	7	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	45	170	19	5	1	10	179	12	6
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	14	54	6	2	0	3	57	4	2
Total Analysis Volume [veh/h]	13	57	217	24	6	1	13	228	15	8
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	50	0	0	9	0	50	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	82	76	82	74	74
g / C, Green / Cycle	0.68	0.63	0.68	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.01	0.13	0.02
s, saturation flow rate [veh/h]	1192	1762	1178	1800	1530
c, Capacity [veh/h]	813	1116	796	1102	936
d1, Uniform Delay [s]	6.67	9.37	6.51	10.34	9.17
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	0.46	0.01	0.43	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.22	0.02	0.21	0.02
d, Delay for Lane Group [s/veh]	6.88	9.83	6.52	10.76	9.21
Lane Group LOS	A	A	A	B	A
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.61	2.82	0.11	2.75	0.25
50th-Percentile Queue Length [ft/ln]	15.16	70.38	2.75	68.72	6.17
95th-Percentile Queue Length [veh/ln]	1.09	5.07	0.20	4.95	0.44
95th-Percentile Queue Length [ft/ln]	27.29	126.68	4.95	123.70	11.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.88	6.88	9.83	9.83	9.83	6.52	6.52	10.76	9.21	9.21
Movement LOS	A	A	A	A	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	9.18					10.41				
Approach LOS	A					B				
d_I, Intersection Delay [s/veh]	32.25									
Intersection LOS	C									
Intersection V/C	0.325									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.258	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	767
d_b, Bicycle Delay [s]	22.82	22.82
l_b,int, Bicycle LOS Score for Intersection	1.979	1.962
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	10	36	12	1	3	14	94	78	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	11	38	13	1	3	15	100	83	2
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	12	4	0	1	5	32	26	1
Total Analysis Volume [veh/h]	0	14	48	17	1	4	19	127	106	3
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	30	0	0	0	0	30	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13
g / C, Green / Cycle	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.08	0.09	0.07
s, saturation flow rate [veh/h]	989	1717	1530
c, Capacity [veh/h]	140	216	162
d1, Uniform Delay [s]	50.42	52.47	51.65
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	3.64	3.95	4.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.69	0.67
d, Delay for Lane Group [s/veh]	54.06	56.42	56.44
Lane Group LOS	D	E	E
Critical Lane Group	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.40	4.66	3.37
50th-Percentile Queue Length [ft/ln]	59.98	116.49	84.35
95th-Percentile Queue Length [veh/ln]	4.32	8.20	6.07
95th-Percentile Queue Length [ft/ln]	107.96	205.00	151.84

Movement, Approach, & Intersection Results

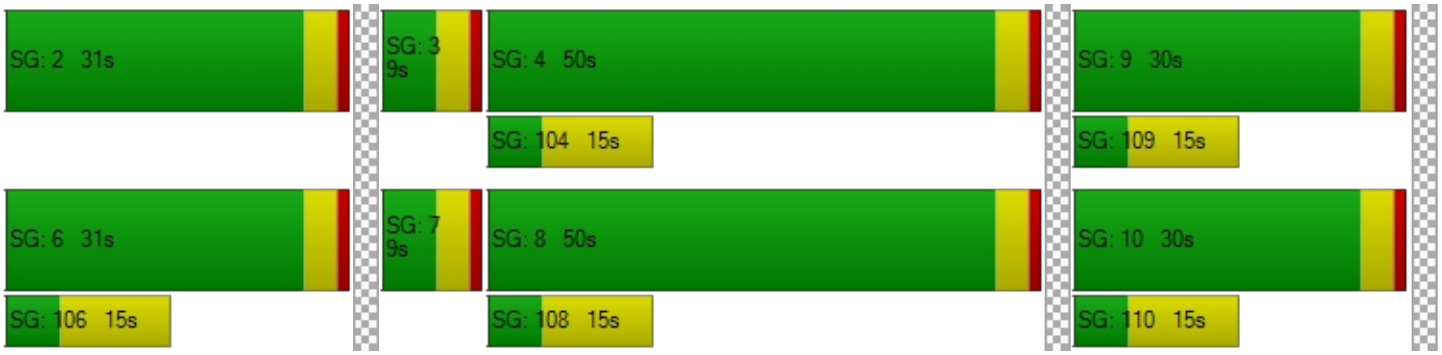
d_M, Delay for Movement [s/veh]	54.06	54.06	54.06	54.06	54.06	56.42	56.42	56.42	56.44	56.44
Movement LOS	D	D	D	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	54.06					56.43				
Approach LOS	D					E				
d_I, Intersection Delay [s/veh]	32.25									
Intersection LOS	C									
Intersection V/C	0.325									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.920	2.224
Crosswalk LOS	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433
d_b, Bicycle Delay [s]	36.82	36.82
l_b,int, Bicycle LOS Score for Intersection	1.640	1.975
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	38.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	116	589	159	100	785	63	135	118	67	107	130	261
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	31	0	10	32	0	0	1	0	0	0	8
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	123	655	169	116	864	67	143	126	71	113	138	285
Peak Hour Factor	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	33	176	45	31	232	18	38	34	19	30	37	76
Total Analysis Volume [veh/h]	132	703	181	124	927	72	153	135	76	121	148	306
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	41	0	15	41	0	16	41	0	23	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	55	55	10	54	54	12	28	28	10	27	27
g / C, Green / Cycle	0.09	0.46	0.46	0.09	0.45	0.45	0.10	0.23	0.23	0.09	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.08	0.25	0.25	0.07	0.28	0.28	0.09	0.06	0.06	0.07	0.08	0.20
s, saturation flow rate [veh/h]	1714	1800	1674	1714	1800	1755	1714	1800	1590	1714	1800	1530
c, Capacity [veh/h]	157	825	767	149	816	796	171	422	373	150	399	340
d1, Uniform Delay [s]	53.67	23.63	23.63	53.95	24.93	24.94	53.36	37.42	37.54	53.78	39.58	45.41
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.47	2.69	2.89	11.44	3.52	3.61	14.49	0.32	0.39	9.87	0.57	9.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.56	0.56	0.83	0.62	0.62	0.89	0.26	0.27	0.81	0.37	0.90
d, Delay for Lane Group [s/veh]	65.14	26.32	26.53	65.40	28.45	28.55	67.86	37.75	37.93	63.66	40.15	55.30
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.42	9.92	9.28	4.16	11.57	11.31	5.25	2.68	2.49	4.00	3.78	9.76
50th-Percentile Queue Length [ft/ln]	110.4	248.1	231.9	103.9	289.1	282.6	131.1	66.94	62.28	99.98	94.61	243.9
95th-Percentile Queue Length [veh/ln]	7.87	15.09	14.27	7.48	17.14	16.82	9.00	4.82	4.48	7.20	6.81	14.88
95th-Percentile Queue Length [ft/ln]	196.6	377.2	356.7	187.0	428.6	420.5	225.0	120.4	112.1	179.9	170.3	372.0

Movement, Approach, & Intersection Results

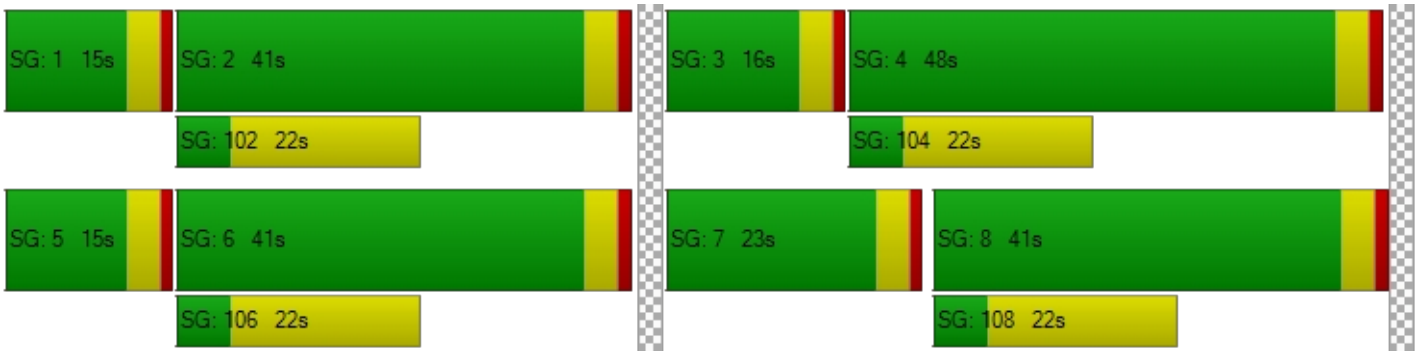
d_M, Delay for Movement [s/veh]	65.14	26.39	26.53	65.40	28.50	28.55	67.86	37.78	37.93	63.66	40.15	55.30
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	31.45			32.57			50.45			53.16		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.16											
Intersection LOS	D											
Intersection V/C	0.647											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.732	2.761	2.455	2.633
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	617	617	733
d_b, Bicycle Delay [s]	28.70	28.70	28.70	24.07
l_b,int, Bicycle LOS Score for Intersection	2.398	2.486	1.860	2.034
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.670

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	731	162	10	1158	67	27	177	83	258	306	38
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	1	13	0	4	22	0	0	2	2	0	1	3
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	788	172	15	1249	71	29	190	90	273	325	43
Peak Hour Factor	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	207	45	4	328	19	8	50	24	72	85	11
Total Analysis Volume [veh/h]	56	827	180	16	1311	75	30	199	94	286	341	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	26	0	9	26	0	32	36	0	49	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	67	67	2	64	64	3	13	13	22	32	32
g / C, Green / Cycle	0.04	0.56	0.56	0.02	0.53	0.53	0.03	0.11	0.11	0.19	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.03	0.24	0.12	0.01	0.38	0.05	0.02	0.08	0.09	0.17	0.11	0.11
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1612	1714	1800	1728
c, Capacity [veh/h]	71	1901	849	30	1819	812	48	196	176	318	480	461
d1, Uniform Delay [s]	56.99	15.68	13.48	58.47	21.40	13.90	57.70	52.00	52.23	47.77	36.23	36.25
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.23	0.73	0.57	14.10	2.51	0.23	12.63	6.26	8.47	9.09	0.56	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.44	0.21	0.54	0.72	0.09	0.63	0.77	0.81	0.90	0.41	0.41
d, Delay for Lane Group [s/veh]	74.22	16.41	14.05	72.57	23.91	14.12	70.34	58.25	60.70	56.86	36.79	36.84
Lane Group LOS	E	B	B	E	C	B	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.02	6.70	2.57	0.60	14.16	1.06	1.07	4.77	4.59	9.13	4.83	4.66
50th-Percentile Queue Length [ft/ln]	50.57	167.4	64.25	14.98	354.0	26.40	26.76	119.1	114.6	228.3	120.7	116.5
95th-Percentile Queue Length [veh/ln]	3.64	10.94	4.63	1.08	20.33	1.90	1.93	8.35	8.10	14.09	8.44	8.20
95th-Percentile Queue Length [ft/ln]	91.03	273.5	115.6	26.97	508.3	47.51	48.16	208.6	202.5	352.2	210.9	205.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.22	16.41	14.05	72.57	23.91	14.12	70.34	58.84	60.70	56.86	36.81	36.84
Movement LOS	E	B	B	E	C	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	19.06			23.94			60.45			45.34		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	30.01											
Intersection LOS	C											
Intersection V/C	0.670											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.076	2.843	2.470	2.523
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	367	533	817
d_b, Bicycle Delay [s]	40.02	40.02	32.27	21.00
l_b,int, Bicycle LOS Score for Intersection	2.437	2.716	1.826	2.114
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.323

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	6	102	8	8	123	45	21	43	2	21	147	7
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	108	8	8	130	48	22	46	2	22	156	7
Peak Hour Factor	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	32	2	2	38	14	6	13	1	6	46	2
Total Analysis Volume [veh/h]	7	126	9	9	152	56	26	54	2	26	183	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	722	755	679	647	751
Degree of Utilization, x	0.20	0.29	0.12	0.32	0.01

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.73	1.19	0.41	1.40	0.03
95th-Percentile Queue Length [ft]	18.19	29.76	10.24	34.89	0.81
Approach Delay [s/veh]	9.21	9.69	9.03	10.77	
Approach LOS	A	A	A	B	
Intersection Delay [s/veh]	9.86				
Intersection LOS	A				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	26.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.462

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	292	941	78	41	857	43	25	45	128	165	161	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	9	0	0	13	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	310	1006	83	43	921	46	27	48	136	175	171	72
Peak Hour Factor	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	85	276	23	12	253	13	7	13	37	48	47	20
Total Analysis Volume [veh/h]	340	1104	91	47	1011	50	30	53	149	192	188	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	26	63	0	12	49	0	12	28	0	17	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	77	77	4	66	66	3	14	14	9	20	20
g / C, Green / Cycle	0.12	0.64	0.64	0.04	0.55	0.55	0.03	0.12	0.12	0.07	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.10	0.23	0.23	0.03	0.20	0.20	0.02	0.02	0.10	0.06	0.05	0.05
s, saturation flow rate [veh/h]	3329	3427	1731	1714	3427	1757	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	407	2195	1108	60	1896	972	46	397	177	250	562	251
d1, Uniform Delay [s]	51.47	10.10	10.10	57.42	15.05	15.06	57.82	47.63	51.95	54.47	44.36	44.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.55	0.46	0.92	18.99	0.56	1.08	14.26	0.15	10.10	4.92	0.35	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.36	0.36	0.78	0.37	0.37	0.65	0.13	0.84	0.77	0.33	0.31
d, Delay for Lane Group [s/veh]	56.02	10.56	11.02	76.41	15.61	16.14	72.08	47.78	62.05	59.39	44.71	44.92
Lane Group LOS	E	B	B	E	B	B	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.25	4.83	5.02	1.73	5.43	5.71	1.09	0.72	4.89	3.02	2.51	2.13
50th-Percentile Queue Length [ft/ln]	131.3	120.7	125.4	43.34	135.6	142.8	27.14	18.10	122.2	75.46	62.81	53.28
95th-Percentile Queue Length [veh/ln]	9.01	8.44	8.69	3.12	9.25	9.64	1.95	1.30	8.51	5.43	4.52	3.84
95th-Percentile Queue Length [ft/ln]	225.2	210.9	217.3	78.01	231.1	240.8	48.86	32.59	212.8	135.8	113.0	95.90

Movement, Approach, & Intersection Results

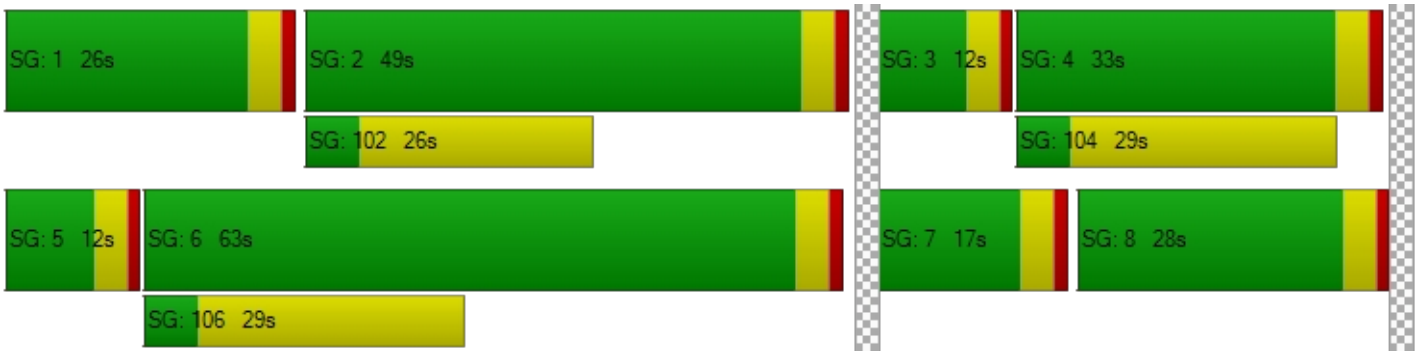
d_M, Delay for Movement [s/veh]	56.02	10.69	11.02	76.41	15.77	16.14	72.08	47.78	62.05	59.39	44.71	44.92
Movement LOS	E	B	B	E	B	B	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	20.75			18.36			60.09			50.88		
Approach LOS	C			B			E			D		
d_I, Intersection Delay [s/veh]	26.84											
Intersection LOS	C											
Intersection V/C	0.462											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.932	2.600	2.700
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	750	400	483
d_b, Bicycle Delay [s]	15.50	23.44	38.40	34.50
l_b,int, Bicycle LOS Score for Intersection	2.404	2.169	1.751	1.938
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.447

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	56	215	398	8	307	42	18	107	21	394	320	30
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	74	0	0	86	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	302	422	8	411	45	19	113	22	418	339	32
Peak Hour Factor	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	77	108	2	105	11	5	29	6	107	86	8
Total Analysis Volume [veh/h]	60	308	430	8	419	46	19	115	22	426	346	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	36	0	9	36	0	11	10	0	65	64	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	78	78	1	75	75	2	6	6	18	22	22
g / C, Green / Cycle	0.04	0.65	0.65	0.01	0.63	0.63	0.02	0.05	0.05	0.15	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.02	0.17	0.28	0.00	0.13	0.13	0.01	0.03	0.01	0.13	0.10	0.02
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1739	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	120	1175	999	17	1128	1089	34	176	78	508	631	282
d1, Uniform Delay [s]	56.77	8.73	10.07	59.08	9.62	9.64	58.29	55.88	54.79	49.40	44.42	40.82
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	0.54	1.36	18.42	0.42	0.44	13.52	4.08	1.92	3.77	0.75	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.26	0.43	0.47	0.21	0.21	0.56	0.65	0.28	0.84	0.55	0.12
d, Delay for Lane Group [s/veh]	59.96	9.27	11.42	77.50	10.04	10.08	71.81	59.96	56.71	53.16	45.17	41.00
Lane Group LOS	E	A	B	E	B	B	E	E	E	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.95	3.40	5.56	0.33	2.72	2.66	0.70	1.81	0.68	6.46	4.75	0.83
50th-Percentile Queue Length [ft/ln]	23.67	84.99	139.0	8.25	67.94	66.42	17.51	45.24	17.08	161.6	118.6	20.87
95th-Percentile Queue Length [veh/ln]	1.70	6.12	9.43	0.59	4.89	4.78	1.26	3.26	1.23	10.63	8.32	1.50
95th-Percentile Queue Length [ft/ln]	42.60	152.9	235.7	14.84	122.2	119.5	31.51	81.42	30.75	265.8	207.9	37.56

Movement, Approach, & Intersection Results

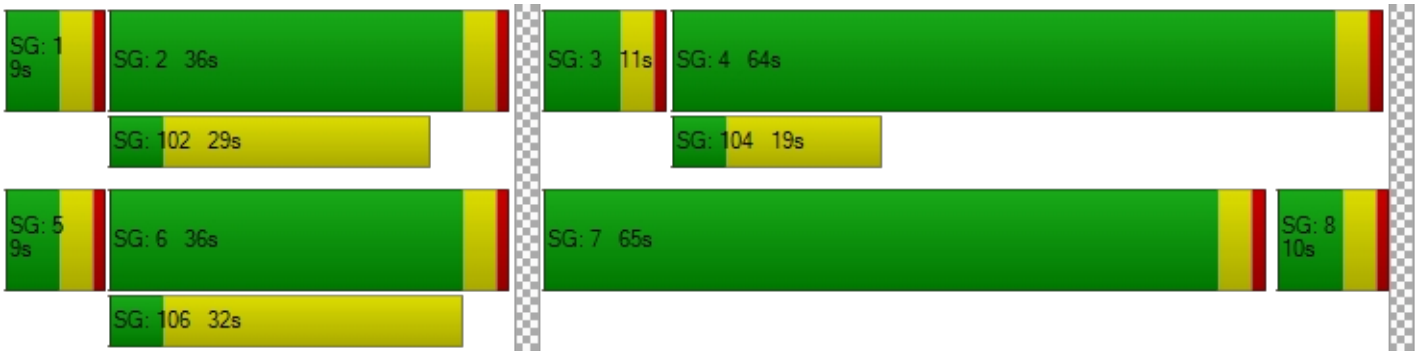
d_M, Delay for Movement [s/veh]	59.96	9.27	11.42	77.50	10.06	10.08	71.81	59.96	56.71	53.16	45.17	41.00
Movement LOS	E	A	B	E	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	14.24			11.20			60.94			49.23		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	29.48											
Intersection LOS	C											
Intersection V/C	0.447											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.349	2.694	2.906
Crosswalk LOS	F	B	B	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	533	100	1000
d_b, Bicycle Delay [s]	32.27	32.27	54.15	15.00
l_b,int, Bicycle LOS Score for Intersection	2.876	1.950	1.688	2.224
Bicycle LOS	C	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	43.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	466	1012	370	91	1138	69	86	116	267	506	305	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	88	0	1	130	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	494	1161	392	97	1336	73	91	123	283	536	323	75
Peak Hour Factor	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	130	305	103	25	351	19	24	32	74	141	85	20
Total Analysis Volume [veh/h]	519	1221	412	102	1405	77	96	129	298	564	340	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	45	0	12	36	0	13	40	40	23	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	66	66	8	57	57	5	11	32	19	25	25
g / C, Green / Cycle	0.14	0.55	0.55	0.07	0.47	0.47	0.04	0.09	0.27	0.16	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.16	0.36	0.27	0.06	0.29	0.05	0.03	0.04	0.19	0.17	0.12	0.12
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1684
c, Capacity [veh/h]	472	1880	839	114	2323	725	148	319	410	527	372	348
d1, Uniform Delay [s]	51.50	18.98	16.72	55.57	23.30	17.50	56.40	51.29	39.93	50.50	42.91	42.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.29	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	52.92	1.75	2.05	19.99	1.18	0.30	4.68	0.83	6.41	40.30	1.44	1.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.10	0.65	0.49	0.89	0.60	0.11	0.65	0.40	0.73	1.07	0.58	0.58
d, Delay for Lane Group [s/veh]	104.4	20.74	18.77	75.56	24.47	17.80	61.08	52.12	46.34	90.80	44.35	44.45
Lane Group LOS	F	C	B	E	C	B	E	D	D	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.53	11.99	7.33	3.70	9.88	1.25	1.53	1.87	8.69	10.83	5.94	5.57
50th-Percentile Queue Length [ft/ln]	263.3	299.7	183.3	92.40	246.9	31.20	38.22	46.74	217.3	270.8	148.5	139.2
95th-Percentile Queue Length [veh/ln]	16.54	17.67	11.78	6.65	15.03	2.25	2.75	3.37	13.53	16.75	9.94	9.44
95th-Percentile Queue Length [ft/ln]	413.4	441.7	294.3	166.3	375.7	56.17	68.79	84.13	338.1	418.7	248.4	235.9

Movement, Approach, & Intersection Results

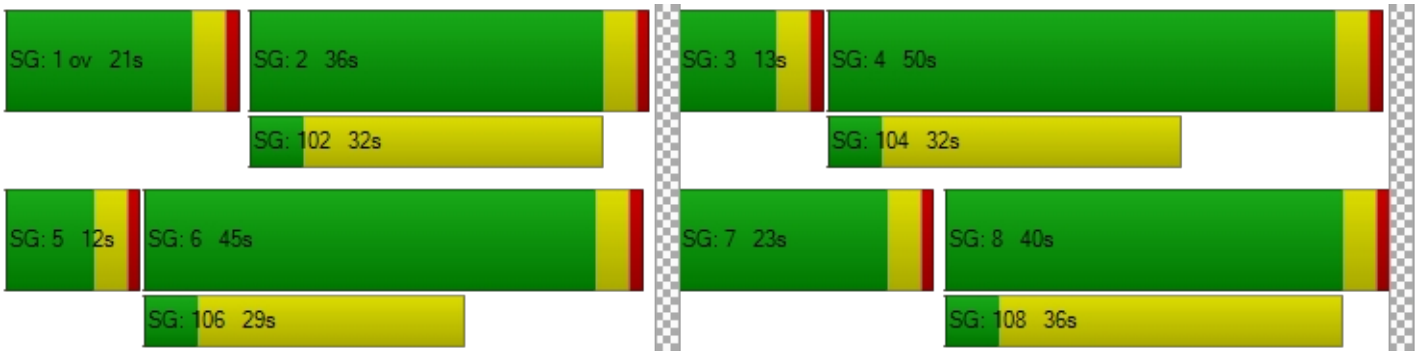
d_M, Delay for Movement [s/veh]	104.4	20.74	18.77	75.56	24.47	17.80	61.08	52.12	46.34	90.80	44.39	44.45
Movement LOS	F	C	B	E	C	B	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	40.54			27.44			50.47			71.03		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	43.29											
Intersection LOS	D											
Intersection V/C	0.738											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.343	3.104	2.919	2.836
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	533	600	767
d_b, Bicycle Delay [s]	26.00	32.27	29.40	22.82
l_b,int, Bicycle LOS Score for Intersection	3.335	2.431	1.991	2.371
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.521

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	8	9	4	23	1	73	5	50	26	56	314	11
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	1	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	10	4	24	1	77	5	53	28	59	334	12
Peak Hour Factor	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	3	1	7	0	22	1	15	8	17	95	3
Total Analysis Volume [veh/h]	9	11	5	27	1	88	6	60	32	67	381	14
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	Permi
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	14	14	71	65	65
g / C, Green / Cycle	0.12	0.12	0.59	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.12	0.11	0.11
s, saturation flow rate [veh/h]	1651	1483	825	1800	1778
c, Capacity [veh/h]	231	223	471	974	962
d1, Uniform Delay [s]	48.17	51.95	11.99	14.20	14.21
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	3.87	1.01	0.47	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.70	0.21	0.20	0.20
d, Delay for Lane Group [s/veh]	48.66	55.82	13.00	14.68	14.69
Lane Group LOS	D	E	B	B	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.45	4.82	1.25	2.89	2.87
50th-Percentile Queue Length [ft/ln]	36.37	120.57	31.25	72.34	71.73
95th-Percentile Queue Length [veh/ln]	2.62	8.42	2.25	5.21	5.16
95th-Percentile Queue Length [ft/ln]	65.47	210.61	56.25	130.21	129.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.66	48.66	48.66	48.66	55.82	55.82	55.82	55.82	13.00	13.00	14.68	14.69
Movement LOS	D	D	D	D	E	E	E	E	B	B	B	B
d_A, Approach Delay [s/veh]	48.66				55.82				14.35			
Approach LOS	D				E				B			
d_I, Intersection Delay [s/veh]	27.76											
Intersection LOS	C											
Intersection V/C	0.521											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.780	0.000	2.718
Crosswalk LOS	A	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	250
d_b, Bicycle Delay [s]	45.94	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.601	1.670	1.912
Bicycle LOS	A	A	A

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	16	545	49	18	10	9	194	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	578	52	19	11	10	206	1
Peak Hour Factor	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	165	15	5	3	3	59	0
Total Analysis Volume [veh/h]	19	659	59	22	13	11	235	1
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	19	0	0	0	73	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	62	62	62	22
g / C, Green / Cycle	0.02	0.52	0.52	0.52	0.19
(v / s)_i Volume / Saturation Flow Rate	0.01	0.14	0.22	0.05	0.17
s, saturation flow rate [veh/h]	1714	1800	1800	1530	1548
c, Capacity [veh/h]	34	936	936	796	290
d1, Uniform Delay [s]	58.30	16.13	17.76	14.58	47.61
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.79	0.73	1.43	0.26	9.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.28	0.43	0.10	0.90
d, Delay for Lane Group [s/veh]	72.10	16.87	19.18	14.84	57.20
Lane Group LOS	E	B	B	B	E
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.70	4.15	7.10	1.18	8.34
50th-Percentile Queue Length [ft/ln]	17.55	103.83	177.55	29.41	208.48
95th-Percentile Queue Length [veh/ln]	1.26	7.48	11.47	2.12	13.08
95th-Percentile Queue Length [ft/ln]	31.59	186.89	286.81	52.94	326.88

Movement, Approach, & Intersection Results

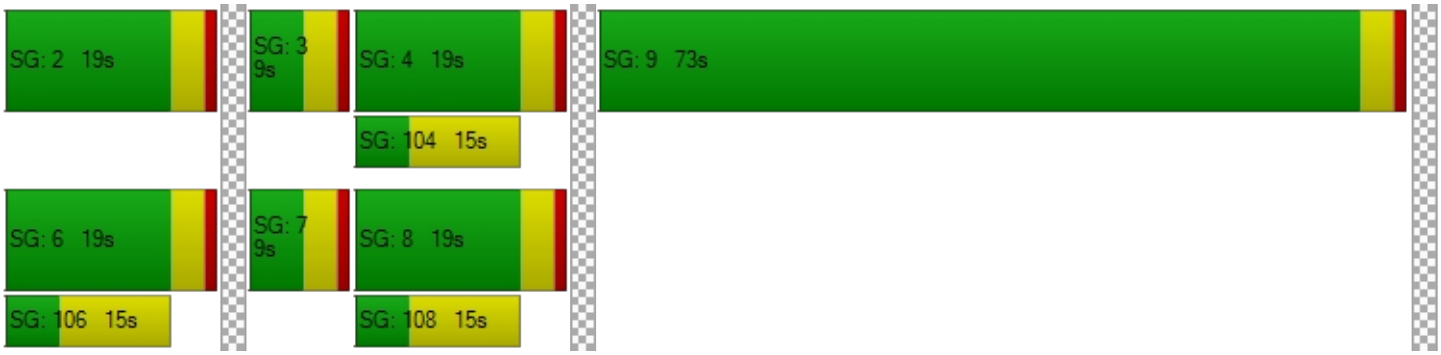
d_M, Delay for Movement [s/veh]	72.10	18.27	19.18	14.84	57.20	57.20	57.20	57.20
Movement LOS	E	B	B	B	E	E	E	E
d_A, Approach Delay [s/veh]	19.25				57.20			
Approach LOS	B				E			
d_I, Intersection Delay [s/veh]	27.76							
Intersection LOS	C							
Intersection V/C	0.521							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.105
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	1150
d_b, Bicycle Delay [s]	45.94	10.84
l_b,int, Bicycle LOS Score for Intersection	2.168	1.987
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	67.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.020

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	6	1	21	92	3	29	14	399	8	14	605	72
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	1	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	1	22	98	3	31	15	424	8	15	641	76
Peak Hour Factor	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	0	6	28	1	9	4	120	2	4	181	21
Total Analysis Volume [veh/h]	7	1	25	111	3	35	17	479	9	17	724	86
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

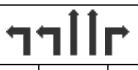
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.01	0.03	0.67	0.02	0.06	0.02	0.00	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	22.92	30.62	10.35	65.14	67.05	11.36	9.46	0.00	0.00	8.37	0.00	0.00
Movement LOS	C	D	B	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.24	0.24	0.24	4.09	4.09	0.19	0.06	0.00	0.00	0.05	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.91	5.91	5.91	102.2	102.2	4.63	1.58	0.00	0.00	1.19	0.00	0.00
d_A, Approach Delay [s/veh]	13.63			52.55			0.32			0.17		
Approach LOS	B			F			A			A		
d_I, Intersection Delay [s/veh]	5.67											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	51.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.824

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	439	581	136	84	759	31	35	281	464	265	376	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	30	0	0	32	0	0	1	0	0	0	1
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	465	646	144	89	837	33	37	299	492	281	399	88
Peak Hour Factor	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	121	169	38	23	219	9	10	78	129	73	104	23
Total Analysis Volume [veh/h]	486	675	150	93	875	34	39	312	514	294	417	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	46	0	13	36	0	9	46	0	15	52	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	43	43	8	32	32	4	42	42	11	49	49
g / C, Green / Cycle	0.16	0.36	0.36	0.07	0.27	0.27	0.03	0.35	0.35	0.09	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.15	0.20	0.10	0.05	0.25	0.25	0.01	0.09	0.34	0.09	0.15	0.15
s, saturation flow rate [veh/h]	3329	3427	1530	1714	1800	1776	3329	3427	1530	3329	1800	1689
c, Capacity [veh/h]	527	1231	550	116	484	477	106	1192	532	305	734	689
d1, Uniform Delay [s]	49.77	30.68	27.31	55.12	43.01	43.01	56.92	28.07	38.43	54.30	24.63	24.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.43	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.23	1.76	1.22	11.73	29.38	29.64	2.14	0.12	28.84	16.67	0.29	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.55	0.27	0.80	0.95	0.95	0.37	0.26	0.97	0.96	0.36	0.36
d, Delay for Lane Group [s/veh]	57.00	32.44	28.54	66.85	72.39	72.65	59.06	28.19	67.27	70.97	24.93	24.95
Lane Group LOS	E	C	C	E	E	E	E	C	E	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.69	8.06	3.26	3.15	17.13	16.94	0.61	3.26	18.86	5.12	5.23	4.92
50th-Percentile Queue Length [ft/ln]	192.2	201.4	81.42	78.81	428.2	423.4	15.29	81.38	471.4	128.0	130.7	123.0
95th-Percentile Queue Length [veh/ln]	12.24	12.71	5.86	5.67	23.92	23.69	1.10	5.86	25.98	8.84	8.98	8.56
95th-Percentile Queue Length [ft/ln]	306.0	317.8	146.5	141.8	597.9	592.2	27.53	146.4	649.5	220.8	224.5	214.0

Movement, Approach, & Intersection Results

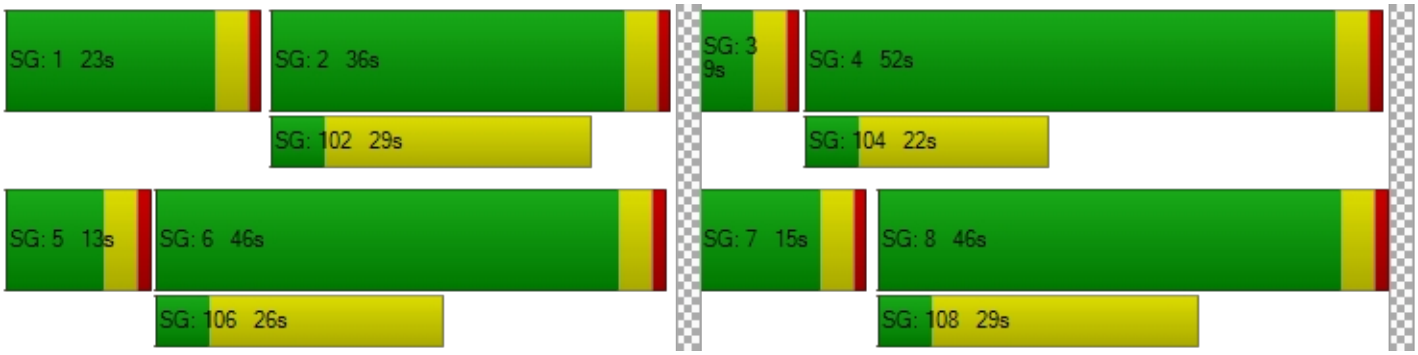
d_M, Delay for Movement [s/veh]	57.00	32.44	28.54	66.85	72.52	72.65	59.06	28.19	67.27	70.97	24.94	24.95
Movement LOS	E	C	C	E	E	E	E	C	E	E	C	C
d_A, Approach Delay [s/veh]	41.10			71.99			52.80			41.79		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	51.56											
Intersection LOS	D											
Intersection V/C	0.824											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.026	2.668	2.860	2.906
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	533	700	800
d_b, Bicycle Delay [s]	25.35	32.27	25.35	21.60
l_b,int, Bicycle LOS Score for Intersection	2.641	2.386	2.273	2.222
Bicycle LOS	B	B	B	B

Sequence

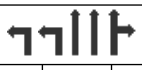
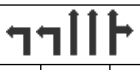
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	180	1217	675	109	1386	98	170	259	151	546	419	94
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	1	10	0	6	18	0	0	0	1	0	0	4
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	192	1300	716	122	1487	104	180	275	161	579	444	104
Peak Hour Factor	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	347	191	33	397	28	48	73	43	155	119	28
Total Analysis Volume [veh/h]	205	1389	765	130	1589	111	192	294	172	619	474	111
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	40	40	9	36	0	35	43	0	28	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	59	87	5	55	55	9	16	16	24	31	40
g / C, Green / Cycle	0.08	0.49	0.72	0.04	0.46	0.46	0.08	0.14	0.14	0.20	0.26	0.33
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.50	0.04	0.33	0.33	0.06	0.09	0.11	0.19	0.14	0.04
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1741	3329	3427	1530	3329	3427	2708
c, Capacity [veh/h]	250	2400	1106	139	1563	794	260	465	207	666	883	901
d1, Uniform Delay [s]	54.71	21.82	9.22	57.34	26.44	26.47	54.12	49.04	50.51	47.17	38.38	27.87
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.60	1.03	3.56	23.04	2.90	5.64	4.10	1.43	8.23	6.42	0.51	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.58	0.69	0.94	0.72	0.72	0.74	0.63	0.83	0.93	0.54	0.12
d, Delay for Lane Group [s/veh]	61.31	22.85	12.78	80.39	29.34	32.11	58.22	50.47	58.75	53.59	38.89	27.93
Lane Group LOS	E	C	B	F	C	C	E	D	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.28	9.35	10.80	2.41	13.41	14.27	2.99	4.26	5.50	9.64	6.07	1.13
50th-Percentile Queue Length [ft/ln]	82.04	233.7	270.0	60.24	335.3	356.7	74.67	106.5	137.5	240.8	151.8	28.20
95th-Percentile Queue Length [veh/ln]	5.91	14.37	16.19	4.34	19.42	20.47	5.38	7.65	9.35	14.73	10.12	2.03
95th-Percentile Queue Length [ft/ln]	147.6	359.1	404.8	108.4	485.5	511.6	134.4	191.2	233.6	368.1	252.9	50.76

Movement, Approach, & Intersection Results

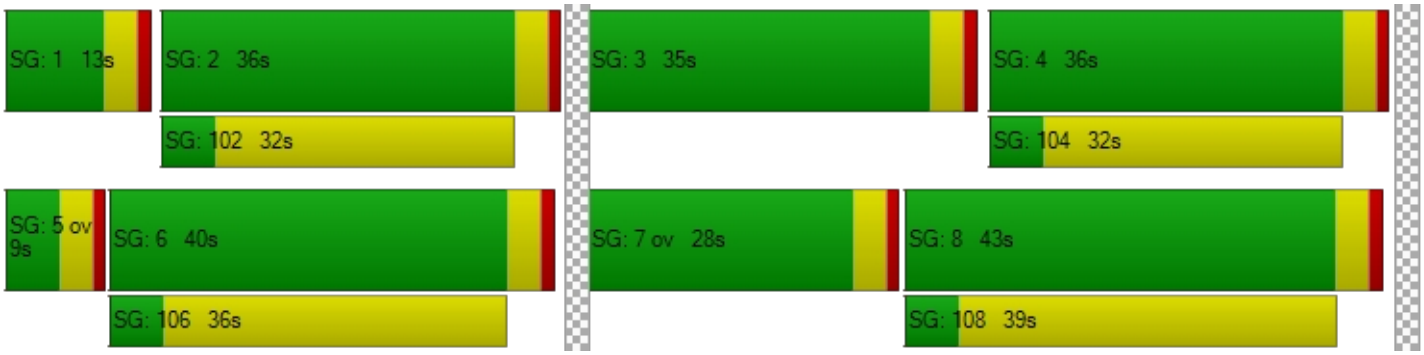
d_M, Delay for Movement [s/veh]	61.31	22.85	12.78	80.39	30.15	32.11	58.22	50.47	58.75	53.59	38.89	27.93
Movement LOS	E	C	B	F	C	C	E	D	E	D	D	C
d_A, Approach Delay [s/veh]	22.93			33.84			54.90			45.44		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.18											
Intersection LOS	C											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.444	3.170	2.917	3.124
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	533	650	533
d_b, Bicycle Delay [s]	29.40	32.27	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.857	2.566	1.922	2.553
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.513

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	762	445	0	774	408	0	0	0	490	0	531
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.000	1.060
In-Process Volume [veh/h]	0	9	0	0	6	7	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	817	445	0	826	439	0	0	0	519	0	563
Peak Hour Factor	1.000	0.924	1.000	1.000	0.924	0.924	1.000	1.000	1.000	0.924	1.000	0.924
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	221	111	0	223	119	0	0	0	140	0	152
Total Analysis Volume [veh/h]	0	884	445	0	894	475	0	0	0	562	0	609
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	43	0	0	43	0	0	0	0	77	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	77	77		35	35	35
g / C, Green / Cycle	0.64	0.64		0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.26	0.18		0.23	0.24	0.26
s, saturation flow rate [veh/h]	3427	4903		1714	1606	1530
c, Capacity [veh/h]	2204	3153		498	466	444
d1, Uniform Delay [s]	10.30	9.35		39.13	39.93	40.57
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.55	0.23		2.77	4.07	5.75
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.28		0.78	0.84	0.88
d, Delay for Lane Group [s/veh]	10.85	9.57		41.90	44.00	46.32
Lane Group LOS	B	A		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.52	3.34		10.90	11.25	11.61
50th-Percentile Queue Length [ft/ln]	137.99	83.52		272.3	281.3	290.2
95th-Percentile Queue Length [veh/ln]	9.37	6.01		16.31	16.75	17.20
95th-Percentile Queue Length [ft/ln]	234.31	150.34		407.7	418.8	429.9

Movement, Approach, & Intersection Results

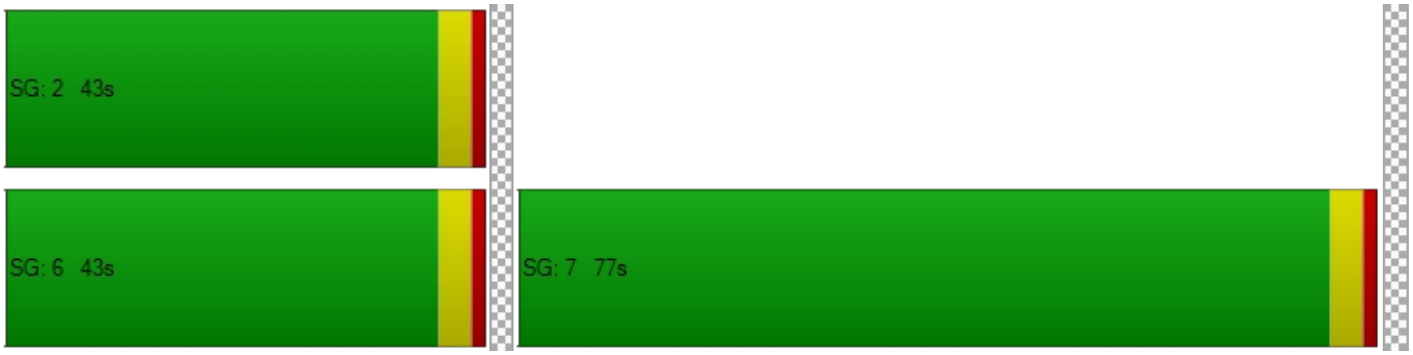
d_M, Delay for Movement [s/veh]	0.00	10.85	0.00	0.00	9.57	0.00	0.00	0.00	0.00	42.54	0.00	45.49
Movement LOS		B			A					D		D
d_A, Approach Delay [s/veh]	10.85			9.57			0.00			44.07		
Approach LOS	B			A			A			D		
d_I, Intersection Delay [s/veh]	23.65											
Intersection LOS	C											
Intersection V/C	0.513											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	650	0	1217
d_b, Bicycle Delay [s]	27.34	27.34	60.00	9.20
l_b,int, Bicycle LOS Score for Intersection	2.289	2.051	4.132	3.492
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	993	543	0	1748	0	0	0	0	738	0	637
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.060	1.000	1.060	1.060	1.060	1.060	1.060	1.060	1.000	1.060
In-Process Volume [veh/h]	0	26	0	0	124	0	0	0	0	0	0	62
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1079	576	0	1977	0	0	0	0	782	0	737
Peak Hour Factor	1.000	0.910	0.910	1.000	0.910	0.910	0.910	0.910	0.910	0.910	1.000	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	296	158	0	543	0	0	0	0	215	0	202
Total Analysis Volume [veh/h]	0	1186	633	0	2173	0	0	0	0	859	0	810
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	19	0	0	19	0	0	0	0	101	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	44	44		68	68
g / C, Green / Cycle	0.37	0.37		0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.24	0.33		0.26	0.53
s, saturation flow rate [veh/h]	4903	6538		3329	1530
c, Capacity [veh/h]	1808	2411		1880	864
d1, Uniform Delay [s]	31.54	35.81		15.33	24.17
k, delay calibration	0.50	0.50		0.11	0.22
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	1.88	6.01		0.17	10.10
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.90		0.46	0.94
d, Delay for Lane Group [s/veh]	33.41	41.83		15.50	34.27
Lane Group LOS	C	D		B	C
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	9.77	15.76		6.79	22.49
50th-Percentile Queue Length [ft/ln]	244.23	394.02		169.81	562.14
95th-Percentile Queue Length [veh/ln]	14.90	22.27		11.07	30.26
95th-Percentile Queue Length [ft/ln]	372.38	556.79		276.66	756.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	33.41	0.00	0.00	41.83	0.00	0.00	0.00	0.00	15.50	0.00	34.27
Movement LOS		C			D					B		C
d_A, Approach Delay [s/veh]	33.41			41.83			0.00			24.61		
Approach LOS	C			D			A			C		
d_I, Intersection Delay [s/veh]	34.13											
Intersection LOS	C											
Intersection V/C	0.862											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	0	1617
d_b, Bicycle Delay [s]	45.94	45.94	60.00	2.20
l_b,int, Bicycle LOS Score for Intersection	2.212	2.456	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.560

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	654	272	0	983	466	0	0	0	363	0	448
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.000	1.060
In-Process Volume [veh/h]	0	4	0	0	32	0	0	0	0	0	0	26
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	697	272	0	1074	466	0	0	0	385	0	501
Peak Hour Factor	1.000	0.960	0.868	1.000	0.960	1.000	1.000	1.000	1.000	0.960	1.000	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	182	78	0	280	117	0	0	0	100	0	130
Total Analysis Volume [veh/h]	0	726	313	0	1119	466	0	0	0	401	0	522
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	55	0	0	55	0	0	0	0	65	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	80	80		32	32
g / C, Green / Cycle	0.67	0.67		0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.15	0.33		0.23	0.19
s, saturation flow rate [veh/h]	4903	3427		1714	2708
c, Capacity [veh/h]	3278	2291		454	717
d1, Uniform Delay [s]	7.74	9.79		42.33	40.17
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.16	0.75		5.84	1.43
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.49		0.88	0.73
d, Delay for Lane Group [s/veh]	7.89	10.54		48.17	41.61
Lane Group LOS	A	B		D	D
Critical Lane Group	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	2.36	7.00		12.07	7.14
50th-Percentile Queue Length [ft/ln]	58.98	174.96		301.71	178.56
95th-Percentile Queue Length [veh/ln]	4.25	11.34		17.77	11.53
95th-Percentile Queue Length [ft/ln]	106.16	283.42		444.14	288.14

Movement, Approach, & Intersection Results

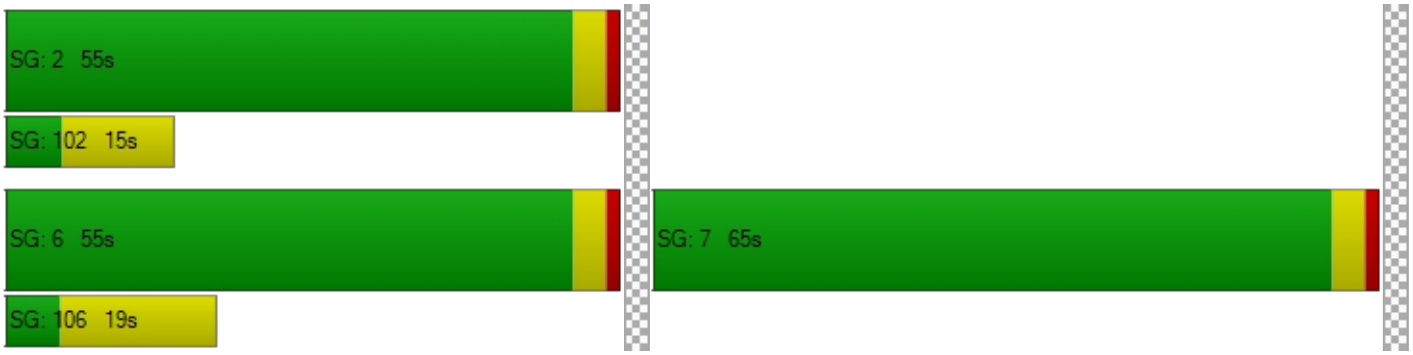
d_M, Delay for Movement [s/veh]	0.00	7.89	0.00	0.00	10.54	0.00	0.00	0.00	0.00	48.17	0.00	41.61
Movement LOS		A			B					D		D
d_A, Approach Delay [s/veh]	7.89			10.54			0.00			44.46		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	21.16											
Intersection LOS	C											
Intersection V/C	0.560											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.371
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	850	850	0	1017
d_b, Bicycle Delay [s]	19.84	19.84	60.00	14.50
l_b,int, Bicycle LOS Score for Intersection	1.959	2.483	4.132	1.560
Bicycle LOS	A	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.797

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1074	381	0	966	238	308	0	671	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1142	381	0	1030	238	308	0	671	0	0	0
Peak Hour Factor	1.000	0.927	1.000	1.000	0.927	1.000	0.927	1.000	0.927	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	308	95	0	278	60	83	0	181	0	0	0
Total Analysis Volume [veh/h]	0	1232	381	0	1111	238	332	0	724	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	19	0	0	19	0	101	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	52	52	60	60	
g / C, Green / Cycle	0.43	0.43	0.50	0.50	
(v / s)_i Volume / Saturation Flow Rate	0.25	0.32	0.10	0.47	
s, saturation flow rate [veh/h]	4903	3427	3329	1530	
c, Capacity [veh/h]	2129	1488	1662	764	
d1, Uniform Delay [s]	25.66	28.42	16.72	28.57	
k, delay calibration	0.50	0.50	0.11	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.15	3.46	0.06	9.98	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.58	0.75	0.20	0.95	
d, Delay for Lane Group [s/veh]	26.81	31.88	16.78	38.55	
Lane Group LOS	C	C	B	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	8.98	13.83	2.56	21.13	
50th-Percentile Queue Length [ft/ln]	224.41	345.65	64.12	528.33	
95th-Percentile Queue Length [veh/ln]	13.89	19.92	4.62	28.67	
95th-Percentile Queue Length [ft/ln]	347.25	498.10	115.41	716.81	

Movement, Approach, & Intersection Results

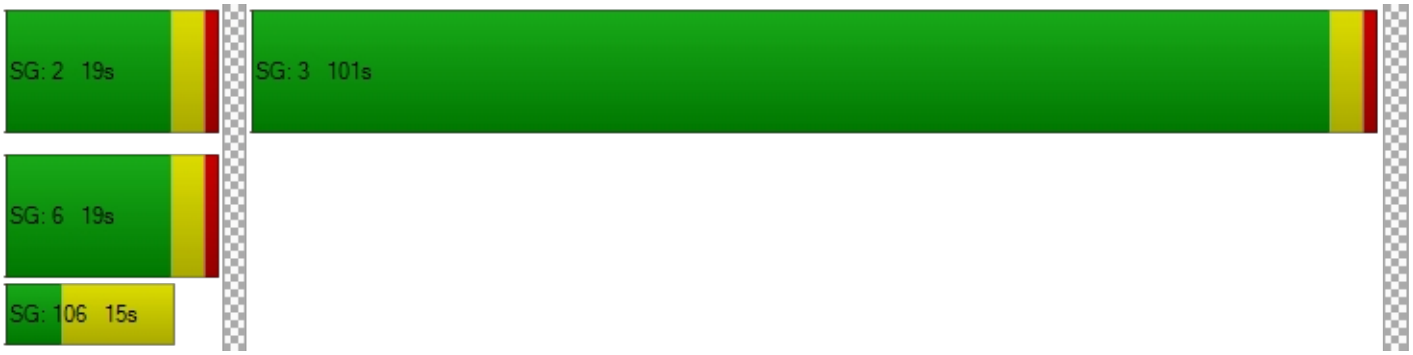
d_M, Delay for Movement [s/veh]	0.00	26.81	0.00	0.00	31.88	0.00	16.78	0.00	38.55	0.00	0.00	0.00
Movement LOS		C			C		B		D			
d_A, Approach Delay [s/veh]	26.81			31.88			31.70			0.00		
Approach LOS	C			C			C			A		
d_I, Intersection Delay [s/veh]	29.99											
Intersection LOS	C											
Intersection V/C	0.797											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1617	0
d_b, Bicycle Delay [s]	45.94	45.94	2.20	60.00
l_b,int, Bicycle LOS Score for Intersection	2.237	2.476	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	35.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.817

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1234	483	460	1488	0	401	6	617	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	21	0	92	32	0	5	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1329	512	580	1609	0	430	6	654	0	0	0
Peak Hour Factor	1.000	0.914	0.914	0.914	0.914	1.000	0.914	0.914	0.914	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	364	140	159	440	0	118	2	179	0	0	0
Total Analysis Volume [veh/h]	0	1454	560	635	1760	0	470	7	716	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	51	0	29	80	0	0	40	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	50	50	25	78	34	34	34	
g / C, Green / Cycle	0.41	0.41	0.21	0.65	0.28	0.28	0.28	
(v / s)_i Volume / Saturation Flow Rate	0.30	0.37	0.19	0.36	0.23	0.25	0.26	
s, saturation flow rate [veh/h]	4903	1530	3329	4903	1714	1565	1530	
c, Capacity [veh/h]	2021	631	684	3191	484	442	432	
d1, Uniform Delay [s]	29.48	32.71	46.81	11.41	40.22	41.42	41.74	
k, delay calibration	0.50	0.50	0.11	0.50	0.29	0.35	0.36	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.25	16.95	6.20	0.69	8.93	18.04	21.58	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.72	0.89	0.93	0.55	0.82	0.90	0.92	
d, Delay for Lane Group [s/veh]	31.72	49.66	53.01	12.10	49.15	59.46	63.32	
Lane Group LOS	C	D	D	B	D	E	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	11.92	17.71	9.85	8.20	12.10	13.44	13.90	
50th-Percentile Queue Length [ft/ln]	297.92	442.70	246.25	204.90	302.5	336.0	347.5	
95th-Percentile Queue Length [veh/ln]	17.58	24.61	15.00	12.89	17.81	19.45	20.02	
95th-Percentile Queue Length [ft/ln]	439.45	615.23	374.93	322.27	445.2	486.3	500.4	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	31.72	49.66	53.01	12.10	0.00	50.74	59.46	61.60	0.00	0.00	0.00
Movement LOS		C	D	D	B		D	E	E			
d_A, Approach Delay [s/veh]	36.71			22.94			57.31			0.00		
Approach LOS	D			C			E			A		
d_I, Intersection Delay [s/veh]	35.21											
Intersection LOS	D											
Intersection V/C	0.817											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.437	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	1267	600	0
d_b, Bicycle Delay [s]	22.20	8.07	29.40	60.00
l_b,int, Bicycle LOS Score for Intersection	2.667	2.877	3.528	4.132
Bicycle LOS	B	C	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	33.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	651	332	534	851	0	304	8	427	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	26	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	694	352	592	908	0	322	8	453	0	0	0
Peak Hour Factor	1.000	0.964	0.964	0.964	0.964	1.000	0.964	0.964	0.964	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	180	91	154	235	0	84	2	117	0	0	0
Total Analysis Volume [veh/h]	0	720	365	614	942	0	334	8	470	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	9	0	34	43	0	0	77	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	43	43	25	71	41	41	
g / C, Green / Cycle	0.36	0.36	0.21	0.60	0.34	0.34	
(v / s)_i Volume / Saturation Flow Rate	0.21	0.24	0.18	0.27	0.10	0.31	
s, saturation flow rate [veh/h]	3427	1530	3329	3427	3329	1534	
c, Capacity [veh/h]	1219	544	687	2040	1125	519	
d1, Uniform Delay [s]	31.54	32.72	46.34	13.55	29.22	38.19	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.11	6.46	4.36	0.75	0.15	7.32	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.59	0.67	0.89	0.46	0.30	0.92	
d, Delay for Lane Group [s/veh]	33.65	39.18	50.70	14.31	29.37	45.52	
Lane Group LOS	C	D	D	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	8.82	9.88	9.29	7.10	3.59	14.38	
50th-Percentile Queue Length [ft/ln]	220.58	247.04	232.31	177.41	89.63	359.52	
95th-Percentile Queue Length [veh/ln]	13.69	15.04	14.29	11.47	6.45	20.60	
95th-Percentile Queue Length [ft/ln]	342.36	375.92	357.29	286.63	161.33	515.00	

Movement, Approach, & Intersection Results

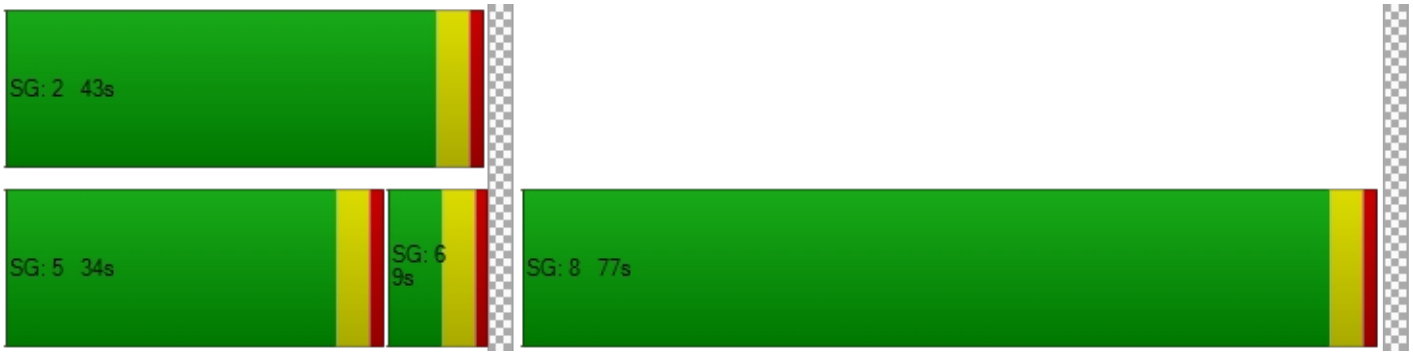
d_M, Delay for Movement [s/veh]	0.00	33.65	39.18	50.70	14.31	0.00	29.37	45.52	45.52	0.00	0.00	0.00
Movement LOS		C	D	D	B		C	D	D			
d_A, Approach Delay [s/veh]	35.51			28.67			38.87			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	33.22											
Intersection LOS	C											
Intersection V/C	0.735											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	650	1217	0
d_b, Bicycle Delay [s]	55.10	27.34	9.20	60.00
l_b,int, Bicycle LOS Score for Intersection	2.156	2.843	2.899	4.132
Bicycle LOS	B	C	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.710

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	420	718	357	500	741	821	855	0	501	428	0	550
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.000	1.060
In-Process Volume [veh/h]	0	4	0	13	6	0	0	0	0	0	0	7
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	445	765	378	543	791	870	906	0	531	454	0	590
Peak Hour Factor	0.955	0.955	0.955	0.955	0.955	0.955	0.955	1.000	0.955	0.955	1.000	0.955
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	116	200	99	142	207	228	237	0	139	119	0	154
Total Analysis Volume [veh/h]	466	801	396	569	828	911	949	0	556	475	0	618
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	62	0	0	62	0	58	0	0	58	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	74	74	74	74	38	38
g / C, Green / Cycle	0.62	0.62	0.62	0.62	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.36	0.16	0.42	0.17	0.29	0.14
s, saturation flow rate [veh/h]	1306	4903	1340	4903	3329	3329
c, Capacity [veh/h]	719	3026	741	3026	1053	1053
d1, Uniform Delay [s]	22.88	10.51	25.25	10.58	39.24	32.72
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.48	0.21	7.52	0.22	3.15	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.26	0.77	0.27	0.90	0.45
d, Delay for Lane Group [s/veh]	27.35	10.73	32.77	10.81	42.39	33.02
Lane Group LOS	C	B	C	B	D	C
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.37	3.20	7.44	3.33	13.69	5.57
50th-Percentile Queue Length [ft/ln]	134.30	80.10	186.11	83.36	342.30	139.17
95th-Percentile Queue Length [veh/ln]	9.17	5.77	11.92	6.00	19.76	9.44
95th-Percentile Queue Length [ft/ln]	229.33	144.18	297.98	150.04	494.02	235.91

Movement, Approach, & Intersection Results

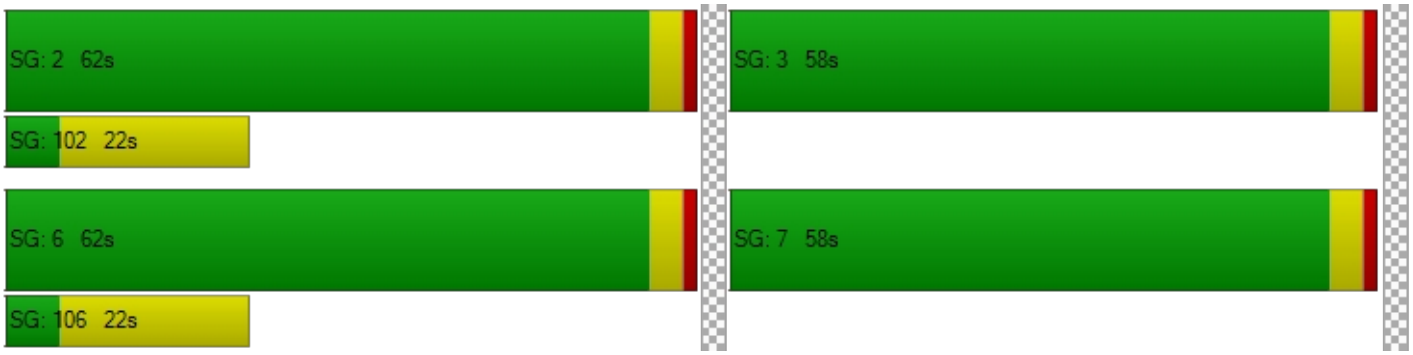
d_M, Delay for Movement [s/veh]	27.35	10.73	0.00	32.77	10.81	0.00	42.39	0.00	0.00	33.02	0.00	0.00
Movement LOS	C	B		C	B		D			C		
d_A, Approach Delay [s/veh]	16.84			19.75			42.39			33.02		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	25.65											
Intersection LOS	C											
Intersection V/C	0.710											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.254	3.328
Crosswalk LOS	F	F	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	967	900	900
d_b, Bicycle Delay [s]	16.02	16.02	18.15	18.15
l_b,int, Bicycle LOS Score for Intersection	2.256	2.328	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	38.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	176	333	80	108	705	218	77	409	118	156	1102	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	4	4	0	0	0	4	0	6	6	6
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	353	89	118	747	231	82	438	125	171	1174	115
Peak Hour Factor	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	54	103	26	34	218	67	24	128	36	50	342	34
Total Analysis Volume [veh/h]	218	411	104	138	871	269	96	510	146	199	1368	134
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	29	0	11	27	0	12	59	0	21	68	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	36	36	7	34	34	8	45	45	16	53	53
g / C, Green / Cycle	0.08	0.30	0.30	0.06	0.28	0.28	0.07	0.38	0.38	0.13	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.07	0.08	0.07	0.04	0.18	0.18	0.06	0.15	0.10	0.12	0.40	0.09
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	250	1481	462	190	1393	435	114	1287	575	226	1511	675
d1, Uniform Delay [s]	54.93	31.91	31.36	55.66	37.40	37.32	55.37	27.48	25.86	51.14	31.21	20.55
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.23	0.47	1.13	5.22	2.13	6.48	14.82	0.20	0.23	10.51	2.33	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.28	0.23	0.73	0.63	0.62	0.84	0.40	0.25	0.88	0.91	0.20
d, Delay for Lane Group [s/veh]	64.16	32.37	32.49	60.87	39.53	43.80	70.18	27.68	26.09	61.65	33.54	20.70
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.58	3.11	2.42	2.19	7.67	7.62	3.34	5.41	2.93	6.53	18.45	2.34
50th-Percentile Queue Length [ft/ln]	89.50	77.70	60.41	54.82	191.8	190.5	83.52	135.2	73.28	163.2	461.1	58.58
95th-Percentile Queue Length [veh/ln]	6.44	5.59	4.35	3.95	12.22	12.15	6.01	9.22	5.28	10.72	25.49	4.22
95th-Percentile Queue Length [ft/ln]	161.0	139.8	108.7	98.67	305.4	303.7	150.3	230.5	131.9	267.9	637.2	105.4

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.16	32.37	32.49	60.87	39.53	43.80	70.18	27.68	26.09	61.65	33.54	20.70
Movement LOS	E	C	C	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	41.84			42.73			32.80			35.82		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	38.28											
Intersection LOS	D											
Intersection V/C	0.698											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.076	3.072	2.892	2.867
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	383	917	1067
d_b, Bicycle Delay [s]	37.60	39.20	17.60	13.07
l_b,int, Bicycle LOS Score for Intersection	1.963	2.263	2.180	2.963
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	170	66	105	390	270	118	333	69	166	1013	134
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	12	0	0	18	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	180	70	111	413	286	125	365	73	176	1092	142
Peak Hour Factor	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	53	21	33	122	84	37	108	22	52	322	42
Total Analysis Volume [veh/h]	61	212	83	131	487	337	147	430	86	208	1288	167
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	33	0	14	35	35	16	56	0	17	57	57
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	33	33	10	38	54	12	51	51	10	49	63
g / C, Green / Cycle	0.05	0.28	0.28	0.08	0.32	0.45	0.10	0.43	0.43	0.08	0.41	0.52
(v / s)_i Volume / Saturation Flow Rate	0.04	0.06	0.05	0.08	0.14	0.22	0.09	0.15	0.15	0.06	0.38	0.11
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1697	3329	3427	1530
c, Capacity [veh/h]	79	951	425	143	1078	685	171	765	721	269	1391	799
d1, Uniform Delay [s]	56.58	33.38	33.12	54.59	32.87	23.46	53.16	23.26	23.29	54.07	33.94	15.36
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.21	0.54	1.03	19.69	1.37	2.52	11.57	0.27	0.29	4.69	3.20	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.22	0.20	0.92	0.45	0.49	0.86	0.35	0.35	0.77	0.93	0.21
d, Delay for Lane Group [s/veh]	70.79	33.93	34.14	74.28	34.24	25.98	64.72	23.53	23.58	58.76	37.13	15.49
Lane Group LOS	E	C	C	E	C	C	E	C	C	E	D	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.14	2.47	1.98	4.71	5.86	7.18	4.91	5.11	4.85	3.26	18.08	2.47
50th-Percentile Queue Length [ft/ln]	53.58	61.65	49.53	117.6	146.6	179.4	122.7	127.6	121.3	81.42	452.0	61.82
95th-Percentile Queue Length [veh/ln]	3.86	4.44	3.57	8.26	9.84	11.57	8.54	8.81	8.47	5.86	25.06	4.45
95th-Percentile Queue Length [ft/ln]	96.45	110.9	89.15	206.6	245.9	289.2	213.6	220.3	211.6	146.5	626.4	111.2

Movement, Approach, & Intersection Results

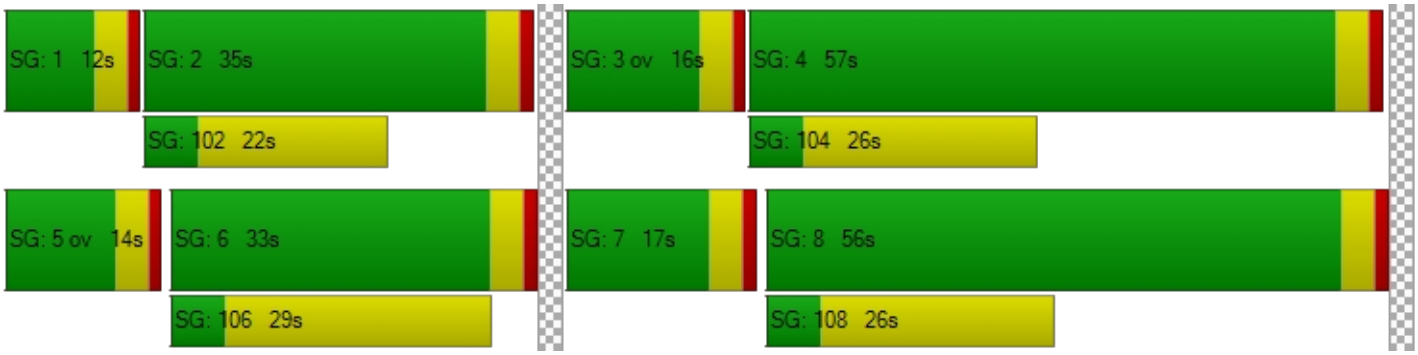
d_M, Delay for Movement [s/veh]	70.79	33.93	34.14	74.28	34.24	25.98	64.72	23.55	23.58	58.76	37.13	15.49
Movement LOS	E	C	C	E	C	C	E	C	C	E	D	B
d_A, Approach Delay [s/veh]	40.29			36.81			32.68			37.66		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	36.79											
Intersection LOS	D											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.653	2.709	2.773	2.930
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	517	867	883
d_b, Bicycle Delay [s]	34.50	33.00	19.27	18.70
l_b,int, Bicycle LOS Score for Intersection	1.853	2.347	2.107	2.932
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.688

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	28	937	55	409	1110	522	407	220	42	53	258	351
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	17	0	0	26	6	4	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	1010	58	434	1203	559	435	233	45	56	273	372
Peak Hour Factor	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	281	16	121	335	156	121	65	13	16	76	104
Total Analysis Volume [veh/h]	33	1125	65	483	1340	622	484	259	50	62	304	414
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	33	0	22	42	42	22	56	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	3	52	52	18	67	89	18	30	30	4	16	38
g / C, Green / Cycle	0.03	0.43	0.43	0.15	0.55	0.74	0.15	0.25	0.25	0.04	0.13	0.32
(v / s)_i Volume / Saturation Flow Rate	0.02	0.23	0.23	0.15	0.27	0.41	0.15	0.09	0.09	0.02	0.09	0.27
s, saturation flow rate [veh/h]	1714	3427	1750	3329	4903	1530	3329	1800	1700	3329	3427	1530
c, Capacity [veh/h]	49	1482	757	499	2716	1128	499	446	421	121	460	486
d1, Uniform Delay [s]	57.74	25.10	25.11	50.71	16.44	6.98	50.72	37.23	37.24	56.76	49.34	38.30
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.34
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.96	1.37	2.67	12.46	0.64	1.94	12.76	0.48	0.51	3.29	1.63	12.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.53	0.53	0.97	0.49	0.55	0.97	0.36	0.36	0.51	0.66	0.85
d, Delay for Lane Group [s/veh]	72.69	26.47	27.77	63.16	17.08	8.93	63.49	37.71	37.75	60.05	50.97	50.45
Lane Group LOS	E	C	C	E	B	A	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.20	8.48	8.94	8.05	7.52	6.76	8.09	3.92	3.72	0.98	4.44	12.91
50th-Percentile Queue Length [ft/ln]	29.90	212.0	223.5	201.3	188.0	168.9	202.2	98.07	92.90	24.47	110.9	322.8
95th-Percentile Queue Length [veh/ln]	2.15	13.26	13.85	12.71	12.02	11.02	12.76	7.06	6.69	1.76	7.89	18.80
95th-Percentile Queue Length [ft/ln]	53.83	331.4	346.1	317.6	300.5	275.4	318.9	176.5	167.2	44.05	197.2	470.1

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.69	26.86	27.77	63.16	17.08	8.93	63.49	37.73	37.75	60.05	50.97	50.45
Movement LOS	E	C	C	E	B	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	28.15			24.11			53.45			51.41		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.55											
Intersection LOS	C											
Intersection V/C	0.688											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.067	3.417	2.753	2.830
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	633	867	650
d_b, Bicycle Delay [s]	34.50	28.02	19.27	27.34
l_b,int, Bicycle LOS Score for Intersection	2.232	2.904	2.214	2.203
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	657.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	39.736

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	36	762	11	114	720	331	245	39	80	9	21	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	0	14	6	6	4	0	0	0	0	9
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	812	12	135	769	357	264	41	85	10	22	79
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	222	3	37	211	98	72	11	23	3	6	22
Total Analysis Volume [veh/h]	42	889	13	148	842	391	289	45	93	11	24	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	12	12	5	13	13	91	91	91	91
g / C, Green / Cycle	0.03	0.10	0.10	0.04	0.11	0.11	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.02	0.17	0.17	0.09	0.25	0.26	39.46	0.06	0.40	0.06
s, saturation flow rate [veh/h]	1714	3427	1787	1714	3427	1530	8	1530	88	1530
c, Capacity [veh/h]	54	346	180	71	381	170	62	1159	106	1159
d1, Uniform Delay [s]	57.71	53.95	53.95	57.50	53.33	53.33	53.20	3.76	34.80	3.74
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.12	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.16	333.3	344.4	492.7	552.9	602.6	1994.68	0.03	2.01	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	1.71	1.72	2.07	2.21	2.30	5.36	0.08	0.33	0.08
d, Delay for Lane Group [s/veh]	78.87	387.3	398.3	550.2	606.3	655.9	2047.88	3.79	36.80	3.77
Lane Group LOS	E	F	F	F	F	F	F	A	D	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.58	21.22	22.68	11.94	35.00	33.59	36.46	0.52	0.90	0.49
50th-Percentile Queue Length [ft/ln]	39.56	530.5	567.0	298.5	874.9	839.8	911.42	13.07	22.52	12.18
95th-Percentile Queue Length [veh/ln]	2.85	33.88	35.95	20.10	55.12	53.26	65.62	0.94	1.62	0.88
95th-Percentile Queue Length [ft/ln]	71.20	847.0	898.8	502.6	1377.	1331.	1640.56	23.53	40.53	21.92

Movement, Approach, & Intersection Results

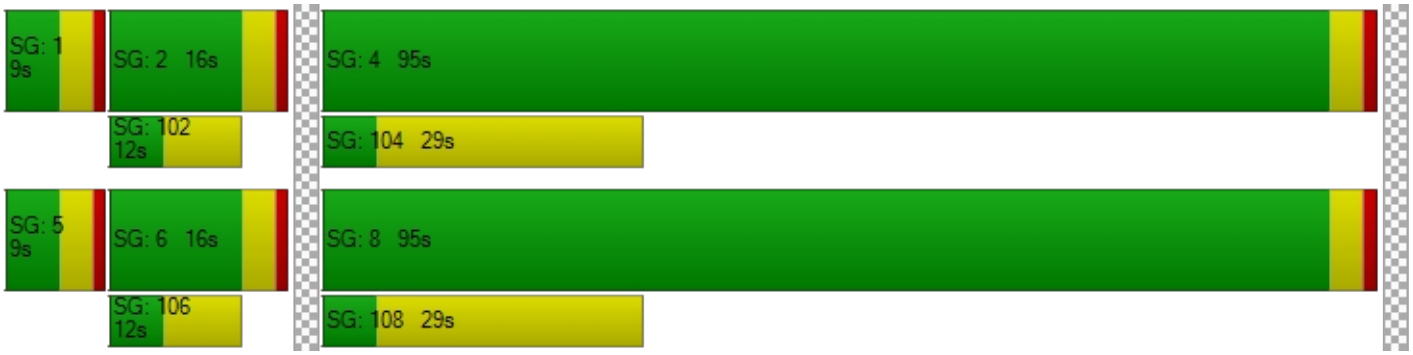
d_M, Delay for Movement [s/veh]	78.87	391.0	398.3	550.2	606.3	655.9	2047.	2047.	3.79	36.80	36.80	3.77
Movement LOS	E	F	F	F	F	F	F	F	A	D	D	A
d_A, Approach Delay [s/veh]	377.22			614.35			1602.68			13.25		
Approach LOS	F			F			F			B		
d_I, Intersection Delay [s/veh]	657.78											
Intersection LOS	F											
Intersection V/C	39.736											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.888	3.389	2.243	2.062
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	2.079	2.319	2.264	1.761
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	40	40	0	24	24	24	0	33	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	104	0	104	112	0	0	0	0	0
g / C, Green / Cycle	0.00	0.87	0.87	0.00	0.87	0.93	0.00	0.00	0.00	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1687	3373	1772	1687	3373	1506	1687	1772	2665	1687	1772
c, Capacity [veh/h]	1	2920	1533	1	2919	1405	1	1	1	1	1
d1, Uniform Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Group LOS	A	A	A	A	A	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	No	No	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement, Approach, & Intersection Results

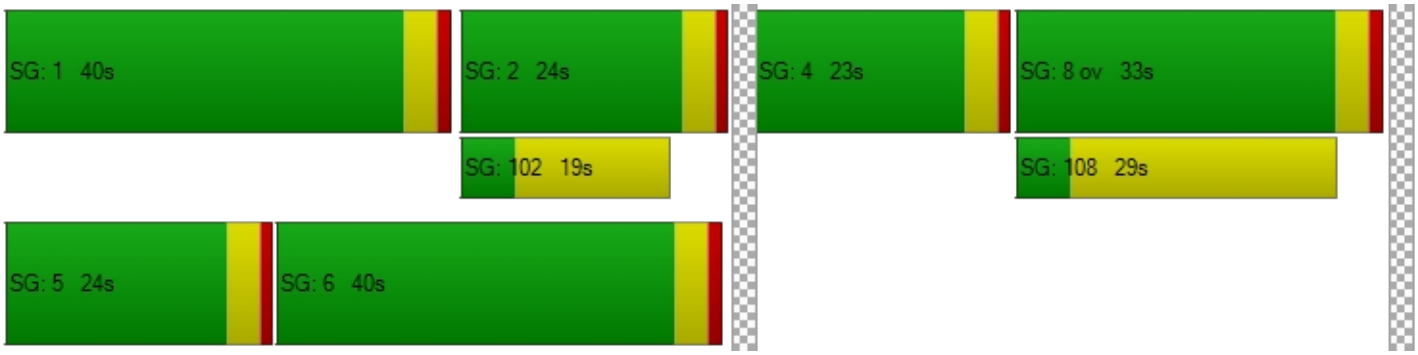
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											
Intersection V/C	0.000											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.609	0.000	2.468	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	333	483	317
d_b, Bicycle Delay [s]	29.40	41.67	34.50	42.50
l_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560	1.560
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 998543: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Level Of Service Report
Intersection 998552: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Crosswalk	Yes		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Level Of Service Report
Intersection 998555: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Left	Thru	Left	Thru	Right	Left	Thru	Right	Thru	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Speedway Commerce Center

Vistro File: K:\...\Speedway CC PM.vistro
Report File: K:\...\3 OY 2024 CUM PM.pdf

Scenario 3 OY 2024 CUM PM
1/13/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.551	28.8	C
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.639	26.3	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.434	16.6	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.569	23.3	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.711	29.9	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.473	14.4	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.384	34.7	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.676	39.1	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	EB Left	0.822	46.1	D
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	SB Left	0.453	40.3	D
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.341	15.0	B
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.473	34.4	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.668	38.7	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.465	43.3	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.527	39.6	D
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.518	35.4	D
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.526	43.6	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.876	20.7	C
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.552	21.9	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.668	42.8	D
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.643	43.5	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	3.418	1,539.5	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.792	51.4	D
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	NB Left	0.721	42.4	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.690	39.9	D
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.825	53.7	D
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.565	25.2	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.704	42.3	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.557	36.3	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.755	26.8	C
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	WB Left	0.828	46.5	D
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.462	38.8	E
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.613	27.3	C
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.729	26.2	C
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	EB Thru	0.967	40.9	E
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.559	30.3	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	EB Left	0.614	42.5	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.466	23.1	C
			HCM 6th				

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.664	33.4	C
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	EB Thru	0.834	25.7	D
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	WB Thru	0.807	28.8	D
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.490	27.7	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	SB Left	0.587	30.8	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Right	0.864	51.3	D
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	WB Left	0.604	34.8	C
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.532	36.9	D
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	WB Left	0.818	49.8	D
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.205	10.8	B
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.776	44.4	D
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	WB Left	0.489	35.2	D
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	NB Thru	0.470	27.7	C
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.509	31.0	C
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	WB Left	0.720	39.7	D
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	EB Thru	0.335	9.8	A
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.590	34.1	C
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	NB Right	0.883	51.8	D
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.917	44.8	D
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.479	15.1	B
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Left	1.125	243.3	F
			HCM 6th				

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.737	45.2	D
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	SB Left	0.893	51.6	D
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.511	19.1	B
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	WB Right	0.748	26.3	C
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Right	0.521	18.7	B
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.587	18.6	B
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	NB Right	0.785	35.3	D
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	EB Right	0.712	30.6	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	SB Left	1.016	50.3	D
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	WB Left	0.751	39.7	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	SB Left	0.704	39.1	D
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.661	35.7	D
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	30.924	372.4	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition		0.000	0.0	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.551

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	302	571	0	0	461	146	0	0	0	287	0	135
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	15	5	0	0	8	0	0	0	0	26	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	335	610	0	0	497	155	0	0	0	330	0	143
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	88	161	0	0	131	41	0	0	0	87	0	38
Total Analysis Volume [veh/h]	353	642	0	0	523	163	0	0	0	347	0	151
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	56	68	0	0	12	0	0	0	0	0	52	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	27	85	54	54		27	27
g / C, Green / Cycle	0.22	0.71	0.45	0.45		0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.21	0.19	0.13	0.14		0.20	0.10
s, saturation flow rate [veh/h]	1714	3427	3427	1599		1714	1530
c, Capacity [veh/h]	386	2430	1543	720		385	343
d1, Uniform Delay [s]	45.35	6.25	20.92	21.15		45.26	40.05
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	8.74	0.27	0.49	1.16		7.90	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.26	0.30	0.32		0.90	0.44
d, Delay for Lane Group [s/veh]	54.09	6.52	21.41	22.31		53.16	40.93
Lane Group LOS	D	A	C	C		D	D
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	11.14	2.78	4.17	4.35		10.84	3.93
50th-Percentile Queue Length [ft/ln]	278.52	69.46	104.32	108.63		271.05	98.36
95th-Percentile Queue Length [veh/ln]	16.61	5.00	7.51	7.76		16.24	7.08
95th-Percentile Queue Length [ft/ln]	415.37	125.03	187.78	194.09		406.05	177.05

Movement, Approach, & Intersection Results

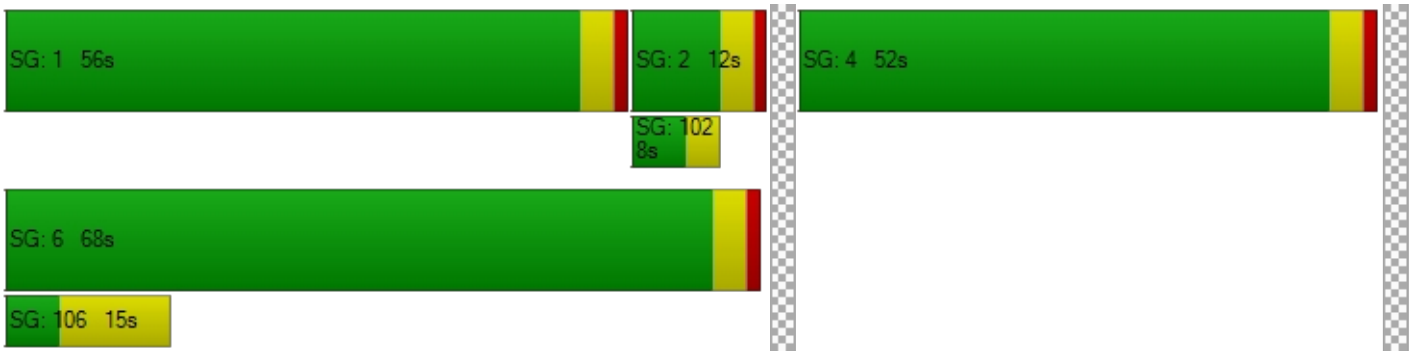
d_M, Delay for Movement [s/veh]	54.09	6.52	0.00	0.00	21.52	22.31	0.00	0.00	0.00	53.16	53.16	40.93
Movement LOS	D	A			C	C				D	D	D
d_A, Approach Delay [s/veh]	23.40			21.71			0.00			49.45		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	28.82											
Intersection LOS	C											
Intersection V/C	0.551											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.942	2.117
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1067	133	0	800
d_b, Bicycle Delay [s]	13.07	52.27	60.00	21.60
l_b,int, Bicycle LOS Score for Intersection	2.380	1.937	4.132	2.381
Bicycle LOS	B	A	D	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	26.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	323	1038	0	0	732	395	0	0	0	341	0	332
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	0	5	0	0	8	0	0	0	0	7	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	342	1105	0	0	784	419	0	0	0	368	0	352
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	90	291	0	0	206	110	0	0	0	97	0	93
Total Analysis Volume [veh/h]	360	1163	0	0	825	441	0	0	0	387	0	371
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	21	59	0	0	38	0	0	0	0	0	61	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	15	80	61	61		32	32	32
g / C, Green / Cycle	0.13	0.67	0.51	0.51		0.27	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.11	0.34	0.24	0.29		0.11	0.11	0.24
s, saturation flow rate [veh/h]	3329	3427	3427	1530		1714	1714	1530
c, Capacity [veh/h]	417	2277	1734	774		461	461	411
d1, Uniform Delay [s]	51.47	10.22	19.29	20.58		36.16	36.16	42.34
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	5.40	0.82	0.94	3.03		0.61	0.61	7.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.51	0.48	0.57		0.42	0.42	0.90
d, Delay for Lane Group [s/veh]	56.88	11.04	20.23	23.61		36.77	36.77	49.79
Lane Group LOS	E	B	C	C		D	D	D
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.62	7.55	7.59	9.05		4.77	4.77	11.38
50th-Percentile Queue Length [ft/ln]	140.41	188.66	189.83	226.35		119.2	119.2	284.6
95th-Percentile Queue Length [veh/ln]	9.50	12.05	12.11	13.99		8.35	8.35	16.92
95th-Percentile Queue Length [ft/ln]	237.58	301.29	302.81	349.71		208.7	208.7	422.9

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.88	11.04	0.00	0.00	20.23	23.61	0.00	0.00	0.00	36.77	36.77	49.79
Movement LOS	E	B			C	C				D	D	D
d_A, Approach Delay [s/veh]	21.88			21.41			0.00			43.14		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	26.26											
Intersection LOS	C											
Intersection V/C	0.639											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.121	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	567	0	950
d_b, Bicycle Delay [s]	17.60	30.82	60.00	16.54
l_b,int, Bicycle LOS Score for Intersection	2.816	2.604	4.132	2.810
Bicycle LOS	C	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.434

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1132	0	0	1172	0	0	0	0	297	0	400
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	0	5	0	0	8	0	0	0	0	4	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1205	0	0	1250	0	0	0	0	319	0	424
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	317	0	0	329	0	0	0	0	84	0	112
Total Analysis Volume [veh/h]	0	1268	0	0	1316	0	0	0	0	336	0	446
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	53	0	0	53	0	0	0	0	0	67	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	89	89		23	23	23
g / C, Green / Cycle	0.74	0.74		0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.26	0.27		0.16	0.16	0.17
s, saturation flow rate [veh/h]	4903	4903		1714	1572	1530
c, Capacity [veh/h]	3619	3619		335	307	299
d1, Uniform Delay [s]	5.55	5.63		46.19	46.46	46.54
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.27	0.28		4.78	6.05	6.52
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.36		0.81	0.84	0.85
d, Delay for Lane Group [s/veh]	5.82	5.91		50.98	52.51	53.06
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.41	3.58		8.20	7.89	7.79
50th-Percentile Queue Length [ft/ln]	85.17	89.60		204.9	197.1	194.8
95th-Percentile Queue Length [veh/ln]	6.13	6.45		12.90	12.49	12.37
95th-Percentile Queue Length [ft/ln]	153.31	161.28		322.3	312.3	309.3

Movement, Approach, & Intersection Results

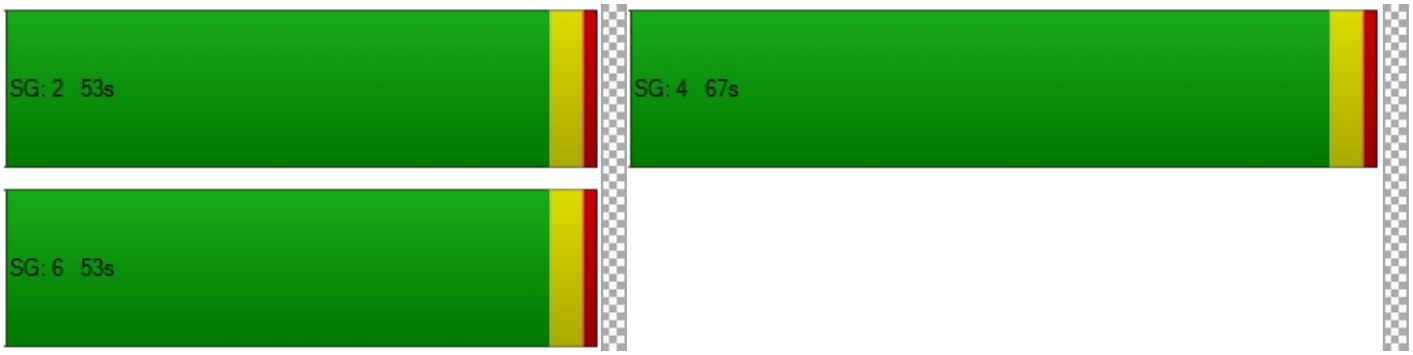
d_M, Delay for Movement [s/veh]	0.00	5.82	0.00	0.00	5.91	0.00	0.00	0.00	0.00	51.31	52.51	52.83
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	5.82			5.91			0.00			52.16		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	16.62											
Intersection LOS	B											
Intersection V/C	0.434											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	817	0	1050
d_b, Bicycle Delay [s]	21.00	21.00	60.00	13.54
l_b,int, Bicycle LOS Score for Intersection	2.257	2.283	4.132	2.850
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	23.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.569

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	687	307	72	673	0	193	2	359	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	20	22	0	34	0	0	0	16	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	748	347	76	747	0	205	2	397	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	197	91	20	197	0	54	1	104	0	0	0
Total Analysis Volume [veh/h]	0	787	365	80	786	0	216	2	418	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	31	0	13	44	0	0	76	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	65	65	7	76	36	36	
g / C, Green / Cycle	0.54	0.54	0.06	0.64	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.25	0.05	0.23	0.13	0.27	
s, saturation flow rate [veh/h]	3427	1541	1714	3427	1715	1530	
c, Capacity [veh/h]	1864	839	101	2181	510	455	
d1, Uniform Delay [s]	16.08	16.62	55.74	10.30	33.96	40.79	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.67	1.80	12.88	0.46	0.57	8.01	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.41	0.46	0.79	0.36	0.43	0.92	
d, Delay for Lane Group [s/veh]	16.75	18.42	68.62	10.77	34.53	48.80	
Lane Group LOS	B	B	E	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	6.26	6.70	2.75	4.84	5.22	12.84	
50th-Percentile Queue Length [ft/ln]	156.41	167.59	68.81	121.07	130.43	321.00	
95th-Percentile Queue Length [veh/ln]	10.36	10.95	4.95	8.45	8.96	18.72	
95th-Percentile Queue Length [ft/ln]	258.96	273.75	123.86	211.29	224.07	467.92	

Movement, Approach, & Intersection Results

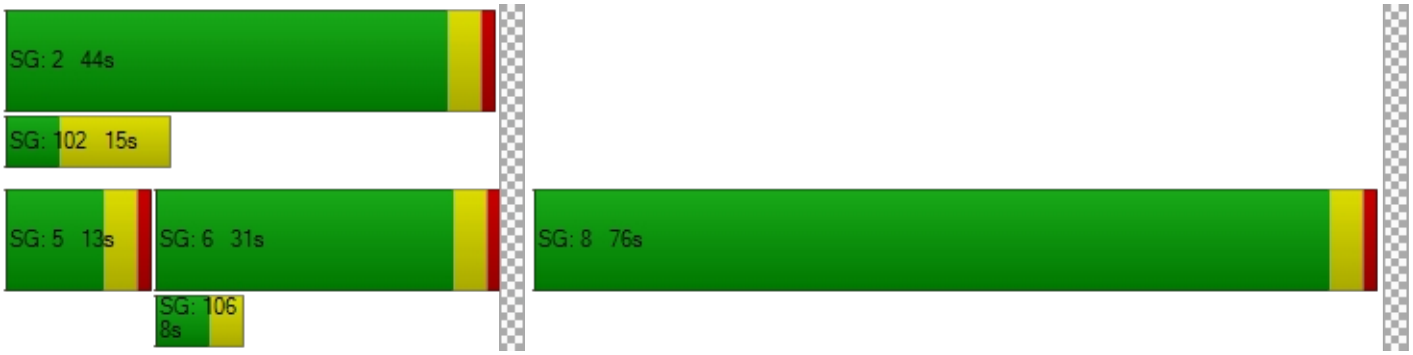
d_M, Delay for Movement [s/veh]	0.00	16.80	18.42	68.62	10.77	0.00	34.53	34.53	48.80	0.00	0.00	0.00
Movement LOS		B	B	E	B		C	C	D			
d_A, Approach Delay [s/veh]	17.31			16.11			43.91			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	23.29											
Intersection LOS	C											
Intersection V/C	0.569											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.162	1.874
Crosswalk LOS	F	F	B	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	450	667	1200	0
d_b, Bicycle Delay [s]	36.04	26.67	9.60	60.00
l_b,int, Bicycle LOS Score for Intersection	2.193	2.274	2.609	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	29.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1043	269	204	682	0	496	3	344	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	5	7	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1111	292	216	738	0	526	3	365	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	292	77	57	194	0	138	1	96	0	0	0
Total Analysis Volume [veh/h]	0	1169	307	227	777	0	554	3	384	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	67	0	14	81	0	0	39	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	70	70	10	84	28	28	28	
g / C, Green / Cycle	0.59	0.59	0.08	0.70	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.41	0.44	0.07	0.23	0.18	0.19	0.20	
s, saturation flow rate [veh/h]	1800	1677	3329	3427	1714	1668	1530	
c, Capacity [veh/h]	1054	982	277	2407	396	385	353	
d1, Uniform Delay [s]	17.45	18.39	54.11	6.87	43.50	43.74	44.53	
k, delay calibration	0.50	0.50	0.11	0.50	0.18	0.20	0.23	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.87	5.29	5.89	0.36	6.18	7.46	13.78	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.70	0.75	0.82	0.32	0.80	0.82	0.88	
d, Delay for Lane Group [s/veh]	21.32	23.68	59.99	7.23	49.68	51.19	58.32	
Lane Group LOS	C	C	E	A	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	14.76	15.81	3.60	3.64	9.49	9.63	10.24	
50th-Percentile Queue Length [ft/ln]	369.10	395.14	89.93	90.99	237.3	240.7	255.8	
95th-Percentile Queue Length [veh/ln]	21.07	22.33	6.48	6.55	14.55	14.72	15.48	
95th-Percentile Queue Length [ft/ln]	526.64	558.14	161.88	163.79	363.7	367.9	387.0	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	22.19	23.68	59.99	7.23	0.00	50.33	51.19	57.00	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	E			
d_A, Approach Delay [s/veh]	22.50			19.16			53.04			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	29.92											
Intersection LOS	C											
Intersection V/C	0.711											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.376	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	1283	583	0
d_b, Bicycle Delay [s]	13.54	7.70	30.10	60.00
I_b,int, Bicycle LOS Score for Intersection	2.777	2.388	3.112	4.132
Bicycle LOS	C	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1417	643	0	1189	41	193	0	409	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.000	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	5	0	0	12	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1507	682	0	1272	41	205	0	434	0	0	0
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	397	179	0	335	11	54	0	114	0	0	0
Total Analysis Volume [veh/h]	0	1586	718	0	1339	43	216	0	457	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	81	0	0	81	0	0	39	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	91	91	21	21	21	
g / C, Green / Cycle	0.76	0.76	0.18	0.18	0.18	
(v / s)_i Volume / Saturation Flow Rate	0.32	0.27	0.13	0.15	0.15	
s, saturation flow rate [veh/h]	4903	4903	1714	1530	1530	
c, Capacity [veh/h]	3710	3710	303	270	270	
d1, Uniform Delay [s]	5.26	4.89	46.52	47.80	47.80	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.36	0.27	3.11	7.10	7.10	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.43	0.36	0.71	0.84	0.84	
d, Delay for Lane Group [s/veh]	5.62	5.17	49.63	54.90	54.90	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	Yes	No	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	4.19	3.29	6.34	7.14	7.14	
50th-Percentile Queue Length [ft/ln]	104.75	82.22	158.4	178.4	178.4	
95th-Percentile Queue Length [veh/ln]	7.54	5.92	10.47	11.52	11.52	
95th-Percentile Queue Length [ft/ln]	188.56	148.00	261.6	287.9	287.9	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	5.62	0.00	0.00	5.17	0.00	49.63	54.90	54.90	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	5.62			5.17			53.21			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	14.35											
Intersection LOS	B											
Intersection V/C	0.473											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.310	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1283	1283	583	0
d_b, Bicycle Delay [s]	7.70	7.70	30.10	60.00
l_b,int, Bicycle LOS Score for Intersection	2.432	2.296	2.670	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.384

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	26	384	87	100	386	54	65	324	60	68	185	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	407	92	106	409	57	69	343	64	72	196	87
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	107	24	28	108	15	18	90	17	19	52	23
Total Analysis Volume [veh/h]	29	428	97	112	431	60	73	361	67	76	206	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	30	0	14	29	0	43	65	0	11	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	70	70	9	77	77	7	17	17	7	17	17
g / C, Green / Cycle	0.03	0.59	0.59	0.08	0.64	0.64	0.06	0.15	0.15	0.06	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.15	0.15	0.07	0.14	0.14	0.04	0.12	0.12	0.04	0.09	0.09
s, saturation flow rate [veh/h]	1714	1800	1687	1714	1800	1724	1714	1800	1704	1714	1800	1618
c, Capacity [veh/h]	45	1055	989	136	1150	1102	96	262	248	95	261	235
d1, Uniform Delay [s]	57.86	12.09	12.11	54.43	9.08	9.09	55.82	49.84	49.93	55.99	47.95	48.13
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.22	0.58	0.63	11.78	0.43	0.46	11.43	6.79	7.64	13.82	2.11	2.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.26	0.26	0.83	0.22	0.22	0.76	0.83	0.84	0.80	0.59	0.61
d, Delay for Lane Group [s/veh]	72.08	12.67	12.75	66.21	9.52	9.55	67.25	56.63	57.56	69.81	50.06	50.71
Lane Group LOS	E	B	B	E	A	A	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.05	3.62	3.45	3.78	2.79	2.70	2.49	6.86	6.64	2.64	4.47	4.21
50th-Percentile Queue Length [ft/ln]	26.27	90.58	86.35	94.41	69.69	67.39	62.17	171.6	166.0	66.01	111.6	105.3
95th-Percentile Queue Length [veh/ln]	1.89	6.52	6.22	6.80	5.02	4.85	4.48	11.16	10.87	4.75	7.93	7.58
95th-Percentile Queue Length [ft/ln]	47.29	163.0	155.4	169.9	125.4	121.2	111.9	279.0	271.7	118.8	198.3	189.5

Movement, Approach, & Intersection Results

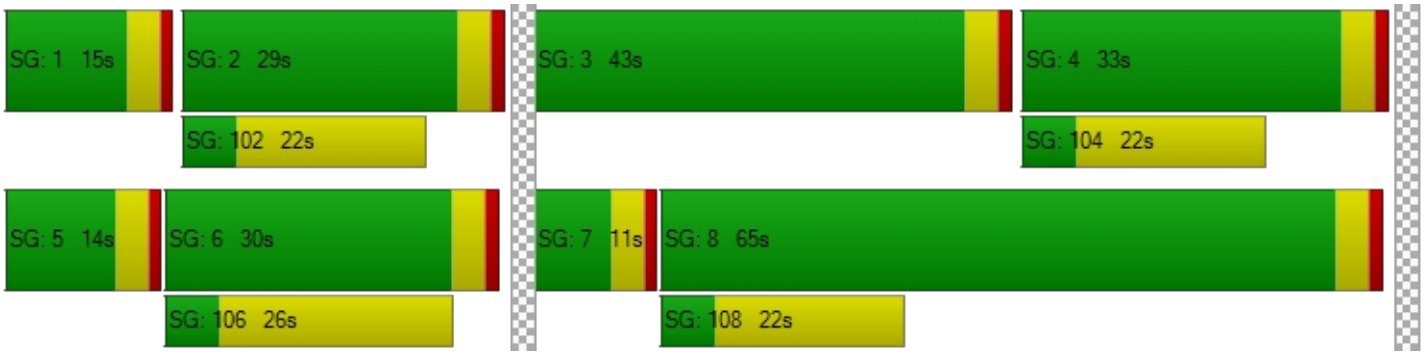
d_M, Delay for Movement [s/veh]	72.08	12.70	12.75	66.21	9.53	9.55	67.25	57.00	57.56	69.81	50.22	50.71
Movement LOS	E	B	B	E	A	A	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	15.82			20.06			58.57			54.32		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	34.70											
Intersection LOS	C											
Intersection V/C	0.384											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.535	2.548	2.470	2.622
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	417	1017	483
d_b, Bicycle Delay [s]	36.82	37.60	14.50	34.50
l_b,int, Bicycle LOS Score for Intersection	2.017	2.057	1.973	1.868
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	39.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	62	750	75	294	625	106	192	300	54	124	296	363
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	12	0	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	807	80	312	678	112	204	318	57	131	314	385
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	212	21	82	178	29	54	84	15	34	83	101
Total Analysis Volume [veh/h]	69	849	84	328	714	118	215	335	60	138	331	405
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	26	0	20	36	0	15	43	0	31	59	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	46	46	14	54	54	10	33	33	12	35	35
g / C, Green / Cycle	0.05	0.38	0.38	0.12	0.45	0.45	0.08	0.27	0.27	0.10	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.04	0.25	0.05	0.10	0.21	0.08	0.06	0.10	0.04	0.08	0.18	0.26
s, saturation flow rate [veh/h]	1714	3427	1530	3329	3427	1530	3329	3427	1530	1714	1800	1530
c, Capacity [veh/h]	86	1306	583	385	1531	683	269	933	416	168	520	442
d1, Uniform Delay [s]	56.42	30.55	24.32	52.06	23.21	19.91	54.19	35.23	33.09	53.10	37.15	41.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.86	2.52	0.52	5.40	1.02	0.55	5.40	0.23	0.16	9.58	1.30	10.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.65	0.14	0.85	0.47	0.17	0.80	0.36	0.14	0.82	0.64	0.92
d, Delay for Lane Group [s/veh]	72.28	33.07	24.84	57.47	24.23	20.46	59.59	35.47	33.24	62.69	38.45	51.24
Lane Group LOS	E	C	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.45	10.47	1.66	5.13	7.23	2.09	3.39	4.00	1.35	4.53	8.63	12.70
50th-Percentile Queue Length [ft/ln]	61.17	261.6	41.51	128.2	180.7	52.32	84.79	99.91	33.81	113.2	215.7	317.3
95th-Percentile Queue Length [veh/ln]	4.40	15.77	2.99	8.84	11.64	3.77	6.11	7.19	2.43	8.02	13.45	18.54
95th-Percentile Queue Length [ft/ln]	110.1	394.2	74.72	221.0	291.0	94.18	152.6	179.8	60.85	200.5	336.1	463.4

Movement, Approach, & Intersection Results

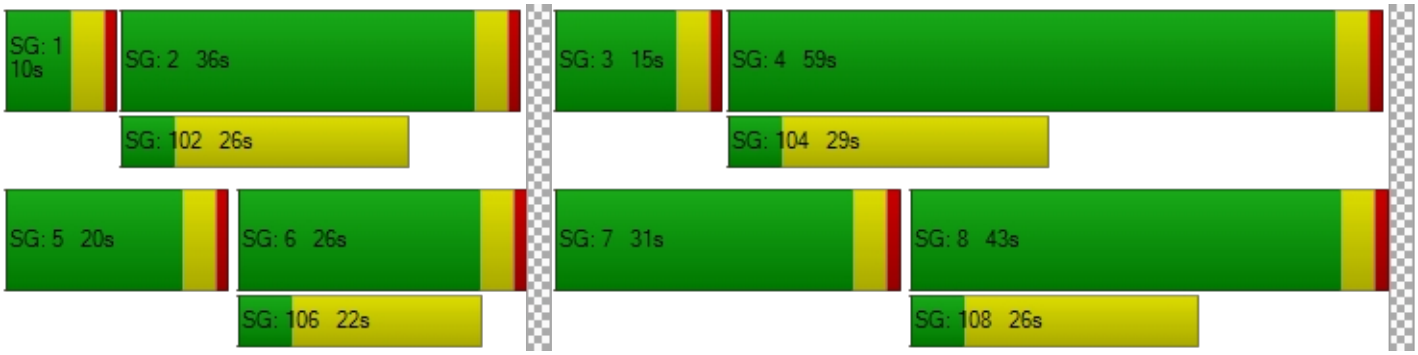
d_M, Delay for Movement [s/veh]	72.28	33.07	24.84	57.47	24.23	20.46	59.59	35.47	33.24	62.69	38.45	51.24
Movement LOS	E	C	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	35.08			33.24			43.75			48.20		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.09											
Intersection LOS	D											
Intersection V/C	0.676											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.779	2.975	2.766	2.732
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	533	650	917
d_b, Bicycle Delay [s]	40.02	32.27	27.34	17.60
l_b,int, Bicycle LOS Score for Intersection	2.386	2.517	2.063	3.002
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	46.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	59	1316	65	357	973	241	426	251	51	69	171	354
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	8	0	0	12	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	1403	69	378	1043	255	452	266	54	73	181	375
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	369	18	99	274	67	119	70	14	19	48	99
Total Analysis Volume [veh/h]	66	1477	73	398	1098	268	476	280	57	77	191	395
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	40	0	19	38	0	21	40	0	21	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	39	39	15	50	50	17	45	45	5	33	33
g / C, Green / Cycle	0.04	0.33	0.33	0.13	0.41	0.41	0.14	0.38	0.38	0.04	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.02	0.30	0.05	0.12	0.22	0.18	0.14	0.08	0.04	0.02	0.06	0.26
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	126	1595	498	416	2022	631	472	1292	577	131	942	420
d1, Uniform Delay [s]	56.67	39.09	28.68	52.18	26.69	25.11	51.50	25.35	24.18	56.69	33.42	42.55
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.36
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.34	10.70	0.62	12.52	1.05	2.09	21.55	0.08	0.07	4.17	0.11	24.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.93	0.15	0.96	0.54	0.42	1.01	0.22	0.10	0.59	0.20	0.94
d, Delay for Lane Group [s/veh]	60.00	49.79	29.30	64.69	27.75	27.20	73.05	25.43	24.25	60.86	33.53	67.34
Lane Group LOS	E	D	C	E	C	C	F	C	C	E	C	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.04	15.39	1.59	6.66	8.07	5.79	8.48	2.74	1.07	1.22	2.17	14.23
50th-Percentile Queue Length [ft/ln]	26.04	384.8	39.72	166.5	201.6	144.7	211.9	68.47	26.74	30.62	54.18	355.7
95th-Percentile Queue Length [veh/ln]	1.87	21.83	2.86	10.90	12.73	9.73	13.31	4.93	1.93	2.20	3.90	20.42
95th-Percentile Queue Length [ft/ln]	46.87	545.7	71.49	272.4	318.1	243.3	332.7	123.2	48.13	55.11	97.52	510.4

Movement, Approach, & Intersection Results

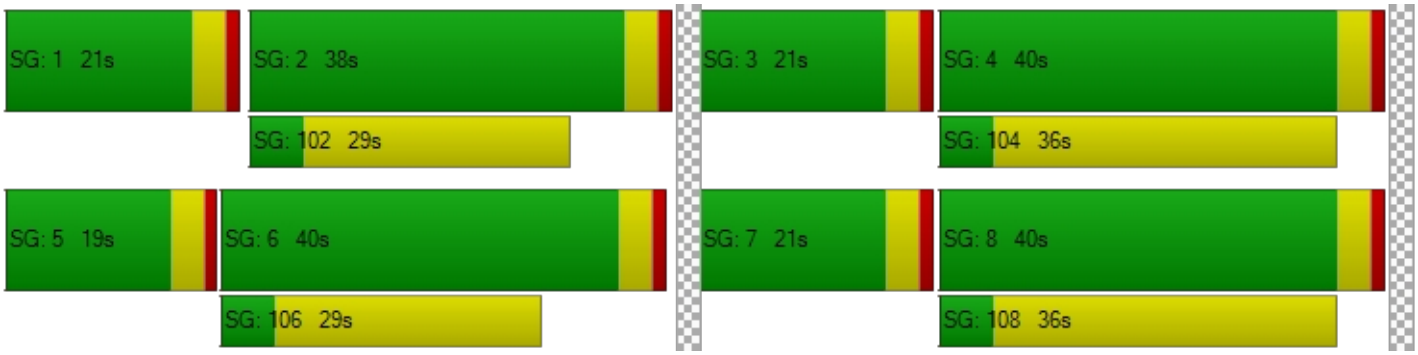
d_M, Delay for Movement [s/veh]	60.00	49.79	29.30	64.69	27.75	27.20	73.05	25.43	24.25	60.86	33.53	67.34
Movement LOS	E	D	C	E	C	C	F	C	C	E	C	E
d_A, Approach Delay [s/veh]	49.28			36.00			53.23			56.85		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	46.15											
Intersection LOS	D											
Intersection V/C	0.822											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.173	3.310	2.796	2.806
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	567	600	600
d_b, Bicycle Delay [s]	29.40	30.82	29.40	29.40
l_b,int, Bicycle LOS Score for Intersection	2.448	2.530	2.230	2.107
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	40.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.453

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	102	163	206	49	94	61	74	991	115	128	620	46
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	5	5	0	0	8	0	0	0	8	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	178	218	52	108	65	78	1050	130	136	657	49
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	30	47	57	14	28	17	21	276	34	36	173	13
Total Analysis Volume [veh/h]	119	187	229	55	114	68	82	1105	137	143	692	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	36	36	11	31	0	14	60	0	13	59	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	57	70	5	55	55	7	33	33	9	35	35
g / C, Green / Cycle	0.05	0.47	0.58	0.04	0.46	0.46	0.06	0.28	0.28	0.08	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.04	0.10	0.15	0.03	0.05	0.06	0.05	0.24	0.24	0.04	0.21	0.21
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1585	1714	3427	1700	3329	1800	1756
c, Capacity [veh/h]	175	852	890	70	832	732	103	950	471	250	526	513
d1, Uniform Delay [s]	55.87	18.57	12.34	57.01	18.32	18.39	55.65	41.36	41.36	53.64	38.03	38.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.63	0.59	0.70	16.98	0.27	0.34	12.79	2.70	5.28	2.07	1.84	1.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.22	0.26	0.78	0.11	0.12	0.79	0.87	0.87	0.57	0.72	0.72
d, Delay for Lane Group [s/veh]	60.50	19.16	13.04	73.99	18.59	18.73	68.45	44.05	46.64	55.71	39.87	39.92
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.88	3.20	3.15	1.98	1.55	1.48	2.82	11.97	12.23	2.16	10.13	9.90
50th-Percentile Queue Length [ft/ln]	47.10	79.98	78.70	49.61	38.68	36.91	70.41	299.3	305.6	53.99	253.3	247.3
95th-Percentile Queue Length [veh/ln]	3.39	5.76	5.67	3.57	2.78	2.66	5.07	17.65	17.96	3.89	15.35	15.05
95th-Percentile Queue Length [ft/ln]	84.77	143.9	141.6	89.29	69.62	66.45	126.7	441.2	449.0	97.19	383.8	376.3

Movement, Approach, & Intersection Results

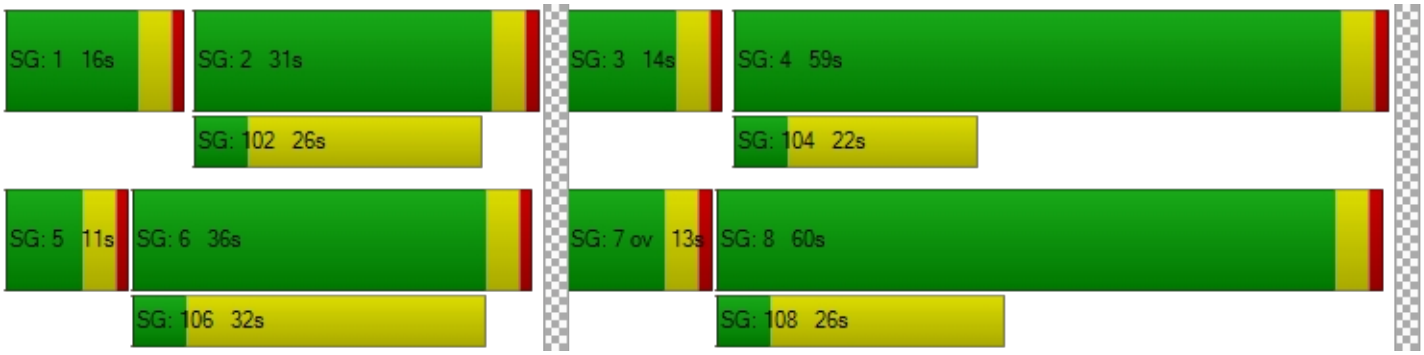
d_M, Delay for Movement [s/veh]	60.50	19.16	13.04	73.99	18.62	18.73	68.45	44.70	46.64	55.71	39.89	39.92
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	25.74			31.50			46.37			42.44		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	40.32											
Intersection LOS	D											
Intersection V/C	0.453											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.619	2.424	2.826	3.018
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	450	933	917
d_b, Bicycle Delay [s]	32.27	36.04	17.07	17.60
l_b,int, Bicycle LOS Score for Intersection	2.442	1.755	2.288	2.291
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.341

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	258	0	250	0	1047	169	0	558	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.000	1.060	1.060	1.000	1.060	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	273	0	265	0	1110	179	0	591	0
Peak Hour Factor	1.000	1.000	1.000	0.950	1.000	0.950	1.000	0.950	0.950	1.000	0.950	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	72	0	70	0	292	47	0	156	0
Total Analysis Volume [veh/h]	0	0	0	287	0	279	0	1168	188	0	622	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Split	Permi	Split	Permi	Permi	Unsig	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	43	0	0	0	77	0	0	77	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		16	16	96	96
g / C, Green / Cycle		0.13	0.13	0.80	0.80
(v / s)_i Volume / Saturation Flow Rate		0.09	0.10	0.24	0.13
s, saturation flow rate [veh/h]		3329	2708	4903	4903
c, Capacity [veh/h]		437	355	3933	3933
d1, Uniform Delay [s]		49.57	50.50	3.08	2.69
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		1.69	3.86	0.19	0.09
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.66	0.79	0.30	0.16
d, Delay for Lane Group [s/veh]		51.26	54.36	3.27	2.77
Lane Group LOS		D	D	A	A
Critical Lane Group		No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		4.20	4.25	1.95	0.91
50th-Percentile Queue Length [ft/ln]		105.05	106.26	48.80	22.64
95th-Percentile Queue Length [veh/ln]		7.56	7.63	3.51	1.63
95th-Percentile Queue Length [ft/ln]		189.10	190.79	87.83	40.75

Movement, Approach, & Intersection Results

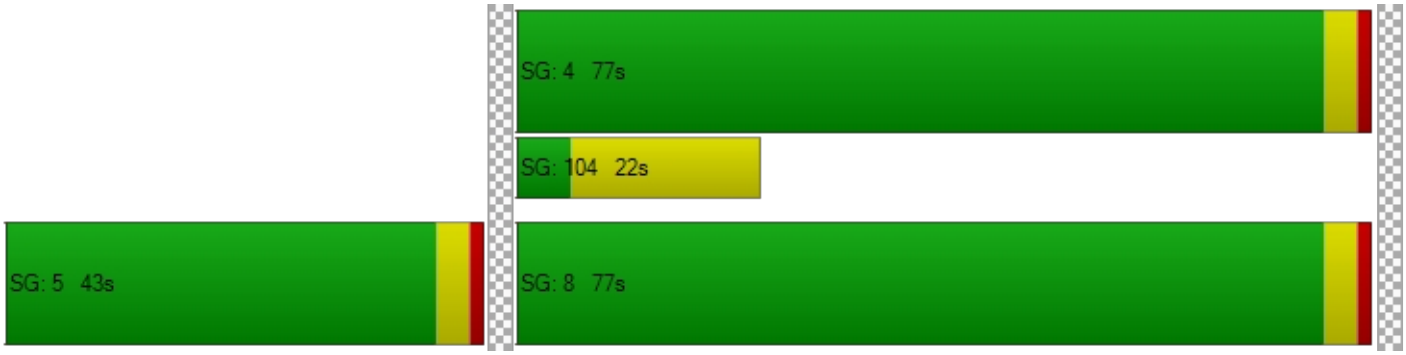
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	51.26	0.00	54.36	0.00	3.27	0.00	0.00	2.77	0.00
Movement LOS				D		D		A			A	
d_A, Approach Delay [s/veh]	0.00			52.79			3.27			2.77		
Approach LOS	A			D			A			A		
d_I, Intersection Delay [s/veh]	15.04											
Intersection LOS	B											
Intersection V/C	0.341											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.425	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	650	1217	1217
d_b, Bicycle Delay [s]	60.00	27.34	9.20	9.20
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.202	1.902
Bicycle LOS	D	A	B	A

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	34.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	276	0	514	0	0	0	439	912	0	0	798	162
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	293	0	545	0	0	0	465	967	0	0	846	172
Peak Hour Factor	0.950	0.950	0.950	1.000	1.000	1.000	0.950	0.950	1.000	1.000	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	77	0	143	0	0	0	122	254	0	0	223	45
Total Analysis Volume [veh/h]	308	0	574	0	0	0	489	1018	0	0	891	181
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Unsig
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	0	0	58	85	0	0	27	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	67	67	67		21	45	21
g / C, Green / Cycle	0.56	0.56	0.56		0.17	0.38	0.17
(v / s)_i Volume / Saturation Flow Rate	0.18	0.19	0.19		0.15	0.21	0.14
s, saturation flow rate [veh/h]	1714	1533	1530		3329	4903	6538
c, Capacity [veh/h]	952	851	849		576	1854	1123
d1, Uniform Delay [s]	14.41	14.64	14.65		48.10	29.28	47.64
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.88	1.09	1.09		3.61	0.25	1.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.34	0.34		0.85	0.55	0.79
d, Delay for Lane Group [s/veh]	15.29	15.73	15.74		51.71	29.53	48.95
Lane Group LOS	B	B	B		D	C	D
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.60	4.52	4.52		7.37	7.70	6.48
50th-Percentile Queue Length [ft/ln]	115.0	113.0	112.9		184.26	192.42	161.94
95th-Percentile Queue Length [veh/ln]	8.12	8.01	8.01		11.82	12.25	10.65
95th-Percentile Queue Length [ft/ln]	202.9	200.1	200.1		295.57	306.17	266.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.31	15.73	15.74	0.00	0.00	0.00	51.71	29.53	0.00	0.00	48.95	0.00
Movement LOS	B	B	B				D	C			D	
d_A, Approach Delay [s/veh]	15.58			0.00			36.73			48.95		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	34.36											
Intersection LOS	C											
Intersection V/C	0.473											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.361	1.968	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	0	1350	383
d_b, Bicycle Delay [s]	33.00	60.00	6.34	39.20
l_b,int, Bicycle LOS Score for Intersection	3.015	4.132	2.388	1.927
Bicycle LOS	C	D	B	A

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	38.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	154	926	338	107	435	86	305	1060	81	292	590	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	42	39	0	50	0	0	0	0	63	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	163	1024	397	113	511	91	323	1124	86	373	625	65
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	43	269	104	30	134	24	85	296	23	98	164	17
Total Analysis Volume [veh/h]	172	1078	418	119	538	96	340	1183	91	393	658	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	43	0	9	40	0	28	44	0	24	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	49	49	5	46	46	15	34	34	16	35	35
g / C, Green / Cycle	0.07	0.41	0.41	0.04	0.38	0.38	0.12	0.28	0.28	0.14	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.22	0.27	0.04	0.11	0.06	0.10	0.24	0.06	0.12	0.13	0.04
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	222	1998	624	139	1876	585	412	1376	429	456	1440	449
d1, Uniform Delay [s]	55.11	27.00	28.98	57.15	25.70	24.41	51.30	40.93	33.01	50.68	34.58	31.33
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.71	1.05	5.66	13.90	0.39	0.60	4.22	1.69	0.24	4.96	0.23	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.54	0.67	0.86	0.29	0.16	0.82	0.86	0.21	0.86	0.46	0.15
d, Delay for Lane Group [s/veh]	60.83	28.05	34.63	71.05	26.08	25.01	55.52	42.61	33.26	55.65	34.80	31.48
Lane Group LOS	E	C	C	E	C	C	E	D	C	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.74	7.96	10.67	2.06	3.63	1.91	5.23	11.18	2.07	6.08	5.26	1.49
50th-Percentile Queue Length [ft/ln]	68.40	198.9	266.8	51.53	90.74	47.74	130.7	279.5	51.76	152.0	131.5	37.22
95th-Percentile Queue Length [veh/ln]	4.92	12.58	16.03	3.71	6.53	3.44	8.98	16.66	3.73	10.13	9.02	2.68
95th-Percentile Queue Length [ft/ln]	123.1	314.5	400.7	92.75	163.3	85.93	224.5	416.6	93.17	253.2	225.5	66.99

Movement, Approach, & Intersection Results

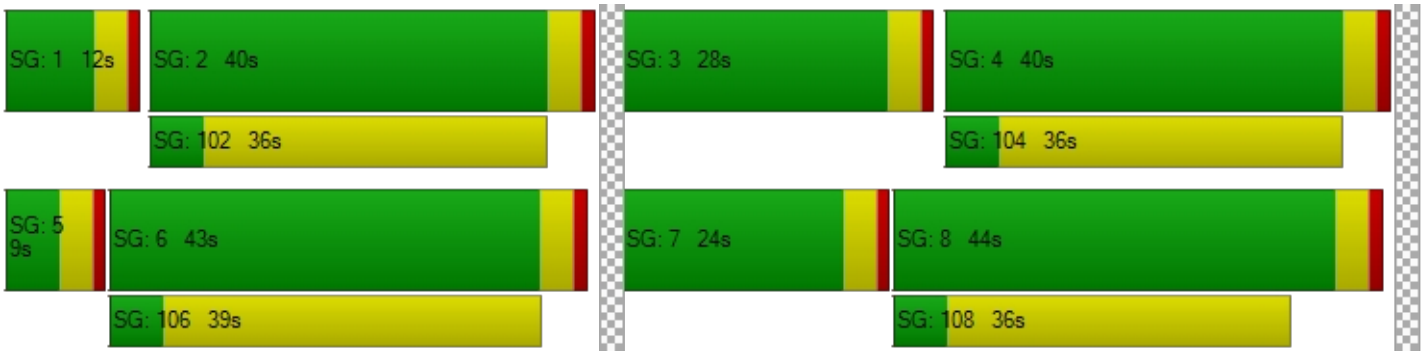
d_M, Delay for Movement [s/veh]	60.83	28.05	34.63	71.05	26.08	25.01	55.52	42.61	33.26	55.65	34.80	31.48
Movement LOS	E	C	C	E	C	C	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	33.08			33.05			44.80			41.92		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.67											
Intersection LOS	D											
Intersection V/C	0.668											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.156	3.107	3.318	3.258
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	600	667	600
d_b, Bicycle Delay [s]	27.34	29.40	26.67	29.40
l_b,int, Bicycle LOS Score for Intersection	2.477	1.974	2.447	2.175
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	43.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.465

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	94	250	24	131	191	90	211	979	73	65	552	121
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	33	0	0	54	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	100	265	25	139	202	95	224	1071	77	69	639	128
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	70	7	37	53	25	59	282	20	18	168	34
Total Analysis Volume [veh/h]	105	279	26	146	213	100	236	1127	81	73	673	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	37	0	16	40	0	37	57	0	10	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	51	51	12	54	54	19	35	35	6	23	23
g / C, Green / Cycle	0.07	0.42	0.42	0.10	0.45	0.45	0.16	0.29	0.29	0.05	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.02	0.09	0.09	0.09	0.14	0.23	0.05	0.04	0.16	0.16
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1772	1585	1714	4903	1506	1687	3427	1652
c, Capacity [veh/h]	128	1451	648	171	794	711	267	1440	442	84	643	310
d1, Uniform Delay [s]	54.72	21.72	20.30	53.16	20.11	20.17	49.57	38.87	31.64	56.60	47.04	47.15
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.03	0.30	0.12	11.36	0.58	0.68	9.32	0.96	0.20	21.79	3.13	6.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.19	0.04	0.85	0.21	0.21	0.88	0.78	0.18	0.87	0.84	0.85
d, Delay for Lane Group [s/veh]	66.75	22.02	20.42	64.52	20.70	20.85	58.89	39.83	31.83	78.39	50.16	53.85
Lane Group LOS	E	C	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.56	2.54	0.45	4.87	2.91	2.70	7.61	10.21	1.79	2.71	8.08	8.22
50th-Percentile Queue Length [ft/ln]	88.88	63.47	11.32	121.7	72.68	67.58	190.1	255.3	44.85	67.67	202.0	205.3
95th-Percentile Queue Length [veh/ln]	6.40	4.57	0.81	8.49	5.23	4.87	12.13	15.45	3.23	4.87	12.75	12.92
95th-Percentile Queue Length [ft/ln]	159.9	114.2	20.37	212.1	130.8	121.6	303.2	386.3	80.73	121.8	318.6	322.9

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.75	22.02	20.42	64.52	20.73	20.85	58.89	39.83	31.83	78.39	50.88	53.85
Movement LOS	E	C	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	33.37			34.69			42.50			53.61		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	43.27											
Intersection LOS	D											
Intersection V/C	0.465											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.594	2.648	3.116	3.006
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	600	883	433
d_b, Bicycle Delay [s]	31.54	29.40	18.70	36.82
l_b,int, Bicycle LOS Score for Intersection	1.898	1.938	2.354	2.044
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.527

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	95	607	69	127	443	106	299	720	115	160	526	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	2	2	0	0	15	10	18	0	1	30	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	101	645	75	135	470	127	327	781	122	171	588	61
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	170	20	36	124	33	86	206	32	45	155	16
Total Analysis Volume [veh/h]	106	679	79	142	495	134	344	822	128	180	619	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	19	40	0	22	43	0	28	46	0	12	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	59	59	12	61	61	15	25	25	8	19	34
g / C, Green / Cycle	0.08	0.49	0.49	0.10	0.51	0.51	0.12	0.21	0.21	0.07	0.15	0.29
(v / s)_i Volume / Saturation Flow Rate	0.06	0.21	0.21	0.08	0.14	0.09	0.10	0.17	0.08	0.05	0.13	0.04
s, saturation flow rate [veh/h]	1714	1800	1735	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	131	879	847	171	1752	782	414	1041	325	222	759	440
d1, Uniform Delay [s]	54.54	20.02	20.02	53.03	16.76	15.71	51.32	44.73	40.63	55.25	49.07	31.78
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.09	1.59	1.66	9.94	0.40	0.48	4.38	1.38	0.78	6.95	2.22	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.44	0.44	0.83	0.28	0.17	0.83	0.79	0.39	0.81	0.82	0.15
d, Delay for Lane Group [s/veh]	65.63	21.61	21.67	62.97	17.16	16.19	55.70	46.11	41.40	62.21	51.28	31.93
Lane Group LOS	E	C	C	E	B	B	E	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.56	7.34	7.09	4.67	3.97	2.07	5.30	7.83	3.34	2.90	6.13	1.41
50th-Percentile Queue Length [ft/ln]	88.93	183.5	177.3	116.8	99.25	51.72	132.5	195.8	83.43	72.50	153.2	35.32
95th-Percentile Queue Length [veh/ln]	6.40	11.79	11.46	8.22	7.15	3.72	9.08	12.42	6.01	5.22	10.19	2.54
95th-Percentile Queue Length [ft/ln]	160.0	294.6	286.5	205.4	178.6	93.09	226.9	310.5	150.1	130.5	254.7	63.57

Movement, Approach, & Intersection Results

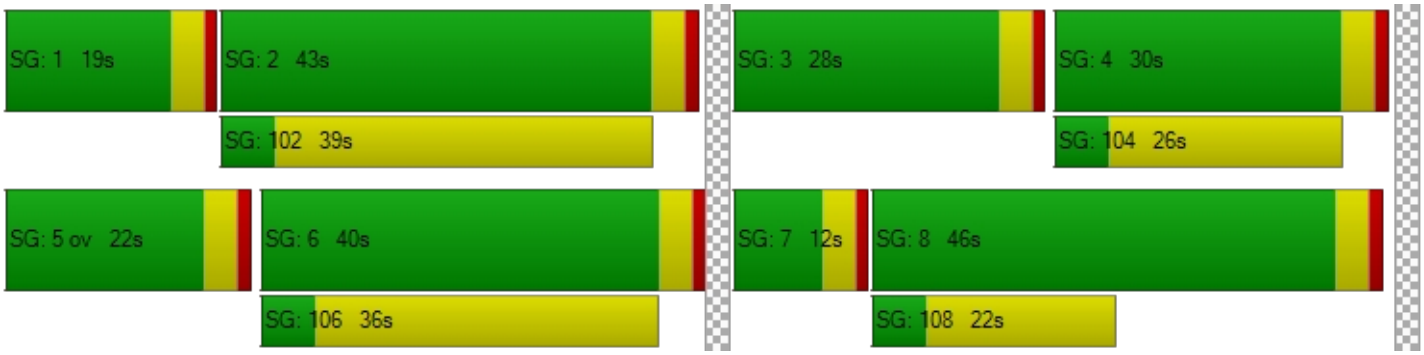
d_M, Delay for Movement [s/veh]	65.63	21.64	21.67	62.97	17.16	16.19	55.70	46.11	41.40	62.21	51.28	31.93
Movement LOS	E	C	C	E	B	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	27.04			25.43			48.19			52.12		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.64											
Intersection LOS	D											
Intersection V/C	0.527											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.640	2.770	3.098	3.168
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	650	700	433
d_b, Bicycle Delay [s]	29.40	27.34	25.35	36.82
l_b,int, Bicycle LOS Score for Intersection	2.272	2.196	2.271	2.034
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	35.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.518

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	104	974	61	226	510	55	136	597	90	92	640	235
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	0	0	6	14	9	5	0	0	8	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	1036	65	240	547	72	153	638	95	98	686	249
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	29	273	17	63	144	19	40	168	25	26	181	66
Total Analysis Volume [veh/h]	116	1091	68	253	576	76	161	672	100	103	722	262
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	40	0	16	43	0	12	55	0	9	52	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	61	61	11	66	66	8	27	27	5	25	25
g / C, Green / Cycle	0.05	0.50	0.50	0.09	0.55	0.55	0.06	0.23	0.23	0.04	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.03	0.22	0.04	0.08	0.17	0.05	0.05	0.14	0.07	0.03	0.15	0.17
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	169	2471	771	307	1869	834	213	1122	350	139	1012	316
d1, Uniform Delay [s]	56.02	18.98	15.44	53.53	14.90	13.05	55.23	41.35	38.17	56.86	44.31	45.59
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.89	0.57	0.23	5.60	0.43	0.22	5.36	0.52	0.44	7.59	0.95	5.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.44	0.09	0.83	0.31	0.09	0.75	0.60	0.29	0.74	0.71	0.83
d, Delay for Lane Group [s/veh]	60.91	19.56	15.67	59.12	15.33	13.26	60.59	41.86	38.62	64.45	45.25	51.17
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.84	6.51	1.02	3.99	4.35	1.03	2.55	5.98	2.49	1.69	6.74	7.94
50th-Percentile Queue Length [ft/ln]	46.08	162.6	25.46	99.67	108.7	25.74	63.85	149.5	62.16	42.26	168.6	198.6
95th-Percentile Queue Length [veh/ln]	3.32	10.69	1.83	7.18	7.77	1.85	4.60	9.99	4.48	3.04	11.00	12.57
95th-Percentile Queue Length [ft/ln]	82.94	267.2	45.82	179.4	194.3	46.33	114.9	249.8	111.8	76.08	275.0	314.1

Movement, Approach, & Intersection Results

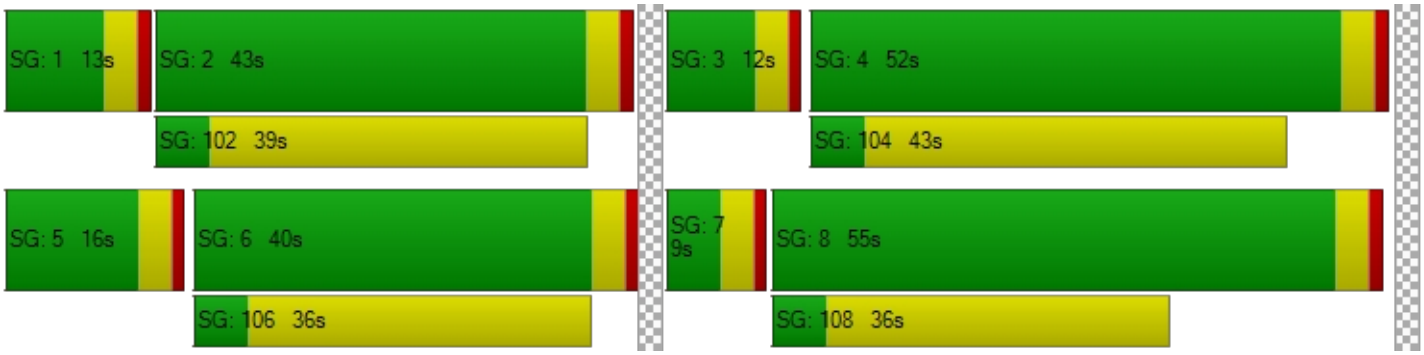
d_M, Delay for Movement [s/veh]	60.91	19.56	15.67	59.12	15.33	13.26	60.59	41.86	38.62	64.45	45.25	51.17
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	23.11			27.40			44.74			48.50		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.41											
Intersection LOS	D											
Intersection V/C	0.518											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.087	3.308	3.162	3.090
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	650	850	800
d_b, Bicycle Delay [s]	29.40	27.34	19.84	21.60
l_b,int, Bicycle LOS Score for Intersection	2.261	2.306	2.073	2.157
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	43.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.526

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	133	256	98	23	224	93	137	439	167	42	256	30
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	10	0	0	16	0	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	281	104	24	253	99	145	465	177	46	271	32
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	37	74	27	6	67	26	38	122	47	12	71	8
Total Analysis Volume [veh/h]	148	296	109	25	266	104	153	489	186	48	285	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	16	27	0	12	23	23	0	51	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	52	52	3	43	43	33	33	16	16
g / C, Green / Cycle	0.10	0.43	0.43	0.02	0.36	0.36	0.28	0.28	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.09	0.12	0.12	0.01	0.08	0.07	0.25	0.25	0.11	0.11
s, saturation flow rate [veh/h]	1714	1800	1638	1714	3427	1530	1770	1508	1778	1583
c, Capacity [veh/h]	171	781	711	42	1227	548	493	420	231	206
d1, Uniform Delay [s]	53.19	21.77	21.82	57.97	26.80	26.52	41.77	41.79	50.96	51.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.12	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.99	0.85	0.95	13.18	0.41	0.77	7.05	8.22	7.80	9.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.27	0.27	0.60	0.22	0.19	0.91	0.91	0.84	0.84
d, Delay for Lane Group [s/veh]	65.18	22.62	22.77	71.15	27.21	27.29	48.82	50.01	58.76	60.05
Lane Group LOS	E	C	C	E	C	C	D	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.96	3.98	3.71	0.90	2.74	2.18	13.61	11.76	6.17	5.61
50th-Percentile Queue Length [ft/ln]	124.0	99.62	92.85	22.61	68.40	54.52	340.36	293.98	154.24	140.31
95th-Percentile Queue Length [veh/ln]	8.62	7.17	6.69	1.63	4.93	3.93	19.67	17.38	10.24	9.50
95th-Percentile Queue Length [ft/ln]	215.4	179.3	167.1	40.70	123.1	98.14	491.64	434.58	256.08	237.43

Movement, Approach, & Intersection Results

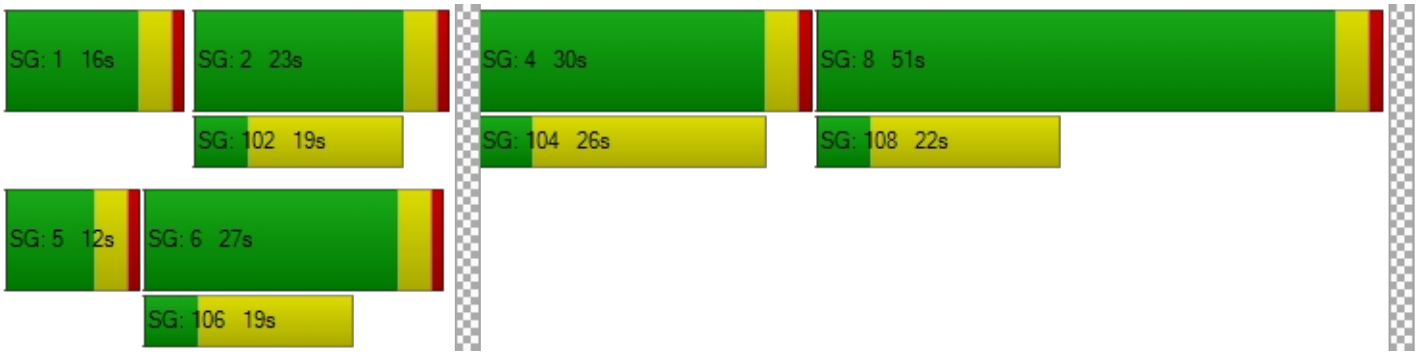
d_M, Delay for Movement [s/veh]	65.18	22.66	22.77	71.15	27.21	27.29	48.82	49.30	50.01	58.76	59.39	60.05
Movement LOS	E	C	C	E	C	C	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	34.07			30.01			49.37			59.37		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	43.56											
Intersection LOS	D											
Intersection V/C	0.526											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.520	2.611	2.479	2.388
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	317	783	433
d_b, Bicycle Delay [s]	39.20	42.50	22.20	36.82
l_b,int, Bicycle LOS Score for Intersection	2.016	1.885	2.243	1.862
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	167	0	536	0	1898	934	0	1348	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.000	1.060	1.060	1.000	1.060	1.000
In-Process Volume [veh/h]	0	0	0	42	0	0	0	16	0	0	16	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	219	0	568	0	2028	990	0	1445	0
Peak Hour Factor	1.000	1.000	1.000	0.950	1.000	0.950	1.000	0.950	0.950	1.000	0.950	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	58	0	149	0	534	261	0	380	0
Total Analysis Volume [veh/h]	0	0	0	231	0	598	0	2135	1042	0	1521	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	29	0	0	0	91	0	0	91	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		25	25	25	87	87	87
g / C, Green / Cycle		0.21	0.21	0.21	0.73	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate		0.13	0.20	0.20	0.44	0.68	0.31
s, saturation flow rate [veh/h]		1714	1530	1530	4903	1530	4903
c, Capacity [veh/h]		357	319	319	3555	1109	3555
d1, Uniform Delay [s]		43.46	46.74	46.74	8.04	14.23	6.58
k, delay calibration		0.11	0.29	0.29	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.04	25.80	25.80	0.76	15.89	0.38
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.65	0.94	0.94	0.60	0.94	0.43
d, Delay for Lane Group [s/veh]		45.51	72.54	72.54	8.80	30.12	6.96
Lane Group LOS		D	E	E	A	C	A
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		6.48	11.02	11.02	8.17	25.42	4.74
50th-Percentile Queue Length [ft/ln]		161.9	275.4	275.4	204.22	635.51	118.55
95th-Percentile Queue Length [veh/ln]		10.65	16.46	16.46	12.86	33.69	8.31
95th-Percentile Queue Length [ft/ln]		266.3	411.5	411.5	321.41	842.22	207.84

Movement, Approach, & Intersection Results

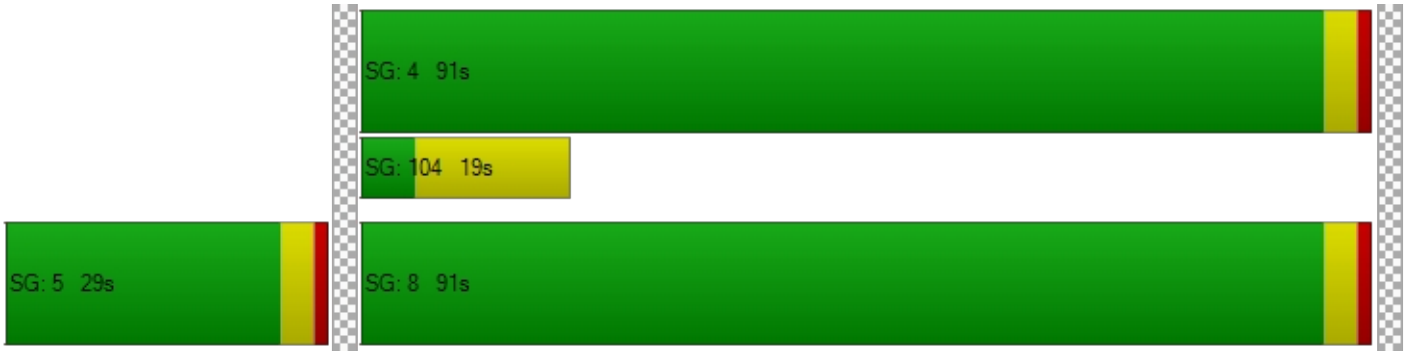
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	45.51	0.00	72.54	0.00	8.80	30.12	0.00	6.96	0.00
Movement LOS				D		E		A	C		A	
d_A, Approach Delay [s/veh]	0.00			65.01			15.79			6.96		
Approach LOS	A			E			B			A		
d_I, Intersection Delay [s/veh]	20.74											
Intersection LOS	C											
Intersection V/C	0.876											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.348	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	417	1450	1450
d_b, Bicycle Delay [s]	60.00	37.60	4.54	4.54
l_b,int, Bicycle LOS Score for Intersection	4.132	2.927	3.307	2.396
Bicycle LOS	D	C	C	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.552

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	731	0	465	0	0	0	0	1092	0	0	1114	292
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	58	0	0	16	35
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	775	0	493	0	0	0	0	1216	0	0	1197	345
Peak Hour Factor	0.950	1.000	0.950	1.000	1.000	1.000	1.000	0.950	1.000	1.000	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	204	0	130	0	0	0	0	320	0	0	315	91
Total Analysis Volume [veh/h]	816	0	519	0	0	0	0	1280	0	0	1260	363
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	97	0	0	0	0	0	0	23	0	0	23	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	39	39	39		73	73	73
g / C, Green / Cycle	0.33	0.33	0.33		0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.29		0.26	0.26	0.24
s, saturation flow rate [veh/h]	1714	1681	1530		4903	4903	1530
c, Capacity [veh/h]	562	550	501		2970	2970	927
d1, Uniform Delay [s]	36.64	36.90	38.26		12.62	12.55	12.22
k, delay calibration	0.11	0.11	0.11		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.57	2.88	5.54		0.46	0.45	1.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.81	0.89		0.43	0.42	0.39
d, Delay for Lane Group [s/veh]	39.22	39.79	43.80		13.08	12.99	13.47
Lane Group LOS	D	D	D		B	B	B
Critical Lane Group	No	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.15	12.28	13.04		6.03	5.91	5.19
50th-Percentile Queue Length [ft/ln]	303.8	306.9	326.0		150.86	147.67	129.76
95th-Percentile Queue Length [veh/ln]	17.87	18.02	18.96		10.06	9.89	8.93
95th-Percentile Queue Length [ft/ln]	446.7	450.5	474.1		251.58	247.31	223.17

Movement, Approach, & Intersection Results

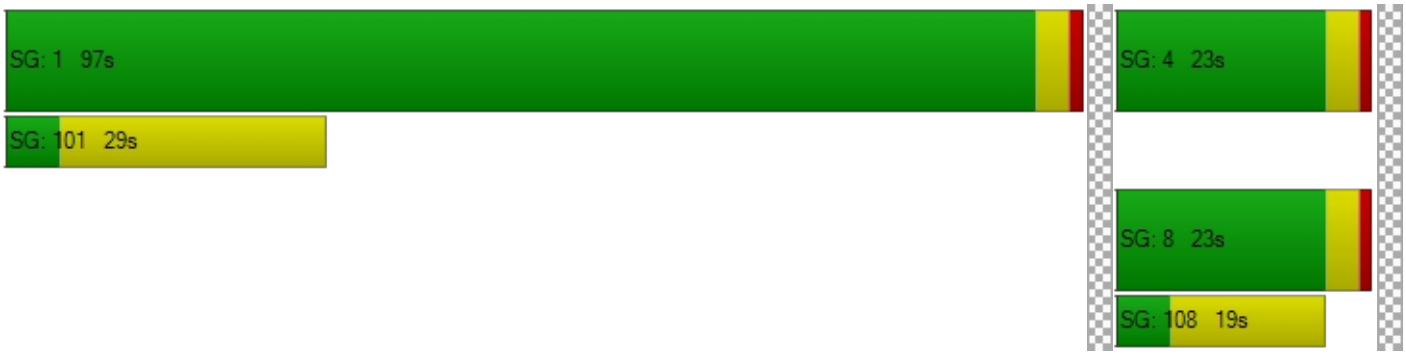
d_M, Delay for Movement [s/veh]	39.48	0.00	43.23	0.00	0.00	0.00	0.00	13.08	0.00	0.00	12.99	13.47
Movement LOS	D		D					B			B	B
d_A, Approach Delay [s/veh]	40.93			0.00			13.08			13.10		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	21.86											
Intersection LOS	C											
Intersection V/C	0.552											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.472	0.000	0.000	3.086
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1550	0	317	317
d_b, Bicycle Delay [s]	3.04	60.00	42.50	42.50
l_b,int, Bicycle LOS Score for Intersection	3.762	4.132	2.264	2.452
Bicycle LOS	D	D	B	B

Sequence

Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	42.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	260	348	189	62	209	155	236	931	176	104	748	47
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	51	10	0	0	17	0	0	0	58	1	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	327	379	200	66	239	164	250	987	245	111	793	50
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	86	100	53	17	63	43	66	260	64	29	209	13
Total Analysis Volume [veh/h]	344	399	211	69	252	173	263	1039	258	117	835	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	56	0	10	36	0	15	45	45	9	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	54	54	6	34	34	11	39	69	5	33	33
g / C, Green / Cycle	0.21	0.45	0.45	0.05	0.29	0.29	0.09	0.33	0.57	0.04	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.20	0.22	0.14	0.04	0.12	0.13	0.08	0.30	0.17	0.04	0.24	0.03
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1563	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	368	809	688	86	513	445	305	1116	877	139	944	422
d1, Uniform Delay [s]	46.29	23.36	21.09	56.42	35.05	35.22	53.75	39.17	13.13	57.11	41.64	32.62
k, delay calibration	0.31	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.21	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.73	2.14	1.15	15.86	2.70	3.28	7.13	4.17	0.36	12.79	2.98	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.49	0.31	0.81	0.44	0.45	0.86	0.93	0.29	0.84	0.88	0.13
d, Delay for Lane Group [s/veh]	70.02	25.51	22.25	72.28	37.75	38.50	60.88	43.34	13.49	69.90	44.62	32.76
Lane Group LOS	E	C	C	E	D	D	E	D	B	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.45	8.40	4.00	2.45	5.74	5.23	4.21	15.27	3.61	2.01	12.14	1.18
50th-Percentile Queue Length [ft/ln]	311.2	210.0	100.0	61.17	143.5	130.8	105.3	381.7	90.27	50.21	303.4	29.60
95th-Percentile Queue Length [veh/ln]	18.24	13.16	7.20	4.40	9.67	8.99	7.58	21.68	6.50	3.61	17.85	2.13
95th-Percentile Queue Length [ft/ln]	455.9	328.8	180.0	110.1	241.7	224.6	189.5	541.9	162.4	90.37	446.2	53.28

Movement, Approach, & Intersection Results

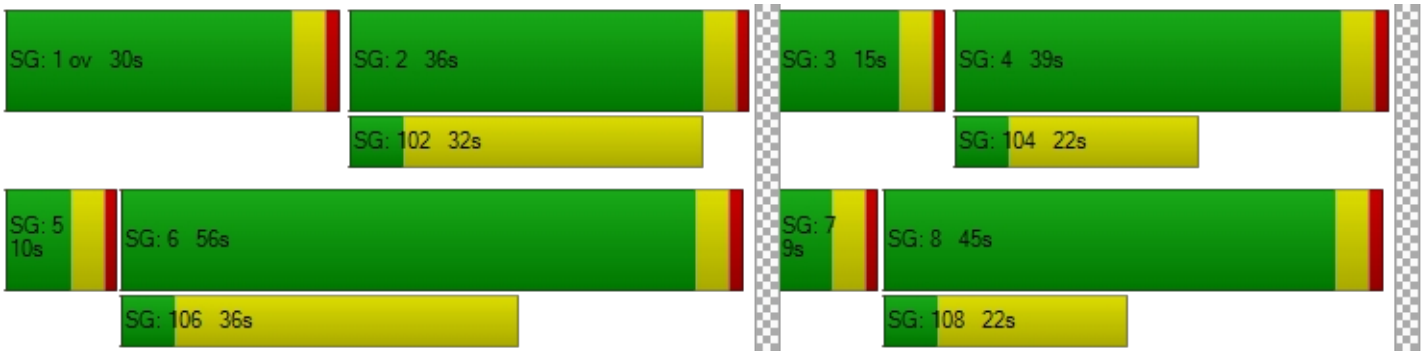
d_M, Delay for Movement [s/veh]	70.02	25.51	22.25	72.28	37.83	38.50	60.88	43.34	13.49	69.90	44.62	32.76
Movement LOS	E	C	C	E	D	D	E	D	B	E	D	C
d_A, Approach Delay [s/veh]	40.84			42.88			41.36			46.93		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.82											
Intersection LOS	D											
Intersection V/C	0.668											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.623	2.551	3.096	3.116
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	533	683	583
d_b, Bicycle Delay [s]	19.27	32.27	26.00	30.10
l_b,int, Bicycle LOS Score for Intersection	3.134	1.967	2.847	2.389
Bicycle LOS	C	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	43.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	276	828	230	281	634	195	247	860	100	135	567	123
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	87	26	0	120	1	0	0	0	36	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	293	965	270	298	792	208	262	912	106	179	601	130
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	77	254	71	78	208	55	69	240	28	47	158	34
Total Analysis Volume [veh/h]	308	1016	284	314	834	219	276	960	112	188	633	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	26	40	0	26	40	40	14	42	0	12	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	22	46	46	22	46	60	10	28	28	8	26	52
g / C, Green / Cycle	0.18	0.39	0.39	0.18	0.39	0.50	0.08	0.23	0.23	0.07	0.21	0.43
(v / s)_i Volume / Saturation Flow Rate	0.18	0.21	0.19	0.18	0.17	0.14	0.08	0.20	0.07	0.06	0.13	0.09
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	314	1892	590	314	1892	769	277	1131	353	222	1050	659
d1, Uniform Delay [s]	48.78	28.54	27.78	48.99	27.26	17.32	54.97	44.15	38.31	55.39	42.55	21.36
k, delay calibration	0.24	0.50	0.50	0.25	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	30.91	1.10	2.79	36.00	0.75	0.93	23.92	1.87	0.51	8.62	0.56	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.54	0.48	1.00	0.44	0.28	0.99	0.85	0.32	0.85	0.60	0.21
d, Delay for Lane Group [s/veh]	79.69	29.64	30.57	84.99	28.01	18.25	78.89	46.02	38.82	64.02	43.12	21.51
Lane Group LOS	E	C	C	F	C	B	E	D	D	E	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.84	7.70	6.58	12.50	6.02	3.70	5.09	9.26	2.80	3.08	5.71	2.45
50th-Percentile Queue Length [ft/ln]	295.9	192.4	164.6	312.4	150.4	92.38	127.1	231.4	70.05	76.95	142.6	61.30
95th-Percentile Queue Length [veh/ln]	17.48	12.25	10.79	18.30	10.04	6.65	8.78	14.25	5.04	5.54	9.62	4.41
95th-Percentile Queue Length [ft/ln]	436.9	306.1	269.8	457.4	250.9	166.2	219.6	356.2	126.1	138.5	240.6	110.3

Movement, Approach, & Intersection Results

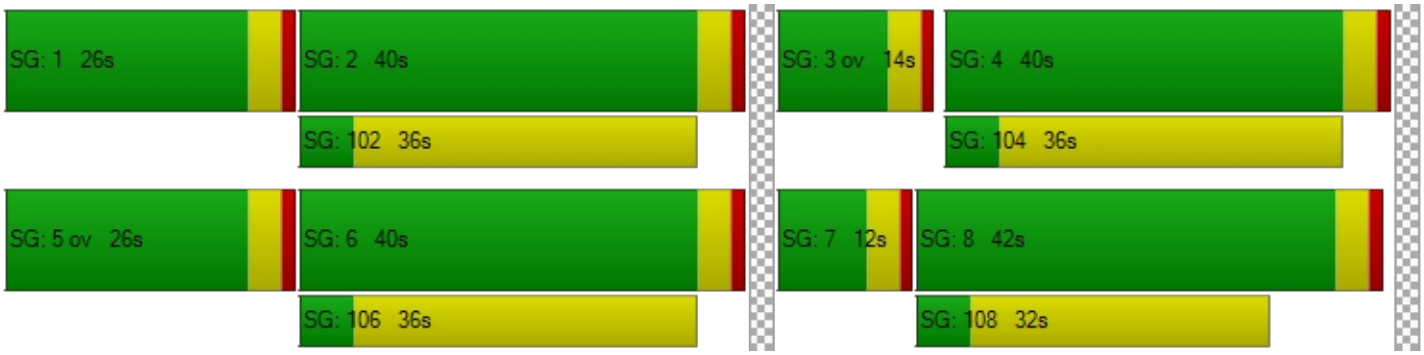
d_M, Delay for Movement [s/veh]	79.69	29.64	30.57	84.99	28.01	18.25	78.89	46.02	38.82	64.02	43.12	21.51
Movement LOS	E	C	C	F	C	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	39.39			39.54			52.16			44.13		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.55											
Intersection LOS	D											
Intersection V/C	0.643											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.075	3.167	3.136	3.137
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	633	600
d_b, Bicycle Delay [s]	29.40	29.40	28.02	29.40
l_b,int, Bicycle LOS Score for Intersection	2.444	2.311	2.301	2.087
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	1,539.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.418

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	60	0	118	0	0	0	0	1326	54	104	760	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	1	0	0	0	0	26	0	1	36	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	0	126	0	0	0	0	1432	57	111	842	0
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	0	33	0	0	0	0	377	15	29	222	0
Total Analysis Volume [veh/h]	67	0	133	0	0	0	0	1507	60	117	886	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	3.42	0.00	0.39	0.00	0.00	0.00	0.00	0.02	0.00	0.27	0.01	0.00
d_M, Delay for Movement [s/veh]	1539.	1570.	1366.	171.1	229.2	11.34	9.66	0.00	0.00	16.59	0.00	0.00
Movement LOS	F	F	F	F	F	B	A	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	21.87	21.87	21.87	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00
95th-Percentile Queue Length [ft/ln]	546.6	546.6	546.6	0.00	0.00	0.00	0.00	0.00	0.00	27.54	0.00	0.00
d_A, Approach Delay [s/veh]	1424.43			137.23			0.00			1.93		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	103.55											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	51.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.792

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	138	673	87	131	551	71	256	837	177	287	553	119
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	0	0	1	0	0	21	0	0	28	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	717	92	139	585	75	271	908	188	304	614	126
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	38	189	24	37	154	20	71	239	49	80	162	33
Total Analysis Volume [veh/h]	154	755	97	146	616	79	285	956	198	320	646	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	37	0	15	36	0	26	40	0	28	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	34	34	11	33	33	22	35	35	24	38	38
g / C, Green / Cycle	0.10	0.28	0.28	0.09	0.27	0.27	0.18	0.29	0.29	0.20	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.24	0.24	0.09	0.20	0.20	0.17	0.28	0.13	0.19	0.19	0.09
s, saturation flow rate [veh/h]	1714	1800	1729	1714	1800	1729	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	171	503	484	157	488	469	310	1012	452	343	1078	481
d1, Uniform Delay [s]	53.40	41.04	41.04	54.11	39.66	39.67	48.29	41.32	34.22	47.21	34.75	30.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.20	0.11	0.11	0.26	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.08	17.55	18.14	19.95	9.07	9.44	18.08	5.38	0.67	22.32	0.54	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.86	0.86	0.93	0.73	0.73	0.92	0.94	0.44	0.93	0.60	0.28
d, Delay for Lane Group [s/veh]	68.47	58.59	59.18	74.06	48.74	49.11	66.36	46.70	34.89	69.53	35.29	31.19
Lane Group LOS	E	E	E	E	D	D	E	D	C	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.31	14.55	14.05	5.24	10.67	10.30	9.91	14.43	4.77	11.48	8.03	2.95
50th-Percentile Queue Length [ft/ln]	132.6	363.6	351.3	131.0	266.6	257.5	247.7	360.6	119.3	287.0	200.7	73.77
95th-Percentile Queue Length [veh/ln]	9.08	20.80	20.20	9.00	16.02	15.57	15.07	20.66	8.36	17.04	12.68	5.31
95th-Percentile Queue Length [ft/ln]	227.0	520.0	505.0	224.9	400.5	389.2	376.7	516.4	208.9	426.0	316.9	132.7

Movement, Approach, & Intersection Results

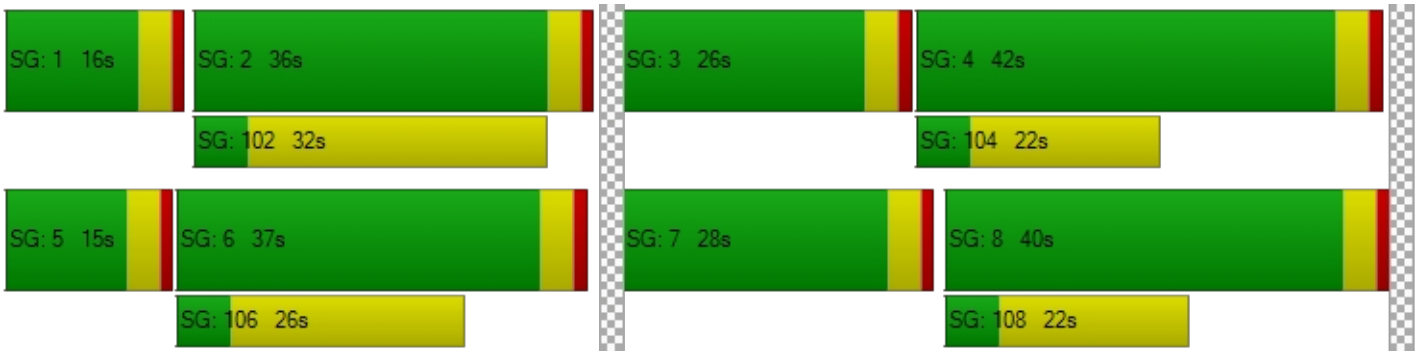
d_M, Delay for Movement [s/veh]	68.47	58.84	59.18	74.06	48.90	49.11	66.36	46.70	34.89	69.53	35.29	31.19
Movement LOS	E	E	E	E	D	D	E	D	C	E	D	C
d_A, Approach Delay [s/veh]	60.35			53.29			48.97			44.76		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	51.36											
Intersection LOS	D											
Intersection V/C	0.792											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.732	2.708	2.845	2.842
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	533	600	633
d_b, Bicycle Delay [s]	31.54	32.27	29.40	28.02
l_b,int, Bicycle LOS Score for Intersection	2.390	2.253	2.747	2.466
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	42.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.721

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	103	798	135	153	488	119	200	689	134	200	501	162
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	7	3	0	10	5	3	13	0	1	15	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	109	853	146	162	527	131	215	743	142	213	546	172
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	29	224	38	43	139	34	57	196	37	56	144	45
Total Analysis Volume [veh/h]	115	898	154	171	555	138	226	782	149	224	575	181
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	39	0	18	33	0	27	41	0	22	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	42	42	14	46	46	18	30	30	17	30	30
g / C, Green / Cycle	0.08	0.35	0.35	0.11	0.39	0.39	0.15	0.25	0.25	0.15	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.07	0.26	0.10	0.10	0.16	0.09	0.13	0.23	0.10	0.13	0.17	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	142	1211	540	196	1319	589	254	869	388	249	859	384
d1, Uniform Delay [s]	54.09	34.01	27.91	52.26	27.10	24.96	50.14	43.31	37.03	50.41	40.48	38.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.35	4.13	1.32	11.23	0.99	0.93	10.19	3.71	0.62	11.15	0.91	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.74	0.28	0.87	0.42	0.23	0.89	0.90	0.38	0.90	0.67	0.47
d, Delay for Lane Group [s/veh]	64.45	38.14	29.23	63.49	28.08	25.89	60.33	47.02	37.66	61.56	41.39	39.11
Lane Group LOS	E	D	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.82	12.05	3.40	5.67	6.01	2.82	7.36	11.59	3.70	7.37	7.74	4.63
50th-Percentile Queue Length [ft/ln]	95.59	301.3	84.89	141.7	150.2	70.57	184.0	289.7	92.46	184.2	193.5	115.7
95th-Percentile Queue Length [veh/ln]	6.88	17.75	6.11	9.58	10.03	5.08	11.81	17.18	6.66	11.82	12.30	8.16
95th-Percentile Queue Length [ft/ln]	172.0	443.7	152.8	239.4	250.7	127.0	295.2	429.3	166.4	295.5	307.5	204.0

Movement, Approach, & Intersection Results

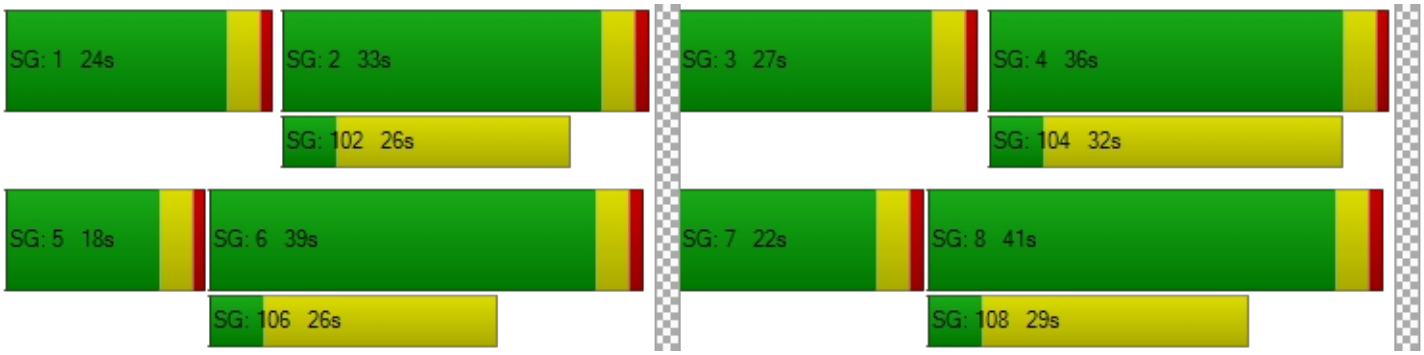
d_M, Delay for Movement [s/veh]	64.45	38.14	29.23	63.49	28.08	25.89	60.33	47.02	37.66	61.56	41.39	39.11
Movement LOS	E	D	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	39.56			34.74			48.41			45.58		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	42.43											
Intersection LOS	D											
Intersection V/C	0.721											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.901	3.005	2.791	2.807
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	483	617	533
d_b, Bicycle Delay [s]	30.10	34.50	28.70	32.27
l_b,int, Bicycle LOS Score for Intersection	2.522	2.272	2.514	2.368
Bicycle LOS	B	B	B	B

Sequence

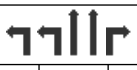
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.690

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	163	520	116	127	235	114	349	622	387	100	360	144
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	15	61	0	0	76	0	0	0	24	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	612	123	135	325	121	370	659	434	106	382	153
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	49	161	32	36	86	32	97	173	114	28	101	40
Total Analysis Volume [veh/h]	198	644	129	142	342	127	389	694	457	112	402	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	15	30	30	15	30	30	21	66	66	9	54	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	39	48	11	39	59	16	49	64	5	38	38
g / C, Green / Cycle	0.09	0.32	0.40	0.09	0.32	0.49	0.13	0.41	0.54	0.04	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.08	0.08	0.10	0.08	0.12	0.39	0.30	0.03	0.16	0.17
s, saturation flow rate [veh/h]	3329	3427	1530	1714	3427	1530	3329	1800	1530	3329	1800	1628
c, Capacity [veh/h]	305	1099	606	157	1099	747	446	743	822	139	576	521
d1, Uniform Delay [s]	52.63	34.08	23.92	53.98	30.75	17.14	50.94	33.70	18.30	57.02	33.16	33.22
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.28	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.32	2.29	0.80	16.74	0.74	0.49	5.39	13.44	2.70	10.49	0.70	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.59	0.21	0.90	0.31	0.17	0.87	0.93	0.56	0.81	0.51	0.52
d, Delay for Lane Group [s/veh]	54.95	36.37	24.72	70.72	31.49	17.63	56.33	47.14	21.00	67.51	33.86	34.01
Lane Group LOS	D	D	C	E	C	B	E	D	C	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.98	8.17	2.56	4.97	3.86	2.06	6.06	21.66	8.80	1.89	7.08	6.48
50th-Percentile Queue Length [ft/ln]	74.55	204.3	64.07	124.3	96.53	51.61	151.4	541.4	219.9	47.15	176.9	162.0
95th-Percentile Queue Length [veh/ln]	5.37	12.86	4.61	8.63	6.95	3.72	10.10	29.29	13.66	3.39	11.44	10.66
95th-Percentile Queue Length [ft/ln]	134.1	321.5	115.3	215.7	173.7	92.89	252.3	732.2	341.5	84.87	285.9	266.3

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.95	36.37	24.72	70.72	31.49	17.63	56.33	47.14	21.00	67.51	33.90	34.01
Movement LOS	D	D	C	E	C	B	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	38.61			37.72			41.71			39.50		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	39.88											
Intersection LOS	D											
Intersection V/C	0.690											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.871	2.761	2.925	2.735
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	1033	833
d_b, Bicycle Delay [s]	36.82	36.82	14.02	20.42
l_b,int, Bicycle LOS Score for Intersection	2.361	2.064	4.101	2.116
Bicycle LOS	B	B	D	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	53.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	138	1069	219	69	777	93	84	606	98	116	542	59
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	113	18	0	156	0	0	0	0	30	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	1246	250	73	980	99	89	642	104	153	575	63
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	38	328	66	19	258	26	23	169	27	40	151	17
Total Analysis Volume [veh/h]	154	1312	263	77	1032	104	94	676	109	161	605	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	43	0	10	37	0	21	51	0	16	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	40	40	6	34	34	8	46	46	12	50	50
g / C, Green / Cycle	0.10	0.33	0.33	0.05	0.28	0.28	0.07	0.39	0.39	0.10	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.09	0.31	0.31	0.04	0.22	0.22	0.05	0.38	0.07	0.09	0.34	0.04
s, saturation flow rate [veh/h]	1714	3427	1651	1714	3427	1717	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	171	1129	544	86	958	480	119	697	592	171	752	640
d1, Uniform Delay [s]	53.40	39.09	39.14	56.70	39.98	39.99	55.00	36.08	24.26	53.64	30.61	21.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.44	0.11	0.11	0.32	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.08	15.85	26.84	25.68	6.61	12.53	11.18	25.33	0.15	20.17	5.84	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.94	0.94	0.90	0.79	0.79	0.79	0.97	0.18	0.94	0.80	0.10
d, Delay for Lane Group [s/veh]	68.47	54.95	65.98	82.38	46.58	52.52	66.17	61.41	24.41	73.80	36.45	21.31
Lane Group LOS	E	D	E	F	D	D	E	E	C	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.31	17.47	18.54	2.93	11.14	11.97	3.17	23.89	2.08	5.78	16.26	1.15
50th-Percentile Queue Length [ft/ln]	132.6	436.6	463.5	73.30	278.4	299.1	79.21	597.3	52.08	144.4	406.4	28.76
95th-Percentile Queue Length [veh/ln]	9.08	24.32	25.61	5.28	16.61	17.64	5.70	31.91	3.75	9.72	22.87	2.07
95th-Percentile Queue Length [ft/ln]	227.0	607.9	640.1	131.9	415.2	440.9	142.5	797.7	93.74	243.0	571.7	51.78

Movement, Approach, & Intersection Results

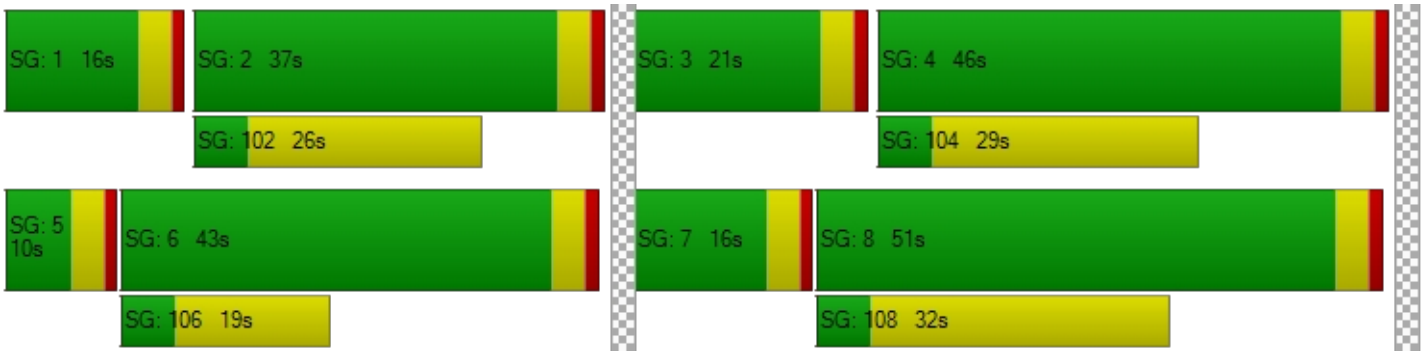
d_M, Delay for Movement [s/veh]	68.47	57.05	65.98	82.38	48.17	52.52	66.17	61.41	24.41	73.80	36.45	21.31
Movement LOS	E	E	E	F	D	D	E	E	C	E	D	C
d_A, Approach Delay [s/veh]	59.43			50.71			57.33			42.48		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	53.73											
Intersection LOS	D											
Intersection V/C	0.825											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.110	2.983	2.751	2.597
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	550	783	700
d_b, Bicycle Delay [s]	27.34	31.54	22.20	25.35
l_b,int, Bicycle LOS Score for Intersection	2.511	2.227	3.010	2.932
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.565

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	96	151	218	18	141	22	31	636	65	90	429	27
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	1	2	0	1	0	0	18	0	3	30	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	161	233	19	150	23	33	692	69	98	485	29
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	42	61	5	39	6	9	182	18	26	128	8
Total Analysis Volume [veh/h]	107	169	245	20	158	24	35	728	73	103	511	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	36	0	0	36	0	0	84	0	0	84	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	51	51	51	51	51	51	61	61	61	61	61	61
g / C, Green / Cycle	0.42	0.42	0.42	0.42	0.42	0.42	0.51	0.51	0.51	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.16	0.02	0.09	0.02	0.04	0.40	0.05	0.15	0.28	0.02
s, saturation flow rate [veh/h]	1221	1800	1530	988	1800	1530	878	1800	1530	690	1800	1530
c, Capacity [veh/h]	478	761	647	394	761	647	334	919	781	183	919	781
d1, Uniform Delay [s]	28.44	22.06	23.80	26.84	21.91	20.31	29.56	24.14	15.10	47.69	20.07	14.67
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.18	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.08	0.67	1.69	0.24	0.62	0.11	0.14	2.62	0.05	2.72	0.53	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.22	0.38	0.05	0.21	0.04	0.10	0.79	0.09	0.56	0.56	0.04
d, Delay for Lane Group [s/veh]	29.52	22.73	25.49	27.08	22.53	20.41	29.70	26.75	15.15	50.41	20.60	14.69
Lane Group LOS	C	C	C	C	C	C	C	C	B	D	C	B
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.38	3.19	5.07	0.42	2.96	0.42	0.74	17.09	1.04	3.11	9.72	0.43
50th-Percentile Queue Length [ft/ln]	59.39	79.80	126.8	10.46	74.07	10.45	18.59	427.3	26.03	77.70	243.0	10.74
95th-Percentile Queue Length [veh/ln]	4.28	5.75	8.77	0.75	5.33	0.75	1.34	23.87	1.87	5.59	14.84	0.77
95th-Percentile Queue Length [ft/ln]	106.9	143.6	219.1	18.82	133.3	18.81	33.46	596.8	46.85	139.8	370.9	19.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.52	22.73	25.49	27.08	22.53	20.41	29.70	26.75	15.15	50.41	20.60	14.69
Movement LOS	C	C	C	C	C	C	C	C	B	D	C	B
d_A, Approach Delay [s/veh]	25.42			22.73			25.86			25.08		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.24											
Intersection LOS	C											
Intersection V/C	0.565											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.501	2.303	2.659	2.663
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	533	1333	1333
d_b, Bicycle Delay [s]	32.27	32.27	6.67	6.67
l_b,int, Bicycle LOS Score for Intersection	2.419	1.893	2.939	2.624
Bicycle LOS	B	A	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	42.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	175	861	169	138	729	67	78	565	168	144	309	92
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	2	0	1	0	0	10	0	3	17	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	186	917	181	146	774	71	83	609	178	156	345	98
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	49	241	48	38	204	19	22	160	47	41	91	26
Total Analysis Volume [veh/h]	196	965	191	154	815	75	87	641	187	164	363	103
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	50	0	17	39	0	12	36	0	17	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	53	53	13	50	50	8	25	25	13	31	31
g / C, Green / Cycle	0.13	0.44	0.44	0.10	0.42	0.42	0.06	0.21	0.21	0.11	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.11	0.33	0.33	0.09	0.25	0.25	0.05	0.19	0.12	0.10	0.20	0.07
s, saturation flow rate [veh/h]	1714	1800	1698	1714	1800	1747	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	225	796	751	179	748	726	108	724	323	186	462	393
d1, Uniform Delay [s]	51.11	27.80	27.92	52.86	27.36	27.36	55.48	45.90	42.51	52.75	41.54	35.56
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.20	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.89	6.23	6.78	11.24	3.59	3.70	12.86	3.84	1.63	12.73	5.35	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.74	0.75	0.86	0.60	0.60	0.80	0.88	0.58	0.88	0.79	0.26
d, Delay for Lane Group [s/veh]	61.00	34.03	34.71	64.09	30.95	31.06	68.34	49.75	44.15	65.48	46.89	35.91
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.39	15.23	14.66	5.12	10.74	10.45	2.98	9.61	5.13	5.52	10.64	2.46
50th-Percentile Queue Length [ft/ln]	159.7	380.8	366.5	128.0	268.5	261.3	74.61	240.3	128.3	138.1	266.1	61.42
95th-Percentile Queue Length [veh/ln]	10.54	21.64	20.94	8.83	16.12	15.75	5.37	14.70	8.85	9.38	16.00	4.42
95th-Percentile Queue Length [ft/ln]	263.3	540.8	523.5	220.8	402.9	393.8	134.3	367.5	221.2	234.4	399.8	110.5

Movement, Approach, & Intersection Results

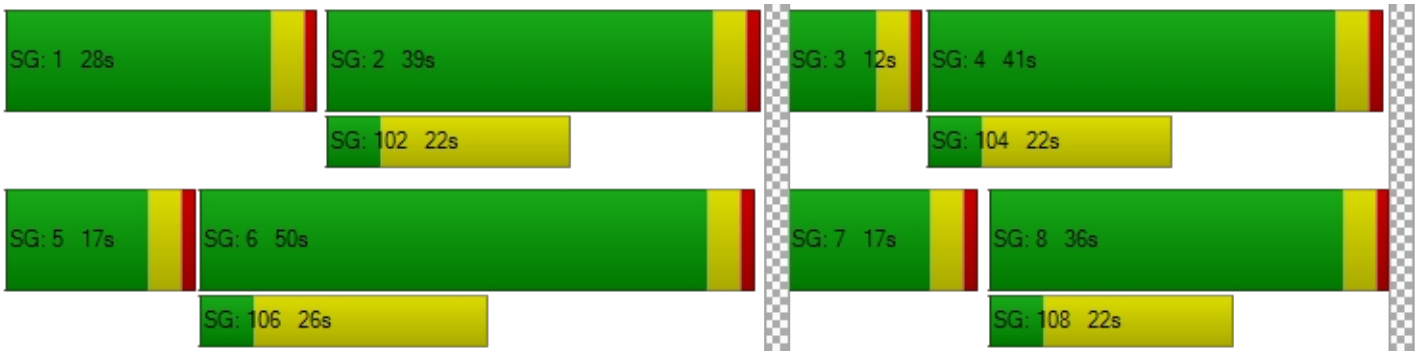
d_M, Delay for Movement [s/veh]	61.00	34.29	34.71	64.09	31.00	31.06	68.34	49.75	44.15	65.48	46.89	35.91
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	38.22			35.88			50.37			49.94		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.30											
Intersection LOS	D											
Intersection V/C	0.704											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.806	2.744	2.617	2.731
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	583	533	617
d_b, Bicycle Delay [s]	22.82	30.10	32.27	28.70
l_b,int, Bicycle LOS Score for Intersection	2.675	2.421	2.314	2.599
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.557

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	85	770	56	108	507	77	101	475	89	64	311	53
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	10	2	0	11	0	0	3	0	3	5	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	826	61	114	548	82	107	507	94	71	335	56
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	217	16	30	144	22	28	133	25	19	88	15
Total Analysis Volume [veh/h]	95	869	64	120	577	86	113	534	99	75	353	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	42	0	15	37	0	32	52	0	11	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	63	63	10	64	64	10	25	25	7	21	21
g / C, Green / Cycle	0.07	0.52	0.52	0.08	0.54	0.54	0.08	0.21	0.21	0.06	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.26	0.26	0.07	0.19	0.19	0.07	0.18	0.18	0.04	0.12	0.12
s, saturation flow rate [veh/h]	1714	1800	1757	1714	1800	1720	1714	1800	1703	1714	1800	1712
c, Capacity [veh/h]	119	940	917	144	966	923	142	370	350	94	320	304
d1, Uniform Delay [s]	54.98	18.59	18.59	54.10	15.88	15.88	54.04	46.22	46.25	56.03	45.93	46.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.26	1.92	1.97	11.50	1.00	1.05	9.71	6.75	7.24	13.90	2.29	2.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.50	0.50	0.83	0.35	0.35	0.80	0.88	0.88	0.80	0.66	0.66
d, Delay for Lane Group [s/veh]	66.24	20.50	20.55	65.61	16.88	16.94	63.75	52.97	53.49	69.93	48.21	48.49
Lane Group LOS	E	C	C	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.20	8.84	8.64	4.03	5.50	5.28	3.74	10.05	9.59	2.61	6.03	5.83
50th-Percentile Queue Length [ft/ln]	80.09	221.0	216.0	100.7	137.5	131.9	93.39	251.2	239.7	65.22	150.7	145.6
95th-Percentile Queue Length [veh/ln]	5.77	13.72	13.47	7.25	9.35	9.05	6.72	15.25	14.67	4.70	10.05	9.79
95th-Percentile Queue Length [ft/ln]	144.1	342.9	336.6	181.2	233.7	226.1	168.1	381.2	366.7	117.3	251.3	244.6

Movement, Approach, & Intersection Results

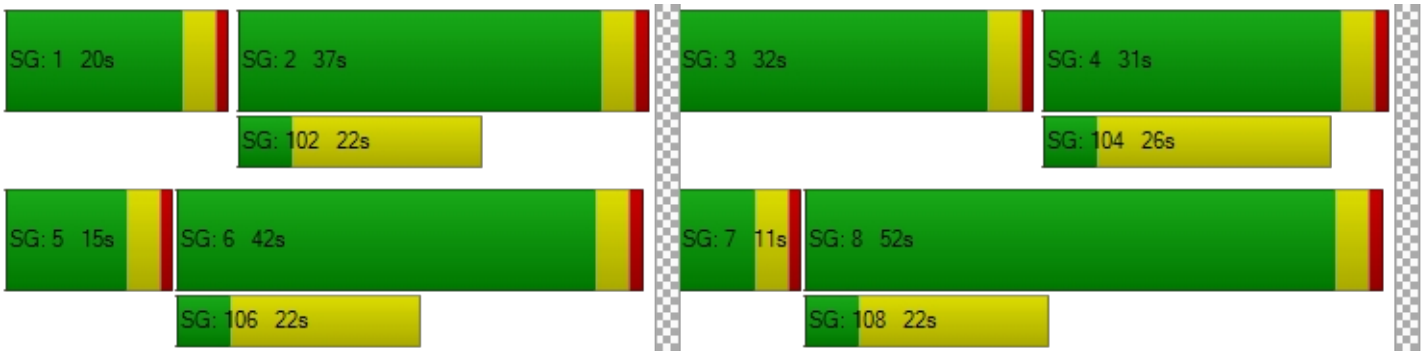
d_M, Delay for Movement [s/veh]	66.24	20.53	20.55	65.61	16.90	16.94	63.75	53.17	53.49	69.93	48.33	48.49
Movement LOS	E	C	C	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	24.75			24.37			54.82			51.67		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.33											
Intersection LOS	D											
Intersection V/C	0.557											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.662	2.765	2.565	2.550
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	550	800	450
d_b, Bicycle Delay [s]	28.02	31.54	21.60	36.04
l_b,int, Bicycle LOS Score for Intersection	2.408	2.206	2.175	1.961
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	26.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	664	283	196	515	0	0	0	0	201	0	88
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	76	0	0	100	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	780	300	208	646	0	0	0	0	213	0	93
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	205	79	55	170	0	0	0	0	56	0	24
Total Analysis Volume [veh/h]	0	821	316	219	680	0	0	0	0	224	0	98
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	30	46	0	48	64	0	0	26	0	0	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	68	68	18	86	86	22	22	22	22
g / C, Green / Cycle	0.00	0.57	0.57	0.15	0.72	0.72	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.46	0.21	0.13	0.38	0.00	0.00	0.00	0.17	0.06
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1530	1638	1530	1309	1530
c, Capacity [veh/h]	1	1027	873	250	1288	1095	330	281	300	281
d1, Uniform Delay [s]	0.00	20.33	13.94	50.17	7.79	0.00	0.00	0.00	49.34	42.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.22	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	6.51	1.16	9.33	1.55	0.00	0.00	0.00	7.29	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.80	0.36	0.88	0.53	0.00	0.00	0.00	0.75	0.35
d, Delay for Lane Group [s/veh]	0.00	26.84	15.10	59.50	9.34	0.00	0.00	0.00	56.63	43.50
Lane Group LOS	A	C	B	E	A	A	A	A	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	19.10	4.83	7.07	7.74	0.00	0.00	0.00	7.21	2.61
50th-Percentile Queue Length [ft/ln]	0.00	477.4	120.7	176.8	193.4	0.00	0.00	0.00	180.27	65.16
95th-Percentile Queue Length [veh/ln]	0.00	26.27	8.44	11.43	12.30	0.00	0.00	0.00	11.61	4.69
95th-Percentile Queue Length [ft/ln]	0.00	656.6	210.9	285.8	307.5	0.00	0.00	0.00	290.36	117.28

Movement, Approach, & Intersection Results

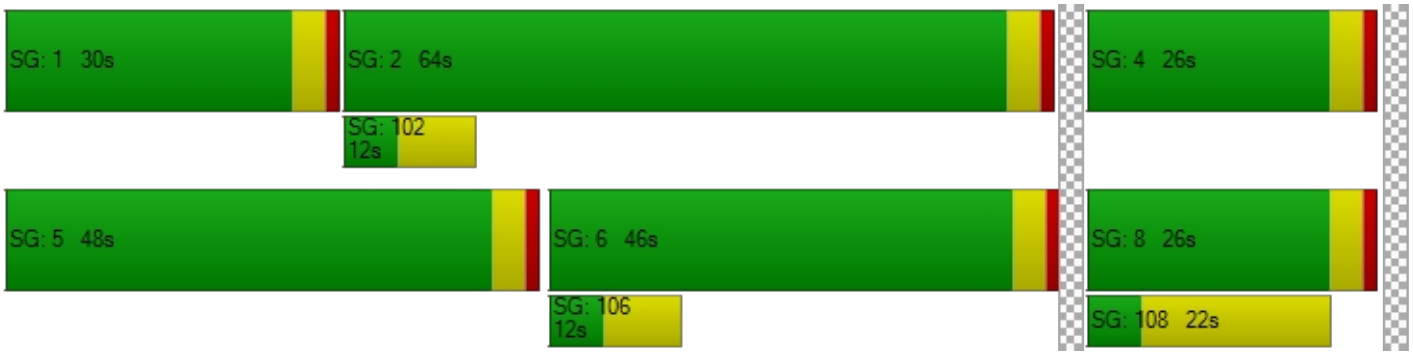
d_M, Delay for Movement [s/veh]	0.00	26.84	15.10	59.50	9.34	0.00	0.00	0.00	0.00	56.63	56.63	43.50
Movement LOS	A	C	B	E	A	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	23.58			21.56			0.00			52.63		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	26.78											
Intersection LOS	C											
Intersection V/C	0.755											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.032	0.000	1.955	2.234
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	1000	367	367
d_b, Bicycle Delay [s]	25.35	15.00	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	3.436	3.043	1.560	2.091
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	46.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.828

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	143	1366	112	38	688	56	87	141	294	122	67	73
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	131	0	0	186	0	0	0	0	2	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	152	1579	119	40	915	59	92	149	312	131	71	77
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	40	416	31	11	241	16	24	39	82	34	19	20
Total Analysis Volume [veh/h]	160	1662	125	42	963	62	97	157	328	138	75	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	37	65	0	10	38	0	12	31	0	14	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	63	63	4	54	54	8	27	27	10	29
g / C, Green / Cycle	0.11	0.53	0.53	0.03	0.45	0.45	0.07	0.23	0.23	0.08	0.24
(v / s)_i Volume / Saturation Flow Rate	0.09	0.50	0.51	0.02	0.28	0.04	0.06	0.09	0.21	0.08	0.09
s, saturation flow rate [veh/h]	1714	1800	1757	1714	3427	1530	1714	1800	1530	1714	1649
c, Capacity [veh/h]	191	948	925	54	1531	683	114	405	344	143	398
d1, Uniform Delay [s]	52.22	26.69	27.36	57.67	25.55	19.15	55.40	39.48	45.87	54.83	38.11
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.35	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.19	18.26	22.39	20.36	1.97	0.26	15.55	0.61	30.19	27.59	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.94	0.97	0.77	0.63	0.09	0.85	0.39	0.95	0.97	0.39
d, Delay for Lane Group [s/veh]	61.41	44.95	49.75	78.03	27.52	19.41	70.95	40.09	76.06	82.42	38.74
Lane Group LOS	E	D	D	E	C	B	E	D	E	F	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.21	27.68	29.19	1.57	10.82	1.05	3.40	4.02	12.47	5.25	3.93
50th-Percentile Queue Length [ft/ln]	130.2	691.8	729.7	39.32	270.5	26.34	84.89	100.3	311.7	131.20	98.19
95th-Percentile Queue Length [veh/ln]	8.95	36.30	38.05	2.83	16.22	1.90	6.11	7.23	18.26	9.00	7.07
95th-Percentile Queue Length [ft/ln]	223.8	907.5	951.3	70.78	405.4	47.42	152.8	180.7	456.4	225.12	176.75

Movement, Approach, & Intersection Results

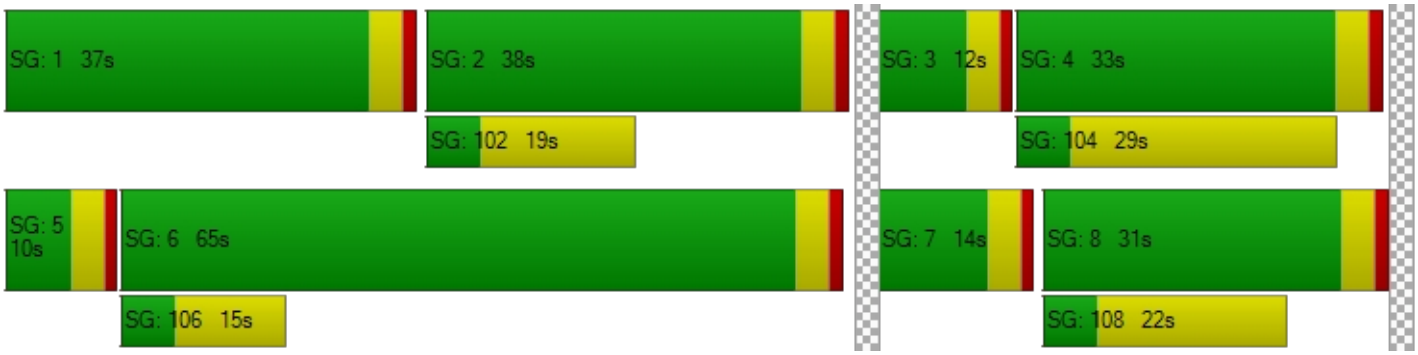
d_M, Delay for Movement [s/veh]	61.41	47.17	49.75	78.03	27.52	19.41	70.95	40.09	76.06	82.42	38.74	38.74
Movement LOS	E	D	D	E	C	B	E	D	E	F	D	D
d_A, Approach Delay [s/veh]	48.50			29.04			65.50			59.24		
Approach LOS	D			C			E			E		
d_I, Intersection Delay [s/veh]	46.52											
Intersection LOS	D											
Intersection V/C	0.828											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.017	3.014	2.361	2.156
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	567	450	483
d_b, Bicycle Delay [s]	14.50	30.82	36.04	34.50
l_b,int, Bicycle LOS Score for Intersection	3.166	2.440	2.520	2.045
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	38.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.462

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	88	400	0	0	314	39	80	0	165	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.060	1.000	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	3	0	0	2	2	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	427	0	0	335	43	85	0	175	0	0	0
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	0.950	1.000	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	112	0	0	88	11	22	0	46	0	0	0
Total Analysis Volume [veh/h]	98	449	0	0	353	45	89	0	184	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.27	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.35	0.00	0.00	0.00	0.00	0.00	38.81	0.00	12.31	0.00	0.00	0.00
Movement LOS	A	A			A	A	E		B			
95th-Percentile Queue Length [veh/ln]	0.27	0.27	0.00	0.00	0.00	0.00	2.20	0.00	1.10	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.83	6.83	0.00	0.00	0.00	0.00	55.07	0.00	27.59	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1.50			0.00			20.95			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	5.37											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	27.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.613

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	907	60	95	571	0	5	0	30	191	0	49
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	88	100	0	0	0	0	0	9	0	76
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	961	152	201	605	0	5	0	32	211	0	128
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	253	40	53	159	0	1	0	8	56	0	34
Total Analysis Volume [veh/h]	0	1012	160	212	637	0	5	0	34	222	0	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	53	9	0	74	30	0	0	9	0	0	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	65	65	17	82	82	4	4	18	18
g / C, Green / Cycle	0.00	0.54	0.54	0.14	0.69	0.69	0.03	0.03	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.00	0.33	0.33	0.12	0.18	0.18	0.00	0.02	0.13	0.09
s, saturation flow rate [veh/h]	1714	1800	1715	1714	1800	1800	1714	1392	1687	1530
c, Capacity [veh/h]	1	980	934	243	1234	1234	52	42	253	229
d1, Uniform Delay [s]	0.00	18.67	18.69	50.40	7.20	7.20	56.58	57.83	49.93	47.56
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	2.85	3.00	9.29	0.51	0.51	0.79	28.66	9.44	2.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.61	0.61	0.87	0.26	0.26	0.10	0.81	0.88	0.59
d, Delay for Lane Group [s/veh]	0.00	21.52	21.69	59.69	7.71	7.71	57.37	86.49	59.37	49.95
Lane Group LOS	A	C	C	E	A	A	E	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	11.83	11.34	6.85	3.11	3.11	0.16	1.36	7.17	3.92
50th-Percentile Queue Length [ft/ln]	0.00	295.7	283.5	171.2	77.67	77.67	3.98	34.06	179.24	98.04
95th-Percentile Queue Length [veh/ln]	0.00	17.47	16.87	11.14	5.59	5.59	0.29	2.45	11.56	7.06
95th-Percentile Queue Length [ft/ln]	0.00	436.7	421.6	278.5	139.8	139.8	7.16	61.30	289.02	176.46

Movement, Approach, & Intersection Results

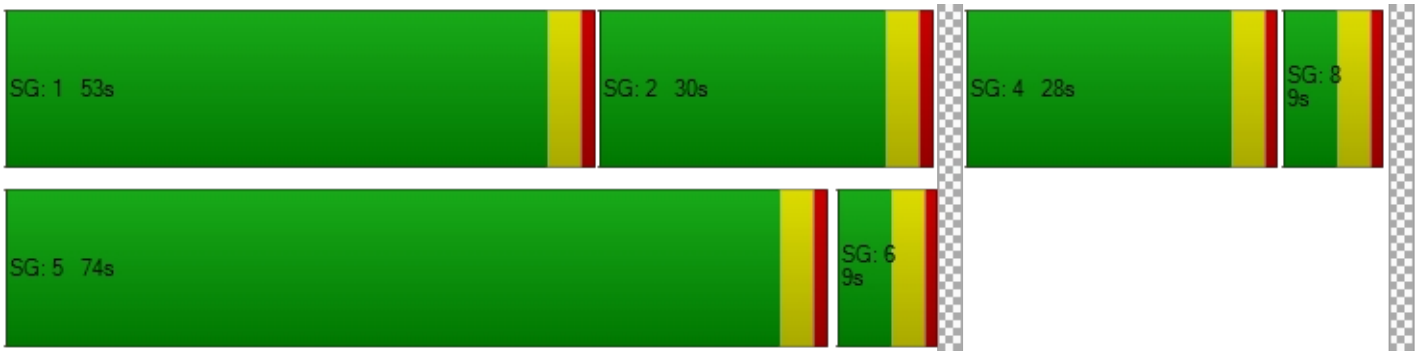
d_M, Delay for Movement [s/veh]	0.00	21.59	21.69	59.69	7.71	7.71	57.37	71.93	86.49	59.37	59.37	49.95
Movement LOS	A	C	C	E	A	A	E	E	F	E	E	D
d_A, Approach Delay [s/veh]	21.60			20.69			82.76			55.81		
Approach LOS	C			C			F			E		
d_I, Intersection Delay [s/veh]	27.32											
Intersection LOS	C											
Intersection V/C	0.613											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	433	83	400
d_b, Bicycle Delay [s]	55.10	36.82	55.10	38.40
l_b,int, Bicycle LOS Score for Intersection	2.527	2.260	1.592	2.149
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	1	1458	200	199	841	1	0	1	0	107	0	206
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1458	200	211	841	1	0	1	0	107	0	218
Peak Hour Factor	0.946	0.946	0.946	0.950	0.946	0.950	0.950	0.950	0.946	0.946	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	385	53	56	222	0	0	0	0	28	0	57
Total Analysis Volume [veh/h]	1	1541	211	222	889	1	0	1	0	113	0	229
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	53	0	21	52	0	9	30	0	16	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	67	67	17	84	84	0	11	10	20
g / C, Green / Cycle	0.00	0.56	0.56	0.14	0.70	0.70	0.00	0.09	0.08	0.17
(v / s)_i Volume / Saturation Flow Rate	0.00	0.45	0.14	0.13	0.26	0.00	0.00	0.00	0.07	0.15
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1714	1530
c, Capacity [veh/h]	3	1909	852	243	2388	1066	0	158	137	257
d1, Uniform Delay [s]	59.80	21.39	13.66	50.78	7.45	5.52	0.00	49.94	54.36	48.87
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	43.79	3.78	0.69	12.80	0.45	0.00	0.00	0.02	11.52	10.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.81	0.25	0.91	0.37	0.00	0.00	0.01	0.82	0.89
d, Delay for Lane Group [s/veh]	103.5	25.17	14.35	63.58	7.90	5.52	0.00	49.96	65.88	59.18
Lane Group LOS	F	C	B	E	A	A	A	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.07	17.63	3.07	7.42	4.48	0.01	0.00	0.03	3.80	7.43
50th-Percentile Queue Length [ft/ln]	1.77	440.7	76.78	185.6	111.8	0.19	0.00	0.71	95.00	185.75
95th-Percentile Queue Length [veh/ln]	0.13	24.52	5.53	11.89	7.94	0.01	0.00	0.05	6.84	11.90
95th-Percentile Queue Length [ft/ln]	3.19	612.9	138.2	297.3	198.6	0.35	0.00	1.27	171.01	297.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	103.5	25.17	14.35	63.58	7.90	5.52	0.00	49.96	49.96	65.88	59.18	59.18
Movement LOS	F	C	B	E	A	A	A	D	D	E	E	E
d_A, Approach Delay [s/veh]	23.92			19.01			49.96			61.40		
Approach LOS	C			B			D			E		
d_I, Intersection Delay [s/veh]	26.22											
Intersection LOS	C											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.993	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	800	433	550
d_b, Bicycle Delay [s]	21.00	21.60	36.82	31.54
l_b,int, Bicycle LOS Score for Intersection	3.006	2.477	1.561	2.124
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	40.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.967

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	30	215	48	118	172	40	129	224	33	32	148	129
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	3	0	0	2	0	0	10	0	0	17	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	231	51	125	184	42	137	247	35	34	174	137
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	61	13	33	48	11	36	65	9	9	46	36
Total Analysis Volume [veh/h]	34	243	54	132	194	44	144	260	37	36	183	144
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	402	441	415	418	467	397	437
Degree of Utilization, x	0.69	0.12	0.89	0.97	0.08	0.55	0.33

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.02	0.41	9.27	11.48	0.26	3.22	1.42
95th-Percentile Queue Length [ft]	125.52	10.37	231.83	287.10	6.42	80.39	35.46
Approach Delay [s/veh]	26.41		50.89	61.07		19.38	
Approach LOS	D		F	F		C	
Intersection Delay [s/veh]	40.89						
Intersection LOS	E						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	30.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.559

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	45	922	34	78	735	100	139	250	53	29	195	136
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	6	1	0	4	0	0	10	0	1	17	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	983	37	83	783	106	147	275	56	32	224	144
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	259	10	22	206	28	39	72	15	8	59	38
Total Analysis Volume [veh/h]	51	1035	39	87	824	112	155	289	59	34	236	152
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	46	0	12	42	0	28	30	0	32	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	67	67	8	70	70	13	26	26	3	17	17
g / C, Green / Cycle	0.04	0.56	0.56	0.06	0.58	0.58	0.11	0.22	0.22	0.03	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.03	0.30	0.30	0.05	0.27	0.27	0.09	0.08	0.04	0.02	0.11	0.12
s, saturation flow rate [veh/h]	1714	1800	1777	1714	1800	1726	1714	3427	1530	1714	1800	1572
c, Capacity [veh/h]	66	1003	990	108	1047	1004	184	742	331	51	251	219
d1, Uniform Delay [s]	57.19	16.82	16.82	55.48	14.28	14.28	52.59	40.21	38.30	57.61	50.10	50.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.47	2.08	2.10	12.88	1.43	1.50	10.02	0.33	0.25	13.78	6.16	8.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.54	0.54	0.80	0.46	0.46	0.84	0.39	0.18	0.66	0.81	0.84
d, Delay for Lane Group [s/veh]	74.66	18.90	18.93	68.37	15.72	15.78	62.61	40.55	38.55	71.40	56.26	58.94
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.85	9.74	9.63	2.99	7.60	7.30	5.09	3.70	1.45	1.22	6.34	5.93
50th-Percentile Queue Length [ft/ln]	46.32	243.5	240.7	74.63	189.8	182.4	127.3	92.45	36.20	30.46	158.4	148.2
95th-Percentile Queue Length [veh/ln]	3.33	14.86	14.72	5.37	12.12	11.73	8.79	6.66	2.61	2.19	10.47	9.92
95th-Percentile Queue Length [ft/ln]	83.37	371.5	367.9	134.3	302.8	293.2	219.8	166.4	65.16	54.84	261.6	248.0

Movement, Approach, & Intersection Results

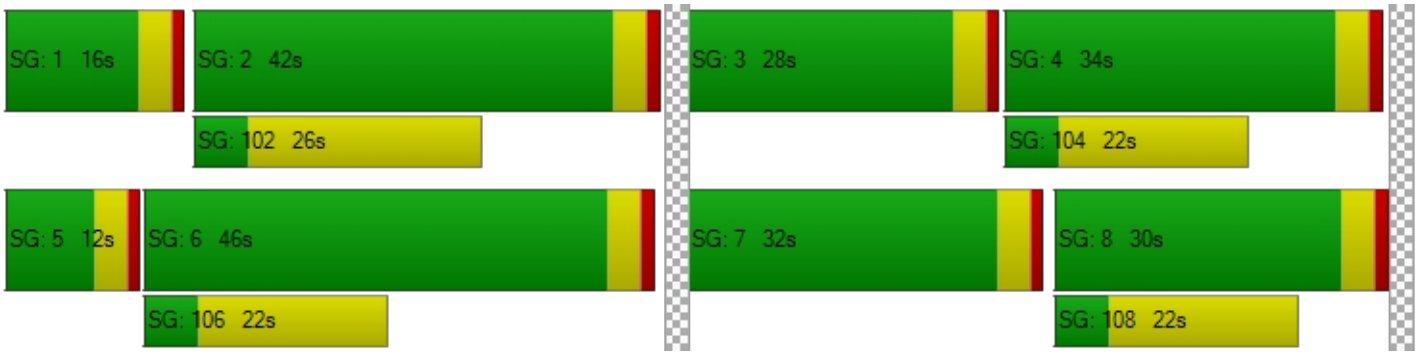
d_M, Delay for Movement [s/veh]	74.66	18.91	18.93	68.37	15.74	15.78	62.61	40.55	38.55	71.40	56.63	58.94
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	21.44			20.22			47.11			58.65		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	30.35											
Intersection LOS	C											
Intersection V/C	0.559											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.713	2.852	2.615	2.604
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	633	433	500
d_b, Bicycle Delay [s]	25.35	28.02	36.82	33.75
l_b,int, Bicycle LOS Score for Intersection	2.488	2.404	1.975	1.908
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	42.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	833	164	64	696	56	75	453	101	111	270	46
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	4	5	0	0	5	17	12	5	2	0	8	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	888	174	68	743	76	92	485	109	118	294	49
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	33	234	46	18	196	20	24	128	29	31	77	13
Total Analysis Volume [veh/h]	131	935	183	72	782	80	97	511	115	124	309	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	65	0	11	61	0	12	30	0	14	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	42	42	6	37	37	8	46	46	10	48	48
g / C, Green / Cycle	0.09	0.35	0.35	0.05	0.31	0.31	0.07	0.38	0.38	0.08	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.08	0.32	0.32	0.04	0.24	0.24	0.06	0.18	0.18	0.07	0.10	0.10
s, saturation flow rate [veh/h]	1714	1800	1699	1714	1800	1742	1714	1800	1687	1714	1800	1711
c, Capacity [veh/h]	156	629	593	91	561	543	114	686	643	143	716	680
d1, Uniform Delay [s]	53.71	37.30	37.37	56.14	37.57	37.57	55.40	28.02	28.05	54.35	24.26	24.29
k, delay calibration	0.11	0.19	0.19	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.46	9.12	10.02	13.94	2.41	2.49	15.55	2.31	2.48	14.41	0.87	0.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.91	0.92	0.79	0.78	0.78	0.85	0.47	0.47	0.87	0.26	0.26
d, Delay for Lane Group [s/veh]	65.16	46.42	47.39	70.08	39.98	40.05	70.95	30.33	30.53	68.75	25.13	25.22
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.39	17.45	16.72	2.51	12.00	11.63	3.40	7.41	7.00	4.27	3.69	3.57
50th-Percentile Queue Length [ft/ln]	109.6	436.3	418.0	62.72	300.0	290.7	84.89	185.1	175.1	106.7	92.27	89.18
95th-Percentile Queue Length [veh/ln]	7.82	24.30	23.43	4.52	17.68	17.22	6.11	11.87	11.35	7.66	6.64	6.42
95th-Percentile Queue Length [ft/ln]	195.4	607.6	585.7	112.8	442.0	430.5	152.8	296.7	283.6	191.4	166.0	160.5

Movement, Approach, & Intersection Results

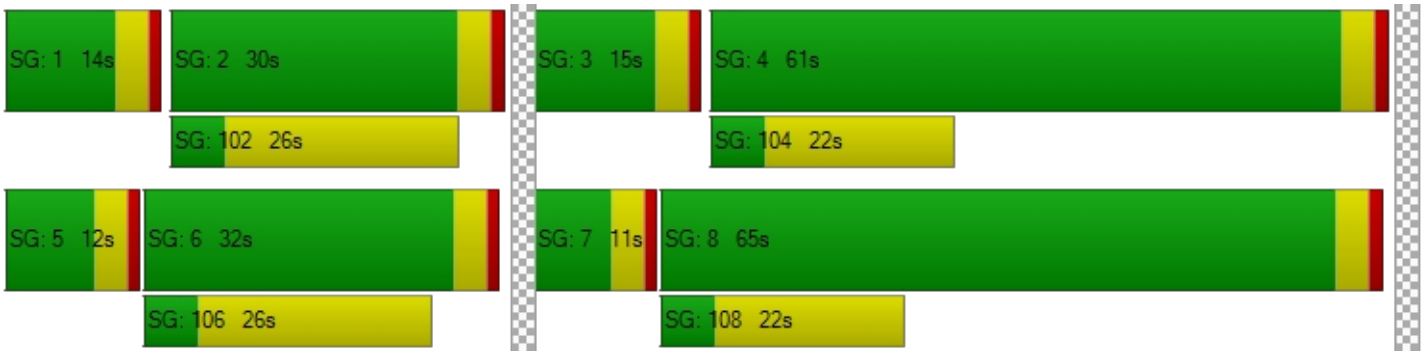
d_M, Delay for Movement [s/veh]	65.16	46.80	47.39	70.08	40.01	40.05	70.95	30.40	30.53	68.75	25.16	25.22
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	48.81			42.33			35.86			36.32		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.48											
Intersection LOS	D											
Intersection V/C	0.614											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.837	2.796	2.557	2.559
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	950	433	467
d_b, Bicycle Delay [s]	14.50	16.54	36.82	35.27
l_b,int, Bicycle LOS Score for Intersection	2.590	2.330	2.156	1.960
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.466

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	18	868	69	34	681	106	136	178	9	42	83	20
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	2	0	0	4	1	5	9	0	10	2	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	922	73	36	726	113	149	198	10	55	90	21
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	243	19	9	191	30	39	52	3	14	24	6
Total Analysis Volume [veh/h]	20	971	77	38	764	119	157	208	11	58	95	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	48	0	13	52	0	26	47	0	12	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	79	79	4	80	80	13	16	16	5	8	8
g / C, Green / Cycle	0.02	0.66	0.66	0.03	0.67	0.67	0.11	0.13	0.13	0.04	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.01	0.29	0.29	0.02	0.25	0.25	0.09	0.12	0.01	0.03	0.05	0.01
s, saturation flow rate [veh/h]	1714	1800	1754	1714	1800	1716	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	35	1185	1155	52	1203	1147	185	243	206	74	126	107
d1, Uniform Delay [s]	58.25	9.93	9.93	57.70	8.82	8.82	52.55	50.77	45.23	56.86	54.79	52.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.77	1.23	1.26	17.84	0.90	0.94	10.16	8.47	0.11	16.33	8.78	0.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.45	0.45	0.73	0.38	0.38	0.85	0.86	0.05	0.78	0.75	0.21
d, Delay for Lane Group [s/veh]	72.03	11.16	11.19	75.54	9.72	9.76	62.71	59.25	45.34	73.19	63.57	53.59
Lane Group LOS	E	B	B	E	A	A	E	E	D	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.74	6.78	6.62	1.40	5.22	4.99	5.16	6.68	0.29	2.08	3.13	0.66
50th-Percentile Queue Length [ft/ln]	18.41	169.5	165.5	35.04	130.4	124.8	129.0	166.9	7.35	51.93	78.22	16.40
95th-Percentile Queue Length [veh/ln]	1.33	11.05	10.84	2.52	8.97	8.66	8.89	10.92	0.53	3.74	5.63	1.18
95th-Percentile Queue Length [ft/ln]	33.14	276.3	271.0	63.07	224.1	216.4	222.2	272.9	13.22	93.48	140.8	29.51

Movement, Approach, & Intersection Results

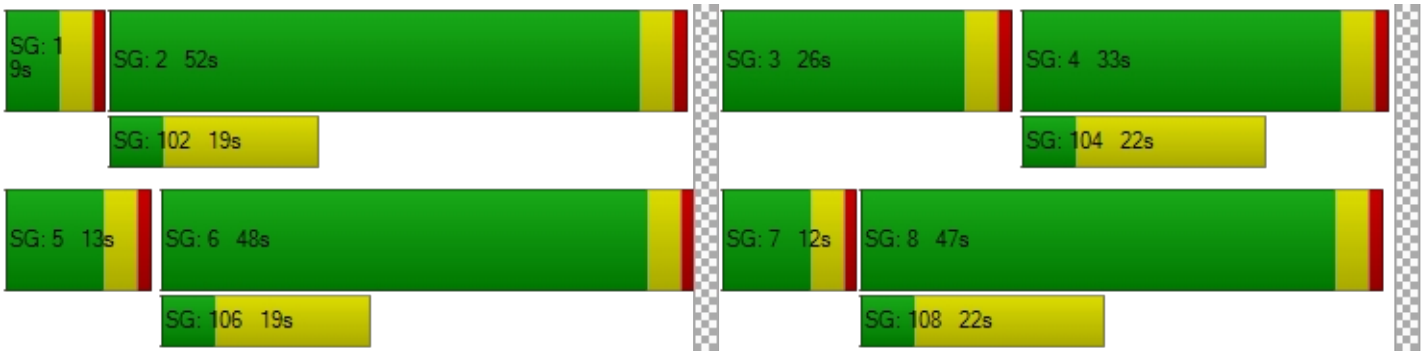
d_M, Delay for Movement [s/veh]	72.03	11.17	11.19	75.54	9.74	9.76	62.71	59.25	45.34	73.19	63.57	53.59
Movement LOS	E	B	B	E	A	A	E	E	D	E	E	D
d_A, Approach Delay [s/veh]	12.31			12.45			60.28			65.51		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	23.13											
Intersection LOS	C											
Intersection V/C	0.466											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.686	2.719	2.295	2.268
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	800	717	483
d_b, Bicycle Delay [s]	24.07	21.60	24.70	34.50
l_b,int, Bicycle LOS Score for Intersection	2.441	2.319	2.180	1.848
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	33.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	16	1461	163	160	882	2	5	2	5	165	0	124
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.060	1.060	1.060	1.000
In-Process Volume [veh/h]	144	0	0	0	0	0	0	106	93	0	116	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	161	1461	173	160	882	2	5	108	98	175	116	124
Peak Hour Factor	0.950	0.972	0.950	0.972	0.972	0.972	0.972	0.950	0.950	0.950	0.950	0.972
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	376	46	41	227	1	1	28	26	46	31	32
Total Analysis Volume [veh/h]	169	1503	182	165	907	2	5	114	103	184	122	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	39	49	0	21	31	0	9	33	0	17	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	60	60	13	59	59	1	18	13	30
g / C, Green / Cycle	0.12	0.50	0.50	0.11	0.49	0.49	0.01	0.15	0.11	0.25
(v / s)_i Volume / Saturation Flow Rate	0.10	0.33	0.33	0.10	0.18	0.00	0.00	0.13	0.11	0.15
s, saturation flow rate [veh/h]	1714	3427	1702	1714	4903	1530	1714	1661	1714	1651
c, Capacity [veh/h]	200	1708	849	192	2421	756	11	246	186	412
d1, Uniform Delay [s]	51.97	22.47	22.51	52.37	18.86	15.39	59.38	50.09	53.44	39.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.47	2.00	4.03	10.69	0.44	0.01	24.11	9.98	28.55	1.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.66	0.66	0.86	0.37	0.00	0.44	0.88	0.99	0.61
d, Delay for Lane Group [s/veh]	61.44	24.47	26.54	63.06	19.31	15.40	83.49	60.07	81.99	41.24
Lane Group LOS	E	C	C	E	B	B	F	E	F	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.51	12.04	12.51	5.45	5.28	0.03	0.23	7.05	7.00	6.68
50th-Percentile Queue Length [ft/ln]	137.7	301.1	312.7	136.2	132.0	0.73	5.71	176.28	175.12	167.08
95th-Percentile Queue Length [veh/ln]	9.36	17.74	18.31	9.28	9.05	0.05	0.41	11.41	11.35	10.92
95th-Percentile Queue Length [ft/ln]	233.9	443.4	457.8	231.9	226.3	1.32	10.27	285.15	283.63	273.08

Movement, Approach, & Intersection Results

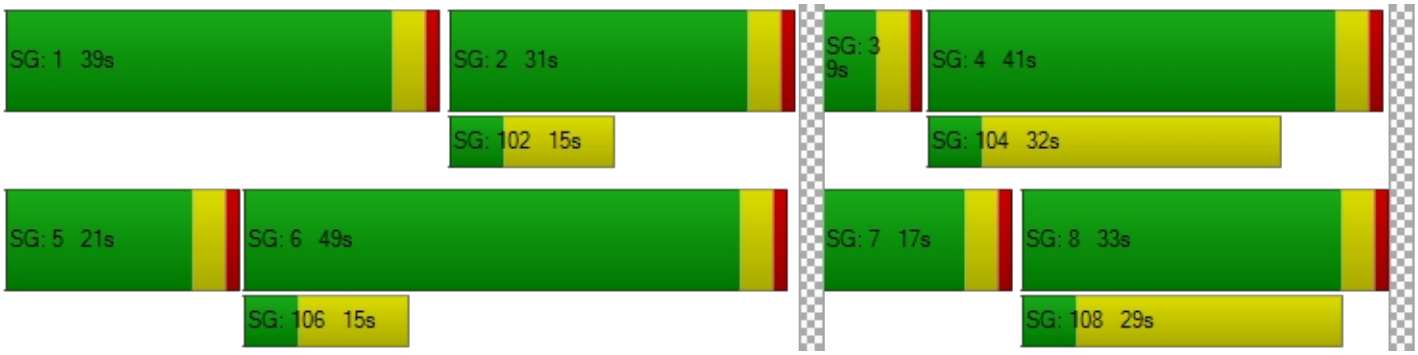
d_M, Delay for Movement [s/veh]	61.44	24.99	26.54	63.06	19.31	15.40	83.49	60.07	60.07	81.99	41.24	41.24
Movement LOS	E	C	C	E	B	B	F	E	E	F	D	D
d_A, Approach Delay [s/veh]	28.46			26.02			60.60			58.52		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	33.36											
Intersection LOS	C											
Intersection V/C	0.664											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.034	3.246	2.123	2.246
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	450	483	617
d_b, Bicycle Delay [s]	23.44	36.04	34.50	28.70
l_b,int, Bicycle LOS Score for Intersection	2.579	2.150	1.926	2.276
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	25.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.834

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	15	213	12	34	162	31	62	171	22	10	113	42
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	8	0	0	0	0	2	3	135	6	0	144	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	226	13	36	172	35	69	316	29	11	264	45
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	6	59	3	9	45	9	18	83	8	3	69	12
Total Analysis Volume [veh/h]	25	238	14	38	181	37	73	333	31	12	278	47
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	482	479	524	509
Degree of Utilization, x	0.57	0.53	0.83	0.66

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.56	3.09	8.48	4.81
95th-Percentile Queue Length [ft]	88.96	77.27	212.06	120.35
Approach Delay [s/veh]	20.07	18.76	35.62	22.91
Approach LOS	C	C	E	C
Intersection Delay [s/veh]	25.75			
Intersection LOS	D			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	28.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.807

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	33	51	48	20	4	12	42	7	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	35	54	51	21	4	13	45	7	1
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	9	14	13	6	1	3	12	2	0
Total Analysis Volume [veh/h]	0	37	57	54	22	4	14	47	7	1
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	466	438
Degree of Utilization, x	0.36	0.17

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.65	0.59
95th-Percentile Queue Length [ft]	41.18	14.83
Approach Delay [s/veh]	15.08	12.87
Approach LOS	C	B
Intersection Delay [s/veh]	28.76	
Intersection LOS	D	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	39	2	143	22	4	12	39	142	7	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	13	115	0	0	0	0	132	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	15	267	23	4	13	41	283	7	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	4	70	6	1	3	11	74	2	1
Total Analysis Volume [veh/h]	43	16	281	24	4	14	43	298	7	5
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	456	455
Degree of Utilization, x	0.81	0.81

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.46	7.46
95th-Percentile Queue Length [ft]	186.54	186.56
Approach Delay [s/veh]	36.34	36.47
Approach LOS	E	E
Intersection Delay [s/veh]	28.76	
Intersection LOS	D	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	3	16	240	40	0	5	39	95	31	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	3	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	17	254	42	0	5	41	101	36	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	67	11	0	1	11	27	9	2
Total Analysis Volume [veh/h]	3	18	267	44	0	5	43	106	38	7
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	451	407	452
Degree of Utilization, x	0.74	0.38	0.10

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.98	1.73	0.33
95th-Percentile Queue Length [ft]	149.52	43.27	8.24
Approach Delay [s/veh]	30.21	15.63	
Approach LOS	D	C	
Intersection Delay [s/veh]	28.76		
Intersection LOS	D		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.490

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	50	874	82	66	634	13	20	165	39	57	148	63
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	49	0	0	0	0	14	2	54	60	0	69	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	926	87	70	672	28	23	229	101	60	226	67
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	244	23	18	177	7	6	60	27	16	59	18
Total Analysis Volume [veh/h]	107	975	92	74	707	29	24	241	106	63	238	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	58	0	15	55	0	9	26	0	21	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	76	76	7	74	74	3	15	15	6	18	18
g / C, Green / Cycle	0.08	0.64	0.64	0.05	0.62	0.62	0.02	0.13	0.13	0.05	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.06	0.30	0.30	0.04	0.21	0.21	0.01	0.07	0.07	0.04	0.13	0.05
s, saturation flow rate [veh/h]	1714	1800	1746	1714	1800	1775	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	132	1145	1111	94	1106	1091	40	436	195	83	274	233
d1, Uniform Delay [s]	54.53	11.35	11.36	56.00	11.24	11.24	58.06	49.16	49.11	56.43	49.70	45.23
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.20	1.40	1.45	13.24	0.82	0.83	13.74	1.10	2.36	13.44	8.26	0.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.47	0.47	0.78	0.34	0.34	0.60	0.55	0.54	0.76	0.87	0.30
d, Delay for Lane Group [s/veh]	65.73	12.75	12.80	69.24	12.05	12.07	71.80	50.26	51.47	69.87	57.96	45.96
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.59	7.58	7.38	2.56	4.89	4.83	0.87	3.46	3.11	2.20	7.59	1.94
50th-Percentile Queue Length [ft/ln]	89.84	189.4	184.4	64.01	122.2	120.7	21.86	86.58	77.81	54.90	189.8	48.45
95th-Percentile Queue Length [veh/ln]	6.47	12.09	11.83	4.61	8.52	8.43	1.57	6.23	5.60	3.95	12.11	3.49
95th-Percentile Queue Length [ft/ln]	161.7	302.2	295.7	115.2	212.9	210.8	39.35	155.8	140.0	98.83	302.7	87.20

Movement, Approach, & Intersection Results

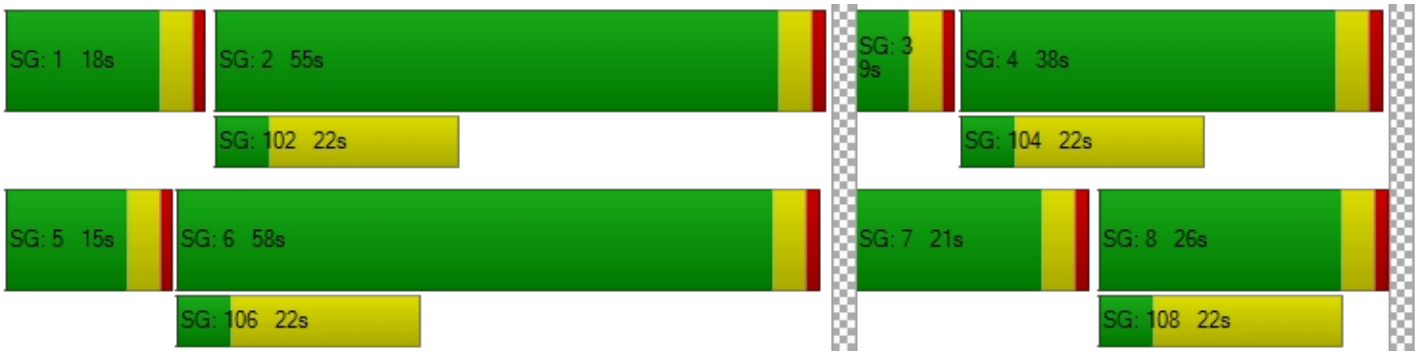
d_M, Delay for Movement [s/veh]	65.73	12.77	12.80	69.24	12.06	12.07	71.80	50.26	51.47	69.87	57.96	45.96
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	D
d_A, Approach Delay [s/veh]	17.60			17.29			52.00			57.69		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	27.66											
Intersection LOS	C											
Intersection V/C	0.490											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.715	2.682	2.460	2.595
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	850	367	567
d_b, Bicycle Delay [s]	18.15	19.84	40.02	30.82
l_b,int, Bicycle LOS Score for Intersection	2.528	2.228	1.866	2.173
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	68	1025	112	64	785	62	76	231	66	117	164	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	35	0	0	0	0	9	8	5	30	0	8	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	1087	119	68	832	75	89	250	100	124	182	61
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	286	31	18	219	20	23	66	26	33	48	16
Total Analysis Volume [veh/h]	113	1144	125	72	876	79	94	263	105	131	192	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	57	0	11	44	0	22	34	0	18	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	71	71	6	68	68	8	16	16	11	18	18
g / C, Green / Cycle	0.08	0.59	0.59	0.05	0.56	0.56	0.07	0.13	0.13	0.09	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.36	0.36	0.04	0.27	0.27	0.05	0.11	0.11	0.08	0.07	0.08
s, saturation flow rate [veh/h]	1714	1800	1739	1714	1800	1748	1714	1800	1630	1714	1800	1650
c, Capacity [veh/h]	139	1066	1030	91	1016	986	118	234	212	157	274	251
d1, Uniform Delay [s]	54.23	15.51	15.56	56.17	15.59	15.59	55.04	50.81	50.97	53.64	46.51	46.62
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.70	2.53	2.66	14.26	1.61	1.65	11.44	6.80	8.48	11.05	1.30	1.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.60	0.61	0.79	0.48	0.48	0.80	0.82	0.84	0.84	0.48	0.49
d, Delay for Lane Group [s/veh]	64.93	18.04	18.22	70.43	17.20	17.24	66.48	57.60	59.44	64.69	47.81	48.13
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.77	11.46	11.20	2.52	8.16	7.94	3.18	6.01	5.70	4.37	3.70	3.52
50th-Percentile Queue Length [ft/ln]	94.27	286.5	280.1	62.88	203.9	198.4	79.40	150.3	142.3	109.2	92.53	87.96
95th-Percentile Queue Length [veh/ln]	6.79	17.01	16.69	4.53	12.84	12.56	5.72	10.04	9.61	7.80	6.66	6.33
95th-Percentile Queue Length [ft/ln]	169.6	425.2	417.3	113.1	321.0	313.9	142.9	250.9	240.2	194.8	166.5	158.3

Movement, Approach, & Intersection Results

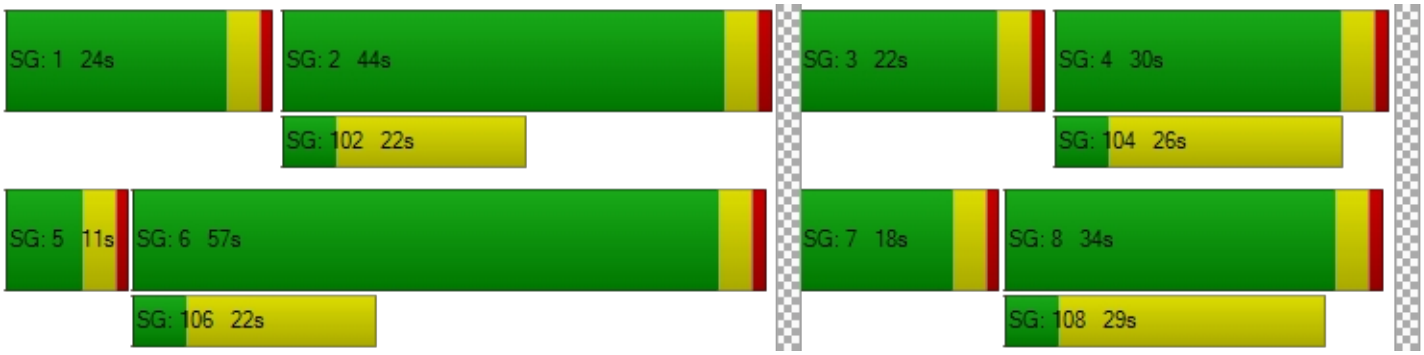
d_M, Delay for Movement [s/veh]	64.93	18.12	18.22	70.43	17.22	17.24	66.48	58.11	59.44	64.69	47.91	48.13
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	21.96			20.95			60.11			53.62		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	30.81											
Intersection LOS	C											
Intersection V/C	0.587											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.957	2.847	2.480	2.480
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	883	667	500	433
d_b, Bicycle Delay [s]	18.70	26.67	33.75	36.82
l_b,int, Bicycle LOS Score for Intersection	2.700	2.407	1.941	1.879
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	51.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.864

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	119	208	360	107	282	534	817	1020	94	152	605	306
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	8	0	0	5	51
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	126	220	382	113	299	566	866	1089	100	161	646	375
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	33	58	101	30	79	149	228	287	26	42	170	99
Total Analysis Volume [veh/h]	133	232	402	119	315	596	912	1146	105	169	680	395
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	35	0	13	28	0	37	60	0	12	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	31	31	9	29	29	29	33	56	56	8	31	31
g / C, Green / Cycle	0.09	0.26	0.26	0.08	0.24	0.24	0.24	0.28	0.47	0.47	0.07	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.08	0.07	0.26	0.07	0.18	0.19	0.19	0.27	0.23	0.07	0.05	0.14	0.26
s, saturation flow rate [veh/h]	1714	3427	1530	171	180	153	153	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	160	885	395	129	432	367	367	916	2290	714	221	1267	395
d1, Uniform Delay [s]	53.45	35.40	44.50	55.1	42.0	43.0	43.0	43.44	22.25	18.30	55.10	38.32	44.49
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.45
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.38	0.72	49.66	22.5	10.3	17.5	17.5	12.96	0.17	0.09	5.45	0.36	42.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.26	1.02	0.93	0.73	0.81	0.81	1.00	0.50	0.15	0.76	0.54	1.00
d, Delay for Lane Group [s/veh]	63.83	36.12	94.16	77.6	52.4	60.6	60.6	56.40	22.42	18.40	60.54	38.67	87.38
Lane Group LOS	E	D	F	E	D	E	E	E	C	B	E	D	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.41	2.81	17.09	4.38	9.81	10.1	10.1	15.01	7.46	1.70	2.68	5.79	16.34
50th-Percentile Queue Length [ft/ln]	110.1	70.14	427.2	109.	245.	252.	252.	375.3	186.3	42.41	67.02	144.7	408.4
95th-Percentile Queue Length [veh/ln]	7.85	5.05	24.12	7.81	14.9	15.3	15.3	21.37	11.93	3.05	4.83	9.73	22.97
95th-Percentile Queue Length [ft/ln]	196.1	126.2	602.9	195.	373.	382.	382.	534.2	298.3	76.34	120.6	243.3	574.1

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.83	36.12	94.16	77.67	52.41	60.64	56.40	22.42	18.40	60.54	38.67	87.38
Movement LOS	E	D	F	E	D	E	E	C	B	E	D	F
d_A, Approach Delay [s/veh]	71.34			60.09			36.55			57.11		
Approach LOS	E			E			D			E		
d_I, Intersection Delay [s/veh]	51.25											
Intersection LOS	D											
Intersection V/C	0.864											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.688	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	400	933	517
d_b, Bicycle Delay [s]	33.00	38.40	17.07	33.00
l_b,int, Bicycle LOS Score for Intersection	2.192	2.409	2.749	2.244
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	34.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.604

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	74	48	43	114	42	359	674	752	63	37	631	140
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	51	0	0	0	8	0	0	56	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	51	46	172	45	381	714	805	67	39	725	148
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	21	13	12	45	12	100	188	212	18	10	191	39
Total Analysis Volume [veh/h]	82	54	48	181	47	401	752	847	71	41	763	156
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	29	0	28	23	0	35	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	8	20	20	20	30	72	72	4	45	45
g / C, Green / Cycle	0.07	0.07	0.07	0.17	0.17	0.17	0.25	0.60	0.60	0.03	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.03	0.07	0.07	0.15	0.23	0.17	0.05	0.02	0.18	0.18
s, saturation flow rate [veh/h]	1714	1800	1537	1714	1748	2708	3329	4903	1530	1714	3427	1649
c, Capacity [veh/h]	115	121	103	290	296	458	844	2934	916	55	1291	621
d1, Uniform Delay [s]	54.83	53.78	53.95	44.34	44.33	48.61	43.17	11.70	10.15	57.61	28.45	28.51
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.88	2.44	3.43	0.85	0.83	5.43	3.50	0.25	0.17	18.25	1.28	2.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.43	0.48	0.39	0.39	0.88	0.89	0.29	0.08	0.75	0.48	0.48
d, Delay for Lane Group [s/veh]	62.72	56.22	57.38	45.19	45.17	54.04	46.67	11.95	10.31	75.86	29.72	31.20
Lane Group LOS	E	E	E	D	D	D	D	B	B	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.68	1.61	1.54	3.07	3.12	6.18	11.09	3.64	0.82	1.51	6.98	7.04
50th-Percentile Queue Length [ft/ln]	67.06	40.16	38.58	76.73	78.08	154.6	277.2	91.10	20.56	37.81	174.4	175.9
95th-Percentile Queue Length [veh/ln]	4.83	2.89	2.78	5.52	5.62	10.26	16.55	6.56	1.48	2.72	11.31	11.39
95th-Percentile Queue Length [ft/ln]	120.7	72.29	69.44	138.1	140.5	256.5	413.8	163.9	37.00	68.06	282.7	284.7

Movement, Approach, & Intersection Results

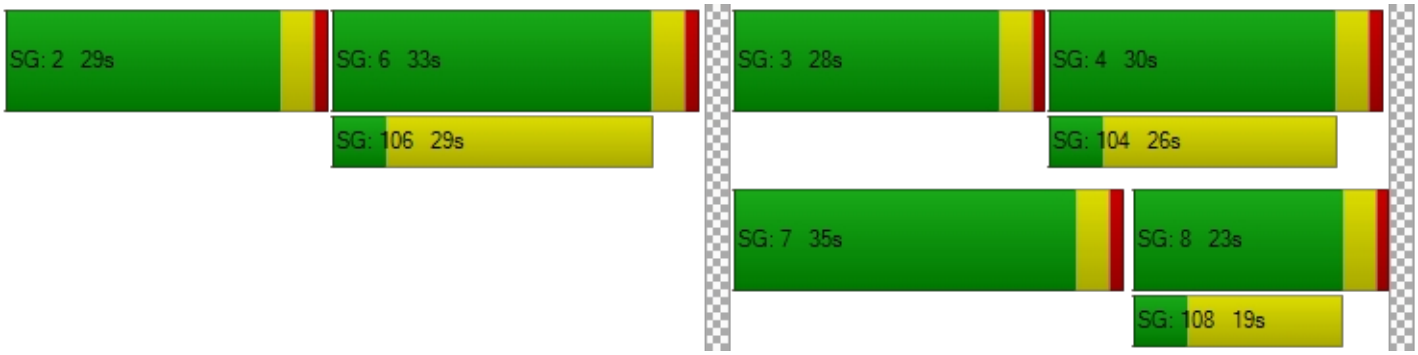
d_M, Delay for Movement [s/veh]	62.72	56.25	57.38	45.18	45.17	54.04	46.67	11.95	10.31	75.86	30.00	31.20
Movement LOS	E	E	E	D	D	D	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	59.43			50.83			27.51			32.15		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	34.77											
Intersection LOS	C											
Intersection V/C	0.604											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.230	2.727	0.000	2.893
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	417	317	433
d_b, Bicycle Delay [s]	34.50	37.60	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.711	2.597	2.478	2.088
Bicycle LOS	A	B	B	B

Sequence

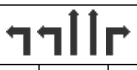
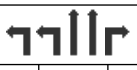
Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	36.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.532

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	158	754	90	148	608	171	182	575	229	108	268	65
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	10	6	0	2	2	35	24	0	9	54	35
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	167	809	101	157	646	183	228	634	243	123	338	104
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	44	213	27	41	170	48	60	167	64	32	89	27
Total Analysis Volume [veh/h]	176	852	106	165	680	193	240	667	256	129	356	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Unsig	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	37	0	11	36	0	24	62	0	10	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	64	7	63	63	11	27	27	6	22	22
g / C, Green / Cycle	0.07	0.53	0.06	0.53	0.53	0.09	0.22	0.22	0.05	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.05	0.20	0.13	0.07	0.19	0.17	0.04	0.13	0.14
s, saturation flow rate [veh/h]	3329	3427	3329	3427	1530	3329	3427	1530	3329	1800	1658
c, Capacity [veh/h]	222	1827	194	1799	803	305	772	345	166	330	304
d1, Uniform Delay [s]	55.18	17.40	55.98	16.90	15.50	53.34	44.73	43.26	56.33	46.18	46.27
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.29	0.86	9.87	0.61	0.71	4.46	3.06	3.18	7.49	3.09	3.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.47	0.85	0.38	0.24	0.79	0.86	0.74	0.77	0.73	0.74
d, Delay for Lane Group [s/veh]	61.47	18.26	65.85	17.51	16.21	57.80	47.78	46.44	63.82	49.27	49.76
Lane Group LOS	E	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.82	7.40	2.74	5.64	3.02	3.73	9.83	7.36	2.10	7.04	6.61
50th-Percentile Queue Length [ft/ln]	70.41	184.90	68.52	141.0	75.39	93.33	245.8	184.0	52.61	176.1	165.2
95th-Percentile Queue Length [veh/ln]	5.07	11.86	4.93	9.53	5.43	6.72	14.98	11.81	3.79	11.40	10.83
95th-Percentile Queue Length [ft/ln]	126.74	296.40	123.3	238.3	135.7	168.0	374.4	295.3	94.70	284.9	270.6

Movement, Approach, & Intersection Results

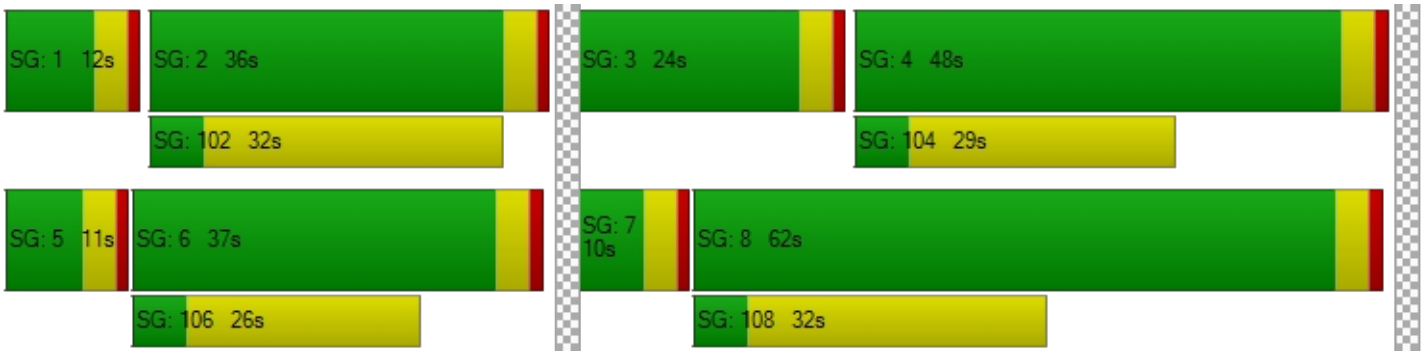
d_M, Delay for Movement [s/veh]	61.47	18.26	0.00	65.85	17.51	16.21	57.80	47.78	46.44	63.82	49.43	49.76
Movement LOS	E	B		E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	25.66			24.95			49.55			52.62		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.92											
Intersection LOS	D											
Intersection V/C	0.532											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.996	2.921	2.971	2.700
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	533	967	733
d_b, Bicycle Delay [s]	31.54	32.27	16.02	24.07
l_b,int, Bicycle LOS Score for Intersection	2.408	2.416	2.519	2.050
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	49.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.818

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	46	3	492	3	0	1	0	791	45	140	261	2
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	35	0	61	0	0	0	0	29	0	90	64	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	3	583	3	0	1	0	867	48	238	341	2
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	22	1	153	1	0	0	0	228	13	63	90	1
Total Analysis Volume [veh/h]	88	3	614	3	0	1	0	913	51	251	359	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	39	57	0	16	34	0	9	38	0	9	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	55	55	51	55	0	34	34	19	53	53
g / C, Green / Cycle	0.46	0.46	0.42	0.46	0.00	0.28	0.28	0.15	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.40	0.00	0.00	0.27	0.03	0.15	0.10	0.10
s, saturation flow rate [veh/h]	1439	1488	1530	871	1714	3427	1530	1714	1800	1796
c, Capacity [veh/h]	704	803	645	492	0	976	436	264	790	788
d1, Uniform Delay [s]	17.97	17.92	33.50	17.50	0.00	41.85	31.76	50.30	21.01	21.01
k, delay calibration	0.11	0.11	0.29	0.11	0.11	0.50	0.50	0.15	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.03	17.38	0.01	0.00	16.94	0.55	20.12	0.67	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.06	0.95	0.01	0.00	0.94	0.12	0.95	0.23	0.23
d, Delay for Lane Group [s/veh]	18.01	17.95	50.88	17.51	0.00	58.79	32.31	70.42	21.68	21.69
Lane Group LOS	B	B	D	B	A	E	C	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.67	0.76	19.92	0.06	0.00	15.35	1.17	8.91	3.33	3.32
50th-Percentile Queue Length [ft/ln]	16.69	18.99	498.0	1.53	0.00	383.8	29.33	222.8	83.14	83.01
95th-Percentile Queue Length [veh/ln]	1.20	1.37	27.24	0.11	0.00	21.78	2.11	13.81	5.99	5.98
95th-Percentile Queue Length [ft/ln]	30.04	34.19	681.1	2.76	0.00	544.4	52.79	345.2	149.6	149.4

Movement, Approach, & Intersection Results

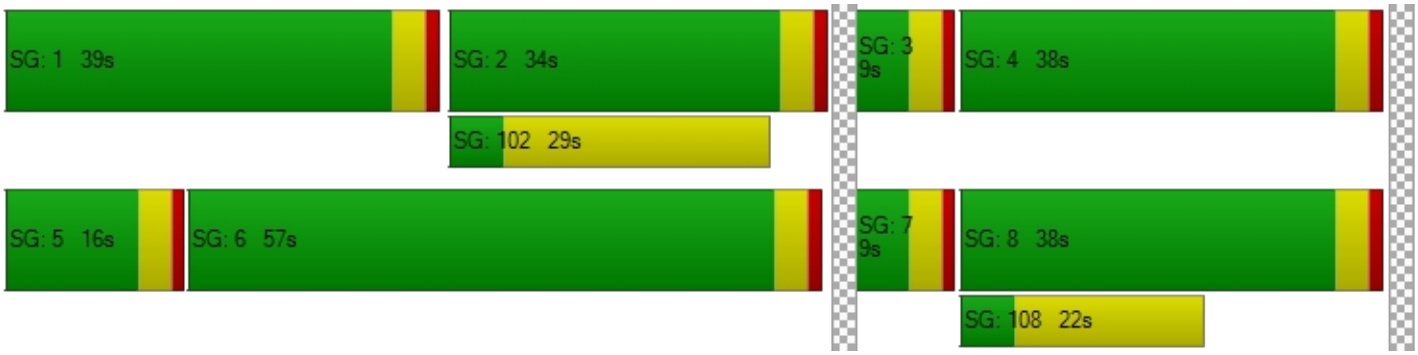
d_M, Delay for Movement [s/veh]	18.01	17.95	50.88	17.51	17.51	17.51	0.00	58.79	32.31	70.42	21.68	21.69
Movement LOS	B	B	D	B	B	B	A	E	C	E	C	C
d_A, Approach Delay [s/veh]	46.64			17.51			57.39			41.67		
Approach LOS	D			B			E			D		
d_I, Intersection Delay [s/veh]	49.79											
Intersection LOS	D											
Intersection V/C	0.818											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.511	0.000	2.935	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1150	1150	567	567
d_b, Bicycle Delay [s]	10.84	10.84	30.82	30.82
l_b,int, Bicycle LOS Score for Intersection	2.723	1.566	2.355	2.065
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.205

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	1295	400	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	153	0	82	1	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	153	0	1455	425	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	40	0	383	112	0
Total Analysis Volume [veh/h]	0	161	0	1532	447	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.20	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	26.50	10.76	8.24	0.00	0.00	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.77	0.77	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	19.13	19.13	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.76		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.81					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	44.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	1021	140	76	775	225	468	667	302	75	184	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	130	0	10	159	1	82	0	0	0	0	18
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	1212	148	91	981	240	578	707	320	80	195	79
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	319	39	24	258	63	152	186	84	21	51	21
Total Analysis Volume [veh/h]	73	1276	156	96	1033	253	608	744	337	84	205	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	28	0	11	30	30	45	40	0	41	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	43	43	7	45	90	41	46	8	13	13
g / C, Green / Cycle	0.04	0.36	0.36	0.06	0.38	0.75	0.34	0.38	0.06	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.04	0.28	0.28	0.06	0.21	0.17	0.35	0.22	0.05	0.08	0.09
s, saturation flow rate [veh/h]	1714	3427	1701	1714	4903	1530	1714	3427	1714	1800	1629
c, Capacity [veh/h]	71	1236	613	100	1849	1151	586	1317	109	191	173
d1, Uniform Delay [s]	57.50	34.04	34.04	56.36	29.49	4.41	39.50	29.06	55.32	52.25	52.43
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.49	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	55.23	4.78	9.24	32.97	1.22	0.44	47.11	0.38	10.80	6.66	8.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.02	0.77	0.77	0.96	0.56	0.22	1.04	0.57	0.77	0.78	0.81
d, Delay for Lane Group [s/veh]	112.7	38.82	43.28	89.33	30.71	4.86	86.61	29.45	66.11	58.91	60.97
Lane Group LOS	F	D	D	F	C	A	F	C	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.26	13.05	13.72	3.81	8.00	1.77	24.62	8.45	2.83	4.71	4.52
50th-Percentile Queue Length [ft/ln]	81.55	326.1	342.8	95.36	200.0	44.17	615.55	211.19	70.79	117.8	112.9
95th-Percentile Queue Length [veh/ln]	5.87	18.97	19.79	6.87	12.64	3.18	33.62	13.21	5.10	8.27	8.00
95th-Percentile Queue Length [ft/ln]	146.7	474.2	494.7	171.6	316.0	79.51	840.38	330.35	127.4	206.8	200.0

Movement, Approach, & Intersection Results

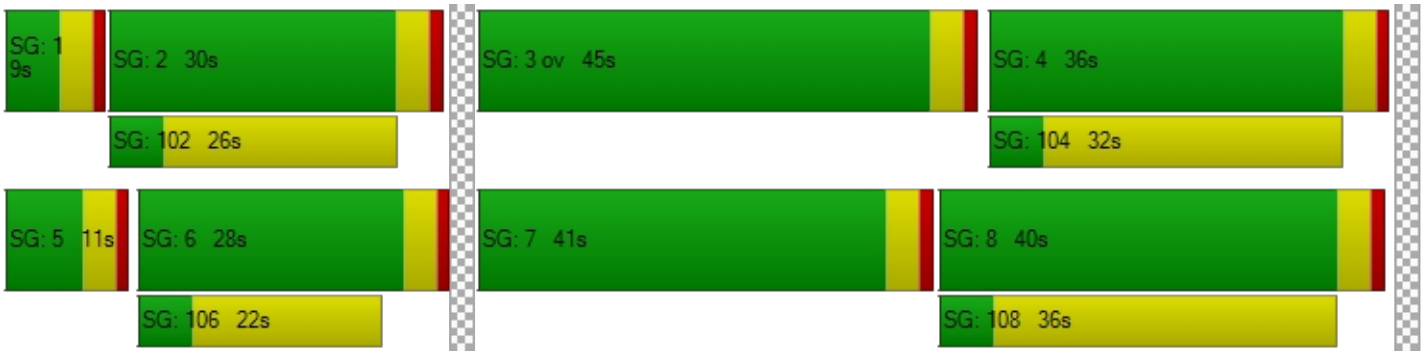
d_M, Delay for Movement [s/veh]	112.7	39.94	43.28	89.33	30.71	4.86	86.61	29.45	0.00	66.11	59.48	60.97
Movement LOS	F	D	D	F	C	A	F	C		E	E	E
d_A, Approach Delay [s/veh]	43.81			30.05			55.15			61.31		
Approach LOS	D			C			E			E		
d_I, Intersection Delay [s/veh]	44.42											
Intersection LOS	D											
Intersection V/C	0.776											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.149	3.149	2.774	2.582
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	433	600	533
d_b, Bicycle Delay [s]	38.40	36.82	29.40	32.27
l_b,int, Bicycle LOS Score for Intersection	2.387	2.320	2.675	1.867
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	35.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.489

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	17	158	25	39	100	35	68	546	12	13	227	35
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	1	0	0	0	5	0	0	10	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	167	27	42	106	37	72	584	13	14	251	37
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	44	7	11	28	10	19	154	3	4	66	10
Total Analysis Volume [veh/h]	19	176	28	44	112	39	76	615	14	15	264	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	23	0	0	23	0	79	88	0	9	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	62	62	7	44	2	40	40
g / C, Green / Cycle	0.51	0.51	0.06	0.37	0.02	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.13	0.12	0.04	0.35	0.01	0.15	0.03
s, saturation flow rate [veh/h]	1720	1598	1714	1793	1714	1800	1530
c, Capacity [veh/h]	915	857	100	664	28	591	503
d1, Uniform Delay [s]	16.29	16.02	55.65	36.63	58.55	31.71	27.77
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	0.62	11.03	7.86	14.54	0.53	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.23	0.76	0.95	0.53	0.45	0.08
d, Delay for Lane Group [s/veh]	16.92	16.64	66.68	44.49	73.09	32.24	27.83
Lane Group LOS	B	B	E	D	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.57	3.08	2.58	18.99	0.57	6.11	0.79
50th-Percentile Queue Length [ft/ln]	89.21	76.96	64.39	474.72	14.17	152.8	19.71
95th-Percentile Queue Length [veh/ln]	6.42	5.54	4.64	26.14	1.02	10.17	1.42
95th-Percentile Queue Length [ft/ln]	160.58	138.52	115.91	653.39	25.50	254.1	35.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.92	16.92	16.92	16.64	16.64	16.64	66.68	44.49	44.49	73.09	32.24	27.83
Movement LOS	B	B	B	B	B	B	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	16.92			16.64			46.89			33.62		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	35.23											
Intersection LOS	D											
Intersection V/C	0.489											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	1.908	1.967	2.424	0.000
Crosswalk LOS	A	A	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	1400	233
d_b, Bicycle Delay [s]	42.50	42.50	5.40	46.82
I_b,int, Bicycle LOS Score for Intersection	1.928	1.881	2.723	2.084
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.470

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	5	19	54	26	3	0	14	23	8	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	9	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	29	57	28	3	0	15	24	8	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	8	15	7	1	0	4	6	2	3
Total Analysis Volume [veh/h]	5	31	60	29	3	0	16	25	8	14
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	11	11
g / C, Green / Cycle	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.08	0.04
s, saturation flow rate [veh/h]	1682	1611
c, Capacity [veh/h]	191	184
d1, Uniform Delay [s]	53.57	51.53
k, delay calibration	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	4.03	1.10
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.34
d, Delay for Lane Group [s/veh]	57.60	52.63
Lane Group LOS	E	D
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	4.01	1.85
50th-Percentile Queue Length [ft/ln]	100.23	46.29
95th-Percentile Queue Length [veh/ln]	7.22	3.33
95th-Percentile Queue Length [ft/ln]	180.41	83.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.60	57.60	57.60	57.60	57.60	52.63	52.63	52.63	52.63	52.63
Movement LOS	E	E	E	E	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	57.60					52.63				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	27.67									
Intersection LOS	C									
Intersection V/C	0.470									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.859	1.979
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250
d_b, Bicycle Delay [s]	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.715	1.614
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	8	128	402	18	1	6	12	184	18	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	6	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	136	426	25	1	6	13	196	19	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	36	112	7	0	2	3	52	5	3
Total Analysis Volume [veh/h]	8	143	448	26	1	6	14	206	20	11
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	57	0	0	9	0	57	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	80	74	80	70	70
g / C, Green / Cycle	0.67	0.62	0.67	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.12	0.27	0.02	0.11	0.02
s, saturation flow rate [veh/h]	1216	1782	977	1800	1530
c, Capacity [veh/h]	831	1096	600	1055	896
d1, Uniform Delay [s]	7.48	12.14	8.08	11.62	10.50
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.48	1.25	0.02	0.41	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.43	0.03	0.20	0.03
d, Delay for Lane Group [s/veh]	7.96	13.39	8.10	12.04	10.58
Lane Group LOS	A	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.46	6.81	0.17	2.66	0.36
50th-Percentile Queue Length [ft/ln]	36.48	170.37	4.21	66.40	9.07
95th-Percentile Queue Length [veh/ln]	2.63	11.10	0.30	4.78	0.65
95th-Percentile Queue Length [ft/ln]	65.66	277.40	7.58	119.52	16.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.96	7.96	13.39	13.39	13.39	8.10	8.10	12.04	10.58	10.58
Movement LOS	A	A	B	B	B	A	A	B	B	B
d_A, Approach Delay [s/veh]	12.08					11.55				
Approach LOS	B					B				
d_I, Intersection Delay [s/veh]	27.67									
Intersection LOS	C									
Intersection V/C	0.470									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.352	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	883	883
d_b, Bicycle Delay [s]	18.70	18.70
l_b,int, Bicycle LOS Score for Intersection	2.355	1.942
Bicycle LOS	B	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	7	16	152	12	4	4	7	52	62	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	17	161	13	4	4	7	55	66	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	4	42	3	1	1	2	14	17	1
Total Analysis Volume [veh/h]	7	18	169	14	4	4	7	58	69	2
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	35	0	0	0	0	35	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17
g / C, Green / Cycle	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.12	0.04	0.05
s, saturation flow rate [veh/h]	1718	1681	1530
c, Capacity [veh/h]	275	271	215
d1, Uniform Delay [s]	50.46	46.07	46.46
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	4.55	0.49	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.25	0.33
d, Delay for Lane Group [s/veh]	55.00	46.56	47.35
Lane Group LOS	E	D	D
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.58	1.89	1.97
50th-Percentile Queue Length [ft/ln]	164.39	47.14	49.29
95th-Percentile Queue Length [veh/ln]	10.78	3.39	3.55
95th-Percentile Queue Length [ft/ln]	269.53	84.85	88.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.00	55.00	55.00	55.00	55.00	46.56	46.56	46.56	47.35	47.35
Movement LOS	E	E	E	E	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	55.00					46.96				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	27.67									
Intersection LOS	C									
Intersection V/C	0.470									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.945	2.268
Crosswalk LOS	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	517
d_b, Bicycle Delay [s]	33.00	33.00
l_b,int, Bicycle LOS Score for Intersection	1.857	1.781
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	173	956	47	48	575	25	53	305	64	44	212	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	37	0	10	50	0	0	0	0	0	1	12
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	1050	50	61	660	27	56	323	68	47	226	87
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	48	276	13	16	174	7	15	85	18	12	59	23
Total Analysis Volume [veh/h]	193	1105	53	64	695	28	59	340	72	49	238	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	57	62	0	21	26	0	11	28	0	9	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	77	77	6	67	67	5	17	17	4	16	16
g / C, Green / Cycle	0.13	0.64	0.64	0.05	0.56	0.56	0.04	0.14	0.14	0.04	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.11	0.32	0.32	0.04	0.20	0.20	0.03	0.12	0.12	0.03	0.09	0.10
s, saturation flow rate [veh/h]	1714	1800	1771	1714	1800	1776	1714	1800	1693	1714	1800	1634
c, Capacity [veh/h]	225	1158	1140	83	1008	995	75	250	235	62	236	214
d1, Uniform Delay [s]	51.01	11.29	11.30	56.45	14.54	14.54	56.82	50.40	50.51	57.37	50.01	50.20
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.06	1.56	1.60	14.08	1.00	1.02	16.28	7.57	8.73	19.34	4.10	5.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.50	0.50	0.77	0.36	0.36	0.79	0.84	0.86	0.79	0.72	0.75
d, Delay for Lane Group [s/veh]	60.07	12.85	12.90	70.53	15.55	15.56	73.10	57.98	59.24	76.71	54.11	55.29
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.24	8.25	8.16	2.24	5.64	5.57	2.11	6.69	6.47	1.81	5.17	4.93
50th-Percentile Queue Length [ft/ln]	156.0	206.3	204.0	56.04	141.0	139.3	52.77	167.1	161.7	45.22	129.1	123.1
95th-Percentile Queue Length [veh/ln]	10.34	12.97	12.85	4.04	9.54	9.44	3.80	10.93	10.64	3.26	8.90	8.57
95th-Percentile Queue Length [ft/ln]	258.4	324.1	321.1	100.8	238.4	236.0	94.99	273.2	266.0	81.40	222.3	214.1

Movement, Approach, & Intersection Results

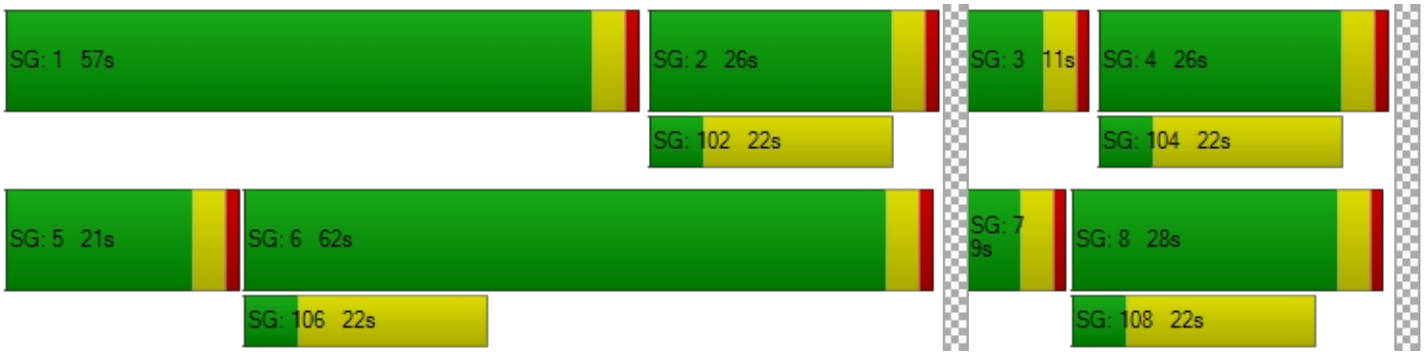
d_M, Delay for Movement [s/veh]	60.07	12.87	12.90	70.53	15.55	15.56	73.10	58.46	59.24	76.71	54.45	55.29
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	E
d_A, Approach Delay [s/veh]	19.62			20.03			60.41			57.53		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	30.96											
Intersection LOS	C											
Intersection V/C	0.509											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.738	2.713	2.496	2.604
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	367	400	367
d_b, Bicycle Delay [s]	16.02	40.02	38.40	40.02
l_b,int, Bicycle LOS Score for Intersection	2.674	2.209	1.948	1.872
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.720

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	182	958	368	67	880	54	92	340	135	232	281	75
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	2	21	0	4	21	0	0	1	3	0	2	6
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	1036	390	75	954	57	98	361	146	246	300	86
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	273	103	20	251	15	26	95	38	65	79	23
Total Analysis Volume [veh/h]	205	1091	411	79	1004	60	103	380	154	259	316	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	41	0	11	31	0	21	45	0	23	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	56	56	7	47	47	9	22	22	19	32	32
g / C, Green / Cycle	0.13	0.47	0.47	0.06	0.39	0.39	0.07	0.18	0.18	0.16	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.12	0.32	0.27	0.05	0.29	0.04	0.06	0.15	0.16	0.15	0.12	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1627	1714	1800	1664
c, Capacity [veh/h]	231	1612	720	99	1349	602	128	325	293	271	475	439
d1, Uniform Delay [s]	51.05	24.70	23.02	55.85	31.21	22.97	54.63	47.71	47.81	50.07	36.84	36.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.16	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.07	2.30	3.28	13.53	3.76	0.33	10.91	6.64	7.80	21.61	0.65	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.68	0.57	0.80	0.74	0.10	0.80	0.86	0.87	0.95	0.44	0.45
d, Delay for Lane Group [s/veh]	62.12	27.00	26.29	69.38	34.97	23.30	65.53	54.35	55.62	71.68	37.50	37.60
Lane Group LOS	E	C	C	E	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.76	12.32	8.95	2.73	13.00	1.14	3.45	8.67	8.03	9.31	5.26	4.91
50th-Percentile Queue Length [ft/ln]	168.8	308.1	223.6	68.36	324.9	28.42	86.34	216.7	200.8	232.7	131.4	122.6
95th-Percentile Queue Length [veh/ln]	11.02	18.08	13.85	4.92	18.91	2.05	6.22	13.50	12.68	14.31	9.02	8.54
95th-Percentile Queue Length [ft/ln]	275.4	452.0	346.3	123.0	472.7	51.15	155.4	337.5	317.0	357.8	225.4	213.5

Movement, Approach, & Intersection Results

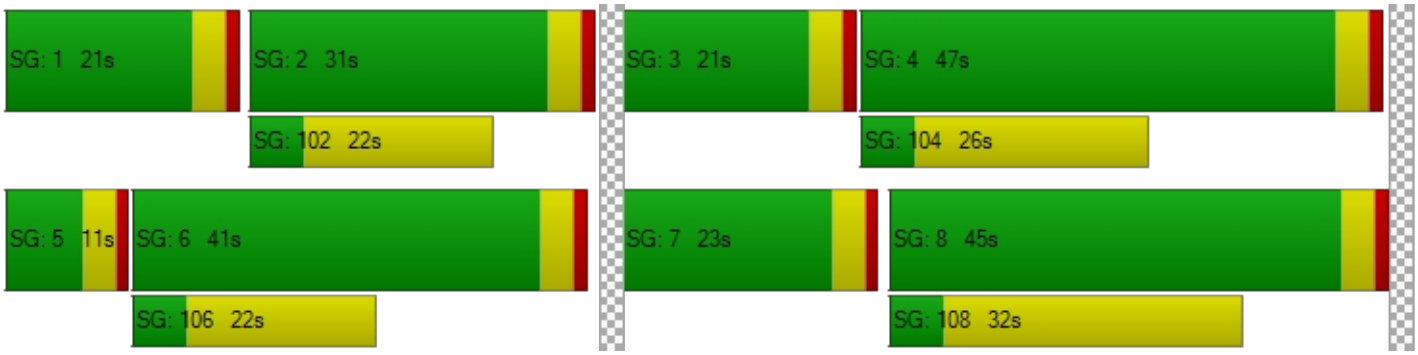
d_M, Delay for Movement [s/veh]	62.12	27.00	26.29	69.38	34.97	23.30	65.53	54.69	55.62	71.68	37.53	37.60
Movement LOS	E	C	C	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	31.05			36.74			56.66			50.82		
Approach LOS	C			D			E			D		
d_I, Intersection Delay [s/veh]	39.71											
Intersection LOS	D											
Intersection V/C	0.720											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.121	2.863	2.553	2.615
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	450	683	717
d_b, Bicycle Delay [s]	28.70	36.04	26.00	24.70
l_b,int, Bicycle LOS Score for Intersection	2.968	2.503	2.085	2.109
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.335

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	164	64	4	101	23	42	130	1	7	77	12
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	174	68	4	107	24	45	138	1	7	82	13
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	46	18	1	28	6	12	36	0	2	22	3
Total Analysis Volume [veh/h]	0	183	72	4	113	25	47	145	1	7	86	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	761	727	691	624	716
Degree of Utilization, x	0.34	0.20	0.28	0.15	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.48	0.72	1.14	0.52	0.06
95th-Percentile Queue Length [ft]	36.96	18.02	28.54	13.04	1.49
Approach Delay [s/veh]	10.10	9.15	10.22	9.26	
Approach LOS	B	A	B	A	
Intersection Delay [s/veh]	9.81				
Intersection LOS	A				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.590

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	257	937	121	64	940	30	75	256	340	136	91	88
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	16	0	0	11	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	272	1009	128	68	1007	32	80	271	360	144	96	93
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	72	266	34	18	265	8	21	71	95	38	25	24
Total Analysis Volume [veh/h]	286	1062	135	72	1060	34	84	285	379	152	101	98
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	37	0	11	32	0	19	61	0	11	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	58	58	6	52	52	7	33	33	7	32	32
g / C, Green / Cycle	0.10	0.48	0.48	0.05	0.44	0.44	0.06	0.27	0.27	0.06	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.09	0.23	0.23	0.04	0.21	0.21	0.05	0.08	0.25	0.05	0.03	0.06
s, saturation flow rate [veh/h]	3329	3427	1698	1714	3427	1771	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	333	1657	821	91	1496	773	108	931	416	194	915	408
d1, Uniform Delay [s]	53.17	20.88	20.88	56.16	24.12	24.13	55.37	34.71	42.30	55.75	33.22	34.45
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.46	1.01	2.03	14.13	1.11	2.15	11.19	0.18	8.21	6.75	0.05	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.48	0.48	0.79	0.48	0.48	0.78	0.31	0.91	0.78	0.11	0.24
d, Delay for Lane Group [s/veh]	59.63	21.89	22.91	70.29	25.24	26.27	66.56	34.89	50.51	62.50	33.27	34.75
Lane Group LOS	E	C	C	E	C	C	E	C	D	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.54	7.70	7.87	2.51	7.48	7.96	2.84	3.35	11.73	2.45	1.13	2.29
50th-Percentile Queue Length [ft/ln]	113.5	192.6	196.6	62.81	187.0	199.0	71.06	83.79	293.3	61.30	28.19	57.25
95th-Percentile Queue Length [veh/ln]	8.04	12.26	12.47	4.52	11.97	12.59	5.12	6.03	17.35	4.41	2.03	4.12
95th-Percentile Queue Length [ft/ln]	200.8	306.4	311.6	113.0	299.1	314.7	127.9	150.8	433.8	110.3	50.75	103.0

Movement, Approach, & Intersection Results

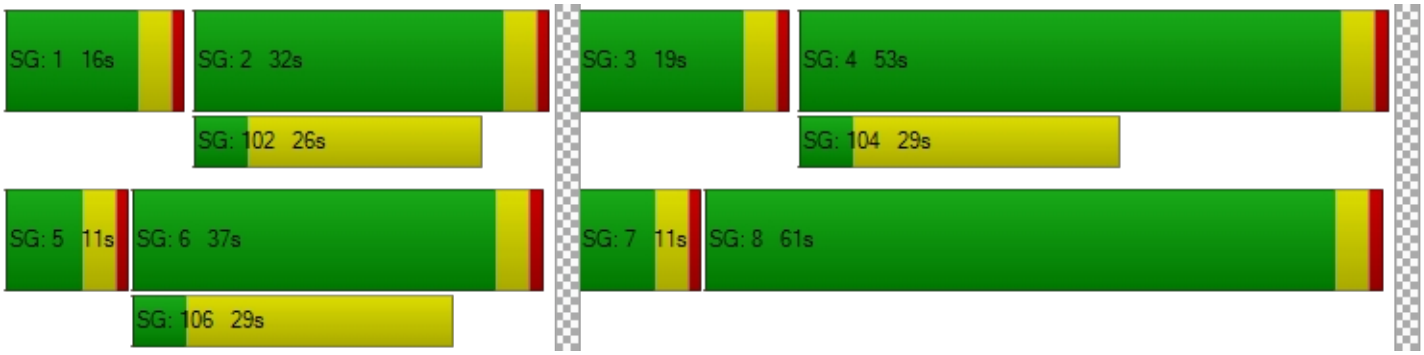
d_M, Delay for Movement [s/veh]	59.63	22.14	22.91	70.29	25.57	26.27	66.56	34.89	50.51	62.50	33.27	34.75
Movement LOS	E	C	C	E	C	C	E	C	D	E	C	C
d_A, Approach Delay [s/veh]	29.44			28.35			46.36			46.34		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.06											
Intersection LOS	C											
Intersection V/C	0.590											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.945	2.658	2.727
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	467	950	817
d_b, Bicycle Delay [s]	31.54	35.27	16.54	21.00
l_b,int, Bicycle LOS Score for Intersection	2.375	2.201	2.177	1.849
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	51.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.883

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	32	371	673	11	254	25	40	443	23	718	443	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	96	0	0	90	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	489	713	12	359	27	42	470	24	761	470	75
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	129	188	3	94	7	11	124	6	200	124	20
Total Analysis Volume [veh/h]	36	515	751	13	378	28	44	495	25	801	495	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	56	0	9	56	0	32	22	0	33	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	55	55	2	54	54	4	18	18	29	43	43
g / C, Green / Cycle	0.03	0.46	0.46	0.01	0.45	0.45	0.03	0.15	0.15	0.24	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.01	0.29	0.49	0.01	0.11	0.11	0.03	0.14	0.02	0.24	0.14	0.05
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1757	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	97	828	704	25	802	783	59	514	230	805	1225	547
d1, Uniform Delay [s]	57.16	24.50	32.39	58.67	20.79	20.81	57.44	50.67	44.07	45.44	28.95	26.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.33	3.50	53.14	14.89	0.77	0.79	17.26	11.59	0.21	13.76	0.22	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.62	1.07	0.51	0.26	0.26	0.75	0.96	0.11	1.00	0.40	0.14
d, Delay for Lane Group [s/veh]	59.49	28.00	85.53	73.57	21.56	21.61	74.70	62.26	44.28	59.19	29.17	26.24
Lane Group LOS	E	C	F	E	C	C	E	E	D	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.57	11.70	30.09	0.50	3.77	3.72	1.61	8.19	0.66	13.35	5.39	1.56
50th-Percentile Queue Length [ft/ln]	14.20	292.6	752.3	12.45	94.26	92.93	40.15	204.7	16.50	333.6	134.7	39.00
95th-Percentile Queue Length [veh/ln]	1.02	17.31	41.06	0.90	6.79	6.69	2.89	12.88	1.19	19.34	9.20	2.81
95th-Percentile Queue Length [ft/ln]	25.55	432.8	1026.	22.40	169.6	167.2	72.26	322.0	29.70	483.4	229.9	70.21

Movement, Approach, & Intersection Results

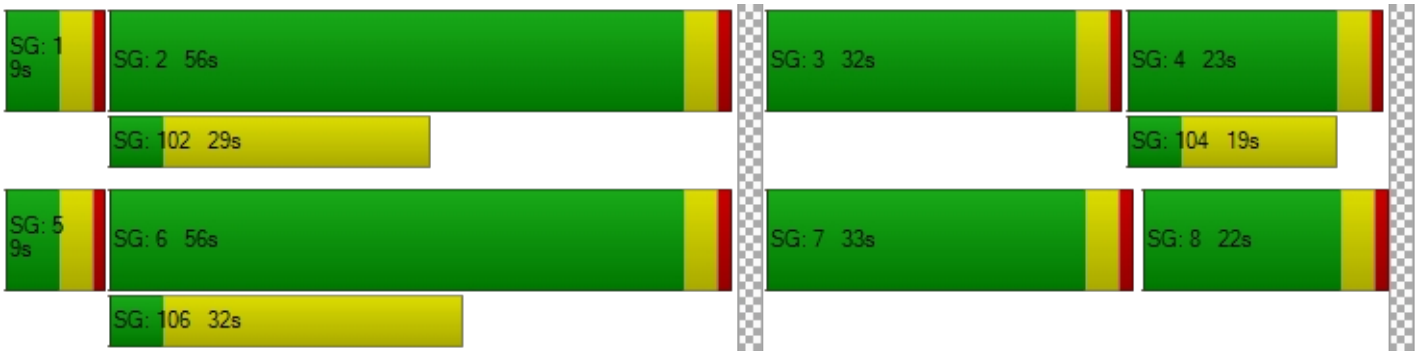
d_M, Delay for Movement [s/veh]	59.49	28.00	85.53	73.57	21.58	21.61	74.70	62.26	44.28	59.19	29.17	26.24
Movement LOS	E	C	F	E	C	C	E	E	D	E	C	C
d_A, Approach Delay [s/veh]	62.05			23.20			62.43			46.49		
Approach LOS	E			C			E			D		
d_I, Intersection Delay [s/veh]	51.82											
Intersection LOS	D											
Intersection V/C	0.883											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.404	2.766	3.062
Crosswalk LOS	F	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	300	317
d_b, Bicycle Delay [s]	19.27	19.27	43.35	42.50
l_b,int, Bicycle LOS Score for Intersection	3.708	1.905	2.025	2.694
Bicycle LOS	D	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	44.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.917

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	247	951	696	98	948	67	178	452	354	395	240	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	129	0	2	157	0	0	0	0	0	0	1
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	262	1137	738	106	1162	71	189	479	375	419	254	88
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	69	299	194	28	306	19	50	126	99	110	67	23
Total Analysis Volume [veh/h]	276	1197	777	112	1223	75	199	504	395	441	267	93
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	20	48	0	12	40	0	24	40	40	20	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	59	59	8	51	51	9	21	41	16	28	28
g / C, Green / Cycle	0.13	0.49	0.49	0.07	0.42	0.42	0.08	0.18	0.34	0.13	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.08	0.35	0.51	0.07	0.25	0.05	0.06	0.15	0.26	0.13	0.10	0.10
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1643
c, Capacity [veh/h]	444	1676	748	114	2070	646	264	609	527	444	417	381
d1, Uniform Delay [s]	49.14	24.08	30.66	55.92	26.68	21.06	54.10	47.56	34.76	51.95	39.54	39.55
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.48	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.43	2.63	43.36	34.50	1.25	0.37	4.34	2.95	9.00	18.38	0.76	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.71	1.04	0.98	0.59	0.12	0.75	0.83	0.75	0.99	0.45	0.45
d, Delay for Lane Group [s/veh]	50.57	26.72	74.02	90.42	27.93	21.43	58.44	50.51	43.76	70.33	40.30	40.39
Lane Group LOS	D	C	F	F	C	C	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.00	13.62	29.70	4.48	9.13	1.36	3.10	7.50	11.42	7.74	4.86	4.45
50th-Percentile Queue Length [ft/ln]	100.0	340.4	742.6	111.9	228.1	33.90	77.59	187.4	285.5	193.5	121.4	111.3
95th-Percentile Queue Length [veh/ln]	7.20	19.67	39.82	7.95	14.08	2.44	5.59	11.99	16.97	12.31	8.47	7.92
95th-Percentile Queue Length [ft/ln]	180.0	491.7	995.6	198.7	352.0	61.02	139.6	299.7	424.1	307.6	211.7	197.9

Movement, Approach, & Intersection Results

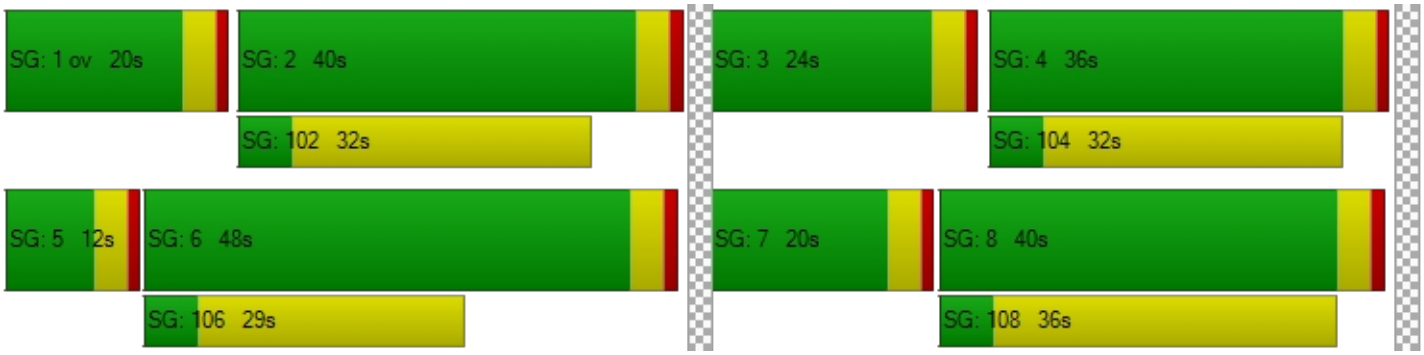
d_M, Delay for Movement [s/veh]	50.57	26.72	74.02	90.42	27.93	21.43	58.44	50.51	43.76	70.33	40.32	40.39
Movement LOS	D	C	F	F	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	45.98			32.55			49.52			56.85		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	44.84											
Intersection LOS	D											
Intersection V/C	0.917											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.331	3.094	2.950	2.915
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	600	600	533
d_b, Bicycle Delay [s]	24.07	29.40	29.40	32.27
l_b,int, Bicycle LOS Score for Intersection	3.416	2.335	2.465	2.220
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.479

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	15	5	4	23	3	46	4	21	43	157	1081	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	2	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	5	4	24	3	49	4	22	46	166	1148	16
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	4	1	1	6	1	13	1	6	12	44	302	4
Total Analysis Volume [veh/h]	17	5	4	25	3	52	4	23	48	175	1208	17
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	Permi
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	69	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	89	83	83
g / C, Green / Cycle	0.07	0.07	0.74	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.03	0.05	0.25	0.34	0.34
s, saturation flow rate [veh/h]	1670	1513	901	1800	1791
c, Capacity [veh/h]	148	148	687	1251	1245
d1, Uniform Delay [s]	54.18	55.44	5.19	8.46	8.47
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.38	3.22	1.25	1.38	1.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.55	0.32	0.49	0.49
d, Delay for Lane Group [s/veh]	55.56	58.66	6.44	9.84	9.86
Lane Group LOS	E	E	A	A	A
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.54	2.58	1.69	7.24	7.22
50th-Percentile Queue Length [ft/ln]	38.62	64.55	42.35	180.92	180.41
95th-Percentile Queue Length [veh/ln]	2.78	4.65	3.05	11.65	11.62
95th-Percentile Queue Length [ft/ln]	69.51	116.19	76.24	291.21	290.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.56	55.56	55.56	55.56	58.66	58.66	58.66	58.66	6.44	6.44	9.85	9.86
Movement LOS	E	E	E	E	E	E	E	E	A	A	A	A
d_A, Approach Delay [s/veh]	55.56				58.66				9.32			
Approach LOS	E				E				A			
d_I, Intersection Delay [s/veh]	15.07											
Intersection LOS	B											
Intersection V/C	0.479											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.774	0.000	2.840
Crosswalk LOS	A	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1083
d_b, Bicycle Delay [s]	45.94	45.94	12.60
l_b,int, Bicycle LOS Score for Intersection	1.603	1.609	2.610
Bicycle LOS	A	A	B

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	10	487	53	23	5	6	94	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	1	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	517	56	24	5	6	100	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	136	15	6	1	2	26	1
Total Analysis Volume [veh/h]	12	544	59	25	5	6	105	2
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	69	0	0	0	23	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	78	78	78	11
g / C, Green / Cycle	0.01	0.65	0.65	0.65	0.09
(v / s)_i Volume / Saturation Flow Rate	0.01	0.12	0.18	0.05	0.08
s, saturation flow rate [veh/h]	1714	1800	1800	1530	1549
c, Capacity [veh/h]	25	1174	1174	998	143
d1, Uniform Delay [s]	58.67	8.26	8.86	7.68	53.50
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.51	0.35	0.59	0.17	11.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.19	0.28	0.08	0.82
d, Delay for Lane Group [s/veh]	72.18	8.62	9.44	7.84	64.68
Lane Group LOS	E	A	A	A	E
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.46	2.28	3.64	0.82	3.94
50th-Percentile Queue Length [ft/ln]	11.41	57.12	90.94	20.47	98.59
95th-Percentile Queue Length [veh/ln]	0.82	4.11	6.55	1.47	7.10
95th-Percentile Queue Length [ft/ln]	20.53	102.82	163.68	36.85	177.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.18	9.11	9.44	7.84	64.68	64.68	64.68	64.68
Movement LOS	E	A	A	A	E	E	E	E
d_A, Approach Delay [s/veh]	10.12				64.68			
Approach LOS	B				E			
d_I, Intersection Delay [s/veh]	15.07							
Intersection LOS	B							
Intersection V/C	0.479							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.179
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1083	317
d_b, Bicycle Delay [s]	12.60	42.50
l_b,int, Bicycle LOS Score for Intersection	2.067	1.751
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	243.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.125

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	4	2	18	74	0	20	117	1003	7	7	509	125
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	2	0	0	1	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	2	19	78	0	21	124	1065	7	7	541	133
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	1	5	21	0	6	33	280	2	2	142	35
Total Analysis Volume [veh/h]	4	2	20	82	0	22	131	1121	7	7	569	140
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

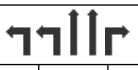
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.05	0.04	1.13	0.00	0.03	0.15	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	77.04	91.71	16.95	243.2	268.6	10.75	9.68	0.00	0.00	10.81	0.00	0.00
Movement LOS	F	F	C	F	F	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.57	0.57	0.57	6.15	6.15	0.11	0.51	0.00	0.00	0.03	0.00	0.00
95th-Percentile Queue Length [ft/ln]	14.14	14.14	14.14	153.6	153.6	2.63	12.72	0.00	0.00	0.85	0.00	0.00
d_A, Approach Delay [s/veh]	31.95			194.09			1.01			0.11		
Approach LOS	D			F			A			A		
d_I, Intersection Delay [s/veh]	10.62											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	45.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	553	970	285	96	540	41	70	663	405	158	753	183
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	34	0	0	50	0	0	2	0	0	1	3
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	586	1062	302	102	622	43	74	705	429	167	799	197
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	154	279	79	27	164	11	19	186	113	44	210	52
Total Analysis Volume [veh/h]	617	1118	318	107	655	45	78	742	452	176	841	207
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	49	0	13	33	0	9	47	0	11	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	50	50	9	34	34	5	38	38	7	41	41
g / C, Green / Cycle	0.20	0.41	0.41	0.08	0.29	0.29	0.04	0.32	0.32	0.06	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.19	0.33	0.21	0.06	0.20	0.20	0.02	0.22	0.30	0.05	0.30	0.30
s, saturation flow rate [veh/h]	3329	3427	1530	1714	1800	1760	3329	3427	1530	3329	1800	1679
c, Capacity [veh/h]	670	1414	631	129	516	504	129	1099	491	194	612	571
d1, Uniform Delay [s]	47.00	30.71	26.13	54.76	38.02	38.02	56.77	35.34	39.30	56.17	37.35	37.42
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.33	0.11	0.31	0.32
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.83	4.58	2.86	12.83	7.26	7.43	4.49	0.73	18.75	14.43	11.47	12.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.79	0.50	0.83	0.69	0.69	0.60	0.68	0.92	0.91	0.88	0.89
d, Delay for Lane Group [s/veh]	52.83	35.29	28.98	67.58	45.27	45.45	61.26	36.08	58.06	70.60	48.82	50.01
Lane Group LOS	D	D	C	E	D	D	E	D	E	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.54	14.74	7.20	3.65	10.24	10.04	1.25	9.47	15.24	3.04	16.74	15.88
50th-Percentile Queue Length [ft/ln]	238.3	368.4	179.9	91.19	255.9	250.9	31.13	236.8	380.9	75.94	418.4	397.0
95th-Percentile Queue Length [veh/ln]	14.60	21.04	11.60	6.57	15.49	15.24	2.24	14.52	21.64	5.47	23.45	22.42
95th-Percentile Queue Length [ft/ln]	364.9	525.9	289.9	164.1	387.1	380.9	56.03	363.0	541.0	136.6	586.2	560.4

Movement, Approach, & Intersection Results

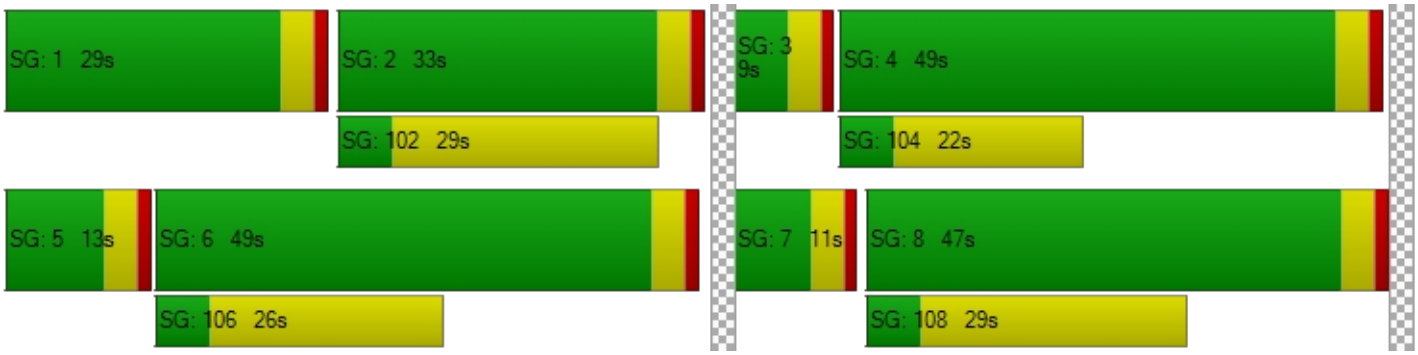
d_M, Delay for Movement [s/veh]	52.83	35.29	28.98	67.58	45.35	45.45	61.26	36.08	58.06	70.60	49.24	50.01
Movement LOS	D	D	C	E	D	D	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	39.59			48.31			45.43			52.45		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.23											
Intersection LOS	D											
Intersection V/C	0.737											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.074	2.746	2.996	3.032
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	483	717	750
d_b, Bicycle Delay [s]	23.44	34.50	24.70	23.44
l_b,int, Bicycle LOS Score for Intersection	3.253	2.225	2.609	2.569
Bicycle LOS	C	B	B	B

Sequence

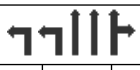
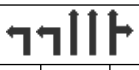
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	51.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	236	1176	727	154	1201	87	267	863	219	633	638	106
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	4	15	0	5	18	0	0	0	2	0	0	8
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	254	1262	771	168	1291	92	283	915	234	671	676	120
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	67	332	203	44	340	24	74	241	62	177	178	32
Total Analysis Volume [veh/h]	267	1328	812	177	1359	97	298	963	246	706	712	126
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	14	40	40	10	36	0	21	43	0	27	49	49
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	10	43	70	6	39	39	13	32	32	23	42	52
g / C, Green / Cycle	0.08	0.36	0.58	0.05	0.32	0.32	0.11	0.27	0.27	0.19	0.35	0.44
(v / s)_i Volume / Saturation Flow Rate	0.08	0.27	0.53	0.05	0.28	0.28	0.09	0.24	0.24	0.21	0.21	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1739	3329	3427	1619	3329	3427	2708
c, Capacity [veh/h]	277	1741	888	166	1103	560	362	925	437	638	1209	1181
d1, Uniform Delay [s]	54.81	34.22	22.54	57.00	38.43	38.44	52.33	42.06	42.06	48.50	31.73	20.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.27	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.59	3.23	15.51	50.60	9.79	17.35	4.68	3.13	13.64	53.56	0.46	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.76	0.91	1.06	0.88	0.88	0.82	0.89	0.89	1.11	0.59	0.11
d, Delay for Lane Group [s/veh]	72.41	37.45	38.06	107.6	48.21	55.78	57.01	45.19	55.70	102.0	32.19	20.06
Lane Group LOS	E	D	D	F	D	E	E	D	E	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.69	11.81	23.02	3.69	14.74	16.15	4.63	12.00	12.61	14.24	8.47	1.06
50th-Percentile Queue Length [ft/ln]	117.3	295.1	575.4	92.28	368.6	403.7	115.7	299.8	315.2	356.0	211.8	26.44
95th-Percentile Queue Length [veh/ln]	8.25	17.44	30.89	6.64	21.04	22.74	8.16	17.68	18.43	21.50	13.25	1.90
95th-Percentile Queue Length [ft/ln]	206.1	436.0	772.1	166.1	526.0	568.5	203.9	441.8	460.8	537.5	331.2	47.59

Movement, Approach, & Intersection Results

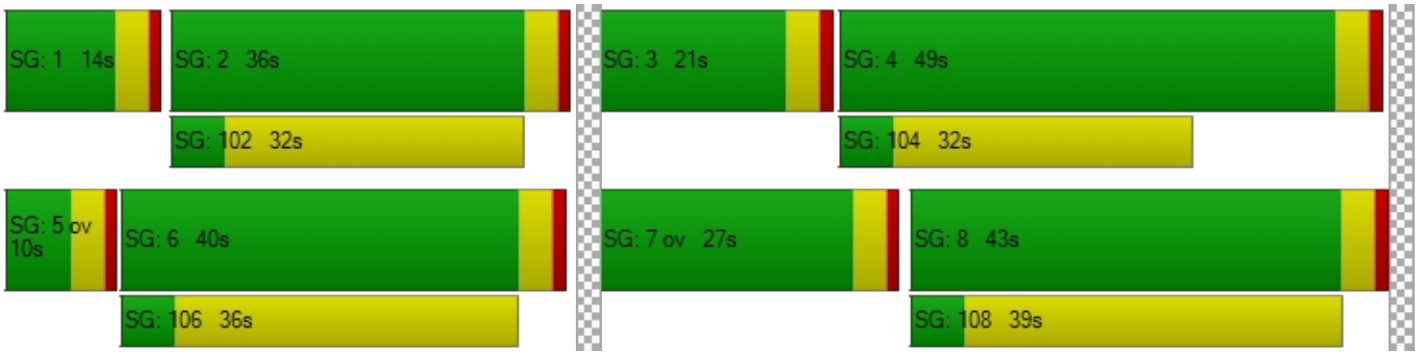
d_M, Delay for Movement [s/veh]	72.41	37.45	38.06	107.6	50.40	55.78	57.01	46.74	55.70	102.0	32.19	20.06
Movement LOS	E	D	D	F	D	E	E	D	E	F	C	C
d_A, Approach Delay [s/veh]	41.53			56.92			50.23			63.15		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	51.63											
Intersection LOS	D											
Intersection V/C	0.893											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.442	3.153	3.055	3.243
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	533	650	750
d_b, Bicycle Delay [s]	29.40	32.27	27.34	23.44
l_b,int, Bicycle LOS Score for Intersection	2.883	2.458	2.388	2.833
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.511

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	986	622	0	1033	422	0	0	0	347	0	432
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.000	1.060
In-Process Volume [veh/h]	0	16	0	0	5	6	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1061	622	0	1100	453	0	0	0	368	0	458
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	279	164	0	289	119	0	0	0	97	0	121
Total Analysis Volume [veh/h]	0	1117	655	0	1158	477	0	0	0	387	0	482
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	72	0	0	72	0	0	0	0	48	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	86	86		26	26	26
g / C, Green / Cycle	0.72	0.72		0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.33	0.24		0.17	0.18	0.19
s, saturation flow rate [veh/h]	3427	4903		1714	1583	1530
c, Capacity [veh/h]	2458	3517		370	342	331
d1, Uniform Delay [s]	7.12	6.28		44.61	45.07	45.27
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.61	0.25		4.08	5.60	6.48
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.33		0.80	0.84	0.86
d, Delay for Lane Group [s/veh]	7.73	6.53		48.68	50.66	51.74
Lane Group LOS	A	A		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.60	3.37		8.79	8.72	8.70
50th-Percentile Queue Length [ft/ln]	140.12	84.34		219.7	218.0	217.6
95th-Percentile Queue Length [veh/ln]	9.49	6.07		13.65	13.56	13.54
95th-Percentile Queue Length [ft/ln]	237.19	151.81		341.3	339.1	338.5

Movement, Approach, & Intersection Results

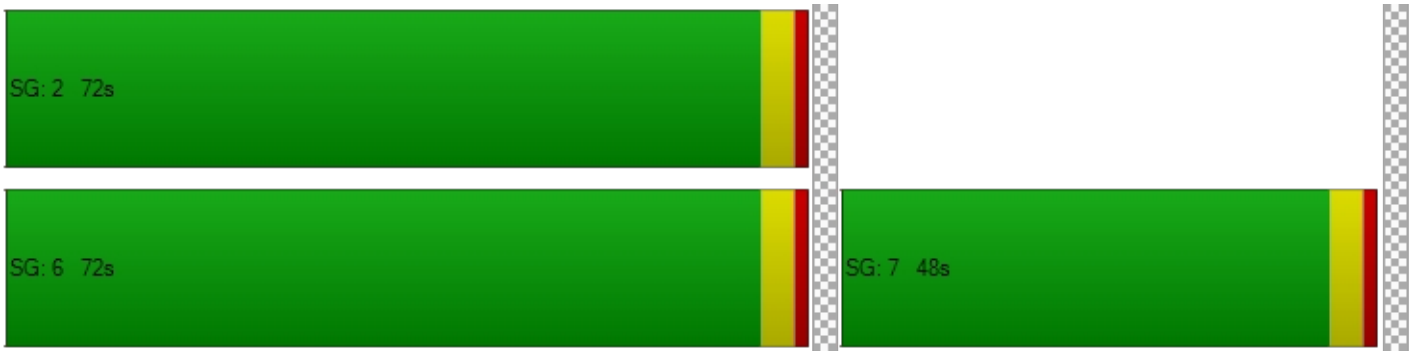
d_M, Delay for Movement [s/veh]	0.00	7.73	0.00	0.00	6.53	0.00	0.00	0.00	0.00	49.17	0.00	51.31
Movement LOS		A			A					D		D
d_A, Approach Delay [s/veh]	7.73			6.53			0.00			50.34		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	19.06											
Intersection LOS	B											
Intersection V/C	0.511											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1133	1133	0	733
d_b, Bicycle Delay [s]	11.27	11.27	60.00	24.07
l_b,int, Bicycle LOS Score for Intersection	2.481	2.197	4.132	2.993
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	26.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.748

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1339	389	0	1805	0	0	0	0	518	0	492
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.060	1.000	1.060	1.060	1.060	1.060	1.060	1.060	1.000	1.060
In-Process Volume [veh/h]	0	47	0	0	150	0	0	0	0	0	0	82
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1466	412	0	2063	0	0	0	0	549	0	604
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	0.950	0.950	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	386	108	0	543	0	0	0	0	144	0	159
Total Analysis Volume [veh/h]	0	1543	434	0	2172	0	0	0	0	578	0	636
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	24	0	0	24	0	0	0	0	96	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	58	58		54	54
g / C, Green / Cycle	0.49	0.49		0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.31	0.33		0.17	0.42
s, saturation flow rate [veh/h]	4903	6538		3329	1530
c, Capacity [veh/h]	2384	3179		1488	684
d1, Uniform Delay [s]	23.11	23.72		22.20	31.39
k, delay calibration	0.50	0.50		0.11	0.13
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	1.37	1.21		0.17	7.45
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.68		0.39	0.93
d, Delay for Lane Group [s/veh]	24.48	24.93		22.36	38.84
Lane Group LOS	C	C		C	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	10.97	11.83		5.48	18.37
50th-Percentile Queue Length [ft/ln]	274.26	295.63		137.02	459.16
95th-Percentile Queue Length [veh/ln]	16.40	17.46		9.32	25.39
95th-Percentile Queue Length [ft/ln]	410.06	436.62		233.00	634.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	24.48	0.00	0.00	24.93	0.00	0.00	0.00	0.00	22.36	0.00	38.84
Movement LOS		C			C					C		D
d_A, Approach Delay [s/veh]	24.48			24.93			0.00			30.99		
Approach LOS	C			C			A			C		
d_I, Intersection Delay [s/veh]	26.28											
Intersection LOS	C											
Intersection V/C	0.748											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	333	0	1533
d_b, Bicycle Delay [s]	41.67	41.67	60.00	3.27
l_b,int, Bicycle LOS Score for Intersection	2.408	2.456	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.521

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1075	256	0	892	474	0	0	0	240	0	498
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.000	1.060
In-Process Volume [veh/h]	0	8	0	0	50	0	0	0	0	0	0	26
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1148	256	0	996	474	0	0	0	254	0	554
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	302	67	0	262	125	0	0	0	67	0	146
Total Analysis Volume [veh/h]	0	1208	269	0	1048	499	0	0	0	267	0	583
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	62	0	0	62	0	0	0	0	58	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	83	83		29	29
g / C, Green / Cycle	0.69	0.69		0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.25	0.31		0.16	0.22
s, saturation flow rate [veh/h]	4903	3427		1714	2708
c, Capacity [veh/h]	3371	2356		421	666
d1, Uniform Delay [s]	7.77	8.44		40.42	43.49
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.30	0.61		1.58	3.85
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.44		0.63	0.88
d, Delay for Lane Group [s/veh]	8.07	9.05		42.01	47.35
Lane Group LOS	A	A		D	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	4.10	5.86		7.23	8.63
50th-Percentile Queue Length [ft/ln]	102.56	146.59		180.81	215.85
95th-Percentile Queue Length [veh/ln]	7.38	9.84		11.64	13.45
95th-Percentile Queue Length [ft/ln]	184.60	245.88		291.07	336.32

Movement, Approach, & Intersection Results

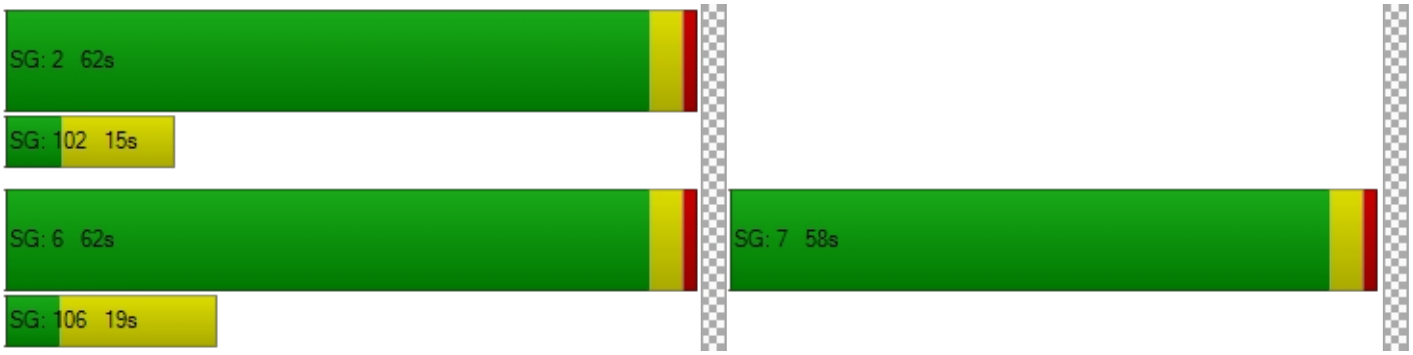
d_M, Delay for Movement [s/veh]	0.00	8.07	0.00	0.00	9.05	0.00	0.00	0.00	0.00	42.01	0.00	47.35
Movement LOS		A			A					D		D
d_A, Approach Delay [s/veh]	8.07			9.05			0.00			45.67		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	18.69											
Intersection LOS	B											
Intersection V/C	0.521											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.354
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	967	0	900
d_b, Bicycle Delay [s]	16.02	16.02	60.00	18.15
l_b,int, Bicycle LOS Score for Intersection	2.224	2.424	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1287	562	0	969	394	298	0	392	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	8	0	0	5	0	8	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1372	562	0	1032	394	306	0	392	0	0	0
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	1.000	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	361	148	0	272	104	81	0	103	0	0	0
Total Analysis Volume [veh/h]	0	1444	592	0	1086	415	322	0	413	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	34	0	0	34	0	86	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	76	76	36	36	
g / C, Green / Cycle	0.64	0.64	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.29	0.32	0.10	0.27	
s, saturation flow rate [veh/h]	4903	3427	3329	1530	
c, Capacity [veh/h]	3120	2181	989	454	
d1, Uniform Delay [s]	11.25	11.62	32.83	40.61	
k, delay calibration	0.50	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.50	0.82	0.19	7.25	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.46	0.50	0.33	0.91	
d, Delay for Lane Group [s/veh]	11.74	12.43	33.02	47.86	
Lane Group LOS	B	B	C	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	6.43	7.57	3.69	12.55	
50th-Percentile Queue Length [ft/ln]	160.69	189.22	92.34	313.87	
95th-Percentile Queue Length [veh/ln]	10.59	12.08	6.65	18.37	
95th-Percentile Queue Length [ft/ln]	264.64	302.02	166.21	459.15	

Movement, Approach, & Intersection Results

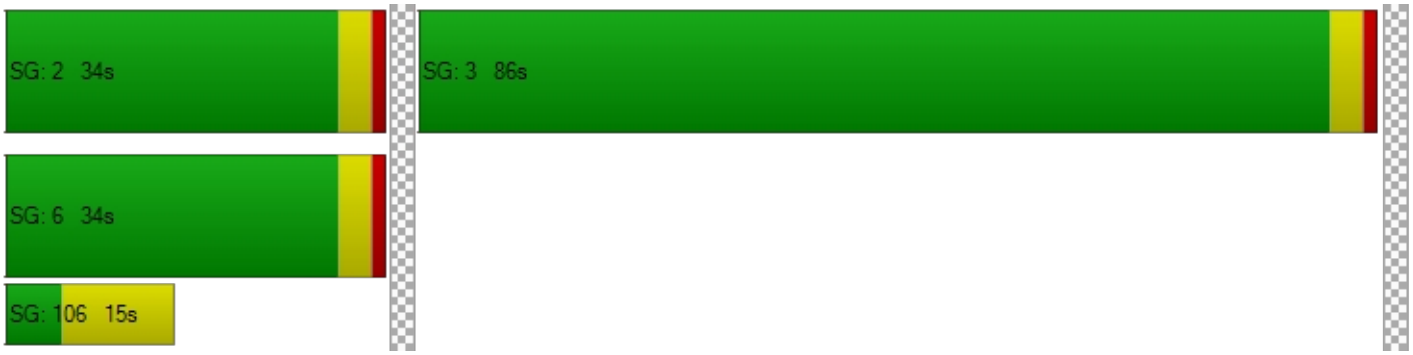
d_M, Delay for Movement [s/veh]	0.00	11.74	0.00	0.00	12.43	0.00	33.02	0.00	47.86	0.00	0.00	0.00
Movement LOS		B			B		C		D			
d_A, Approach Delay [s/veh]	11.74			12.43			41.36			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	18.64											
Intersection LOS	B											
Intersection V/C	0.587											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	500	1367	0
d_b, Bicycle Delay [s]	33.75	33.75	6.02	60.00
l_b,int, Bicycle LOS Score for Intersection	2.354	2.456	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	35.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1236	419	513	1182	0	509	43	548	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	39	0	123	28	0	7	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1349	444	667	1281	0	547	46	581	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	355	117	176	337	0	144	12	153	0	0	0
Total Analysis Volume [veh/h]	0	1420	467	702	1348	0	576	48	612	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	15	0	45	60	0	0	60	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	43	43	28	76	36	36	36	
g / C, Green / Cycle	0.36	0.36	0.24	0.63	0.30	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.29	0.31	0.21	0.27	0.24	0.25	0.27	
s, saturation flow rate [veh/h]	4903	1530	3329	4903	1714	1628	1530	
c, Capacity [veh/h]	1758	549	791	3087	521	495	465	
d1, Uniform Delay [s]	34.75	35.53	44.18	11.35	38.29	38.94	39.81	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.13	0.15	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.11	15.29	3.60	0.45	2.75	4.35	8.00	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.81	0.85	0.89	0.44	0.79	0.83	0.89	
d, Delay for Lane Group [s/veh]	38.86	50.82	47.79	11.80	41.04	43.29	47.81	
Lane Group LOS	D	D	D	B	D	D	D	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	12.97	14.74	10.42	5.99	11.43	11.81	12.50	
50th-Percentile Queue Length [ft/ln]	324.36	368.60	260.56	149.63	285.6	295.3	312.4	
95th-Percentile Queue Length [veh/ln]	18.88	21.04	15.72	10.00	16.97	17.45	18.30	
95th-Percentile Queue Length [ft/ln]	472.04	526.03	392.92	249.94	424.2	436.2	457.4	

Movement, Approach, & Intersection Results

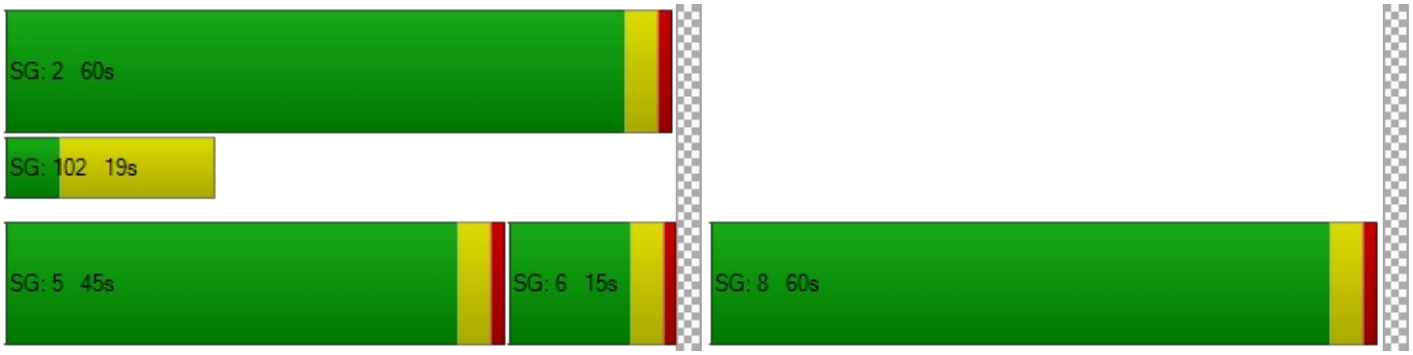
d_M, Delay for Movement [s/veh]	0.00	38.86	50.82	47.79	11.80	0.00	41.68	43.29	46.33	0.00	0.00	0.00
Movement LOS		D	D	D	B		D	D	D			
d_A, Approach Delay [s/veh]	41.82			24.13			44.04			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	35.34											
Intersection LOS	D											
Intersection V/C	0.785											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.448	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	183	933	933	0
d_b, Bicycle Delay [s]	49.50	17.07	17.07	60.00
l_b,int, Bicycle LOS Score for Intersection	2.597	2.687	3.599	4.132
Bicycle LOS	B	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	30.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	893	509	501	647	0	451	7	212	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	8	0	45	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	955	540	576	691	0	478	7	225	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	251	142	152	182	0	126	2	59	0	0	0
Total Analysis Volume [veh/h]	0	1005	568	606	727	0	503	7	237	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	51	0	34	85	0	0	35	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	61	61	24	90	22	22	
g / C, Green / Cycle	0.51	0.51	0.20	0.75	0.19	0.19	
(v / s)_i Volume / Saturation Flow Rate	0.29	0.37	0.18	0.21	0.15	0.16	
s, saturation flow rate [veh/h]	3427	1530	3329	3427	3329	1537	
c, Capacity [veh/h]	1747	780	680	2560	620	286	
d1, Uniform Delay [s]	20.42	22.95	46.46	4.87	46.80	47.23	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.39	5.91	4.33	0.28	2.61	10.58	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.58	0.73	0.89	0.28	0.81	0.85	
d, Delay for Lane Group [s/veh]	21.80	28.86	50.79	5.15	49.41	57.80	
Lane Group LOS	C	C	D	A	D	E	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.89	13.42	9.17	2.65	7.41	7.88	
50th-Percentile Queue Length [ft/ln]	247.23	335.43	229.28	66.26	185.29	196.92	
95th-Percentile Queue Length [veh/ln]	15.05	19.42	14.14	4.77	11.88	12.48	
95th-Percentile Queue Length [ft/ln]	376.16	485.61	353.44	119.27	296.90	311.99	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	21.80	28.86	50.79	5.15	0.00	49.41	57.80	57.80	0.00	0.00	0.00
Movement LOS		C	C	D	A		D	E	E			
d_A, Approach Delay [s/veh]	24.35			25.90			52.15			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	30.60											
Intersection LOS	C											
Intersection V/C	0.712											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	1350	517	0
d_b, Bicycle Delay [s]	22.20	6.34	33.00	60.00
l_b,int, Bicycle LOS Score for Intersection	2.425	2.659	2.792	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	50.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.016

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	512	1223	467	480	861	796	914	0	457	463	0	566
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.000	1.060
In-Process Volume [veh/h]	0	8	0	16	5	0	0	0	0	0	0	11
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	543	1304	495	525	918	844	969	0	484	491	0	611
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	1.000	0.950	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	143	343	130	138	242	222	255	0	127	129	0	161
Total Analysis Volume [veh/h]	572	1373	521	553	966	888	1020	0	509	517	0	643
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	84	0	0	84	0	36	0	0	36	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	80	80	80	80	32	32
g / C, Green / Cycle	0.67	0.67	0.67	0.67	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.50	0.28	0.71	0.20	0.31	0.16
s, saturation flow rate [veh/h]	1148	4903	780	4903	3329	3329
c, Capacity [veh/h]	713	3269	467	3269	888	888
d1, Uniform Delay [s]	22.19	9.26	32.68	8.30	44.00	38.20
k, delay calibration	0.50	0.50	0.50	0.50	0.14	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.25	0.40	102.51	0.23	71.15	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.42	1.18	0.30	1.15	0.58
d, Delay for Lane Group [s/veh]	31.44	9.66	135.19	8.53	115.15	38.81
Lane Group LOS	C	A	F	A	F	D
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.46	5.35	13.77	3.37	21.82	6.67
50th-Percentile Queue Length [ft/ln]	186.44	133.75	344.21	84.22	545.58	166.83
95th-Percentile Queue Length [veh/ln]	11.94	9.14	22.35	6.06	31.94	10.91
95th-Percentile Queue Length [ft/ln]	298.41	228.59	558.79	151.60	798.50	272.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.44	9.66	0.00	135.1	8.53	0.00	115.1	0.00	0.00	38.81	0.00	0.00
Movement LOS	C	A		F	A		F			D		
d_A, Approach Delay [s/veh]	16.06			54.64			115.15			38.81		
Approach LOS	B			D			F			D		
d_I, Intersection Delay [s/veh]	50.34											
Intersection LOS	D											
Intersection V/C	1.016											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.439	3.310
Crosswalk LOS	F	F	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1333	1333	533	533
d_b, Bicycle Delay [s]	6.67	6.67	32.27	32.27
l_b,int, Bicycle LOS Score for Intersection	2.629	2.395	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	174	1468	329	62	520	118	237	979	186	107	541	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	8	8	0	0	0	8	0	5	5	5
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	184	1556	357	74	551	125	251	1046	197	118	578	113
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	48	409	94	19	145	33	66	275	52	31	152	30
Total Analysis Volume [veh/h]	194	1638	376	78	580	132	264	1101	207	124	608	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	36	46	0	9	19	0	39	51	0	14	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	47	47	5	43	43	21	42	42	10	31	31
g / C, Green / Cycle	0.08	0.40	0.40	0.04	0.36	0.36	0.17	0.35	0.35	0.08	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.06	0.33	0.25	0.02	0.12	0.09	0.15	0.32	0.14	0.07	0.18	0.08
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	262	1938	605	128	1741	543	295	1198	535	143	894	399
d1, Uniform Delay [s]	54.07	32.96	29.10	56.79	28.31	27.32	48.62	37.40	29.35	54.35	39.85	35.54
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	4.75	4.76	4.56	0.52	1.06	9.40	3.37	0.46	14.41	0.92	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.85	0.62	0.61	0.33	0.24	0.90	0.92	0.39	0.87	0.68	0.30
d, Delay for Lane Group [s/veh]	58.16	37.72	33.87	61.35	28.82	28.38	58.02	40.77	29.81	68.75	40.76	35.95
Lane Group LOS	E	D	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.02	15.02	9.41	1.25	4.16	2.85	8.48	15.81	4.57	4.27	8.15	2.85
50th-Percentile Queue Length [ft/ln]	75.41	375.4	235.3	31.15	104.0	71.17	212.1	395.1	114.2	106.7	203.7	71.30
95th-Percentile Queue Length [veh/ln]	5.43	21.37	14.44	2.24	7.49	5.12	13.26	22.33	8.07	7.66	12.83	5.13
95th-Percentile Queue Length [ft/ln]	135.7	534.3	361.1	56.07	187.2	128.1	331.5	558.1	201.8	191.4	320.8	128.3

Movement, Approach, & Intersection Results

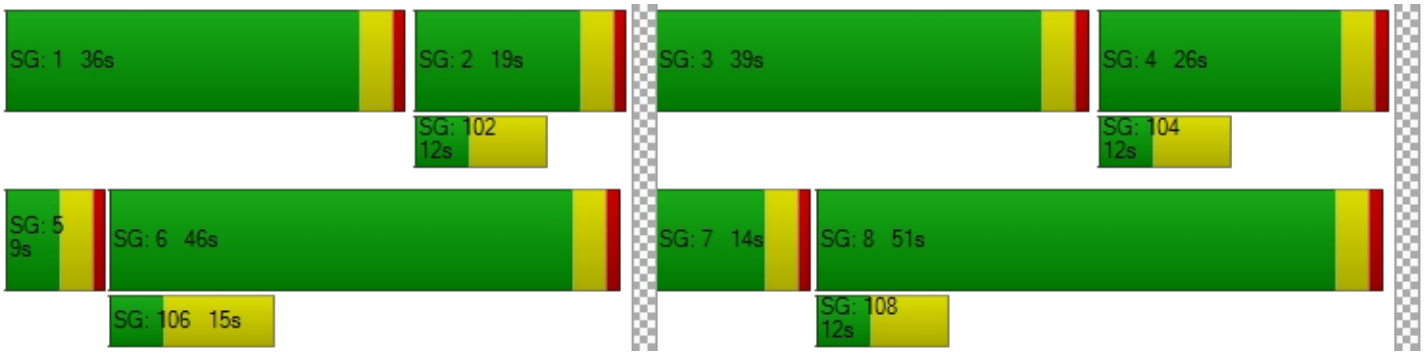
d_M, Delay for Movement [s/veh]	58.16	37.72	33.87	61.35	28.82	28.38	58.02	40.77	29.81	68.75	40.76	35.95
Movement LOS	E	D	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	38.86			31.96			42.22			44.17		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.66											
Intersection LOS	D											
Intersection V/C	0.751											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.202	3.169	2.875	2.859
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	250	783	367
d_b, Bicycle Delay [s]	25.35	45.94	22.20	40.02
l_b,int, Bicycle LOS Score for Intersection	2.774	1.994	2.857	2.262
Bicycle LOS	C	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	39.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	55	791	257	87	219	179	347	879	21	68	490	173
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	24	0	0	15	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	838	272	92	232	190	368	956	22	72	534	183
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	221	72	24	61	50	97	252	6	19	141	48
Total Analysis Volume [veh/h]	61	882	286	97	244	200	387	1006	23	76	562	193
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	22	36	0	12	26	26	42	63	0	9	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	44	44	8	46	80	30	48	48	5	23	35
g / C, Green / Cycle	0.05	0.36	0.36	0.07	0.38	0.66	0.25	0.40	0.40	0.04	0.19	0.29
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.19	0.06	0.07	0.13	0.23	0.29	0.29	0.02	0.16	0.13
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1786	3329	3427	1530
c, Capacity [veh/h]	80	1247	557	114	1315	1015	423	716	710	128	650	443
d1, Uniform Delay [s]	56.52	32.68	29.85	55.40	24.53	7.81	44.00	30.52	30.54	56.78	47.14	34.66
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.25	0.16	0.16	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.54	3.40	3.36	15.55	0.31	0.43	16.08	1.99	2.03	4.35	3.63	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.71	0.51	0.85	0.19	0.20	0.92	0.72	0.72	0.59	0.87	0.44
d, Delay for Lane Group [s/veh]	70.06	36.08	33.21	70.95	24.84	8.25	60.08	32.52	32.57	61.13	50.77	35.33
Lane Group LOS	E	D	C	E	C	A	E	C	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.13	11.46	6.96	3.40	2.37	2.03	13.00	12.84	12.78	1.21	8.44	4.68
50th-Percentile Queue Length [ft/ln]	53.27	286.5	174.0	84.89	59.32	50.84	325.0	321.0	319.3	30.29	210.9	116.9
95th-Percentile Queue Length [veh/ln]	3.84	17.01	11.29	6.11	4.27	3.66	18.92	18.72	18.64	2.18	13.20	8.22
95th-Percentile Queue Length [ft/ln]	95.89	425.3	282.2	152.8	106.7	91.51	472.8	467.9	465.9	54.52	330.0	205.5

Movement, Approach, & Intersection Results

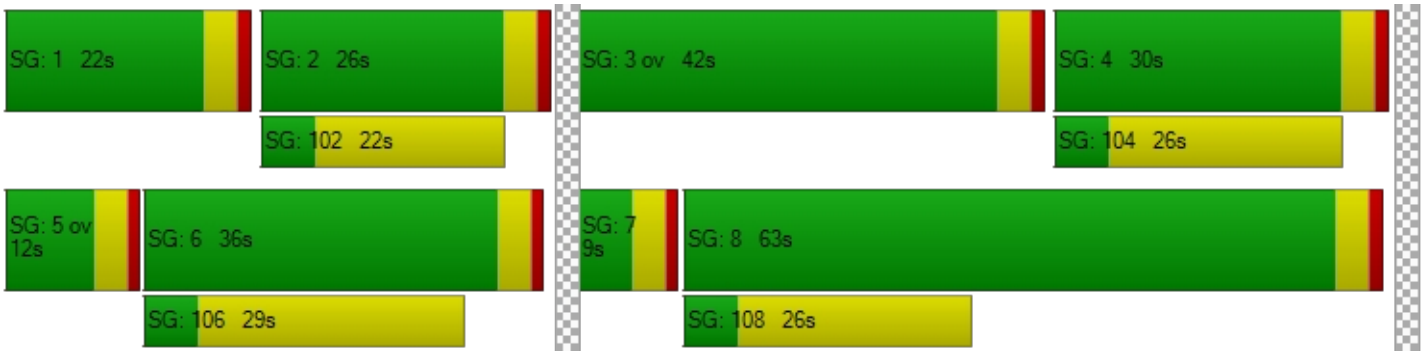
d_M, Delay for Movement [s/veh]	70.06	36.08	33.21	70.95	24.84	8.25	60.08	32.54	32.57	61.13	50.77	35.33
Movement LOS	E	D	C	E	C	A	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	37.10			26.97			40.07			48.13		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.06											
Intersection LOS	D											
Intersection V/C	0.704											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.724	2.794	2.752	2.918
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	367	983	433
d_b, Bicycle Delay [s]	32.27	40.02	15.50	36.82
l_b,int, Bicycle LOS Score for Intersection	2.574	2.006	2.728	2.245
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	35	857	66	377	983	405	440	672	84	60	177	364
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	31	0	0	23	5	8	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	939	70	400	1065	434	474	712	89	64	188	386
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	247	18	105	280	114	125	187	23	17	49	102
Total Analysis Volume [veh/h]	39	988	74	421	1121	457	499	749	94	67	198	406
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	9	33	0	21	45	45	23	57	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	4	51	51	17	64	87	19	32	32	4	17	38
g / C, Green / Cycle	0.03	0.42	0.42	0.14	0.53	0.73	0.16	0.27	0.27	0.04	0.14	0.32
(v / s)_i Volume / Saturation Flow Rate	0.02	0.21	0.21	0.13	0.23	0.30	0.15	0.24	0.24	0.02	0.06	0.27
s, saturation flow rate [veh/h]	1714	3427	1737	3329	4903	1530	3329	1800	1731	3329	3427	1530
c, Capacity [veh/h]	53	1445	732	472	2612	1108	527	479	460	124	497	490
d1, Uniform Delay [s]	57.69	25.26	25.27	50.60	16.99	6.50	50.00	42.43	42.50	56.74	46.55	37.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.12	0.12	0.11	0.11	0.32
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.36	1.18	2.32	6.09	0.52	1.13	9.41	6.73	7.38	3.59	0.52	10.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.49	0.49	0.89	0.43	0.41	0.95	0.90	0.90	0.54	0.40	0.83
d, Delay for Lane Group [s/veh]	76.05	26.44	27.60	56.69	17.50	7.64	59.41	49.16	49.89	60.34	47.07	48.01
Lane Group LOS	E	C	C	E	B	A	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.44	7.49	7.85	6.60	6.26	4.44	8.08	13.05	12.71	1.06	2.73	12.34
50th-Percentile Queue Length [ft/ln]	36.07	187.3	196.1	164.9	156.5	111.0	201.9	326.1	317.8	26.51	68.24	308.4
95th-Percentile Queue Length [veh/ln]	2.60	11.98	12.44	10.81	10.36	7.90	12.74	18.97	18.56	1.91	4.91	18.10
95th-Percentile Queue Length [ft/ln]	64.92	299.5	311.0	270.2	259.1	197.3	318.4	474.2	464.0	47.73	122.8	452.4

Movement, Approach, & Intersection Results

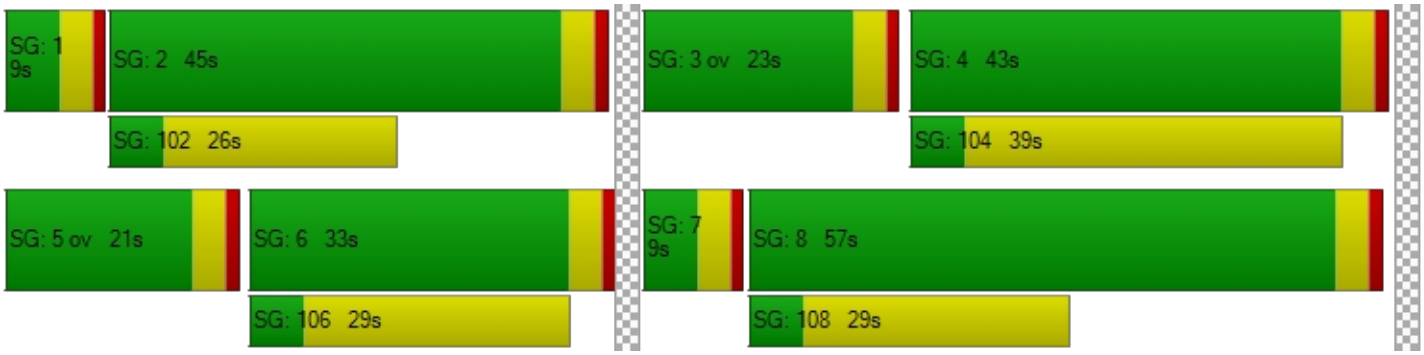
d_M, Delay for Movement [s/veh]	76.05	26.77	27.60	56.69	17.50	7.64	59.41	49.47	49.89	60.34	47.07	48.01
Movement LOS	E	C	C	E	B	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	28.57			23.50			53.19			48.96		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.73											
Intersection LOS	D											
Intersection V/C	0.661											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.031	3.361	2.799	2.876
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	683	883	650
d_b, Bicycle Delay [s]	34.50	26.00	18.70	27.34
l_b,int, Bicycle LOS Score for Intersection	2.165	2.659	2.667	2.113
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	372.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	30.924

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	8	601	29	67	890	130	243	49	30	13	21	83
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	8	0	13	5	5	8	0	0	0	0	15
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	645	31	84	948	143	266	52	32	14	22	103
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	170	8	22	249	38	70	14	8	4	6	27
Total Analysis Volume [veh/h]	8	679	33	88	998	151	280	55	34	15	23	108
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	22	0	10	23	0	0	88	0	0	88	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	18	18	6	23	23	84	84	84	84
g / C, Green / Cycle	0.01	0.15	0.15	0.05	0.19	0.19	0.70	0.70	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.00	0.14	0.14	0.05	0.22	0.23	30.69	0.02	0.57	0.07
s, saturation flow rate [veh/h]	1714	3427	1758	1714	3427	1682	11	1530	67	1530
c, Capacity [veh/h]	17	517	265	86	655	322	63	1069	89	1069
d1, Uniform Delay [s]	59.11	50.12	50.17	57.00	48.53	48.53	52.13	5.56	32.76	5.85
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.34	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.69	22.26	36.75	52.18	94.37	107.4	1988.86	0.01	9.81	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.91	0.91	1.03	1.18	1.18	5.34	0.03	0.43	0.10
d, Delay for Lane Group [s/veh]	78.80	72.38	86.92	109.1	142.9	155.9	2040.99	5.57	42.57	5.89
Lane Group LOS	E	E	F	F	F	F	F	A	D	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.33	8.52	9.86	3.84	18.35	19.17	36.55	0.25	1.10	0.84
50th-Percentile Queue Length [ft/ln]	8.34	213.0	246.4	95.98	458.7	479.3	913.77	6.29	27.39	21.02
95th-Percentile Queue Length [veh/ln]	0.60	13.31	15.01	6.91	27.50	28.59	65.79	0.45	1.97	1.51
95th-Percentile Queue Length [ft/ln]	15.01	332.7	375.1	172.7	687.5	714.8	1644.78	11.32	49.30	37.84

Movement, Approach, & Intersection Results

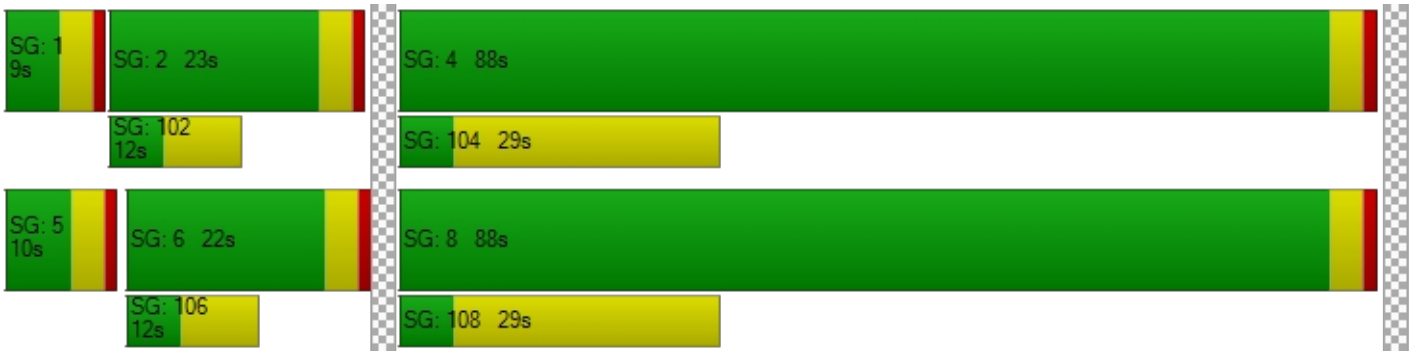
d_M, Delay for Movement [s/veh]	78.80	76.86	86.92	109.1	145.8	155.9	2040.	2040.	5.57	42.57	42.57	5.89
Movement LOS	E	E	F	F	F	F	F	F	A	D	D	A
d_A, Approach Delay [s/veh]	77.35			144.49			1853.45			15.44		
Approach LOS	E			F			F			B		
d_I, Intersection Delay [s/veh]	372.41											
Intersection LOS	F											
Intersection V/C	30.924											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.877	3.328	2.135	2.060
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	317	1400	1400
d_b, Bicycle Delay [s]	43.35	42.50	5.40	5.40
l_b,int, Bicycle LOS Score for Intersection	1.956	2.240	2.168	1.801
Bicycle LOS	A	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	40	40	0	24	24	24	0	33	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	104	0	104	112	0	0	0	0	0
g / C, Green / Cycle	0.00	0.87	0.87	0.00	0.87	0.93	0.00	0.00	0.00	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1687	3373	1772	1687	3373	1506	1687	1772	2665	1687	1772
c, Capacity [veh/h]	1	2920	1533	1	2919	1405	1	1	1	1	1
d1, Uniform Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Group LOS	A	A	A	A	A	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	No	No	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement, Approach, & Intersection Results

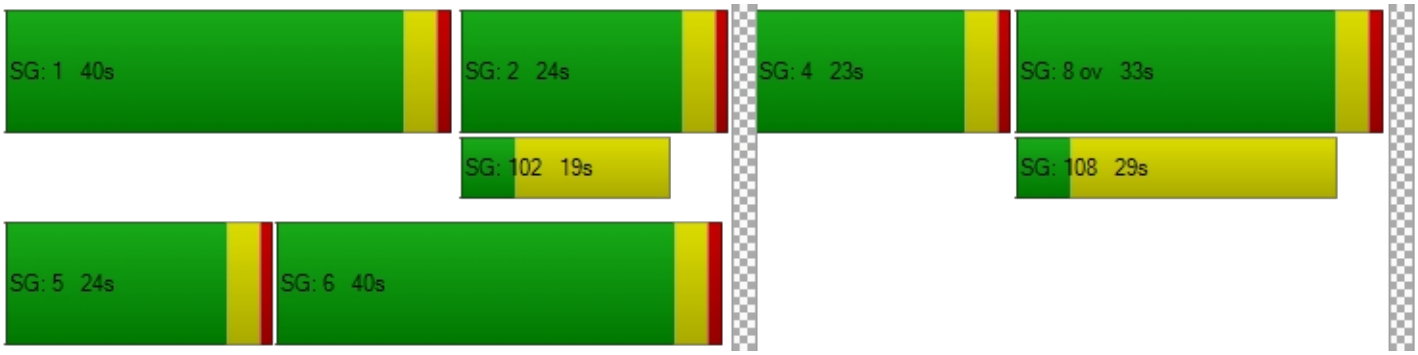
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											
Intersection V/C	0.000											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.609	0.000	2.468	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	333	483	317
d_b, Bicycle Delay [s]	29.40	41.67	34.50	42.50
l_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560	1.560
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-3

INTERSECTION ANALYSIS
WORKSHEETS –
OPENING YEAR 2024 PLUS PHASE 1

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.661	34.3	C
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.589	25.9	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.485	19.6	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.697	28.2	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.713	29.1	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.497	17.5	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.427	31.7	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.636	36.6	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.597	32.0	C
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	WB Right	0.785	55.6	E
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.470	21.7	C
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.525	30.2	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.741	39.3	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.504	39.9	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	EB Left	0.879	48.8	D
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	EB Left	0.584	33.6	C
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.622	47.3	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.896	32.7	C
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.664	25.4	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	NB Left	0.778	43.1	D
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.735	41.2	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	2.026	921.8	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.776	47.7	D
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	NB Left	0.702	42.1	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.748	42.6	D
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.809	47.8	D
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.514	26.9	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.751	45.7	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	SB Left	0.596	37.2	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.647	24.6	C
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.892	54.3	D
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.371	36.7	E
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.460	19.5	B
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.710	25.5	C
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	WB Thru	0.882	31.4	D
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.548	29.8	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	NB Left	0.595	40.0	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.464	20.8	C

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Right	0.966	75.8	E
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	WB Thru	1.313	101.3	F
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	WB Thru	1.001	38.1	E
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.575	34.1	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	SB Left	0.580	29.5	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Left	0.775	45.9	D
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	SB Right	0.693	50.9	D
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.564	36.7	D
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	EB Left	0.586	34.4	C
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.340	16.3	C
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.803	46.0	D
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	EB Left	0.518	33.0	C
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	SWB Thru	0.333	32.1	C
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.653	38.6	D
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	SB Left	0.680	30.7	C
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	WB Thru	0.323	9.9	A
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.483	26.6	C
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	SB Left	0.447	29.2	C
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.817	44.2	D
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.531	27.6	C
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Thru	0.021	77.9	F
			HCM 6th				

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Right	0.847	55.0	D
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	SB Left	0.729	34.2	C
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.515	23.6	C
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	SB Thru	0.972	53.6	D
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.567	21.4	C
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.797	30.0	C
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	EB Right	0.894	44.0	D
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.742	33.6	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	EB Left	0.720	25.8	C
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	EB Left	0.698	38.3	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	SB Left	0.692	36.7	D
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.697	33.9	C
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	35.119	659.5	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition	NB Left	0.470	37.2	D
998543	New Intersection	Unknown	?		?	?	?
998552	New Intersection	Unknown	?		?	?	?
998555	New Intersection	Unknown	?		?	?	?

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	166	303	0	0	712	200	0	0	0	360	4	252
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	14	6	0	0	4	0	0	0	0	17	0	0
Site-Generated Trips [veh/h]	73	0	0	0	7	0	0	0	0	66	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	263	327	0	0	766	212	0	0	0	465	4	267
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	69	86	0	0	202	56	0	0	0	122	1	70
Total Analysis Volume [veh/h]	277	344	0	0	806	223	0	0	0	489	4	281
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	33	49	0	0	16	0	0	0	0	0	71	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	21	75	49	49		37	37
g / C, Green / Cycle	0.18	0.62	0.41	0.41		0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.16	0.10	0.20	0.21		0.29	0.18
s, saturation flow rate [veh/h]	1714	3427	3427	1615		1715	1530
c, Capacity [veh/h]	307	2127	1399	659		536	478
d1, Uniform Delay [s]	48.22	9.59	26.26	26.67		39.79	34.73
k, delay calibration	0.19	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	15.30	0.16	1.23	2.92		6.97	1.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.16	0.49	0.52		0.92	0.59
d, Delay for Lane Group [s/veh]	63.52	9.75	27.50	29.59		46.76	35.88
Lane Group LOS	E	A	C	C		D	D
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	9.40	1.91	7.45	7.86		14.91	7.05
50th-Percentile Queue Length [ft/ln]	234.92	47.78	186.22	196.42		372.65	176.31
95th-Percentile Queue Length [veh/ln]	14.42	3.44	11.92	12.45		21.24	11.41
95th-Percentile Queue Length [ft/ln]	360.60	86.00	298.12	311.34		530.94	285.19

Movement, Approach, & Intersection Results

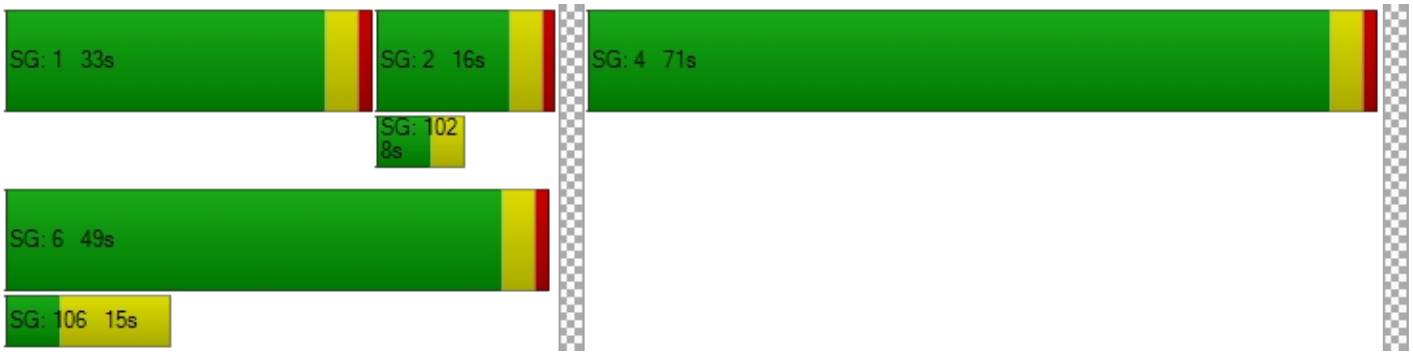
d_M, Delay for Movement [s/veh]	63.52	9.75	0.00	0.00	27.81	29.59	0.00	0.00	0.00	46.76	46.76	35.88
Movement LOS	E	A			C	C				D	D	D
d_A, Approach Delay [s/veh]	33.74			28.20			0.00			42.81		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	34.28											
Intersection LOS	C											
Intersection V/C	0.661											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.930	2.207
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	200	0	1117
d_b, Bicycle Delay [s]	23.44	48.60	60.00	11.70
l_b,int, Bicycle LOS Score for Intersection	2.072	2.126	4.132	2.837
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	302	906	0	0	822	355	0	0	0	421	1	309
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	0	6	0	0	4	0	0	0	0	5	0	0
Site-Generated Trips [veh/h]	0	0	0	0	7	0	0	0	0	8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	320	966	0	0	882	376	0	0	0	459	1	328
Peak Hour Factor	0.964	0.964	1.000	1.000	0.964	0.964	1.000	1.000	1.000	0.964	0.964	0.964
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	83	251	0	0	229	98	0	0	0	119	0	85
Total Analysis Volume [veh/h]	332	1002	0	0	915	390	0	0	0	476	1	340
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	20	66	0	0	46	0	0	0	0	0	54	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	14	82	64	64		30	30	30
g / C, Green / Cycle	0.12	0.68	0.53	0.53		0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.10	0.29	0.27	0.25		0.14	0.14	0.22
s, saturation flow rate [veh/h]	3329	3427	3427	1530		1714	1715	1530
c, Capacity [veh/h]	389	2342	1827	816		429	429	382
d1, Uniform Delay [s]	51.98	8.50	17.84	17.55		39.21	39.21	43.40
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	0.57	0.98	2.00		1.13	1.13	7.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.43	0.50	0.48		0.56	0.56	0.89
d, Delay for Lane Group [s/veh]	57.37	9.07	18.82	19.55		40.34	40.34	51.11
Lane Group LOS	E	A	B	B		D	D	D
Critical Lane Group	Yes	No	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.19	5.60	8.14	7.07		6.27	6.27	10.50
50th-Percentile Queue Length [ft/ln]	129.71	140.05	203.61	176.87		156.6	156.7	262.4
95th-Percentile Queue Length [veh/ln]	8.92	9.48	12.82	11.44		10.37	10.37	15.81
95th-Percentile Queue Length [ft/ln]	223.10	237.09	320.61	285.92		259.3	259.3	395.2

Movement, Approach, & Intersection Results

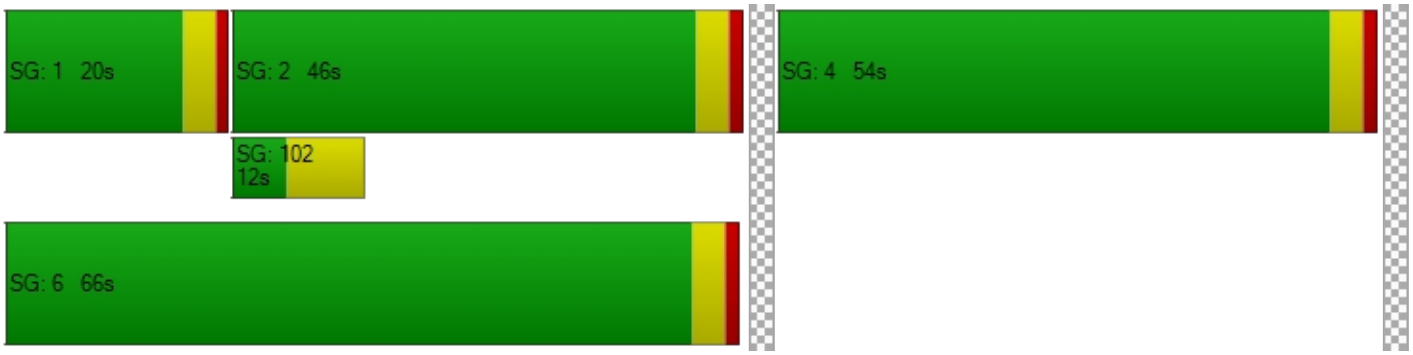
d_M, Delay for Movement [s/veh]	57.37	9.07	0.00	0.00	18.82	19.55	0.00	0.00	0.00	40.34	40.34	51.11
Movement LOS	E	A			B	B				D	D	D
d_A, Approach Delay [s/veh]	21.09			19.04			0.00			44.82		
Approach LOS	C			B			A			D		
d_I, Intersection Delay [s/veh]	25.93											
Intersection LOS	C											
Intersection V/C	0.589											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.083	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	700	0	833
d_b, Bicycle Delay [s]	14.02	25.35	60.00	20.42
l_b,int, Bicycle LOS Score for Intersection	2.660	2.636	4.132	2.908
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.485

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	792	0	0	1079	0	0	0	0	510	0	291
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	0	6	0	0	4	0	0	0	0	2	0	0
Site-Generated Trips [veh/h]	0	0	0	0	7	0	0	0	0	4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	846	0	0	1155	0	0	0	0	547	0	308
Peak Hour Factor	1.000	0.869	1.000	1.000	0.869	1.000	1.000	1.000	1.000	0.869	0.869	0.869
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	243	0	0	332	0	0	0	0	157	0	89
Total Analysis Volume [veh/h]	0	974	0	0	1329	0	0	0	0	629	0	354
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	63	0	0	63	0	0	0	0	0	57	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	83	83		29	29	29
g / C, Green / Cycle	0.69	0.69		0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.20	0.27		0.19	0.19	0.21
s, saturation flow rate [veh/h]	4903	4903		1714	1698	1530
c, Capacity [veh/h]	3371	3371		422	417	376
d1, Uniform Delay [s]	7.31	8.04		42.18	42.28	43.42
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.35		3.12	3.29	6.30
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.39		0.78	0.78	0.87
d, Delay for Lane Group [s/veh]	7.53	8.39		45.31	45.57	49.72
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.11	4.67		9.39	9.43	9.95
50th-Percentile Queue Length [ft/ln]	77.73	116.77		234.7	235.6	248.7
95th-Percentile Queue Length [veh/ln]	5.60	8.21		14.42	14.46	15.12
95th-Percentile Queue Length [ft/ln]	139.91	205.37		360.4	361.5	378.0

Movement, Approach, & Intersection Results

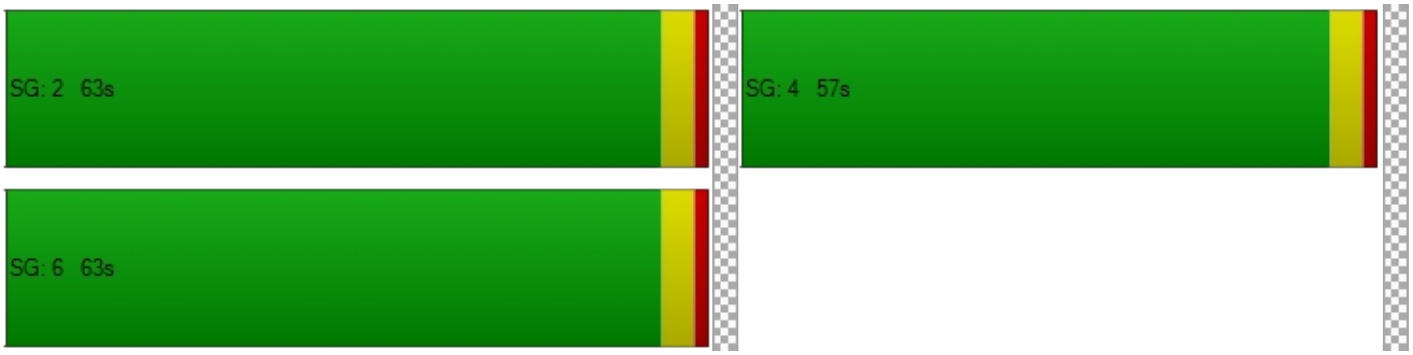
d_M, Delay for Movement [s/veh]	0.00	7.53	0.00	0.00	8.39	0.00	0.00	0.00	0.00	45.43	45.57	49.41
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	7.53			8.39			0.00			46.86		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	19.64											
Intersection LOS	B											
Intersection V/C	0.485											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	983	0	883
d_b, Bicycle Delay [s]	15.50	15.50	60.00	18.70
l_b,int, Bicycle LOS Score for Intersection	2.095	2.291	4.132	3.182
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	427	319	160	805	0	153	5	296	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	20	22	0	21	0	0	0	12	0	0	0
Site-Generated Trips [veh/h]	0	73	70	0	73	0	0	0	107	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	546	430	170	947	0	162	5	433	0	0	0
Peak Hour Factor	1.000	0.952	0.952	0.952	0.952	1.000	0.952	0.952	0.952	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	143	113	45	249	0	43	1	114	0	0	0
Total Analysis Volume [veh/h]	0	574	452	179	995	0	170	5	455	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	41	0	18	59	0	0	61	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	56	56	14	74	38	38	
g / C, Green / Cycle	0.46	0.46	0.12	0.61	0.32	0.32	
(v / s)_i Volume / Saturation Flow Rate	0.17	0.30	0.10	0.29	0.10	0.30	
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1717	1530	
c, Capacity [veh/h]	1587	708	200	2101	550	490	
d1, Uniform Delay [s]	20.79	24.56	52.28	12.67	30.86	39.44	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.19	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.64	4.36	13.00	0.77	0.33	12.91	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.36	0.64	0.90	0.47	0.32	0.93	
d, Delay for Lane Group [s/veh]	21.43	28.93	65.27	13.43	31.19	52.35	
Lane Group LOS	C	C	E	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	5.31	10.48	6.03	7.23	3.91	14.58	
50th-Percentile Queue Length [ft/ln]	132.73	261.89	150.77	180.71	97.70	364.43	
95th-Percentile Queue Length [veh/ln]	9.09	15.78	10.06	11.64	7.03	20.84	
95th-Percentile Queue Length [ft/ln]	227.21	394.60	251.45	290.94	175.86	520.97	

Movement, Approach, & Intersection Results

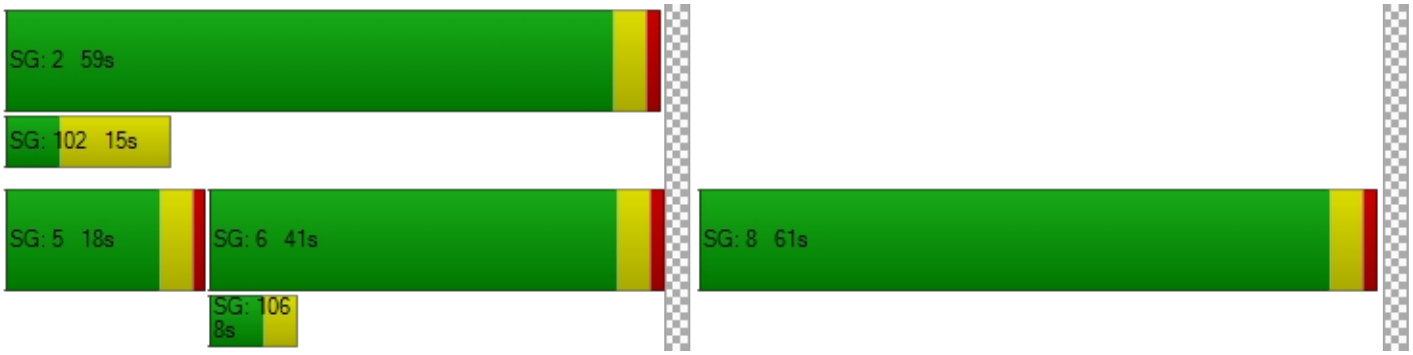
d_M, Delay for Movement [s/veh]	0.00	21.43	28.93	65.27	13.43	0.00	31.19	31.19	52.35	0.00	0.00	0.00
Movement LOS		C	C	E	B		C	C	D			
d_A, Approach Delay [s/veh]	24.73			21.34			46.47			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	28.16											
Intersection LOS	C											
Intersection V/C	0.697											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.160	2.059
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	917	950	0
d_b, Bicycle Delay [s]	28.70	17.60	16.54	60.00
l_b,int, Bicycle LOS Score for Intersection	2.124	2.528	2.599	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	29.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.713

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	817	408	302	931	0	411	3	402	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	6	7	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	2	0	15	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	872	441	320	1011	0	436	3	426	0	0	0
Peak Hour Factor	1.000	0.966	0.966	0.966	0.966	1.000	0.966	0.966	0.966	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	226	114	83	262	0	113	1	110	0	0	0
Total Analysis Volume [veh/h]	0	903	457	331	1047	0	451	3	441	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	60	0	18	78	0	0	42	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	68	68	14	86	26	26	26	
g / C, Green / Cycle	0.57	0.57	0.11	0.71	0.22	0.22	0.22	
(v / s)_i Volume / Saturation Flow Rate	0.38	0.42	0.10	0.31	0.18	0.18	0.19	
s, saturation flow rate [veh/h]	1800	1609	3329	3427	1714	1618	1530	
c, Capacity [veh/h]	1017	909	382	2443	378	357	337	
d1, Uniform Delay [s]	18.26	19.68	52.22	7.12	44.31	44.70	45.09	
k, delay calibration	0.50	0.50	0.11	0.50	0.13	0.15	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.49	5.61	6.02	0.55	4.90	7.03	10.02	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.75	0.87	0.43	0.80	0.84	0.87	
d, Delay for Lane Group [s/veh]	21.76	25.29	58.23	7.67	49.21	51.73	55.12	
Lane Group LOS	C	C	E	A	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	13.67	15.08	5.21	5.21	9.05	9.15	9.32	
50th-Percentile Queue Length [ft/ln]	341.72	377.03	130.31	130.37	226.1	228.7	232.8	
95th-Percentile Queue Length [veh/ln]	19.73	21.45	8.96	8.96	13.98	14.11	14.32	
95th-Percentile Queue Length [ft/ln]	493.30	536.26	223.91	224.00	349.5	352.8	358.0	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	22.63	25.29	58.23	7.67	0.00	50.05	51.73	54.01	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	D			
d_A, Approach Delay [s/veh]	23.52			19.82			51.98			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	29.13											
Intersection LOS	C											
Intersection V/C	0.713											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.364	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	1233	633	0
d_b, Bicycle Delay [s]	17.07	8.82	28.02	60.00
l_b,int, Bicycle LOS Score for Intersection	2.682	2.696	3.036	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.497

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	946	463	0	1265	26	160	0	553	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.000	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	6	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	11	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1009	492	0	1358	26	170	0	586	0	0	0
Peak Hour Factor	1.000	0.942	0.942	1.000	0.942	1.000	0.942	0.942	0.942	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	268	131	0	360	7	45	0	156	0	0	0
Total Analysis Volume [veh/h]	0	1071	522	0	1442	26	180	0	622	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	67	0	0	67	0	0	53	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	84	84	28	28	28	
g / C, Green / Cycle	0.70	0.70	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.29	0.11	0.20	0.20	
s, saturation flow rate [veh/h]	4903	4903	1714	1530	1530	
c, Capacity [veh/h]	3436	3436	399	356	356	
d1, Uniform Delay [s]	6.88	7.62	39.47	44.34	44.34	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.24	0.38	0.80	6.75	6.75	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.31	0.42	0.45	0.87	0.87	
d, Delay for Lane Group [s/veh]	7.12	7.99	40.27	51.09	51.09	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	3.30	4.93	4.66	9.54	9.54	
50th-Percentile Queue Length [ft/ln]	82.58	123.30	116.4	238.4	238.4	
95th-Percentile Queue Length [veh/ln]	5.95	8.57	8.20	14.60	14.60	
95th-Percentile Queue Length [ft/ln]	148.65	214.36	204.9	365.0	365.0	

Movement, Approach, & Intersection Results

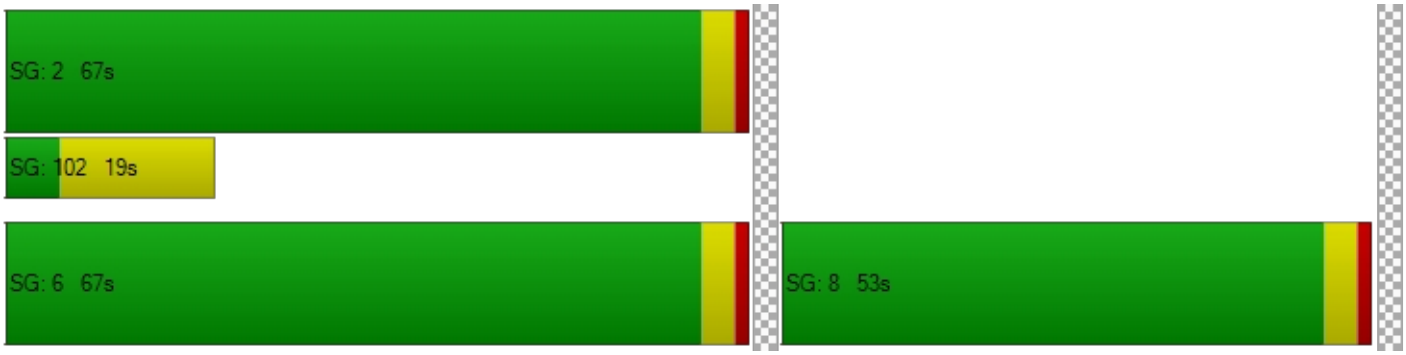
d_M, Delay for Movement [s/veh]	0.00	7.12	0.00	0.00	7.99	0.00	40.27	51.09	51.09	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	7.12			7.99			48.67			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	17.55											
Intersection LOS	B											
Intersection V/C	0.497											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.342	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	1050	817	0
d_b, Bicycle Delay [s]	13.54	13.54	21.00	60.00
l_b,int, Bicycle LOS Score for Intersection	2.149	2.353	2.883	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.427

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	37	570	67	55	502	93	117	199	75	90	208	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	604	71	58	532	99	124	211	80	95	220	65
Peak Hour Factor	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	169	20	16	149	28	35	59	22	27	62	18
Total Analysis Volume [veh/h]	44	678	80	65	597	111	139	237	90	107	247	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	36	0	10	35	0	48	29	0	45	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	73	73	6	75	75	12	16	16	9	14	14
g / C, Green / Cycle	0.03	0.61	0.61	0.05	0.62	0.62	0.10	0.13	0.13	0.08	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.03	0.21	0.21	0.04	0.20	0.20	0.08	0.09	0.10	0.06	0.09	0.09
s, saturation flow rate [veh/h]	1714	1800	1734	1714	1800	1703	1714	1800	1635	1714	1800	1662
c, Capacity [veh/h]	56	1090	1050	82	1117	1057	170	242	220	135	206	190
d1, Uniform Delay [s]	57.62	11.90	11.90	56.52	10.82	10.82	53.02	49.62	49.75	54.29	51.78	51.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.96	0.90	0.94	15.31	0.77	0.82	9.35	3.65	4.34	9.83	6.93	8.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.35	0.35	0.79	0.33	0.33	0.82	0.70	0.72	0.79	0.80	0.82
d, Delay for Lane Group [s/veh]	78.58	12.80	12.84	71.83	11.59	11.65	62.36	53.26	54.09	64.12	58.72	60.24
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.65	5.31	5.13	2.30	4.67	4.45	4.55	5.10	4.80	3.55	5.22	5.01
50th-Percentile Queue Length [ft/ln]	41.30	132.6	128.2	57.48	116.8	111.1	113.7	127.4	119.9	88.67	130.4	125.3
95th-Percentile Queue Length [veh/ln]	2.97	9.08	8.84	4.14	8.22	7.90	8.05	8.80	8.39	6.38	8.96	8.68
95th-Percentile Queue Length [ft/ln]	74.34	227.0	221.0	103.4	205.4	197.6	201.2	220.0	209.7	159.6	224.0	217.1

Movement, Approach, & Intersection Results

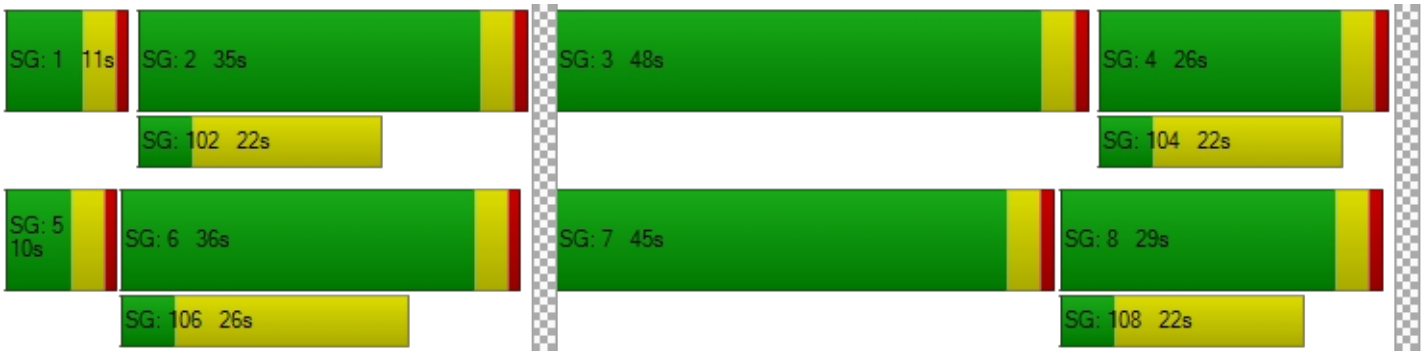
d_M, Delay for Movement [s/veh]	78.58	12.82	12.84	71.83	11.61	11.65	62.36	53.50	54.09	64.12	59.23	60.24
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	16.43			16.68			56.26			60.63		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	31.68											
Intersection LOS	C											
Intersection V/C	0.427											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.626	2.639	2.484	2.600
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	517	417	367
d_b, Bicycle Delay [s]	32.27	33.00	37.60	40.02
l_b,int, Bicycle LOS Score for Intersection	2.221	2.197	1.944	1.912
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	36.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.636

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	75	725	72	337	942	150	215	192	53	91	197	246
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	13	0	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	0	15	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	784	76	357	1023	159	228	204	56	96	209	261
Peak Hour Factor	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	22	214	21	97	279	43	62	56	15	26	57	71
Total Analysis Volume [veh/h]	87	854	83	389	1114	173	248	222	61	105	228	284
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	39	0	20	48	0	15	40	0	21	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	52	52	16	61	61	11	27	27	9	25	25
g / C, Green / Cycle	0.06	0.44	0.44	0.13	0.51	0.51	0.09	0.22	0.22	0.08	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.05	0.12	0.33	0.11	0.07	0.06	0.04	0.06	0.13	0.19
s, saturation flow rate [veh/h]	1714	3427	1530	3329	3427	1530	3329	3427	1530	1714	1800	1530
c, Capacity [veh/h]	100	1494	667	439	1746	779	300	761	340	132	376	320
d1, Uniform Delay [s]	56.05	25.43	20.19	51.21	21.39	16.28	53.68	38.84	37.83	54.45	43.00	46.11
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.52	1.59	0.38	6.17	1.80	0.66	5.78	0.21	0.25	10.31	1.58	8.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.57	0.12	0.89	0.64	0.22	0.83	0.29	0.18	0.80	0.61	0.89
d, Delay for Lane Group [s/veh]	75.56	27.02	20.57	57.37	23.19	16.94	59.46	39.05	38.08	64.76	44.58	54.67
Lane Group LOS	E	C	C	E	C	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.15	9.37	1.47	6.11	11.53	2.76	3.92	2.76	1.49	3.50	6.30	8.96
50th-Percentile Queue Length [ft/ln]	78.87	234.2	36.64	152.8	288.2	69.11	97.95	68.95	37.20	87.49	157.5	223.9
95th-Percentile Queue Length [veh/ln]	5.68	14.39	2.64	10.17	17.10	4.98	7.05	4.96	2.68	6.30	10.42	13.87
95th-Percentile Queue Length [ft/ln]	141.9	359.7	65.96	254.2	427.4	124.4	176.3	124.1	66.97	157.4	260.5	346.6

Movement, Approach, & Intersection Results

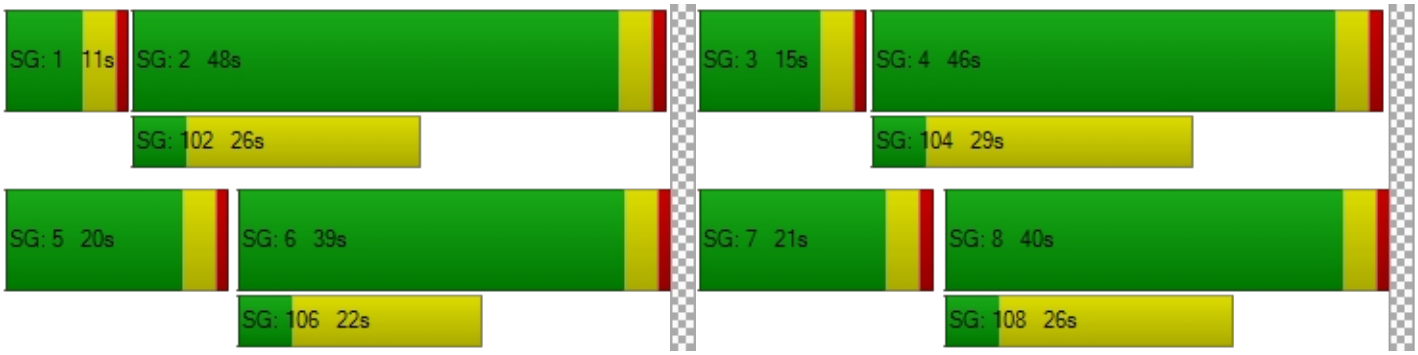
d_M, Delay for Movement [s/veh]	75.56	27.02	20.57	57.37	23.19	16.94	59.46	39.05	38.08	64.76	44.58	54.67
Movement LOS	E	C	C	E	C	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	30.62			30.48			48.47			52.66		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.56											
Intersection LOS	D											
Intersection V/C	0.636											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.843	3.036	2.751	2.681
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	733	600	700
d_b, Bicycle Delay [s]	30.10	24.07	29.40	25.35
l_b,int, Bicycle LOS Score for Intersection	2.404	2.942	1.998	2.578
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	32.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.597

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	160	919	38	219	1191	403	291	252	173	16	252	199
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	9	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	11	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	170	984	40	232	1279	427	308	267	183	17	267	211
Peak Hour Factor	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	45	262	11	62	341	114	82	71	49	5	71	56
Total Analysis Volume [veh/h]	181	1049	43	247	1364	455	328	285	195	18	285	225
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	36	0	23	47	0	19	52	0	9	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	59	59	11	62	62	14	32	32	2	20	20
g / C, Green / Cycle	0.07	0.49	0.49	0.09	0.52	0.52	0.11	0.27	0.27	0.02	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.05	0.21	0.03	0.07	0.28	0.30	0.10	0.08	0.13	0.01	0.08	0.15
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	222	2393	747	311	2525	788	382	911	407	64	584	261
d1, Uniform Delay [s]	55.27	20.01	16.18	53.25	19.56	20.09	52.16	35.27	37.06	58.04	45.05	48.43
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.13	0.59	0.15	4.56	0.83	3.07	5.66	0.19	0.88	2.38	0.63	8.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.44	0.06	0.79	0.54	0.58	0.86	0.31	0.48	0.28	0.49	0.86
d, Delay for Lane Group [s/veh]	62.41	20.59	16.33	57.81	20.39	23.17	57.82	35.46	37.93	60.42	45.69	56.76
Lane Group LOS	E	C	B	E	C	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.92	6.43	0.66	3.84	8.55	9.26	5.14	3.38	4.93	0.29	3.90	7.14
50th-Percentile Queue Length [ft/ln]	73.03	160.6	16.42	96.12	213.8	231.6	128.6	84.53	123.1	7.27	97.60	178.5
95th-Percentile Queue Length [veh/ln]	5.26	10.58	1.18	6.92	13.35	14.26	8.86	6.09	8.57	0.52	7.03	11.52
95th-Percentile Queue Length [ft/ln]	131.4	264.5	29.55	173.0	333.7	356.4	221.6	152.1	214.1	13.09	175.6	288.1

Movement, Approach, & Intersection Results

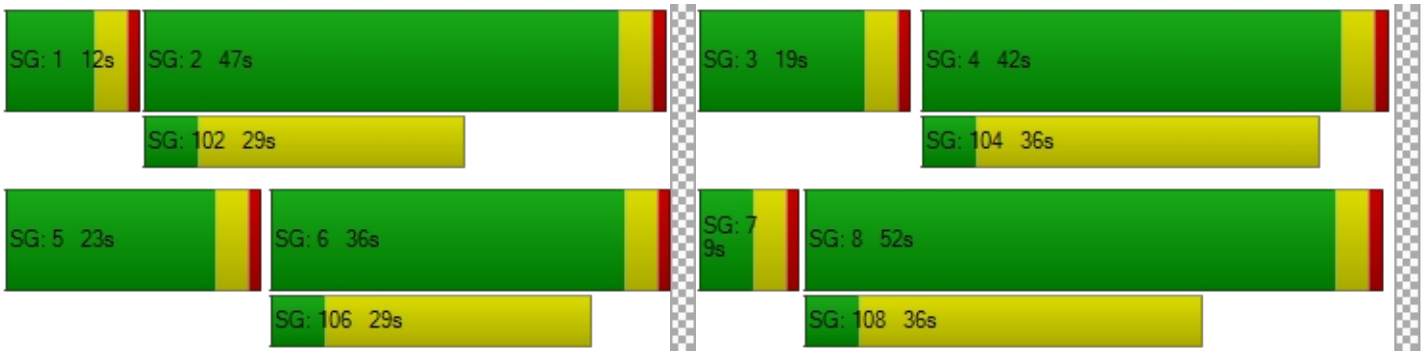
d_M, Delay for Movement [s/veh]	62.41	20.59	16.33	57.81	20.39	23.17	57.82	35.46	37.93	60.42	45.69	56.76
Movement LOS	E	C	B	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	26.39			25.48			45.13			50.91		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	32.00											
Intersection LOS	C											
Intersection V/C	0.597											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.173	3.262	2.850	2.763
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	717	800	633
d_b, Bicycle Delay [s]	32.27	24.70	21.60	28.02
l_b,int, Bicycle LOS Score for Intersection	2.260	2.696	2.226	1.995
Bicycle LOS	B	B	B	A

Sequence

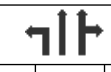
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	55.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	268	102	147	286	257	107	507	78	172	1112	236
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	6	6	0	0	4	0	0	0	4	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	7	0	0	0	7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	126	290	108	156	314	272	113	537	94	182	1179	250
Peak Hour Factor	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	34	77	29	42	84	73	30	143	25	49	315	67
Total Analysis Volume [veh/h]	135	310	115	167	335	291	121	574	100	194	1260	267
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	36	36	16	41	0	13	51	0	17	55	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	32	45	12	37	37	9	51	51	9	51	51
g / C, Green / Cycle	0.06	0.27	0.38	0.10	0.31	0.31	0.08	0.42	0.42	0.08	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.04	0.17	0.08	0.10	0.19	0.19	0.07	0.13	0.13	0.06	0.43	0.44
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1530	1714	3427	1668	3329	1800	1694
c, Capacity [veh/h]	187	480	579	171	559	475	129	1446	704	260	765	720
d1, Uniform Delay [s]	55.71	38.98	25.09	53.85	35.04	35.22	55.24	23.10	23.15	54.14	34.50	34.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.48	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.21	6.57	0.77	26.25	4.69	5.79	24.92	0.12	0.26	4.22	34.48	46.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.65	0.20	0.97	0.60	0.61	0.94	0.31	0.32	0.75	1.01	1.05
d, Delay for Lane Group [s/veh]	60.92	45.55	25.86	80.10	39.74	41.01	80.15	23.22	23.41	58.37	68.98	81.00
Lane Group LOS	E	D	C	F	D	D	F	C	C	E	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.15	8.95	2.35	6.27	9.00	7.99	4.53	4.27	4.26	3.02	28.99	29.69
50th-Percentile Queue Length [ft/ln]	53.65	223.7	58.65	156.6	225.0	199.6	113.2	106.8	106.4	75.59	724.7	742.2
95th-Percentile Queue Length [veh/ln]	3.86	13.86	4.22	10.37	13.92	12.62	8.02	7.66	7.64	5.44	38.13	39.98
95th-Percentile Queue Length [ft/ln]	96.56	346.4	105.5	259.3	348.0	315.5	200.4	191.6	191.1	136.0	953.2	999.5

Movement, Approach, & Intersection Results

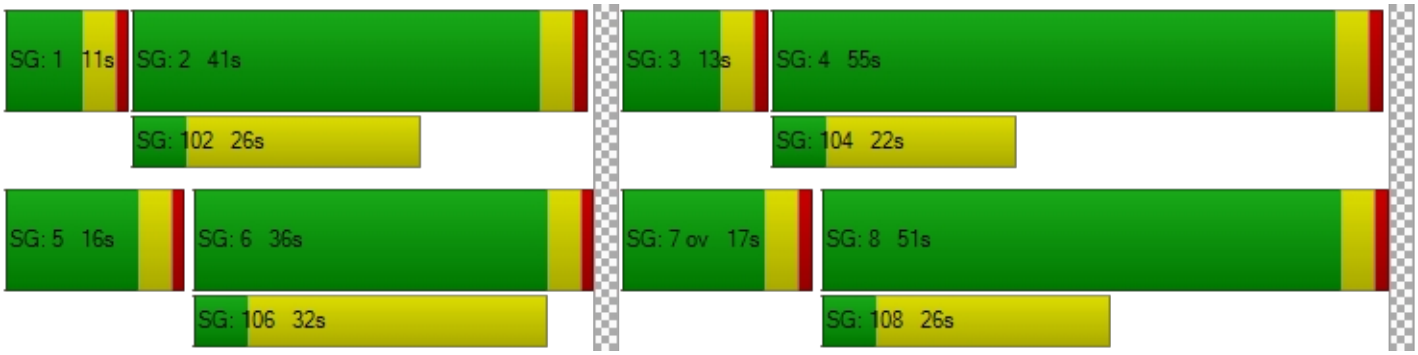
d_M, Delay for Movement [s/veh]	60.92	45.55	25.86	80.10	39.74	41.01	80.15	23.26	23.41	58.37	73.62	81.00
Movement LOS	E	D	C	F	D	D	F	C	C	E	E	F
d_A, Approach Delay [s/veh]	45.21			48.70			31.94			73.05		
Approach LOS	D			D			C			E		
d_I, Intersection Delay [s/veh]	55.58											
Intersection LOS	E											
Intersection V/C	0.785											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.661	2.606	2.871	3.055
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	617	783	850
d_b, Bicycle Delay [s]	32.27	28.70	22.20	19.84
l_b,int, Bicycle LOS Score for Intersection	2.484	2.214	1.997	2.979
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.470

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	367	0	567	0	537	236	0	946	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.000	1.060	1.060	1.000	1.060	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	23	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	412	0	601	0	569	250	0	1003	0
Peak Hour Factor	1.000	1.000	1.000	0.908	1.000	0.908	1.000	0.908	0.908	1.000	0.908	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	113	0	165	0	157	69	0	276	0
Total Analysis Volume [veh/h]	0	0	0	454	0	662	0	627	275	0	1105	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Split	Permi	Split	Permi	Permi	Unsig	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	71	0	0	0	49	0	0	49	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		34	34	78	78
g / C, Green / Cycle		0.28	0.28	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate		0.14	0.24	0.13	0.23
s, saturation flow rate [veh/h]		3329	2708	4903	4903
c, Capacity [veh/h]		938	763	3194	3194
d1, Uniform Delay [s]		35.83	40.96	8.36	9.41
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.39	3.16	0.14	0.30
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.48	0.87	0.20	0.35
d, Delay for Lane Group [s/veh]		36.22	44.12	8.49	9.71
Lane Group LOS		D	D	A	A
Critical Lane Group		No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		5.59	9.57	2.13	4.23
50th-Percentile Queue Length [ft/ln]		139.79	239.28	53.17	105.69
95th-Percentile Queue Length [veh/ln]		9.47	14.64	3.83	7.60
95th-Percentile Queue Length [ft/ln]		236.75	366.12	95.71	189.98

Movement, Approach, & Intersection Results

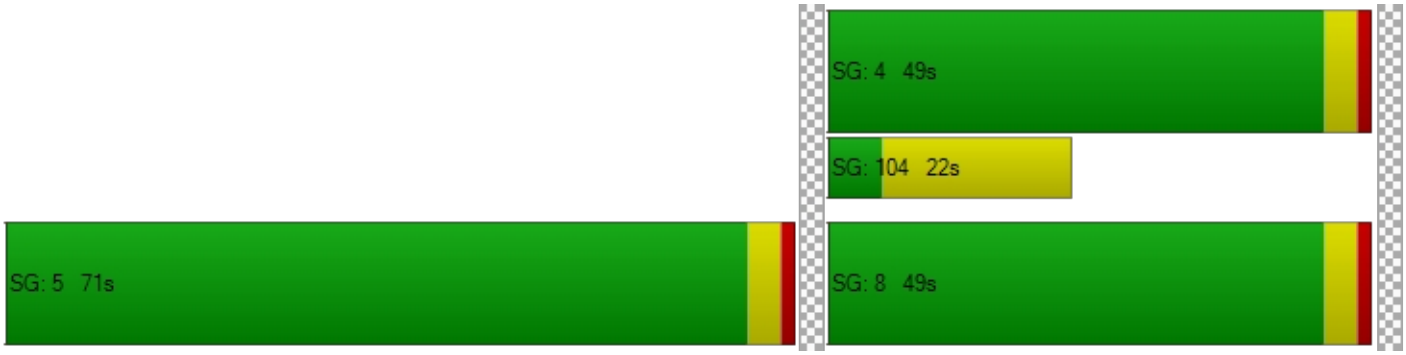
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	36.22	0.00	44.12	0.00	8.49	0.00	0.00	9.71	0.00
Movement LOS				D		D		A			A	
d_A, Approach Delay [s/veh]	0.00			40.91			8.49			9.71		
Approach LOS	A			D			A			A		
d_I, Intersection Delay [s/veh]	21.66											
Intersection LOS	C											
Intersection V/C	0.470											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.533	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1117	750	750
d_b, Bicycle Delay [s]	60.00	11.70	23.44	23.44
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	1.904	2.167
Bicycle LOS	D	A	A	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	30.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.525

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	278	2	306	0	0	0	354	565	0	0	1595	179
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	23	0	0	0	48
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	295	2	324	0	0	0	375	622	0	0	1691	238
Peak Hour Factor	0.952	0.952	0.952	1.000	1.000	1.000	0.952	0.952	1.000	1.000	0.952	0.952
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	77	1	85	0	0	0	98	163	0	0	444	63
Total Analysis Volume [veh/h]	310	2	340	0	0	0	394	653	0	0	1776	250
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Unsig
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	28	0	0	0	0	32	92	0	0	60	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	45		17	67	46
g / C, Green / Cycle	0.37	0.37	0.37		0.14	0.56	0.38
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.14		0.12	0.13	0.27
s, saturation flow rate [veh/h]	1714	1596	1530		3329	4903	6538
c, Capacity [veh/h]	642	598	573		471	2741	2512
d1, Uniform Delay [s]	27.11	27.14	27.16		50.17	13.47	31.24
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	1.55	1.69	1.77		4.02	0.04	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.36	0.36		0.84	0.24	0.71
d, Delay for Lane Group [s/veh]	28.66	28.83	28.93		54.19	13.51	31.61
Lane Group LOS	C	C	C		D	B	C
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.03	4.75	4.59		6.02	2.98	10.81
50th-Percentile Queue Length [ft/ln]	125.8	118.6	114.6		150.49	74.58	270.34
95th-Percentile Queue Length [veh/ln]	8.71	8.32	8.10		10.04	5.37	16.21
95th-Percentile Queue Length [ft/ln]	217.7	208.0	202.4		251.09	134.25	405.17

Movement, Approach, & Intersection Results

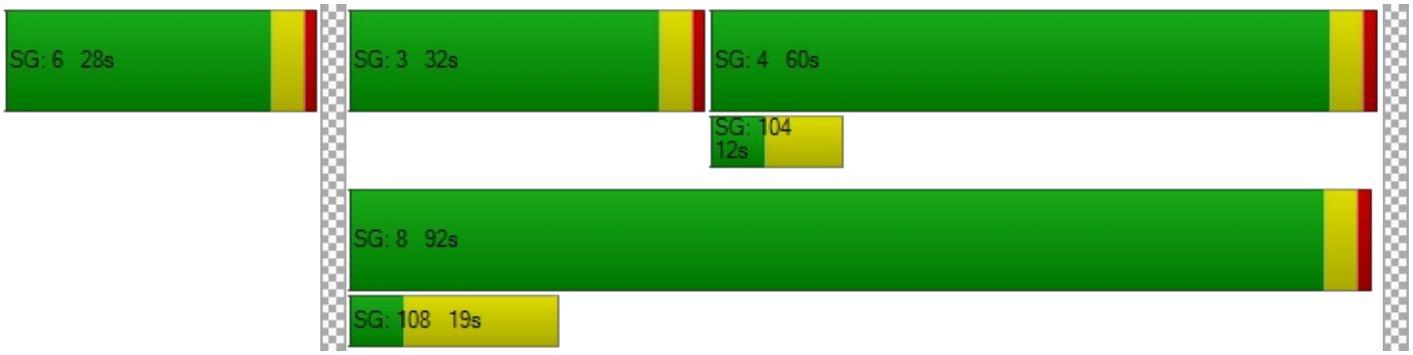
d_M, Delay for Movement [s/veh]	28.71	28.83	28.89	0.00	0.00	0.00	54.19	13.51	0.00	0.00	31.61	0.00
Movement LOS	C	C	C				D	B			C	
d_A, Approach Delay [s/veh]	28.80			0.00			28.82			31.61		
Approach LOS	C			A			C			C		
d_I, Intersection Delay [s/veh]	30.24											
Intersection LOS	C											
Intersection V/C	0.525											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.305	1.923	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	0	1467	933
d_b, Bicycle Delay [s]	38.40	60.00	4.27	17.07
l_b,int, Bicycle LOS Score for Intersection	2.635	4.132	2.135	2.292
Bicycle LOS	B	D	B	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	63	529	155	69	828	410	232	502	139	414	1336	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	42	45	0	32	0	0	0	0	33	0	0
Site-Generated Trips [veh/h]	48	143	2	0	180	0	0	0	23	57	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	746	211	73	1090	435	246	532	170	529	1416	70
Peak Hour Factor	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	31	203	57	20	296	118	67	145	46	144	385	19
Total Analysis Volume [veh/h]	125	811	229	79	1185	473	267	578	185	575	1539	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	43	0	9	43	0	15	40	0	28	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	45	45	5	45	45	11	32	32	23	43	43
g / C, Green / Cycle	0.04	0.38	0.38	0.04	0.37	0.37	0.09	0.26	0.26	0.19	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.04	0.17	0.15	0.02	0.24	0.31	0.08	0.12	0.12	0.17	0.31	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	139	1839	574	129	1825	569	305	1291	403	631	1771	553
d1, Uniform Delay [s]	57.25	28.08	27.56	56.77	31.19	34.23	53.82	36.91	37.04	47.65	35.69	25.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.15	0.77	2.07	4.59	1.81	13.21	7.83	0.24	0.82	5.58	1.42	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.44	0.40	0.61	0.65	0.83	0.87	0.45	0.46	0.91	0.87	0.14
d, Delay for Lane Group [s/veh]	75.40	28.85	29.63	61.37	32.99	47.45	61.65	37.15	37.85	53.23	37.11	25.88
Lane Group LOS	E	C	C	E	C	D	E	D	D	D	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.24	5.94	5.16	1.26	9.70	14.43	4.31	4.76	4.65	8.88	14.01	1.49
50th-Percentile Queue Length [ft/ln]	55.92	148.4	128.9	31.56	242.4	360.8	107.6	119.1	116.3	221.9	350.2	37.27
95th-Percentile Queue Length [veh/ln]	4.03	9.94	8.88	2.27	14.80	20.66	7.71	8.34	8.19	13.76	20.15	2.68
95th-Percentile Queue Length [ft/ln]	100.6	248.4	222.1	56.80	370.0	516.6	192.7	208.5	204.7	344.1	503.7	67.08

Movement, Approach, & Intersection Results

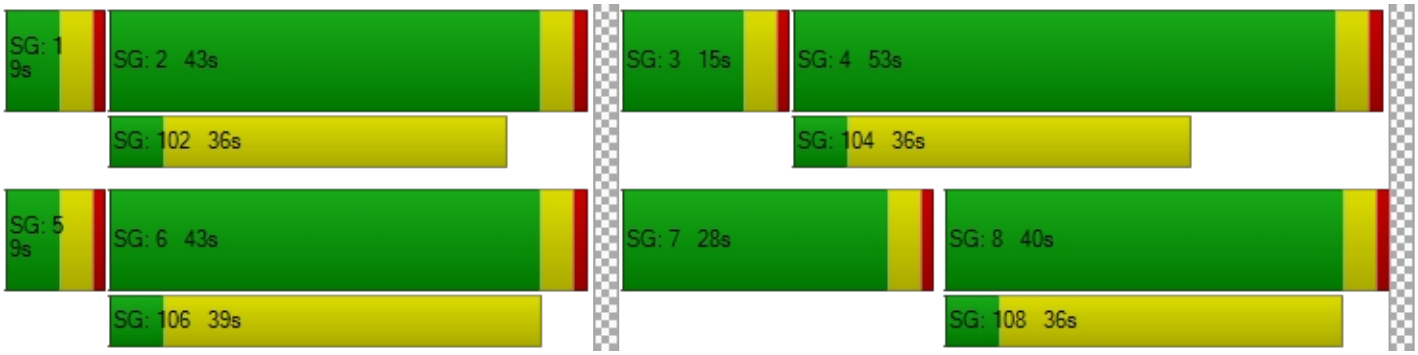
d_M, Delay for Movement [s/veh]	75.40	28.85	29.63	61.37	32.99	47.45	61.65	37.15	37.85	53.23	37.11	25.88
Movement LOS	E	C	C	E	C	D	E	D	D	D	D	C
d_A, Approach Delay [s/veh]	34.00			38.22			43.63			40.95		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	39.30											
Intersection LOS	D											
Intersection V/C	0.741											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.201	3.178	3.374	3.282
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	650	600	817
d_b, Bicycle Delay [s]	27.34	27.34	29.40	21.00
l_b,int, Bicycle LOS Score for Intersection	2.200	2.515	2.126	2.764
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.504

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	239	13	94	239	197	132	419	37	45	589	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	38	0	0	27	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	2	0	0	50	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	253	14	100	253	209	140	484	39	48	701	87
Peak Hour Factor	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	21	76	4	30	76	63	42	146	12	14	212	26
Total Analysis Volume [veh/h]	83	306	17	121	306	252	169	585	47	58	847	105
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	36	0	16	40	0	23	44	0	24	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	54	54	10	57	57	14	34	34	5	26	26
g / C, Green / Cycle	0.06	0.45	0.45	0.08	0.48	0.48	0.11	0.29	0.29	0.04	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.01	0.07	0.17	0.17	0.10	0.12	0.03	0.03	0.19	0.19
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1772	1512	1714	4903	1506	1687	3427	1701
c, Capacity [veh/h]	104	1545	690	146	842	718	197	1400	430	77	741	368
d1, Uniform Delay [s]	55.65	19.88	18.31	54.04	19.88	19.94	52.16	34.78	31.62	56.62	45.25	45.31
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.10	0.29	0.07	11.32	1.17	1.40	10.35	0.20	0.11	13.99	3.02	6.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.20	0.02	0.83	0.36	0.36	0.86	0.42	0.11	0.76	0.86	0.86
d, Delay for Lane Group [s/veh]	68.75	20.17	18.37	65.36	21.05	21.34	62.50	34.98	31.73	70.60	48.27	51.33
Lane Group LOS	E	C	B	E	C	C	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.86	2.65	0.28	4.05	5.53	4.84	5.56	4.66	1.03	2.04	9.38	9.67
50th-Percentile Queue Length [ft/ln]	71.44	66.26	6.94	101.3	138.2	120.9	138.9	116.4	25.70	50.94	234.3	241.7
95th-Percentile Queue Length [veh/ln]	5.14	4.77	0.50	7.30	9.38	8.44	9.42	8.20	1.85	3.67	14.40	14.77
95th-Percentile Queue Length [ft/ln]	128.5	119.2	12.49	182.4	234.5	211.0	235.6	204.9	46.27	91.68	359.9	369.2

Movement, Approach, & Intersection Results

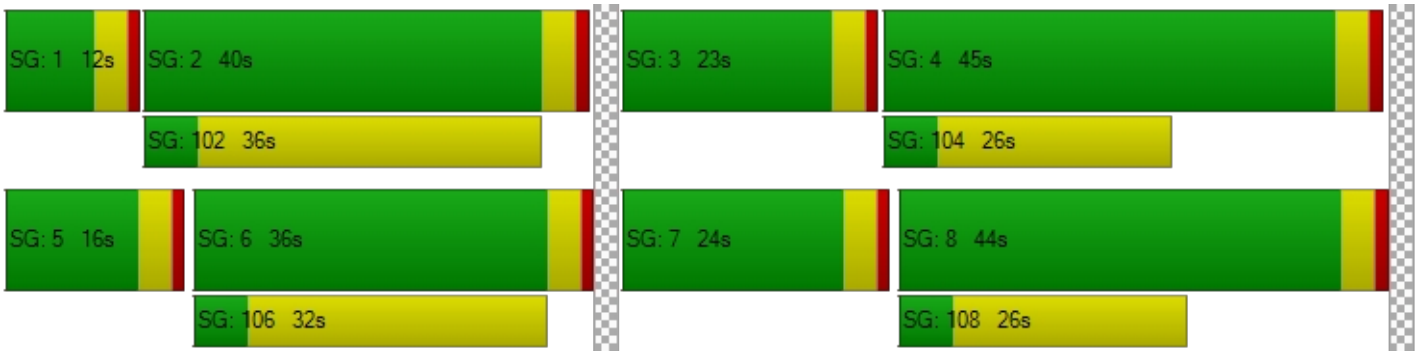
d_M, Delay for Movement [s/veh]	68.75	20.17	18.37	65.36	21.06	21.34	62.50	34.98	31.73	70.60	49.03	51.33
Movement LOS	E	C	B	E	C	C	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	30.02			29.06			40.60			50.51		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.87											
Intersection LOS	D											
Intersection V/C	0.504											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.601	2.673	3.079	2.952
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	667	683
d_b, Bicycle Delay [s]	32.27	29.40	26.67	26.00
l_b,int, Bicycle LOS Score for Intersection	1.895	2.120	2.000	2.115
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	48.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.879

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	120	571	733	124	771	237	274	346	109	156	659	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	2	2	0	0	9	11	21	0	2	14	0
Site-Generated Trips [veh/h]	0	0	0	0	0	15	2	1	0	0	28	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	607	779	131	817	275	303	389	116	167	741	108
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	34	161	207	35	217	73	80	103	31	44	197	29
Total Analysis Volume [veh/h]	135	644	827	139	867	292	322	413	123	177	787	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	61	0	14	55	0	15	26	0	19	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	11	61	61	10	59	59	11	25	25	9	22	36
g / C, Green / Cycle	0.09	0.51	0.51	0.08	0.50	0.50	0.09	0.21	0.21	0.07	0.19	0.30
(v / s)_i Volume / Saturation Flow Rate	0.08	0.36	0.54	0.08	0.25	0.19	0.10	0.08	0.08	0.05	0.16	0.08
s, saturation flow rate [veh/h]	1714	1800	1530	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	162	911	774	143	1695	757	305	1007	314	239	910	462
d1, Uniform Delay [s]	53.38	22.79	29.63	54.87	20.51	18.93	54.50	41.38	41.21	54.58	47.41	31.59
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.39	4.61	52.07	28.98	1.11	1.49	39.96	0.27	0.79	4.43	2.62	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.71	1.07	0.97	0.51	0.39	1.06	0.41	0.39	0.74	0.86	0.25
d, Delay for Lane Group [s/veh]	63.76	27.40	81.70	83.85	21.61	20.42	94.46	41.65	42.00	59.01	50.03	31.86
Lane Group LOS	E	C	F	F	C	C	F	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.47	14.77	32.48	5.34	8.35	5.34	6.30	3.57	3.22	2.77	7.81	2.57
50th-Percentile Queue Length [ft/ln]	111.7	369.3	811.8	133.3	208.6	133.5	157.3	89.29	80.62	69.29	195.1	64.26
95th-Percentile Queue Length [veh/ln]	7.94	21.08	44.05	9.12	13.09	9.13	10.61	6.43	5.80	4.99	12.39	4.63
95th-Percentile Queue Length [ft/ln]	198.4	526.9	1101.	228.1	327.1	228.3	265.3	160.7	145.1	124.7	309.6	115.6

Movement, Approach, & Intersection Results

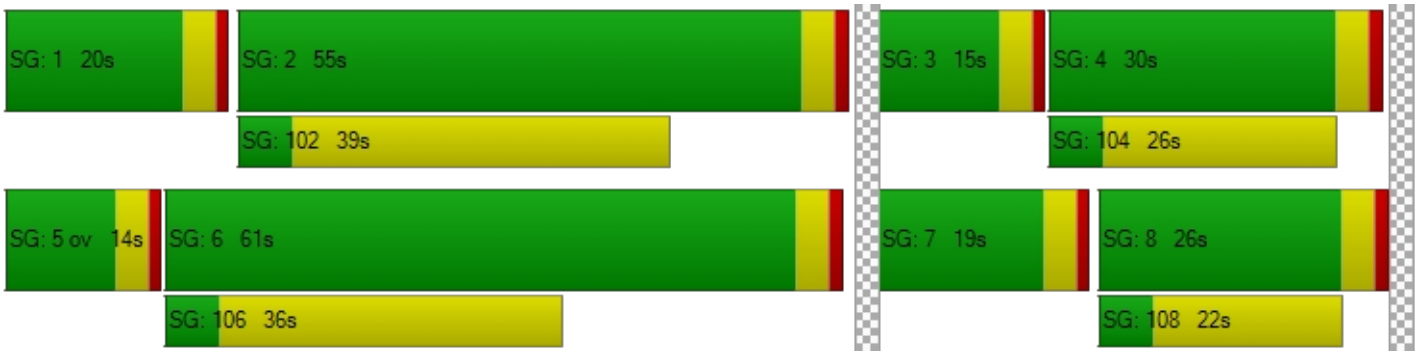
d_M, Delay for Movement [s/veh]	63.76	27.40	81.70	83.85	21.61	20.42	94.46	41.65	42.00	59.01	50.03	31.86
Movement LOS	E	C	F	F	C	C	F	D	D	E	D	C
d_A, Approach Delay [s/veh]	58.42			28.01			61.52			49.57		
Approach LOS	E			C			E			D		
d_I, Intersection Delay [s/veh]	48.84											
Intersection LOS	D											
Intersection V/C	0.879											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.856	2.855	3.089	3.221
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	850	367	433
d_b, Bicycle Delay [s]	16.54	19.84	40.02	36.82
l_b,int, Bicycle LOS Score for Intersection	2.885	2.630	2.032	2.153
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	157	629	56	220	1054	104	94	405	109	90	492	139
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	5	0	0	4	6	10	6	0	0	4	0
Site-Generated Trips [veh/h]	0	0	0	0	4	14	1	0	0	0	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	672	59	233	1125	130	111	435	116	95	533	147
Peak Hour Factor	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	47	189	17	65	316	36	31	122	33	27	150	41
Total Analysis Volume [veh/h]	186	754	66	262	1263	146	125	488	130	107	598	165
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	40	0	23	50	0	10	47	0	10	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	68	68	12	71	71	6	19	19	6	18	18
g / C, Green / Cycle	0.07	0.57	0.57	0.10	0.59	0.59	0.05	0.16	0.16	0.05	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.06	0.15	0.04	0.08	0.37	0.10	0.04	0.10	0.08	0.03	0.12	0.11
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	239	2774	866	325	2028	906	166	766	239	156	751	234
d1, Uniform Delay [s]	54.77	13.37	11.82	53.02	15.83	11.05	56.26	47.44	46.69	56.30	49.00	48.23
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.47	0.24	0.17	4.69	1.45	0.38	6.65	0.89	1.92	5.19	1.98	3.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.27	0.08	0.81	0.62	0.16	0.75	0.64	0.54	0.68	0.80	0.70
d, Delay for Lane Group [s/veh]	60.24	13.61	12.00	57.71	17.28	11.43	62.91	48.33	48.61	61.49	50.98	52.06
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.95	3.50	0.84	4.08	11.12	1.82	2.02	4.62	3.72	1.71	5.89	4.94
50th-Percentile Queue Length [ft/ln]	73.63	87.50	20.99	101.9	277.9	45.62	50.57	115.6	92.89	42.73	147.3	123.4
95th-Percentile Queue Length [veh/ln]	5.30	6.30	1.51	7.34	16.59	3.28	3.64	8.15	6.69	3.08	9.87	8.58
95th-Percentile Queue Length [ft/ln]	132.5	157.5	37.78	183.5	414.7	82.11	91.03	203.8	167.2	76.92	246.8	214.5

Movement, Approach, & Intersection Results

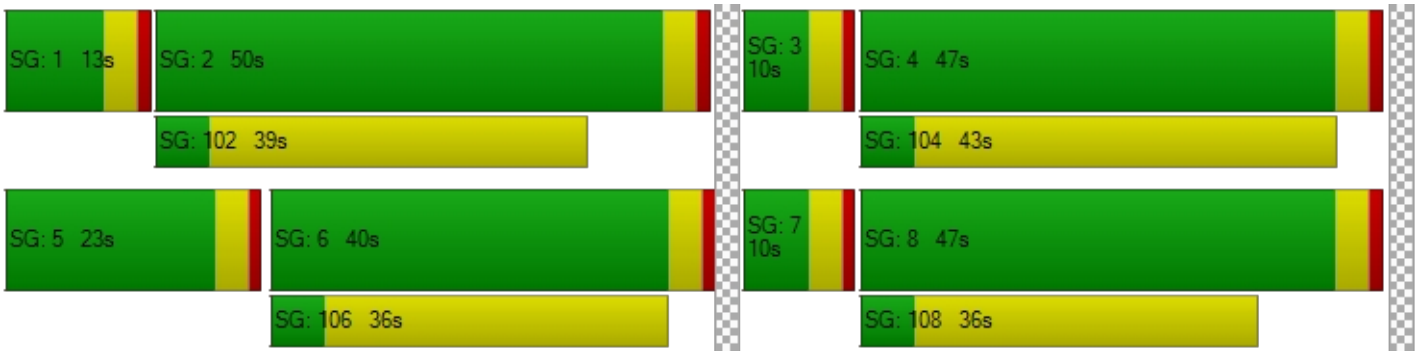
d_M, Delay for Movement [s/veh]	60.24	13.61	12.00	57.71	17.28	11.43	62.91	48.33	48.61	61.49	50.98	52.06
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	22.13			23.11			50.83			52.48		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.64											
Intersection LOS	C											
Intersection V/C	0.584											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.136	3.334	3.145	3.047
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	767	717	717
d_b, Bicycle Delay [s]	29.40	22.82	24.70	24.70
l_b,int, Bicycle LOS Score for Intersection	2.113	2.938	1.968	2.038
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	47.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	141	239	145	76	282	121	87	249	108	94	464	69
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	12	1	0	8	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	265	155	81	321	128	92	264	114	100	492	73
Peak Hour Factor	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	44	79	46	24	95	38	27	78	34	30	146	22
Total Analysis Volume [veh/h]	177	314	184	96	381	152	109	313	135	119	584	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	29	0	12	23	23	0	28	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	41	41	8	35	35	23	23	31	31
g / C, Green / Cycle	0.12	0.35	0.35	0.07	0.30	0.30	0.19	0.19	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.10	0.15	0.15	0.06	0.11	0.10	0.17	0.17	0.24	0.24
s, saturation flow rate [veh/h]	1714	1800	1581	1714	3427	1530	1768	1499	1775	1573
c, Capacity [veh/h]	200	620	545	114	1010	451	343	291	464	411
d1, Uniform Delay [s]	52.21	30.19	30.25	55.37	33.59	33.15	46.92	47.04	42.85	42.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.17	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.12	2.13	2.47	14.82	1.08	2.02	6.97	8.74	9.93	11.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.43	0.43	0.84	0.38	0.34	0.87	0.88	0.90	0.90
d, Delay for Lane Group [s/veh]	64.33	32.32	32.72	70.18	34.66	35.16	53.89	55.78	52.78	53.94
Lane Group LOS	E	C	C	E	C	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.92	6.22	5.59	3.34	4.57	3.73	9.32	8.15	13.20	11.84
50th-Percentile Queue Length [ft/ln]	147.9	155.5	139.6	83.52	114.2	93.30	232.91	203.85	329.94	296.02
95th-Percentile Queue Length [veh/ln]	9.90	10.31	9.46	6.01	8.08	6.72	14.32	12.84	19.16	17.48
95th-Percentile Queue Length [ft/ln]	247.6	257.8	236.5	150.3	201.8	167.9	358.06	320.93	478.89	437.10

Movement, Approach, & Intersection Results

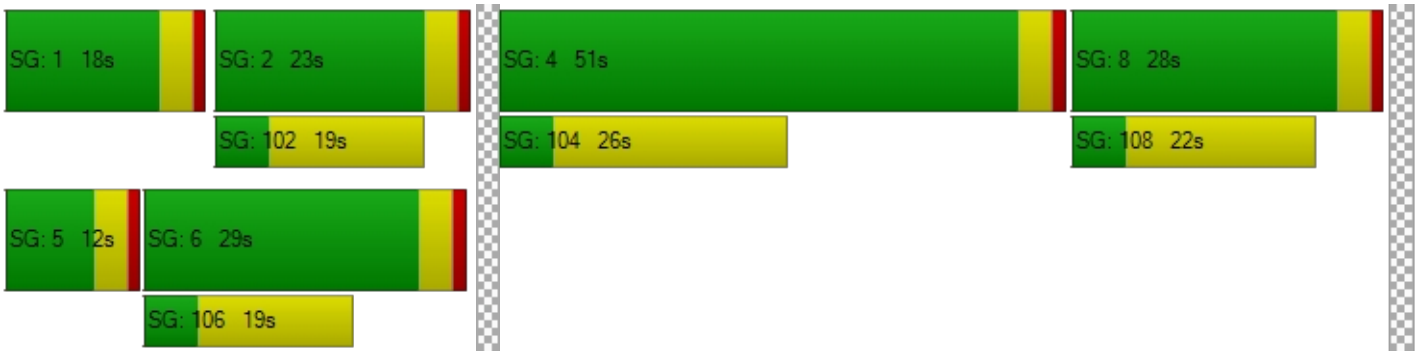
d_M, Delay for Movement [s/veh]	64.33	32.39	32.72	70.18	34.66	35.16	53.89	54.63	55.78	52.78	53.35	53.94
Movement LOS	E	C	C	E	C	D	D	D	E	D	D	D
d_A, Approach Delay [s/veh]	40.85			40.20			54.76			53.33		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	47.34											
Intersection LOS	D											
Intersection V/C	0.622											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.571	2.653	2.505	2.483
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	317	400	783
d_b, Bicycle Delay [s]	37.60	42.50	38.40	22.20
l_b,int, Bicycle LOS Score for Intersection	2.116	2.079	2.019	2.211
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	32.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.896

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	150	0	849	0	520	798	0	1435	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.000	1.060	1.060	1.000	1.060	1.000
In-Process Volume [veh/h]	0	0	0	26	0	0	0	12	0	0	16	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	15	0	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	185	0	900	0	578	846	0	1542	0
Peak Hour Factor	1.000	1.000	1.000	0.945	1.000	0.945	1.000	0.945	0.945	1.000	0.945	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	49	0	238	0	153	224	0	408	0
Total Analysis Volume [veh/h]	0	0	0	196	0	952	0	612	895	0	1632	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	43	0	0	0	77	0	0	77	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		39	39	39	73	73	73
g / C, Green / Cycle		0.32	0.32	0.32	0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate		0.11	0.31	0.31	0.12	0.58	0.33
s, saturation flow rate [veh/h]		1714	1530	1530	4903	1530	4903
c, Capacity [veh/h]		555	495	495	2989	933	2989
d1, Uniform Delay [s]		30.98	39.83	39.83	10.45	22.04	13.71
k, delay calibration		0.11	0.43	0.43	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.38	28.98	28.98	0.16	21.19	0.72
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.35	0.96	0.96	0.20	0.96	0.55
d, Delay for Lane Group [s/veh]		31.36	68.81	68.81	10.61	43.23	14.43
Lane Group LOS		C	E	E	B	D	B
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		4.41	17.57	17.57	2.40	27.33	8.46
50th-Percentile Queue Length [ft/ln]		110.2	439.3	439.3	60.08	683.18	211.43
95th-Percentile Queue Length [veh/ln]		7.85	24.45	24.45	4.33	35.90	13.23
95th-Percentile Queue Length [ft/ln]		196.3	611.2	611.2	108.15	897.51	330.66

Movement, Approach, & Intersection Results

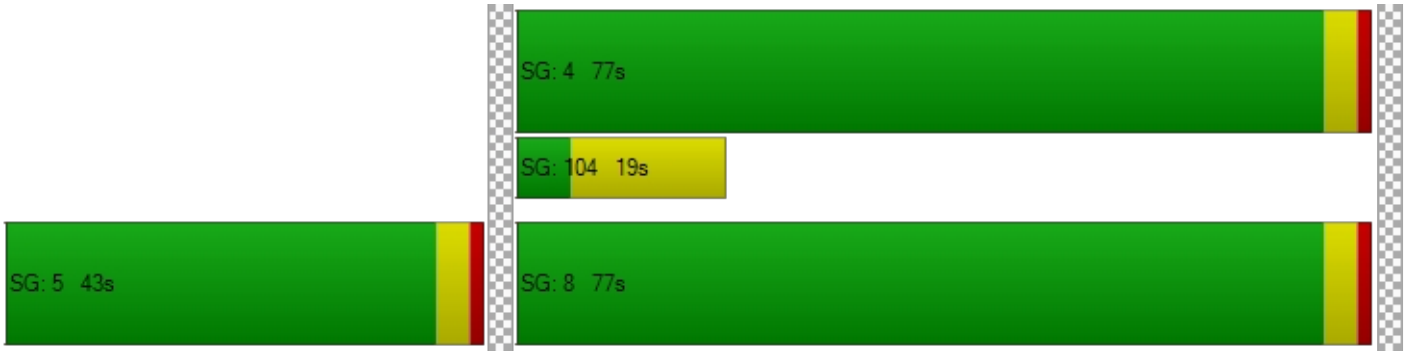
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	31.36	0.00	68.81	0.00	10.61	43.23	0.00	14.43	0.00
Movement LOS				C		E		B	D		B	
d_A, Approach Delay [s/veh]	0.00			62.42			29.98			14.43		
Approach LOS	A			E			C			B		
d_I, Intersection Delay [s/veh]	32.75											
Intersection LOS	C											
Intersection V/C	0.896											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.426	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	650	1217	1217
d_b, Bicycle Delay [s]	60.00	27.34	9.20	9.20
l_b,int, Bicycle LOS Score for Intersection	4.132	3.454	2.388	2.457
Bicycle LOS	D	C	B	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	873	0	494	0	0	0	0	441	0	0	1219	197
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	38	0	0	16	36
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	15	0	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	925	0	524	0	0	0	0	520	0	0	1313	245
Peak Hour Factor	0.879	1.000	0.879	1.000	1.000	1.000	1.000	0.879	1.000	1.000	0.879	0.879
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	263	0	149	0	0	0	0	148	0	0	373	70
Total Analysis Volume [veh/h]	1052	0	596	0	0	0	0	592	0	0	1494	279
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	97	0	0	0	0	0	0	23	0	0	23	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	48	48	48		64	64	64
g / C, Green / Cycle	0.40	0.40	0.40		0.53	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.32	0.32	0.36		0.12	0.30	0.18
s, saturation flow rate [veh/h]	1714	1697	1530		4903	4903	1530
c, Capacity [veh/h]	686	679	612		2615	2615	816
d1, Uniform Delay [s]	31.79	31.94	33.70		14.86	18.79	15.98
k, delay calibration	0.11	0.11	0.11		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.23	2.37	5.03		0.20	0.91	1.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.81	0.90		0.23	0.57	0.34
d, Delay for Lane Group [s/veh]	34.02	34.31	38.73		15.06	19.70	17.12
Lane Group LOS	C	C	D		B	B	B
Critical Lane Group	No	No	Yes		No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.28	14.37	15.54		2.89	9.28	4.57
50th-Percentile Queue Length [ft/ln]	357.0	359.2	388.5		72.18	231.99	114.36
95th-Percentile Queue Length [veh/ln]	20.48	20.59	22.01		5.20	14.28	8.08
95th-Percentile Queue Length [ft/ln]	511.9	514.6	550.2		129.93	356.89	202.05

Movement, Approach, & Intersection Results

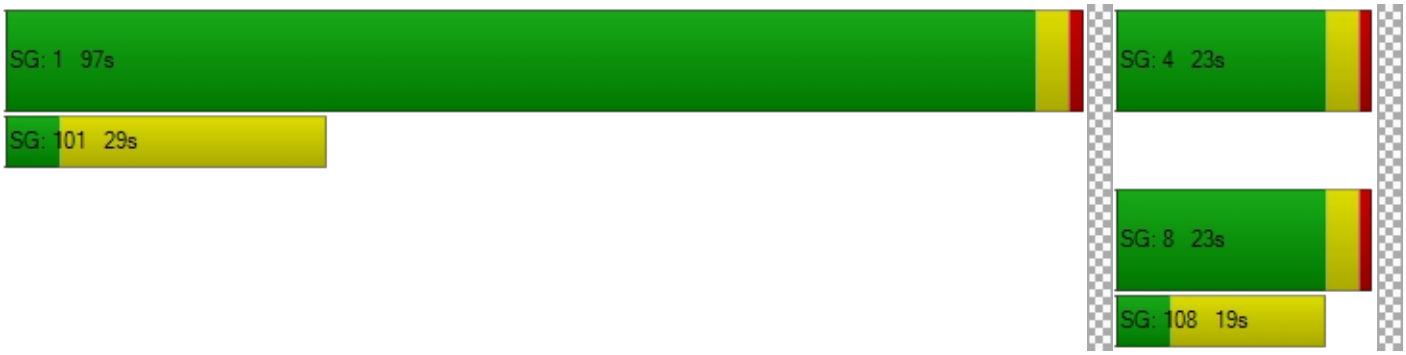
d_M, Delay for Movement [s/veh]	34.16	0.00	38.38	0.00	0.00	0.00	0.00	15.06	0.00	0.00	19.70	17.12
Movement LOS	C		D					B			B	B
d_A, Approach Delay [s/veh]	35.68			0.00			15.06			19.30		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	25.40											
Intersection LOS	C											
Intersection V/C	0.664											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.548	0.000	0.000	3.022
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1550	0	317	317
d_b, Bicycle Delay [s]	3.04	60.00	42.50	42.50
l_b,int, Bicycle LOS Score for Intersection	4.279	4.132	1.885	2.535
Bicycle LOS	E	D	A	B

Sequence

Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	43.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	153	199	67	50	341	230	100	448	210	342	1200	115
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	52	13	1	0	8	0	0	0	38	0	0	0
Site-Generated Trips [veh/h]	5	0	0	3	11	0	0	2	13	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	219	224	72	56	380	244	106	477	274	363	1272	122
Peak Hour Factor	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	59	61	20	15	103	66	29	129	74	99	345	33
Total Analysis Volume [veh/h]	238	243	78	61	413	265	115	518	298	394	1381	132
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	47	0	10	36	0	9	42	42	21	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	44	44	5	32	32	5	39	60	16	50	50
g / C, Green / Cycle	0.14	0.36	0.36	0.05	0.27	0.27	0.04	0.32	0.50	0.13	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.05	0.04	0.20	0.20	0.03	0.15	0.19	0.12	0.40	0.09
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1569	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	243	654	556	79	482	420	139	1101	759	452	1423	635
d1, Uniform Delay [s]	51.33	28.11	25.62	56.59	40.22	40.29	57.08	32.55	18.90	50.85	34.35	22.45
k, delay calibration	0.12	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.29	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.35	1.62	0.53	14.37	10.18	11.86	11.79	0.31	0.88	5.39	6.11	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.37	0.14	0.77	0.75	0.75	0.83	0.47	0.39	0.87	0.97	0.21
d, Delay for Lane Group [s/veh]	75.68	29.73	26.15	70.96	50.40	52.15	68.87	32.86	19.78	56.24	40.46	22.61
Lane Group LOS	E	C	C	E	D	D	E	C	B	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.75	5.44	1.59	2.15	11.08	9.93	1.96	6.06	5.32	6.14	20.42	2.43
50th-Percentile Queue Length [ft/ln]	218.8	135.9	39.66	53.65	276.9	248.2	48.95	151.5	133.0	153.4	510.4	60.69
95th-Percentile Queue Length [veh/ln]	13.60	9.26	2.86	3.86	16.54	15.10	3.52	10.10	9.11	10.20	27.83	4.37
95th-Percentile Queue Length [ft/ln]	340.1	231.5	71.39	96.58	413.4	377.4	88.10	252.5	227.6	255.0	695.6	109.2

Movement, Approach, & Intersection Results

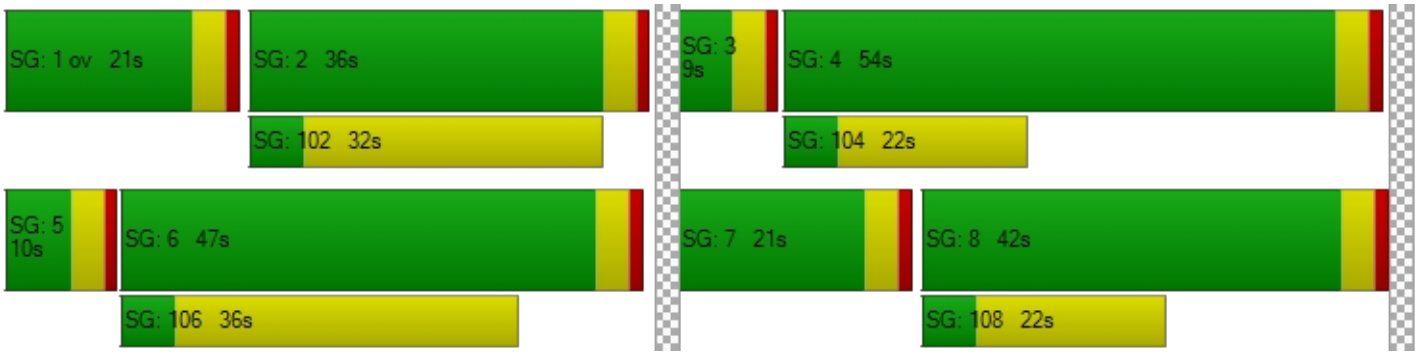
d_M, Delay for Movement [s/veh]	75.68	29.73	26.15	70.96	50.62	52.15	68.87	32.86	19.78	56.24	40.46	22.61
Movement LOS	E	C	C	E	D	D	E	C	B	E	D	C
d_A, Approach Delay [s/veh]	48.79			52.85			33.12			42.48		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	43.08											
Intersection LOS	D											
Intersection V/C	0.778											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.640	2.555	3.084	3.142
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	533	633	833
d_b, Bicycle Delay [s]	24.70	32.27	28.02	20.42
l_b,int, Bicycle LOS Score for Intersection	2.482	2.169	2.328	3.133
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	41.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	214	404	115	164	793	203	183	414	153	284	1138	98
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	91	29	0	72	0	1	0	0	19	0	0
Site-Generated Trips [veh/h]	0	193	5	0	267	0	0	0	5	34	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	227	712	156	174	1180	215	195	439	167	354	1206	104
Peak Hour Factor	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	62	193	42	47	320	58	53	119	45	96	327	28
Total Analysis Volume [veh/h]	246	772	169	189	1280	233	211	476	181	384	1308	113
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	24	43	0	21	40	40	13	36	0	20	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	19	44	44	15	40	53	9	29	29	16	36	55
g / C, Green / Cycle	0.16	0.37	0.37	0.13	0.33	0.44	0.08	0.24	0.24	0.13	0.30	0.46
(v / s)_i Volume / Saturation Flow Rate	0.14	0.16	0.11	0.11	0.26	0.15	0.06	0.10	0.12	0.12	0.27	0.07
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	272	1795	560	217	1639	677	250	1193	372	435	1465	702
d1, Uniform Delay [s]	49.61	28.61	27.10	51.43	35.98	21.99	54.81	38.06	38.97	51.26	40.23	18.97
k, delay calibration	0.14	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.32	0.75	1.38	10.21	3.77	1.39	7.65	0.22	0.99	6.06	2.11	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.43	0.30	0.87	0.78	0.34	0.85	0.40	0.49	0.88	0.89	0.16
d, Delay for Lane Group [s/veh]	62.93	29.37	28.49	61.63	39.75	23.37	62.47	38.27	39.96	57.32	42.34	19.07
Lane Group LOS	E	C	C	E	D	C	E	D	D	E	D	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.23	5.69	3.68	6.19	11.71	4.57	3.41	3.95	4.69	6.03	12.48	1.87
50th-Percentile Queue Length [ft/ln]	205.8	142.2	91.93	154.7	292.7	114.2	85.34	98.79	117.2	150.7	311.9	46.81
95th-Percentile Queue Length [veh/ln]	12.94	9.60	6.62	10.27	17.32	8.08	6.14	7.11	8.24	10.06	18.27	3.37
95th-Percentile Queue Length [ft/ln]	323.5	240.0	165.4	256.7	433.0	201.9	153.6	177.8	206.0	251.4	456.7	84.25

Movement, Approach, & Intersection Results

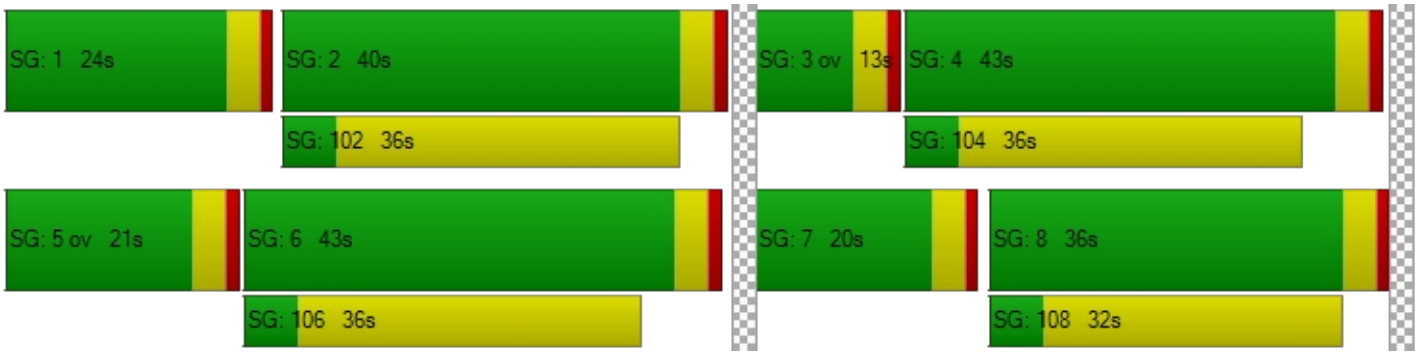
d_M, Delay for Movement [s/veh]	62.93	29.37	28.49	61.63	39.75	23.37	62.47	38.27	39.96	57.32	42.34	19.07
Movement LOS	E	C	C	E	D	C	E	D	D	E	D	B
d_A, Approach Delay [s/veh]	36.20			39.94			44.51			44.07		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.19											
Intersection LOS	D											
Intersection V/C	0.735											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.110	3.168	3.152	3.150
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	600	533	650
d_b, Bicycle Delay [s]	27.34	29.40	32.27	27.34
l_b,int, Bicycle LOS Score for Intersection	2.212	2.496	2.037	2.552
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	921.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.026

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	21	0	102	0	0	0	0	621	36	198	1526	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	1	0	0	0	0	29	0	2	19	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	5	0	0	34	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	0	109	0	0	0	0	692	38	212	1671	0
Peak Hour Factor	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	0	33	0	0	0	0	210	12	64	508	0
Total Analysis Volume [veh/h]	27	0	132	0	0	0	0	841	46	258	2030	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	2.03	0.00	0.23	0.00	0.00	0.00	0.00	0.01	0.00	0.33	0.02	0.00
d_M, Delay for Movement [s/veh]	921.7	1387.	658.0	982.7	767.1	20.03	17.72	0.00	0.00	11.99	0.00	0.00
Movement LOS	F	F	F	F	F	C	C	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	15.04	15.04	15.04	0.00	0.00	0.00	0.00	0.00	0.00	1.47	0.00	0.00
95th-Percentile Queue Length [ft/ln]	375.9	375.9	375.9	0.00	0.00	0.00	0.00	0.00	0.00	36.81	0.00	0.00
d_A, Approach Delay [s/veh]	702.80			589.97			0.00			1.35		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	34.44											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	47.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	143	515	78	132	724	162	149	428	114	235	797	78
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	0	0	2	0	0	23	0	0	15	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	5	0	0	27	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	152	550	83	140	769	172	158	482	121	249	887	83
Peak Hour Factor	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	150	23	38	210	47	43	132	33	68	243	23
Total Analysis Volume [veh/h]	166	602	91	153	841	188	173	527	132	272	970	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	41	0	19	43	0	17	29	0	31	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	42	42	13	42	42	13	28	28	21	36	36
g / C, Green / Cycle	0.11	0.35	0.35	0.10	0.35	0.35	0.11	0.24	0.24	0.18	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.10	0.20	0.20	0.09	0.29	0.30	0.10	0.15	0.09	0.16	0.28	0.06
s, saturation flow rate [veh/h]	1714	1800	1718	1714	1800	1688	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	186	628	600	180	623	584	186	808	361	303	1042	465
d1, Uniform Delay [s]	52.82	31.66	31.66	52.74	36.39	36.43	53.06	41.40	38.34	48.36	40.54	30.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.18	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.70	3.64	3.81	10.43	13.75	14.73	17.99	0.90	0.62	14.61	4.41	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.56	0.56	0.85	0.85	0.85	0.93	0.65	0.37	0.90	0.93	0.20
d, Delay for Lane Group [s/veh]	66.52	35.30	35.48	63.17	50.14	51.16	71.05	42.30	38.97	62.97	44.94	31.10
Lane Group LOS	E	D	D	E	D	D	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.64	8.93	8.56	5.05	16.60	15.77	6.09	7.13	3.32	9.18	14.38	1.99
50th-Percentile Queue Length [ft/ln]	140.9	223.2	213.9	126.2	414.9	394.3	152.3	178.1	83.06	229.4	359.6	49.81
95th-Percentile Queue Length [veh/ln]	9.53	13.83	13.36	8.74	23.28	22.29	10.14	11.51	5.98	14.15	20.60	3.59
95th-Percentile Queue Length [ft/ln]	238.3	345.7	333.9	218.4	581.9	557.1	253.5	287.6	149.5	353.6	515.1	89.66

Movement, Approach, & Intersection Results

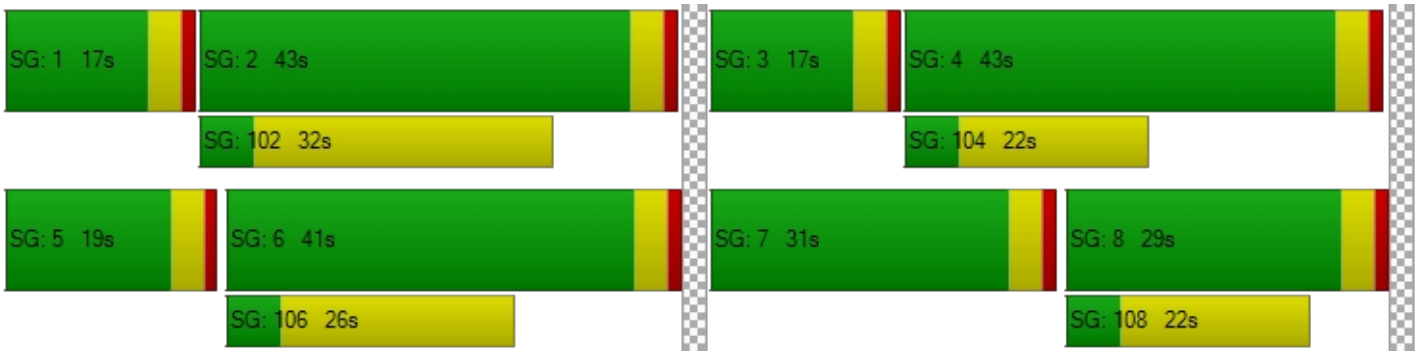
d_M, Delay for Movement [s/veh]	66.52	35.37	35.48	63.17	50.52	51.16	71.05	42.30	38.97	62.97	44.94	31.10
Movement LOS	E	D	D	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	41.40			52.26			47.75			47.67		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	47.70											
Intersection LOS	D											
Intersection V/C	0.776											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.725	2.714	2.818	2.810
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	650	417	650
d_b, Bicycle Delay [s]	28.70	27.34	37.60	27.34
l_b,int, Bicycle LOS Score for Intersection	2.268	2.535	2.246	2.659
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	42.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.702

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	79	436	79	192	814	126	211	375	100	151	611	125
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	9	2	0	8	2	3	14	0	3	9	0
Site-Generated Trips [veh/h]	0	0	0	0	6	5	0	5	0	0	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	471	86	204	877	141	227	417	106	163	672	133
Peak Hour Factor	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	23	131	24	57	243	39	63	116	29	45	186	37
Total Analysis Volume [veh/h]	93	522	95	226	972	156	252	462	118	181	745	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	30	0	25	43	0	29	36	0	29	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	38	38	18	47	47	20	34	34	15	29	29
g / C, Green / Cycle	0.07	0.31	0.31	0.15	0.39	0.39	0.16	0.28	0.28	0.12	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.05	0.15	0.06	0.13	0.28	0.10	0.15	0.13	0.08	0.11	0.22	0.10
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	114	1070	478	253	1348	602	281	970	433	212	832	372
d1, Uniform Delay [s]	55.26	33.49	30.27	50.18	30.83	24.59	49.18	35.66	33.43	51.51	43.95	38.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.15	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.89	1.59	0.93	10.40	3.36	1.04	12.96	0.36	0.34	9.35	3.70	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.49	0.20	0.89	0.72	0.26	0.90	0.48	0.27	0.85	0.90	0.40
d, Delay for Lane Group [s/veh]	68.15	35.08	31.20	60.58	34.19	25.63	62.14	36.02	33.76	60.86	47.65	38.74
Lane Group LOS	E	D	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.18	6.40	2.15	7.38	12.38	3.18	8.40	5.66	2.73	5.88	11.07	3.71
50th-Percentile Queue Length [ft/ln]	79.62	160.0	53.81	184.4	309.6	79.61	209.9	141.4	68.14	147.0	276.6	92.65
95th-Percentile Queue Length [veh/ln]	5.73	10.55	3.87	11.83	18.16	5.73	13.15	9.56	4.91	9.86	16.52	6.67
95th-Percentile Queue Length [ft/ln]	143.3	263.8	96.86	295.8	453.9	143.3	328.7	238.9	122.6	246.5	413.0	166.7

Movement, Approach, & Intersection Results

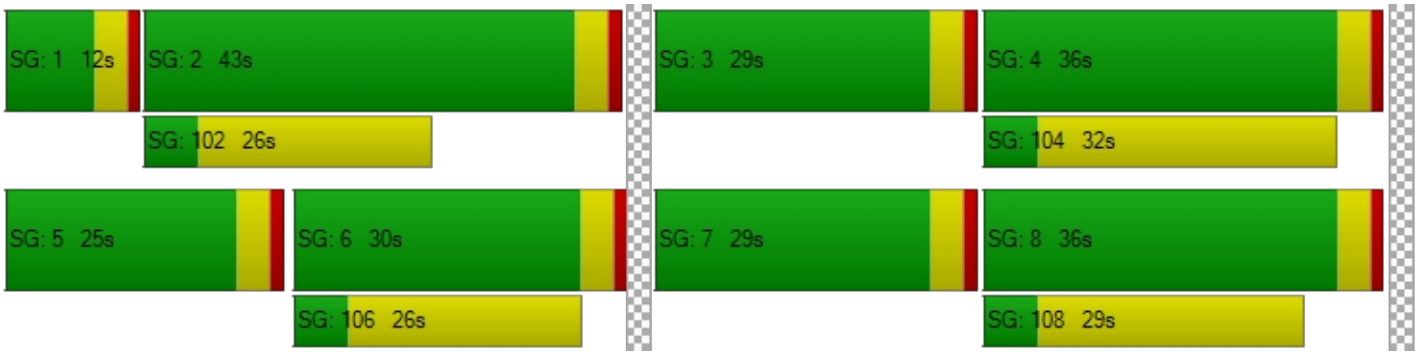
d_M, Delay for Movement [s/veh]	68.15	35.08	31.20	60.58	34.19	25.63	62.14	36.02	33.76	60.86	47.65	38.74
Movement LOS	E	D	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	38.90			37.61			43.61			48.66		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.08											
Intersection LOS	D											
Intersection V/C	0.702											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.885	3.018	2.765	2.770
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	650	533	533
d_b, Bicycle Delay [s]	36.82	27.34	32.27	32.27
l_b,int, Bicycle LOS Score for Intersection	2.145	2.677	2.246	2.445
Bicycle LOS	B	B	B	B

Sequence

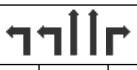
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	42.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.748

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	325	161	36	120	324	392	93	245	148	141	699	133
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	18	66	0	0	46	0	0	0	12	0	0	0
Site-Generated Trips [veh/h]	0	0	0	24	0	0	0	21	0	0	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	363	237	38	151	389	416	99	281	169	149	741	146
Peak Hour Factor	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	105	68	11	44	112	120	29	81	49	43	214	42
Total Analysis Volume [veh/h]	420	274	44	175	450	481	114	325	195	172	857	169
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	22	30	30	22	30	30	10	52	52	16	58	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	45	58	14	42	52	6	36	57	8	38	38
g / C, Green / Cycle	0.14	0.38	0.48	0.12	0.35	0.44	0.05	0.30	0.48	0.07	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.13	0.08	0.03	0.10	0.13	0.31	0.03	0.18	0.13	0.05	0.29	0.29
s, saturation flow rate [veh/h]	3329	3427	1530	1714	3427	1530	3329	1800	1530	3329	1800	1698
c, Capacity [veh/h]	476	1293	735	203	1209	667	166	542	731	232	578	545
d1, Uniform Delay [s]	50.44	25.28	16.68	51.95	28.93	27.83	56.07	35.74	18.77	54.76	39.12	39.17
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.21	0.21
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.57	0.37	0.16	10.35	0.88	6.62	4.91	1.07	0.19	4.64	10.63	11.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.21	0.06	0.86	0.37	0.72	0.68	0.60	0.27	0.74	0.91	0.92
d, Delay for Lane Group [s/veh]	56.01	25.65	16.84	62.30	29.81	34.44	60.98	36.81	18.96	59.40	49.75	50.64
Lane Group LOS	E	C	B	E	C	C	E	D	B	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.54	2.73	0.69	5.75	4.99	12.38	1.81	8.25	3.29	2.70	16.43	15.69
50th-Percentile Queue Length [ft/ln]	163.5	68.13	17.14	143.7	124.6	309.5	45.31	206.2	82.14	67.53	410.8	392.3
95th-Percentile Queue Length [veh/ln]	10.74	4.91	1.23	9.68	8.65	18.15	3.26	12.96	5.91	4.86	23.08	22.19
95th-Percentile Queue Length [ft/ln]	268.3	122.6	30.85	242.0	216.2	453.8	81.55	324.0	147.8	121.5	577.0	554.7

Movement, Approach, & Intersection Results

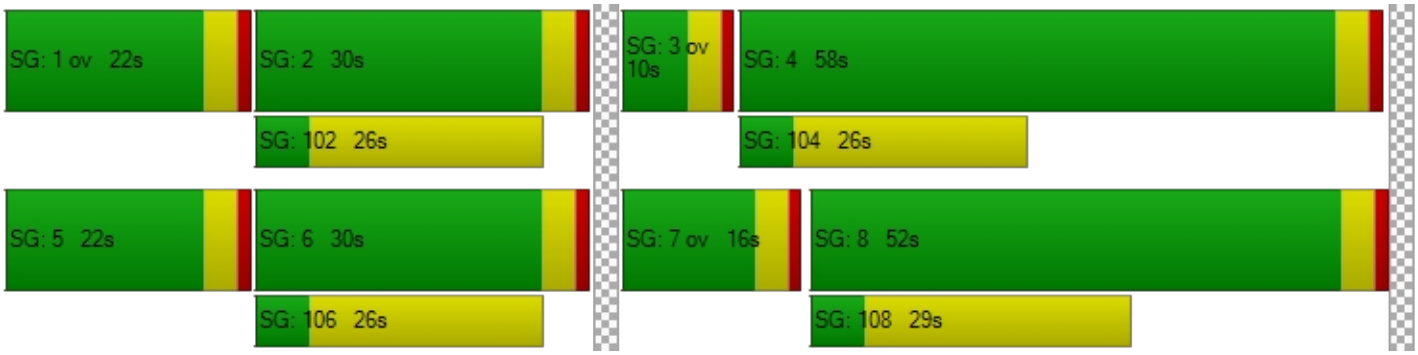
d_M, Delay for Movement [s/veh]	56.01	25.65	16.84	62.30	29.81	34.44	60.98	36.81	18.96	59.40	50.09	50.64
Movement LOS	E	C	B	E	C	C	E	D	B	E	D	D
d_A, Approach Delay [s/veh]	42.40			36.97			35.66			51.50		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.57											
Intersection LOS	D											
Intersection V/C	0.748											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.826	2.738	2.942	2.751
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	800	900
d_b, Bicycle Delay [s]	36.82	36.82	21.60	18.15
l_b,int, Bicycle LOS Score for Intersection	2.168	2.472	2.606	2.548
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	47.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.809

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	103	671	122	53	1008	95	70	390	93	154	601	59
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	121	20	0	91	0	0	0	0	13	0	0
Site-Generated Trips [veh/h]	5	198	0	0	306	0	0	0	45	28	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	1030	149	56	1465	101	74	413	144	204	637	63
Peak Hour Factor	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	30	272	39	15	386	27	20	109	38	54	168	17
Total Analysis Volume [veh/h]	120	1086	157	59	1545	107	78	436	152	215	672	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	43	0	11	41	0	10	43	0	23	56	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	46	46	5	42	42	6	36	36	17	47	47
g / C, Green / Cycle	0.08	0.38	0.38	0.04	0.35	0.35	0.05	0.30	0.30	0.14	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.07	0.24	0.24	0.03	0.32	0.32	0.05	0.24	0.10	0.13	0.37	0.04
s, saturation flow rate [veh/h]	1714	3427	1686	1714	3427	1741	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	129	1308	644	76	1204	611	86	538	458	242	703	597
d1, Uniform Delay [s]	55.20	30.30	30.30	56.73	37.11	37.13	56.73	38.89	32.72	50.59	35.58	23.30
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.25	0.11	0.11	0.37	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.67	2.38	4.77	15.15	11.70	20.03	27.37	6.52	0.42	10.50	20.23	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.64	0.64	0.77	0.91	0.91	0.91	0.81	0.33	0.89	0.96	0.11
d, Delay for Lane Group [s/veh]	78.87	32.68	35.07	71.88	48.81	57.15	84.11	45.42	33.15	61.08	55.81	23.38
Lane Group LOS	E	C	D	E	D	E	F	D	C	E	E	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.45	10.18	10.44	2.09	17.04	18.74	3.00	12.75	3.51	7.04	22.65	1.22
50th-Percentile Queue Length [ft/ln]	111.2	254.4	261.0	52.29	425.8	468.5	75.10	318.8	87.71	175.9	566.2	30.41
95th-Percentile Queue Length [veh/ln]	7.91	15.41	15.74	3.77	23.80	25.84	5.41	18.61	6.31	11.39	30.45	2.19
95th-Percentile Queue Length [ft/ln]	197.8	385.1	393.5	94.13	595.1	646.0	135.1	465.2	157.8	284.6	761.3	54.73

Movement, Approach, & Intersection Results

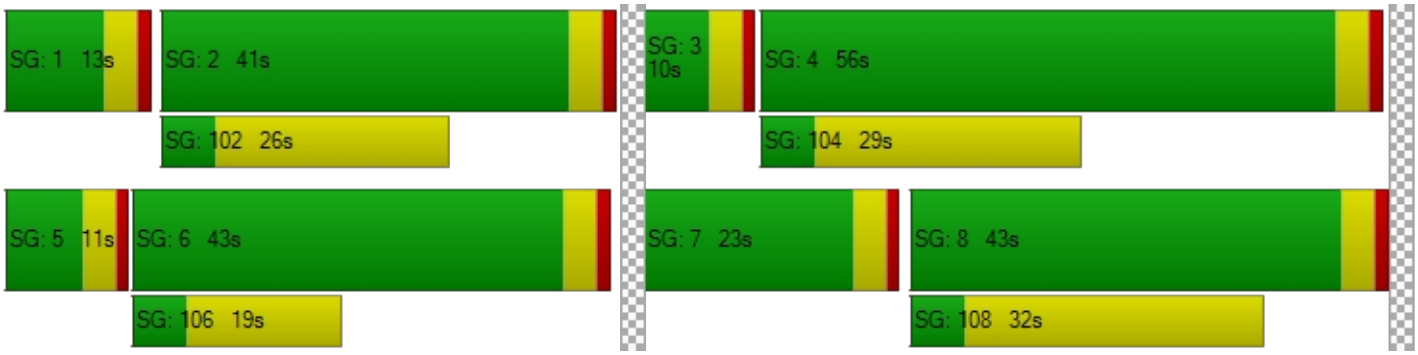
d_M, Delay for Movement [s/veh]	78.87	33.23	35.07	71.88	51.24	57.15	84.11	45.42	33.15	61.08	55.81	23.38
Movement LOS	E	C	D	E	D	E	F	D	C	E	E	C
d_A, Approach Delay [s/veh]	37.46			52.32			47.15			54.75		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	47.77											
Intersection LOS	D											
Intersection V/C	0.809											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.140	3.019	2.722	2.538
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	617	650	867
d_b, Bicycle Delay [s]	27.34	28.70	27.34	19.27
l_b,int, Bicycle LOS Score for Intersection	2.309	2.501	2.659	3.132
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.514

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	83	127	114	14	154	84	41	337	58	140	598	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	1	3	0	2	0	0	20	0	2	13	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	2	28	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	136	124	15	165	89	43	377	61	152	675	23
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	37	34	4	45	25	12	104	17	42	186	6
Total Analysis Volume [veh/h]	97	150	137	17	182	98	47	416	67	168	744	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	26	0	0	26	0	0	94	0	0	94	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	55	55	55	55	55	55	57	57	57	57	57	57
g / C, Green / Cycle	0.46	0.46	0.46	0.46	0.46	0.46	0.47	0.47	0.47	0.47	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.09	0.08	0.09	0.02	0.10	0.06	0.07	0.23	0.04	0.18	0.41	0.02
s, saturation flow rate [veh/h]	1117	1800	1530	1109	1800	1530	711	1800	1530	927	1800	1530
c, Capacity [veh/h]	483	832	707	494	832	707	127	848	721	341	848	721
d1, Uniform Delay [s]	25.34	18.95	19.08	22.61	19.32	18.56	52.78	21.81	17.53	35.57	28.58	17.05
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.14	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.93	0.48	0.61	0.13	0.61	0.41	1.80	0.44	0.06	1.10	3.91	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.18	0.19	0.03	0.22	0.14	0.37	0.49	0.09	0.49	0.88	0.03
d, Delay for Lane Group [s/veh]	26.27	19.42	19.69	22.74	19.93	18.97	54.58	22.25	17.59	36.67	32.49	17.06
Lane Group LOS	C	B	B	C	B	B	D	C	B	D	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.02	2.57	2.38	0.32	3.19	1.66	1.44	8.08	1.04	4.28	19.62	0.38
50th-Percentile Queue Length [ft/ln]	50.42	64.28	59.58	7.96	79.63	41.38	35.98	202.0	26.11	106.9	490.6	9.47
95th-Percentile Queue Length [veh/ln]	3.63	4.63	4.29	0.57	5.73	2.98	2.59	12.74	1.88	7.67	26.89	0.68
95th-Percentile Queue Length [ft/ln]	90.75	115.7	107.2	14.33	143.3	74.48	64.77	318.6	47.00	191.8	672.2	17.04

Movement, Approach, & Intersection Results

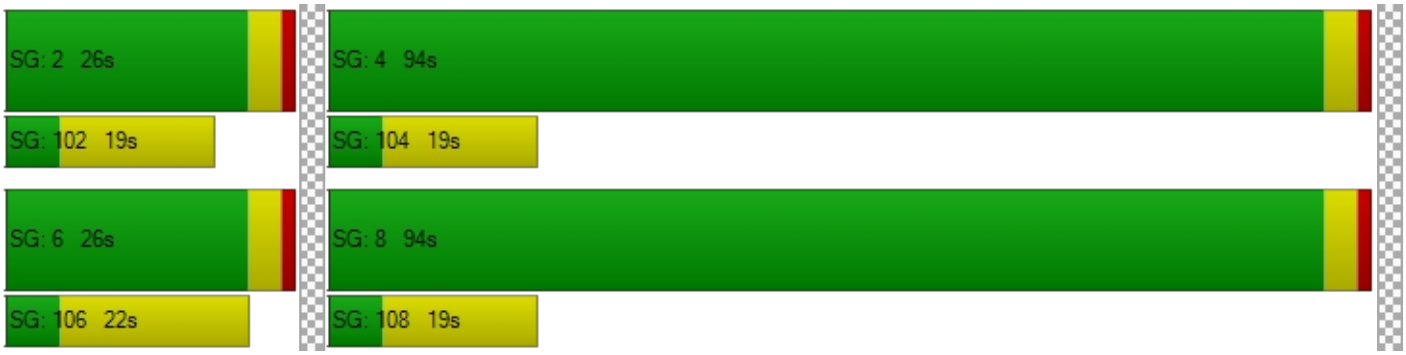
d_M, Delay for Movement [s/veh]	26.27	19.42	19.69	22.74	19.93	18.97	54.58	22.25	17.59	36.67	32.49	17.06
Movement LOS	C	B	B	C	B	B	D	C	B	D	C	B
d_A, Approach Delay [s/veh]	21.25			19.77			24.53			32.83		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	26.91											
Intersection LOS	C											
Intersection V/C	0.514											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.581	2.340	2.642	2.633
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	367	1500	1500
d_b, Bicycle Delay [s]	40.02	40.02	3.75	3.75
l_b,int, Bicycle LOS Score for Intersection	2.193	2.050	2.434	3.106
Bicycle LOS	B	B	B	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	45.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	208	617	205	96	791	141	73	255	105	226	437	131
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	3	0	2	0	0	11	0	2	7	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	2	16	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	220	658	220	102	840	149	77	281	111	244	486	139
Peak Hour Factor	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	57	170	57	26	217	39	20	73	29	63	126	36
Total Analysis Volume [veh/h]	228	681	228	106	870	154	80	291	115	253	503	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	52	0	13	43	0	10	26	0	29	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	53	53	9	45	45	6	22	22	20	36	36
g / C, Green / Cycle	0.15	0.44	0.44	0.08	0.37	0.37	0.05	0.18	0.18	0.16	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.13	0.26	0.26	0.06	0.29	0.29	0.05	0.08	0.08	0.15	0.28	0.09
s, saturation flow rate [veh/h]	1714	1800	1648	1714	1800	1707	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	253	798	731	129	668	633	86	627	280	283	537	456
d1, Uniform Delay [s]	50.28	25.22	25.24	54.72	33.53	33.55	56.80	43.77	43.31	49.06	41.02	32.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.15	0.33	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.19	3.24	3.55	12.29	9.08	9.59	31.16	0.54	0.97	12.65	19.44	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.59	0.60	0.82	0.79	0.79	0.93	0.46	0.41	0.89	0.94	0.32
d, Delay for Lane Group [s/veh]	61.47	28.46	28.80	67.01	42.61	43.13	87.96	44.31	44.27	61.71	60.46	33.02
Lane Group LOS	E	C	C	E	D	D	F	D	D	E	E	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.50	10.79	9.97	3.60	15.09	14.42	3.16	3.92	3.10	8.41	17.22	3.31
50th-Percentile Queue Length [ft/ln]	187.5	269.8	249.3	89.92	377.1	360.5	78.93	97.90	77.53	210.1	430.5	82.80
95th-Percentile Queue Length [veh/ln]	11.99	16.18	15.15	6.47	21.46	20.65	5.68	7.05	5.58	13.16	24.03	5.96
95th-Percentile Queue Length [ft/ln]	299.7	404.4	378.7	161.8	536.4	516.2	142.0	176.2	139.5	329.0	600.7	149.0

Movement, Approach, & Intersection Results

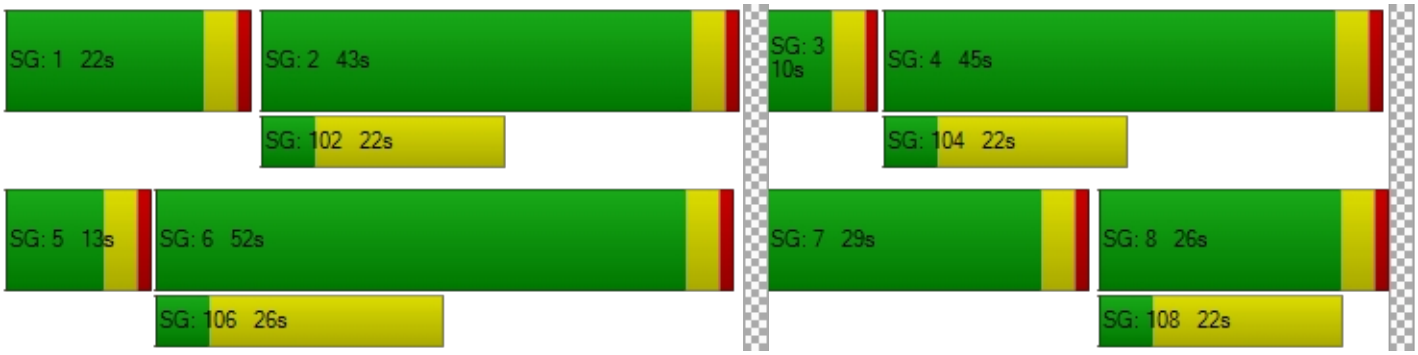
d_M, Delay for Movement [s/veh]	61.47	28.56	28.80	67.01	42.82	43.13	87.96	44.31	44.27	61.71	60.46	33.02
Movement LOS	E	C	C	E	D	D	F	D	D	E	E	C
d_A, Approach Delay [s/veh]	35.21			45.13			51.48			56.42		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	45.67											
Intersection LOS	D											
Intersection V/C	0.751											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.778	2.712	2.582	2.716
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	650	367	683
d_b, Bicycle Delay [s]	21.60	27.34	40.02	26.00
l_b,int, Bicycle LOS Score for Intersection	2.498	2.492	1.961	3.045
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	37.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	87	511	35	58	717	69	67	402	82	69	527	55
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	11	3	0	11	0	0	3	0	2	2	0
Site-Generated Trips [veh/h]	0	0	0	0	6	0	0	0	0	2	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	92	553	40	61	777	73	71	429	87	77	566	58
Peak Hour Factor	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	161	12	18	226	21	21	125	25	22	165	17
Total Analysis Volume [veh/h]	107	645	47	71	906	85	83	500	101	90	660	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	45	0	10	42	0	11	53	0	12	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	63	63	6	60	60	7	27	27	8	28	28
g / C, Green / Cycle	0.08	0.53	0.53	0.05	0.50	0.50	0.06	0.22	0.22	0.07	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.19	0.04	0.28	0.28	0.05	0.17	0.17	0.05	0.21	0.21
s, saturation flow rate [veh/h]	1714	1800	1757	1714	1800	1746	1714	1800	1697	1714	1800	1742
c, Capacity [veh/h]	129	948	926	86	903	876	100	405	381	112	417	403
d1, Uniform Delay [s]	54.76	16.68	16.68	56.49	20.67	20.67	55.91	43.52	43.57	55.35	44.59	44.60
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.83	1.11	1.13	17.79	2.47	2.55	15.75	3.01	3.25	12.68	6.51	6.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.37	0.37	0.83	0.56	0.56	0.83	0.76	0.77	0.81	0.89	0.89
d, Delay for Lane Group [s/veh]	67.58	17.79	17.82	74.28	23.14	23.22	71.66	46.53	46.82	68.02	51.11	51.35
Lane Group LOS	E	B	B	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.65	5.88	5.75	2.56	10.18	9.90	2.92	8.90	8.46	3.08	11.35	11.02
50th-Percentile Queue Length [ft/ln]	91.19	147.0	143.8	63.89	254.4	247.4	73.09	222.4	211.5	76.98	283.7	275.4
95th-Percentile Queue Length [veh/ln]	6.57	9.86	9.69	4.60	15.41	15.06	5.26	13.79	13.23	5.54	16.87	16.46
95th-Percentile Queue Length [ft/ln]	164.1	246.4	242.1	115.0	385.2	376.4	131.5	344.7	330.8	138.5	421.8	411.5

Movement, Approach, & Intersection Results

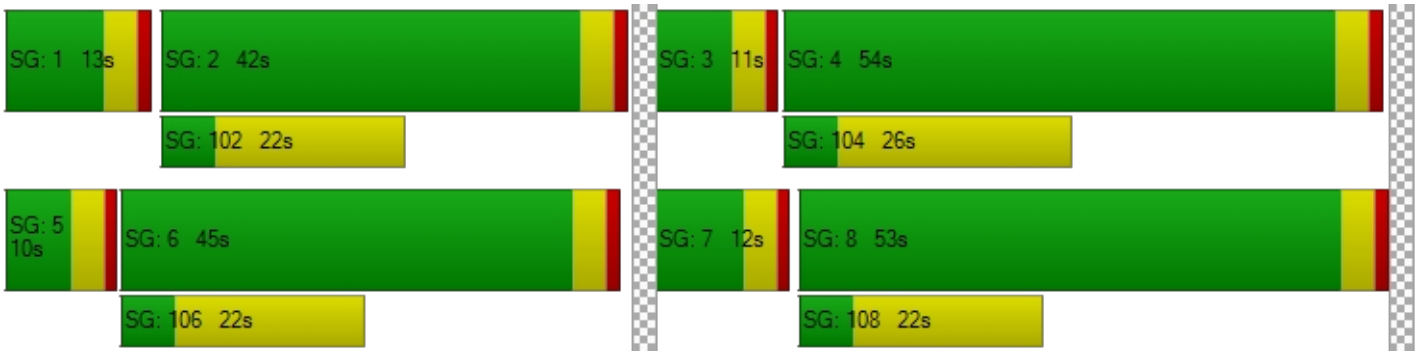
d_M, Delay for Movement [s/veh]	67.58	17.80	17.82	74.28	23.18	23.22	71.66	46.64	46.82	68.02	51.22	51.35
Movement LOS	E	B	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	24.47			26.60			49.70			53.08		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.23											
Intersection LOS	D											
Intersection V/C	0.596											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.685	2.770	2.615	2.595
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	633	817	833
d_b, Bicycle Delay [s]	26.00	28.02	21.00	20.42
l_b,int, Bicycle LOS Score for Intersection	2.219	2.436	2.124	2.234
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	418	151	65	572	0	0	0	0	234	0	137
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	84	0	0	58	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	527	160	69	664	0	0	0	0	248	0	145
Peak Hour Factor	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	154	47	20	194	0	0	0	0	72	0	42
Total Analysis Volume [veh/h]	0	615	187	81	775	0	0	0	0	289	0	169
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	59	0	27	77	0	0	34	0	0	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	73	73	7	80	80	28	28	28	28
g / C, Green / Cycle	0.00	0.61	0.61	0.06	0.67	0.67	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.00	0.34	0.12	0.05	0.43	0.00	0.00	0.00	0.22	0.11
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1530	1693	1530	1332	1530
c, Capacity [veh/h]	1	1092	928	104	1201	1021	424	356	370	356
d1, Uniform Delay [s]	0.00	14.10	10.57	55.57	11.68	0.00	0.00	0.00	46.23	39.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.35	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	2.10	0.49	11.79	2.68	0.00	0.00	0.00	11.06	0.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.56	0.20	0.78	0.65	0.00	0.00	0.00	0.78	0.47
d, Delay for Lane Group [s/veh]	0.00	16.20	11.06	67.35	14.36	0.00	0.00	0.00	57.29	40.70
Lane Group LOS	A	B	B	E	B	A	A	A	E	D
Critical Lane Group	No	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	10.20	2.31	2.76	12.10	0.00	0.00	0.00	9.54	4.40
50th-Percentile Queue Length [ft/ln]	0.00	254.9	57.66	68.96	302.4	0.00	0.00	0.00	238.59	110.12
95th-Percentile Queue Length [veh/ln]	0.00	15.44	4.15	4.97	17.80	0.00	0.00	0.00	14.61	7.85
95th-Percentile Queue Length [ft/ln]	0.00	385.8	103.7	124.1	445.0	0.00	0.00	0.00	365.25	196.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	16.20	11.06	67.35	14.36	0.00	0.00	0.00	0.00	57.29	57.29	40.70
Movement LOS	A	B	B	E	B	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	15.00			19.38			0.00			51.17		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	24.60											
Intersection LOS	C											
Intersection V/C	0.647											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.090	0.000	1.955	2.191
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	1217	500	500
d_b, Bicycle Delay [s]	17.60	9.20	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	2.883	2.972	1.560	2.315
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	54.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.892

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	186	806	132	35	1068	89	30	30	200	150	136	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	140	0	0	104	0	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	203	0	0	379	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	1197	140	37	1615	94	32	32	212	160	144	72
Peak Hour Factor	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	54	326	38	10	440	26	9	9	58	44	39	20
Total Analysis Volume [veh/h]	215	1305	153	40	1761	103	35	35	231	174	157	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	68	0	10	60	0	9	26	0	16	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	68	68	4	58	58	3	20	20	12	28
g / C, Green / Cycle	0.12	0.57	0.57	0.03	0.48	0.48	0.03	0.17	0.17	0.10	0.24
(v / s)_i Volume / Saturation Flow Rate	0.13	0.41	0.42	0.02	0.51	0.07	0.02	0.02	0.15	0.10	0.14
s, saturation flow rate [veh/h]	1714	1800	1735	1714	3427	1530	1714	1800	1530	1714	1700
c, Capacity [veh/h]	200	1024	987	54	1657	740	50	300	255	171	403
d1, Uniform Delay [s]	53.00	18.86	19.11	57.65	30.99	17.16	57.74	42.51	49.10	54.00	40.52
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.16	0.11	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	51.88	4.33	4.79	18.33	40.91	0.39	16.35	0.17	15.94	35.74	1.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.72	0.73	0.75	1.06	0.14	0.70	0.12	0.91	1.02	0.58
d, Delay for Lane Group [s/veh]	104.8	23.19	23.90	75.98	71.90	17.55	74.09	42.68	65.04	89.74	42.00
Lane Group LOS	F	C	C	E	F	B	E	D	E	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	8.90	15.50	15.51	1.48	32.40	1.66	1.28	0.90	7.90	6.87	6.34
50th-Percentile Queue Length [ft/ln]	222.4	387.5	387.8	36.95	810.0	41.58	32.00	22.58	197.5	171.67	158.53
95th-Percentile Queue Length [veh/ln]	14.20	21.96	21.97	2.66	43.77	2.99	2.30	1.63	12.51	11.23	10.47
95th-Percentile Queue Length [ft/ln]	354.9	548.9	549.3	66.51	1094.	74.84	57.60	40.64	312.8	280.72	261.77

Movement, Approach, & Intersection Results

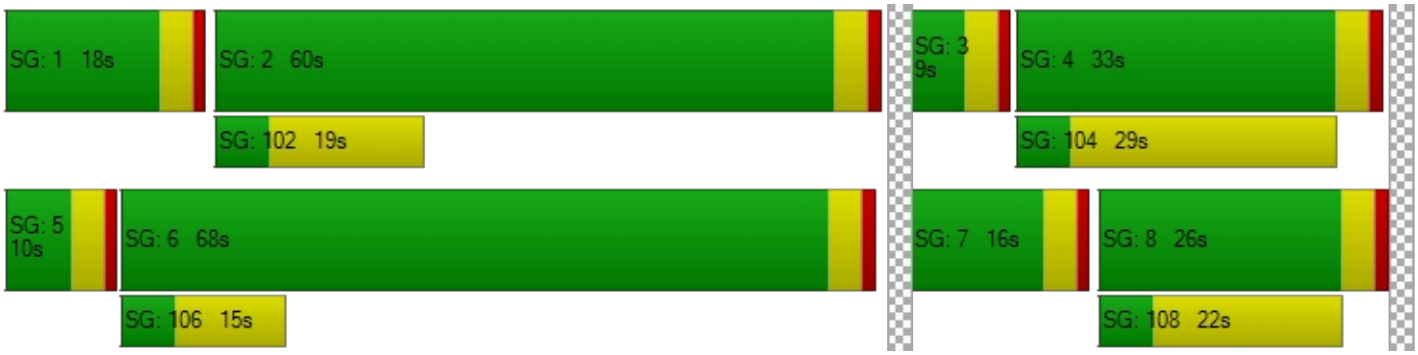
d_M, Delay for Movement [s/veh]	104.8	23.50	23.90	75.98	71.90	17.55	74.09	42.68	65.04	89.74	42.00	42.00
Movement LOS	F	C	C	E	F	B	E	D	E	F	D	D
d_A, Approach Delay [s/veh]	33.99			69.05			63.49			62.26		
Approach LOS	C			E			E			E		
d_I, Intersection Delay [s/veh]	54.33											
Intersection LOS	D											
Intersection V/C	0.892											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.092	3.072	2.335	2.163
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1067	933	367	483
d_b, Bicycle Delay [s]	13.07	17.07	40.02	34.50
l_b,int, Bicycle LOS Score for Intersection	2.940	3.130	2.056	2.236
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	36.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.371

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	134	290	0	0	261	111	57	0	66	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.060	1.000	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	0	3	1	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	311	0	0	282	119	60	0	70	0	0	0
Peak Hour Factor	0.913	0.913	1.000	1.000	0.913	0.913	0.913	1.000	0.913	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	39	85	0	0	77	33	16	0	19	0	0	0
Total Analysis Volume [veh/h]	156	341	0	0	309	130	66	0	77	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.11	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.69	0.00	0.00	0.00	0.00	0.00	36.67	0.00	11.00	0.00	0.00	0.00
Movement LOS	A	A			A	A	E		B			
95th-Percentile Queue Length [veh/ln]	0.48	0.48	0.00	0.00	0.00	0.00	1.59	0.00	0.38	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	11.95	11.95	0.00	0.00	0.00	0.00	39.68	0.00	9.58	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	2.73			0.00			22.85			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	4.28											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	1	551	201	49	753	1	0	0	2	174	0	40
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	73	58	0	0	0	0	0	9	0	84
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	584	286	110	798	1	0	0	2	193	0	126
Peak Hour Factor	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	154	76	29	211	0	0	0	1	51	0	33
Total Analysis Volume [veh/h]	1	617	302	116	844	1	0	0	2	204	0	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	9	0	48	31	0	0	9	0	0	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	77	77	10	86	86	0	0	17	17
g / C, Green / Cycle	0.00	0.64	0.64	0.08	0.72	0.72	0.00	0.00	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.00	0.27	0.27	0.07	0.23	0.23	0.00	0.00	0.12	0.09
s, saturation flow rate [veh/h]	1714	1800	1603	1714	1800	1799	1800	1392	1687	1530
c, Capacity [veh/h]	4	1148	1022	144	1296	1295	5	4	240	217
d1, Uniform Delay [s]	59.79	10.79	10.79	53.99	6.16	6.16	59.66	59.75	50.24	48.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	38.17	1.15	1.29	10.00	0.67	0.67	0.00	75.25	8.27	2.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.42	0.42	0.80	0.33	0.33	0.00	0.51	0.85	0.61
d, Delay for Lane Group [s/veh]	97.95	11.93	12.08	63.99	6.83	6.83	59.66	135.00	58.52	51.15
Lane Group LOS	F	B	B	E	A	A	E	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.07	6.47	5.81	3.84	3.80	3.80	0.00	0.14	6.52	3.91
50th-Percentile Queue Length [ft/ln]	1.70	161.8	145.1	96.03	94.91	94.88	0.00	3.59	162.99	97.86
95th-Percentile Queue Length [veh/ln]	0.12	10.64	9.76	6.91	6.83	6.83	0.00	0.26	10.71	7.05
95th-Percentile Queue Length [ft/ln]	3.07	266.1	243.9	172.8	170.8	170.7	0.00	6.45	267.68	176.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	97.95	11.96	12.08	63.99	6.83	6.83	59.66	59.66	135.0	58.52	58.52	51.15
Movement LOS	F	B	B	E	A	A	E	E	F	E	E	D
d_A, Approach Delay [s/veh]	12.09			13.73			135.00			55.61		
Approach LOS	B			B			F			E		
d_I, Intersection Delay [s/veh]	19.52											
Intersection LOS	B											
Intersection V/C	0.460											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	450	83	833
d_b, Bicycle Delay [s]	55.10	36.04	55.10	20.42
l_b,int, Bicycle LOS Score for Intersection	2.319	2.352	1.561	2.116
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	25.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.710

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	3	813	117	130	1237	0	0	0	0	145	0	253
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	203	0	0	379	0	0	0	0	16	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	1016	117	138	1616	0	0	0	0	161	0	268
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	278	32	38	442	0	0	0	0	44	0	73
Total Analysis Volume [veh/h]	3	1113	128	151	1770	0	0	0	0	176	0	294
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	52	0	16	59	0	9	30	0	22	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	67	67	12	78	78	0	11	14	25
g / C, Green / Cycle	0.00	0.56	0.56	0.10	0.65	0.65	0.00	0.09	0.12	0.21
(v / s)_i Volume / Saturation Flow Rate	0.00	0.32	0.08	0.09	0.52	0.00	0.00	0.00	0.10	0.19
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1714	1530
c, Capacity [veh/h]	8	1902	849	171	2229	995	1	168	203	323
d1, Uniform Delay [s]	59.56	17.60	12.97	53.29	15.17	0.00	0.00	0.00	51.95	46.22
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.21	1.33	0.38	13.41	3.02	0.00	0.00	0.00	10.53	10.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.59	0.15	0.88	0.79	0.00	0.00	0.00	0.87	0.91
d, Delay for Lane Group [s/veh]	87.77	18.93	13.35	66.71	18.19	0.00	0.00	0.00	62.49	56.23
Lane Group LOS	F	B	B	E	B	A	A	A	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.15	10.19	1.76	5.13	16.93	0.00	0.00	0.00	5.79	9.42
50th-Percentile Queue Length [ft/ln]	3.81	254.6	43.89	128.2	423.3	0.00	0.00	0.00	144.82	235.51
95th-Percentile Queue Length [veh/ln]	0.27	15.42	3.16	8.84	23.68	0.00	0.00	0.00	9.74	14.45
95th-Percentile Queue Length [ft/ln]	6.85	385.4	79.01	221.0	592.1	0.00	0.00	0.00	243.50	361.36

Movement, Approach, & Intersection Results

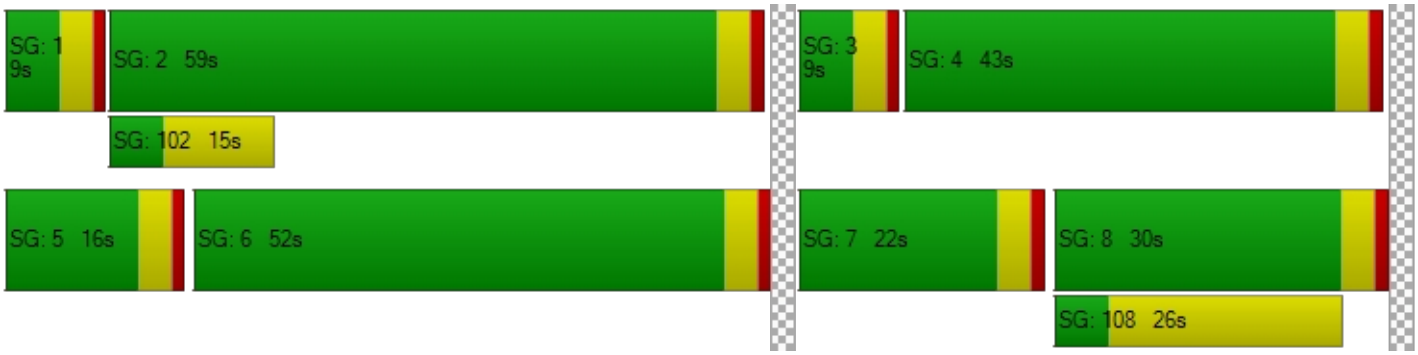
d_M, Delay for Movement [s/veh]	87.77	18.93	13.35	66.71	18.19	0.00	0.00	0.00	0.00	62.49	56.23	56.23
Movement LOS	F	B	B	E	B	A	A	A	A	E	E	E
d_A, Approach Delay [s/veh]	18.52			22.00			0.00			58.57		
Approach LOS	B			C			A			E		
d_I, Intersection Delay [s/veh]	25.54											
Intersection LOS	C											
Intersection V/C	0.710											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.053	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	917	433	650
d_b, Bicycle Delay [s]	21.60	17.60	36.82	27.34
I_b,int, Bicycle LOS Score for Intersection	2.586	3.144	1.560	2.335
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	31.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	51	162	58	56	145	76	103	129	56	67	230	153
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	0	0	3	0	0	11	0	0	7	0
Site-Generated Trips [veh/h]	0	0	0	0	2	0	0	0	0	0	16	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	176	61	59	159	81	109	148	59	71	267	162
Peak Hour Factor	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	50	17	17	45	23	31	42	17	20	75	46
Total Analysis Volume [veh/h]	61	199	69	67	179	91	123	167	67	80	301	183
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	409	453	432	410	459	432	479
Degree of Utilization, x	0.64	0.15	0.78	0.71	0.15	0.88	0.38

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.26	0.53	6.80	5.35	0.51	9.19	1.77
95th-Percentile Queue Length [ft]	106.54	13.36	170.10	133.87	12.69	229.66	44.14
Approach Delay [s/veh]	22.81		35.37	26.72		37.11	
Approach LOS	C		E	D		E	
Intersection Delay [s/veh]	31.44						
Intersection LOS	D						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	29.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.548

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	51	676	27	61	902	92	147	156	48	43	206	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	7	1	0	4	0	0	11	0	1	7	0
Site-Generated Trips [veh/h]	0	0	0	0	2	0	0	0	0	1	16	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	724	30	65	962	98	156	176	51	48	241	109
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	189	8	17	251	26	41	46	13	13	63	28
Total Analysis Volume [veh/h]	56	754	31	68	1002	102	163	183	53	50	251	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	50	0	10	51	0	34	38	0	22	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	69	69	6	70	70	13	25	25	5	16	16
g / C, Green / Cycle	0.04	0.57	0.57	0.05	0.58	0.58	0.11	0.20	0.20	0.04	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.22	0.22	0.04	0.31	0.31	0.10	0.05	0.03	0.03	0.11	0.11
s, saturation flow rate [veh/h]	1714	1800	1775	1714	1800	1742	1714	3427	1530	1714	1800	1615
c, Capacity [veh/h]	71	1032	1018	86	1048	1014	194	701	313	67	234	210
d1, Uniform Delay [s]	56.99	13.99	13.99	56.39	15.23	15.24	52.15	40.12	39.34	57.10	50.73	50.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.23	1.08	1.09	15.00	1.96	2.03	9.36	0.20	0.25	15.50	6.49	8.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.38	0.38	0.79	0.54	0.54	0.84	0.26	0.17	0.75	0.81	0.84
d, Delay for Lane Group [s/veh]	74.22	15.07	15.08	71.39	17.19	17.27	61.52	40.31	39.59	72.60	57.22	59.40
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.02	6.04	5.96	2.40	9.55	9.28	5.31	2.30	1.32	1.79	5.95	5.64
50th-Percentile Queue Length [ft/ln]	50.57	150.8	148.9	59.88	238.6	231.9	132.8	57.59	32.99	44.74	148.6	141.1
95th-Percentile Queue Length [veh/ln]	3.64	10.06	9.96	4.31	14.61	14.27	9.09	4.15	2.38	3.22	9.94	9.54
95th-Percentile Queue Length [ft/ln]	91.03	251.6	249.0	107.7	365.3	356.7	227.3	103.6	59.39	80.52	248.6	238.5

Movement, Approach, & Intersection Results

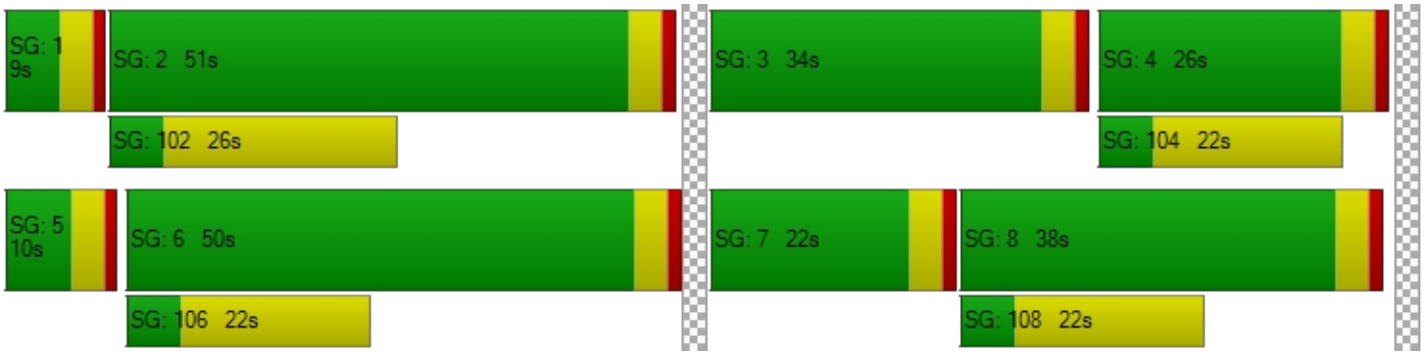
d_M, Delay for Movement [s/veh]	74.22	15.08	15.08	71.39	17.22	17.27	61.52	40.31	39.59	72.60	57.76	59.40
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	19.01			20.37			48.88			60.00		
Approach LOS	B			C			D			E		
d_I, Intersection Delay [s/veh]	29.81											
Intersection LOS	C											
Intersection V/C	0.548											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.695	2.826	2.599	2.581
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	783	567	367
d_b, Bicycle Delay [s]	22.82	22.20	30.82	40.02
l_b,int, Bicycle LOS Score for Intersection	2.253	2.527	1.889	1.902
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	40.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.595

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	57	568	91	33	877	42	50	340	93	134	370	43
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	1	5	0	0	5	12	15	6	2	0	4	0
Site-Generated Trips [veh/h]	4	0	0	0	5	10	0	0	0	0	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	607	96	35	940	67	68	366	101	142	403	46
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	167	26	10	259	18	19	101	28	39	111	13
Total Analysis Volume [veh/h]	72	669	106	39	1036	74	75	404	111	157	444	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	63	0	10	63	0	11	30	0	17	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	43	43	4	41	41	7	44	44	13	51	51
g / C, Green / Cycle	0.05	0.36	0.36	0.03	0.34	0.34	0.06	0.37	0.37	0.11	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.22	0.02	0.31	0.31	0.04	0.15	0.15	0.09	0.14	0.14
s, saturation flow rate [veh/h]	1714	1800	1715	1714	1800	1758	1714	1800	1669	1714	1800	1736
c, Capacity [veh/h]	86	647	616	54	613	599	95	665	617	182	757	730
d1, Uniform Delay [s]	56.52	31.60	31.61	57.58	37.89	37.90	56.01	27.98	28.03	52.75	23.40	23.42
k, delay calibration	0.11	0.11	0.11	0.11	0.20	0.20	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.87	0.95	1.00	16.45	9.90	10.17	13.74	1.79	1.96	11.22	1.18	1.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.61	0.61	0.72	0.92	0.92	0.79	0.40	0.40	0.86	0.33	0.33
d, Delay for Lane Group [s/veh]	75.40	32.55	32.60	74.04	47.79	48.07	69.75	29.77	30.00	63.97	24.58	24.65
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.61	9.57	9.14	1.42	17.27	16.94	2.61	5.98	5.64	5.22	5.04	4.89
50th-Percentile Queue Length [ft/ln]	65.31	239.2	228.4	35.53	431.8	423.3	65.13	149.4	141.0	130.4	126.0	122.3
95th-Percentile Queue Length [veh/ln]	4.70	14.65	14.10	2.56	24.09	23.68	4.69	9.99	9.54	8.96	8.73	8.52
95th-Percentile Queue Length [ft/ln]	117.5	366.1	352.3	63.95	602.2	592.1	117.2	249.6	238.4	224.1	218.1	213.0

Movement, Approach, & Intersection Results

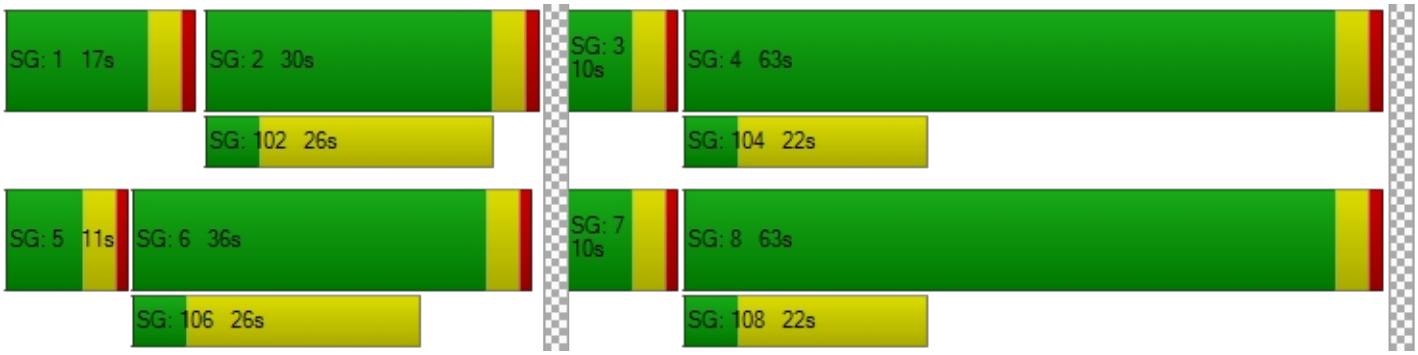
d_M, Delay for Movement [s/veh]	75.40	32.57	32.60	74.04	47.92	48.07	69.75	29.85	30.00	63.97	24.61	24.65
Movement LOS	E	C	C	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	36.22			48.81			34.95			34.09		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	40.03											
Intersection LOS	D											
Intersection V/C	0.595											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.818	2.784	2.545	2.549
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	983	433	533
d_b, Bicycle Delay [s]	15.50	15.50	36.82	32.27
l_b,int, Bicycle LOS Score for Intersection	2.258	2.508	2.046	2.098
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.464

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	20	645	75	23	871	122	103	90	11	74	78	31
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	2	0	0	3	2	6	12	0	5	5	0
Site-Generated Trips [veh/h]	0	0	0	0	3	0	0	0	0	5	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	686	80	24	929	131	115	107	12	88	88	33
Peak Hour Factor	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	6	185	22	6	251	35	31	29	3	24	24	9
Total Analysis Volume [veh/h]	23	742	86	26	1004	142	124	116	13	95	95	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	49	0	9	49	0	36	26	0	36	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	82	82	3	82	82	11	11	11	8	8	8
g / C, Green / Cycle	0.02	0.68	0.68	0.02	0.69	0.69	0.09	0.09	0.09	0.07	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.01	0.23	0.23	0.02	0.33	0.33	0.07	0.06	0.01	0.06	0.05	0.02
s, saturation flow rate [veh/h]	1714	1800	1735	1714	1800	1723	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	39	1229	1185	42	1232	1180	153	160	136	121	127	108
d1, Uniform Delay [s]	58.11	7.88	7.88	58.00	8.84	8.85	53.67	53.23	50.23	54.86	54.73	53.09
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.91	0.76	0.79	14.32	1.31	1.38	9.86	6.10	0.30	10.53	8.48	1.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.34	0.34	0.62	0.47	0.48	0.81	0.72	0.10	0.78	0.75	0.33
d, Delay for Lane Group [s/veh]	72.03	8.65	8.68	72.32	10.15	10.22	63.53	59.33	50.53	65.39	63.21	54.88
Lane Group LOS	E	A	A	E	B	B	E	E	D	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.84	4.48	4.33	0.95	7.04	6.77	4.09	3.68	0.37	3.18	3.12	1.09
50th-Percentile Queue Length [ft/ln]	21.03	111.9	108.2	23.70	175.9	169.3	102.3	91.99	9.30	79.54	77.96	27.25
95th-Percentile Queue Length [veh/ln]	1.51	7.95	7.74	1.71	11.39	11.04	7.37	6.62	0.67	5.73	5.61	1.96
95th-Percentile Queue Length [ft/ln]	37.86	198.6	193.5	42.67	284.6	276.0	184.2	165.5	16.73	143.1	140.3	49.05

Movement, Approach, & Intersection Results

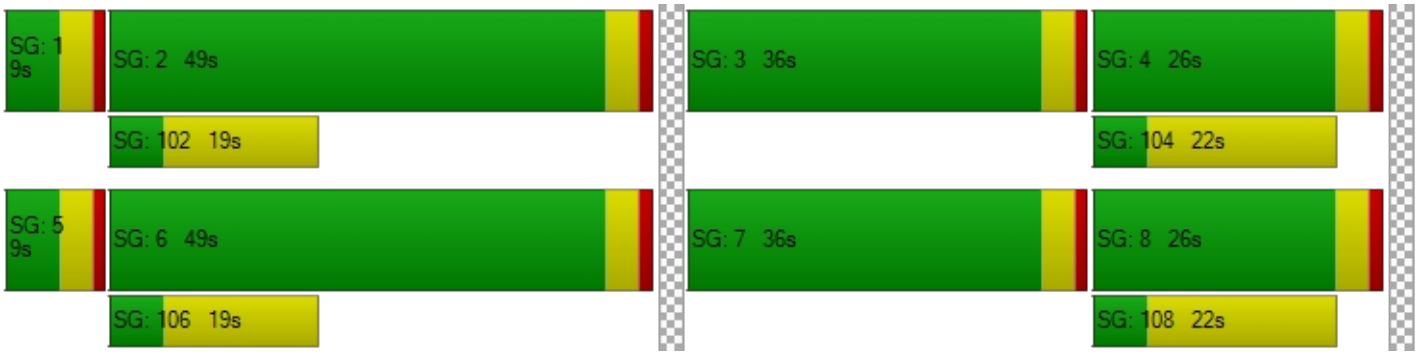
d_M, Delay for Movement [s/veh]	72.03	8.66	8.68	72.32	10.18	10.22	63.53	59.33	50.53	65.39	63.21	54.88
Movement LOS	E	A	A	E	B	B	E	E	D	E	E	D
d_A, Approach Delay [s/veh]	10.37			11.57			60.94			62.80		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	20.78											
Intersection LOS	C											
Intersection V/C	0.464											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.698	2.720	2.271	2.257
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	750	367	367
d_b, Bicycle Delay [s]	23.44	23.44	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	2.262	2.527	1.977	1.933
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	75.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.966

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	10	838	104	156	1207	9	0	1	0	214	0	109
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.060	1.060	1.060	1.000
In-Process Volume [veh/h]	117	0	0	0	0	0	0	123	96	0	97	0
Site-Generated Trips [veh/h]	230	270	0	0	211	38	15	1	186	0	67	41
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	358	1108	110	156	1418	47	15	125	282	227	164	150
Peak Hour Factor	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	98	303	30	43	387	13	4	34	77	62	45	41
Total Analysis Volume [veh/h]	391	1211	120	170	1550	51	16	137	308	248	179	164
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	48	0	20	40	0	9	33	0	19	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	46	46	14	36	36	2	29	15	42
g / C, Green / Cycle	0.20	0.39	0.39	0.11	0.30	0.30	0.02	0.24	0.13	0.35
(v / s)_i Volume / Saturation Flow Rate	0.23	0.26	0.26	0.10	0.32	0.03	0.01	0.28	0.14	0.21
s, saturation flow rate [veh/h]	1714	3427	1718	1714	4903	1530	1714	1604	1714	1660
c, Capacity [veh/h]	343	1319	661	197	1471	459	32	388	214	578
d1, Uniform Delay [s]	48.00	30.62	30.64	52.15	42.00	30.41	58.32	45.50	52.50	32.16
k, delay calibration	0.39	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.14	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	87.10	2.74	5.40	10.46	39.04	0.49	11.41	92.50	85.30	1.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.14	0.67	0.67	0.86	1.05	0.11	0.50	1.15	1.16	0.59
d, Delay for Lane Group [s/veh]	135.1	33.37	36.04	62.60	81.04	30.90	69.73	138.00	137.80	33.63
Lane Group LOS	F	C	D	E	F	C	E	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	18.49	11.02	11.56	5.60	19.64	1.14	0.58	21.41	11.51	8.37
50th-Percentile Queue Length [ft/ln]	462.2	275.6	289.0	139.9	491.0	28.53	14.60	535.20	287.85	209.37
95th-Percentile Queue Length [veh/ln]	27.34	16.47	17.14	9.48	27.82	2.05	1.05	31.31	18.14	13.12
95th-Percentile Queue Length [ft/ln]	683.4	411.7	428.4	236.9	695.4	51.36	26.28	782.87	453.40	328.02

Movement, Approach, & Intersection Results

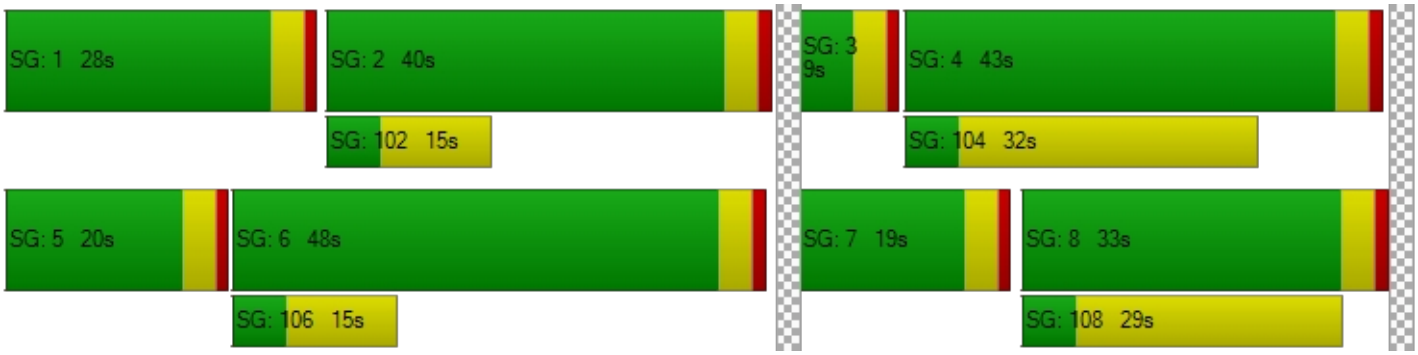
d_M, Delay for Movement [s/veh]	135.1	34.08	36.04	62.60	81.04	30.90	69.73	138.0	138.0	137.8	33.63	33.63
Movement LOS	F	C	D	E	F	C	E	F	F	F	C	C
d_A, Approach Delay [s/veh]	57.16			77.83			135.63			77.34		
Approach LOS	E			E			F			E		
d_I, Intersection Delay [s/veh]	75.80											
Intersection LOS	E											
Intersection V/C	0.966											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.142	3.290	2.307	2.286
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	600	483	650
d_b, Bicycle Delay [s]	24.07	29.40	34.50	27.34
l_b,int, Bicycle LOS Score for Intersection	2.507	2.534	2.320	2.535
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	101.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.313

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	17	193	42	6	194	82	55	115	18	31	173	39
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	4	0	0	0	0	3	4	129	8	0	102	0
Site-Generated Trips [veh/h]	7	0	0	0	0	2	0	1	0	0	85	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	205	45	6	206	92	62	252	27	33	370	41
Peak Hour Factor	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	61	13	2	61	27	18	75	8	10	110	12
Total Analysis Volume [veh/h]	35	244	54	7	245	110	74	300	32	39	440	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	389	399	406	528
Degree of Utilization, x	0.86	0.91	1.01	1.31

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.20	9.55	12.68	24.00
95th-Percentile Queue Length [ft]	204.96	238.71	316.88	599.90
Approach Delay [s/veh]	47.68	55.16	79.04	183.74
Approach LOS	E	F	F	F
Intersection Delay [s/veh]	101.26			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	38.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.001

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	4	43	60	69	61	1	41	86	14	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	46	64	73	65	1	43	91	15	10
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	12	17	19	17	0	11	24	4	3
Total Analysis Volume [veh/h]	4	48	67	77	68	1	45	96	16	11
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	442	412
Degree of Utilization, x	0.60	0.41

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.80	1.96
95th-Percentile Queue Length [ft]	94.96	48.94
Approach Delay [s/veh]	22.50	17.66
Approach LOS	C	C
Intersection Delay [s/veh]	38.07	
Intersection LOS	E	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	46	6	95	57	0	27	55	146	14	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	17	105	0	0	0	0	89	0	0
Site-Generated Trips [veh/h]	0	1	0	0	0	0	0	78	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	24	206	60	0	29	58	322	15	4
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	6	54	16	0	8	15	85	4	1
Total Analysis Volume [veh/h]	51	25	216	63	0	30	61	338	16	4
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	434	449
Degree of Utilization, x	0.82	1.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.62	12.99
95th-Percentile Queue Length [ft]	190.46	324.86
Approach Delay [s/veh]	39.17	71.28
Approach LOS	E	F
Intersection Delay [s/veh]	38.07	
Intersection LOS	E	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	2	13	66	23	1	13	45	123	26	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	7	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	14	70	24	1	14	48	130	35	6
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	18	6	0	4	13	34	9	2
Total Analysis Volume [veh/h]	2	15	74	25	1	15	50	137	37	6
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	421	420	469
Degree of Utilization, x	0.28	0.48	0.09

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.12	2.54	0.30
95th-Percentile Queue Length [ft]	28.09	63.48	7.53
Approach Delay [s/veh]	14.83	17.57	
Approach LOS	B	C	
Intersection Delay [s/veh]	38.07		
Intersection LOS	E		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	591	196	103	849	50	80	110	135	123	108	67
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	39	0	0	0	0	8	2	60	42	0	42	0
Site-Generated Trips [veh/h]	15	0	0	0	0	8	0	0	0	0	55	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	174	626	208	109	900	69	87	177	185	130	211	71
Peak Hour Factor	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	44	158	52	27	227	17	22	45	47	33	53	18
Total Analysis Volume [veh/h]	175	631	210	110	907	70	88	178	186	131	213	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	48	0	22	41	0	24	35	0	15	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	67	67	9	62	62	8	17	17	11	20	20
g / C, Green / Cycle	0.12	0.55	0.55	0.08	0.51	0.51	0.07	0.14	0.14	0.09	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.10	0.24	0.24	0.06	0.27	0.27	0.05	0.05	0.12	0.08	0.12	0.05
s, saturation flow rate [veh/h]	1714	1800	1648	1714	1800	1755	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	205	997	913	136	925	902	113	488	218	156	301	256
d1, Uniform Delay [s]	51.81	15.79	15.79	54.33	19.54	19.54	55.21	46.54	50.23	53.71	47.17	43.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.73	1.41	1.54	10.64	2.21	2.27	11.07	0.46	9.12	11.48	3.04	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.44	0.44	0.81	0.53	0.53	0.78	0.36	0.85	0.84	0.71	0.28
d, Delay for Lane Group [s/veh]	61.54	17.20	17.33	64.97	21.75	21.81	66.27	47.00	59.35	65.19	50.20	44.23
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.71	7.33	6.75	3.67	9.63	9.41	2.97	2.44	6.00	4.39	6.26	1.92
50th-Percentile Queue Length [ft/ln]	142.8	183.3	168.7	91.80	240.7	235.2	74.24	61.12	149.9	109.6	156.5	48.01
95th-Percentile Queue Length [veh/ln]	9.63	11.77	11.01	6.61	14.72	14.44	5.35	4.40	10.01	7.82	10.36	3.46
95th-Percentile Queue Length [ft/ln]	240.8	294.3	275.2	165.2	367.9	360.9	133.6	110.0	250.3	195.5	259.0	86.42

Movement, Approach, & Intersection Results

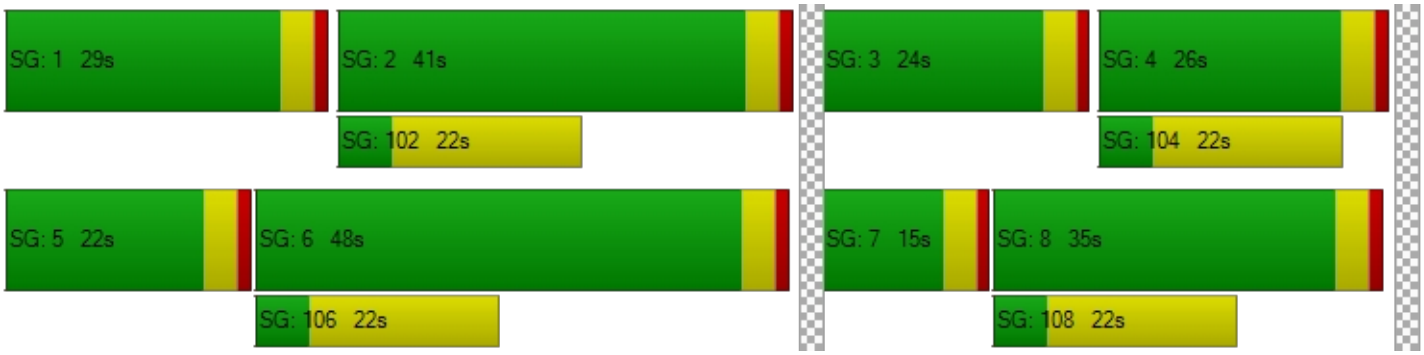
d_M, Delay for Movement [s/veh]	61.54	17.24	17.33	64.97	21.78	21.81	66.27	47.00	59.35	65.19	50.20	44.23
Movement LOS	E	B	B	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	24.89			26.15			55.83			53.89		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	34.12											
Intersection LOS	C											
Intersection V/C	0.575											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.752	2.681	2.493	2.617
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	617	517	367
d_b, Bicycle Delay [s]	24.07	28.70	33.00	40.02
l_b,int, Bicycle LOS Score for Intersection	2.398	2.456	1.933	2.246
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	31	725	49	22	1043	36	57	200	93	134	203	50
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	20	0	0	0	0	8	9	6	32	0	4	0
Site-Generated Trips [veh/h]	26	0	0	0	0	8	0	0	0	0	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	769	52	23	1106	54	69	218	131	142	226	53
Peak Hour Factor	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	20	199	13	6	287	14	18	57	34	37	59	14
Total Analysis Volume [veh/h]	82	798	54	24	1147	56	72	226	136	147	234	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	49	0	9	47	0	20	40	0	22	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	73	73	3	69	69	6	16	16	12	21	21
g / C, Green / Cycle	0.06	0.61	0.61	0.02	0.58	0.58	0.05	0.13	0.13	0.10	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.24	0.24	0.01	0.34	0.34	0.04	0.11	0.11	0.09	0.08	0.08
s, saturation flow rate [veh/h]	1714	1800	1760	1714	1800	1771	1714	1800	1580	1714	1800	1684
c, Capacity [veh/h]	100	1100	1076	40	1037	1020	92	236	207	174	321	301
d1, Uniform Delay [s]	55.88	11.93	11.93	58.07	16.27	16.28	56.07	50.65	50.88	52.98	44.11	44.18
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.96	1.05	1.07	14.02	2.41	2.46	13.17	6.30	8.51	10.54	1.03	1.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.39	0.39	0.61	0.58	0.59	0.78	0.80	0.83	0.84	0.46	0.47
d, Delay for Lane Group [s/veh]	70.83	12.98	13.00	72.09	18.69	18.74	69.23	56.94	59.39	63.52	45.13	45.32
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.87	6.02	5.89	0.88	10.97	10.82	2.49	5.93	5.55	4.86	4.04	3.87
50th-Percentile Queue Length [ft/ln]	71.76	150.4	147.3	21.92	274.1	270.4	62.30	148.3	138.7	121.5	100.9	96.72
95th-Percentile Queue Length [veh/ln]	5.17	10.04	9.87	1.58	16.40	16.21	4.49	9.93	9.41	8.48	7.27	6.96
95th-Percentile Queue Length [ft/ln]	129.1	251.0	246.8	39.45	409.9	405.2	112.1	248.1	235.2	211.9	181.7	174.1

Movement, Approach, & Intersection Results

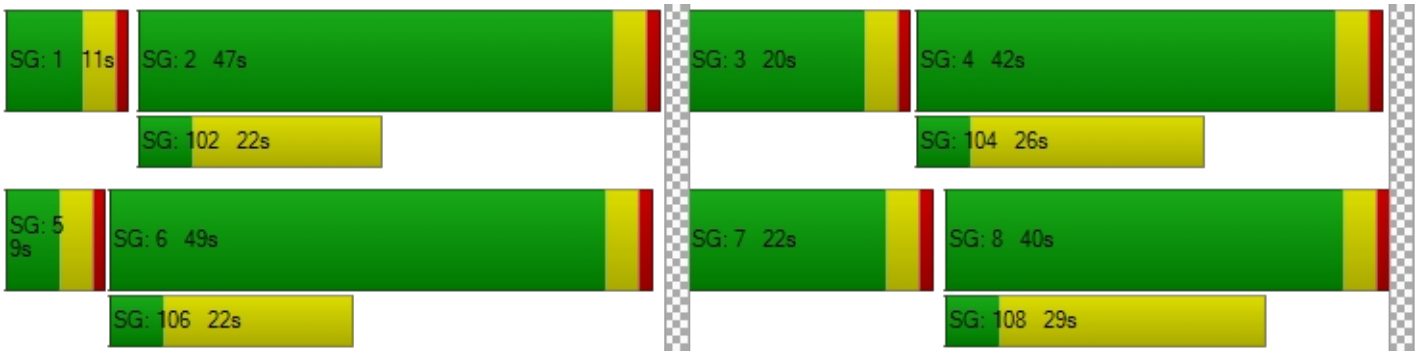
d_M, Delay for Movement [s/veh]	70.83	12.99	13.00	72.09	18.71	18.74	69.23	57.34	59.39	63.52	45.20	45.32
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	18.07			19.76			59.96			51.39		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	29.54											
Intersection LOS	C											
Intersection V/C	0.580											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.938	2.818	2.472	2.459
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	717	600	633
d_b, Bicycle Delay [s]	23.44	24.70	29.40	28.02
l_b,int, Bicycle LOS Score for Intersection	2.330	2.572	1.918	1.919
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	45.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	86	48	77	136	246	885	267	400	59	134	1190	220
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	4	0	0	6	47
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	7	0	0	0	94
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	91	51	82	144	261	938	283	435	63	142	1267	374
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	25	14	23	40	72	259	78	120	17	39	349	103
Total Analysis Volume [veh/h]	100	56	90	159	288	1034	312	480	69	157	1397	412
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	13	0	49	50	0	17	30	0	28	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	41	41	13	46	46	46	13	42	42	8	37	37
g / C, Green / Cycle	0.07	0.34	0.34	0.11	0.39	0.39	0.39	0.11	0.35	0.35	0.07	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.06	0.02	0.06	0.09	0.16	0.34	0.34	0.09	0.10	0.05	0.05	0.28	0.27
s, saturation flow rate [veh/h]	1714	3427	1530	171	180	153	153	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	114	1175	525	190	697	592	592	361	1699	530	220	1493	466
d1, Uniform Delay [s]	55.50	26.34	27.53	52.2	26.8	34.0	34.0	52.64	28.40	26.83	54.91	40.59	39.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.04	0.08	0.71	9.24	1.81	16.2	16.2	6.27	0.09	0.11	4.24	3.40	16.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.05	0.17	0.84	0.41	0.87	0.87	0.87	0.28	0.13	0.71	0.94	0.88
d, Delay for Lane Group [s/veh]	73.54	26.41	28.23	61.5	28.6	50.2	50.2	58.90	28.49	26.94	59.15	43.99	56.17
Lane Group LOS	E	C	C	E	C	D	D	E	C	C	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.57	0.55	1.92	5.18	6.36	16.3	16.3	4.93	3.36	1.38	2.46	13.69	13.57
50th-Percentile Queue Length [ft/ln]	89.25	13.83	48.01	129.	159.	409.	409.	123.3	84.08	34.52	61.44	342.2	339.3
95th-Percentile Queue Length [veh/ln]	6.43	1.00	3.46	8.91	10.5	23.0	23.0	8.58	6.05	2.49	4.42	19.76	19.62
95th-Percentile Queue Length [ft/ln]	160.6	24.90	86.41	222.	262.	575.	575.	214.4	151.3	62.13	110.5	493.9	490.3

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.54	26.41	28.23	61.51	28.63	50.25	58.90	28.49	26.94	59.15	43.99	56.17
Movement LOS	E	C	C	E	C	D	E	C	C	E	D	E
d_A, Approach Delay [s/veh]	46.24			47.26			39.38			47.76		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.93											
Intersection LOS	D											
Intersection V/C	0.775											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.592	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	150	767	433	617
d_b, Bicycle Delay [s]	51.34	22.82	36.82	28.70
l_b,int, Bicycle LOS Score for Intersection	1.763	2.781	2.033	2.641
Bicycle LOS	A	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	50.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.693

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	44	25	34	338	49	955	255	331	25	30	552	95
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	45	0	0	0	4	0	0	53	0
Site-Generated Trips [veh/h]	0	0	0	99	0	0	0	7	0	0	94	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	27	36	502	52	1012	270	362	27	32	732	101
Peak Hour Factor	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	7	10	135	14	271	72	97	7	9	196	27
Total Analysis Volume [veh/h]	50	29	39	539	56	1086	290	388	29	34	785	108
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	48	0	9	23	0	16	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	6	44	44	44	13	51	51	3	42	42
g / C, Green / Cycle	0.05	0.05	0.05	0.37	0.37	0.37	0.11	0.43	0.43	0.03	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.03	0.17	0.17	0.40	0.09	0.08	0.02	0.02	0.17	0.18
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1730	2708	3329	4903	1530	1714	3427	1691
c, Capacity [veh/h]	80	84	71	629	634	993	356	2084	650	49	1188	586
d1, Uniform Delay [s]	56.17	55.43	55.96	29.12	29.07	38.00	52.43	21.54	20.22	57.79	31.02	31.07
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.13	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.77	2.43	6.38	0.55	0.54	46.95	4.57	0.20	0.13	16.51	1.52	3.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.35	0.55	0.47	0.47	1.09	0.82	0.19	0.04	0.70	0.50	0.51
d, Delay for Lane Group [s/veh]	63.95	57.86	62.34	29.67	29.61	84.95	56.99	21.74	20.35	74.30	32.54	34.18
Lane Group LOS	E	E	E	C	C	F	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.66	0.91	1.28	6.66	6.64	20.76	4.49	2.32	0.50	1.25	7.08	7.31
50th-Percentile Queue Length [ft/ln]	41.52	22.71	32.07	166.4	166.1	519.1	112.3	58.10	12.61	31.17	176.9	182.7
95th-Percentile Queue Length [veh/ln]	2.99	1.64	2.31	10.89	10.87	29.96	7.97	4.18	0.91	2.24	11.44	11.74
95th-Percentile Queue Length [ft/ln]	74.74	40.88	57.73	272.2	271.7	748.9	199.2	104.5	22.70	56.10	285.9	293.5

Movement, Approach, & Intersection Results

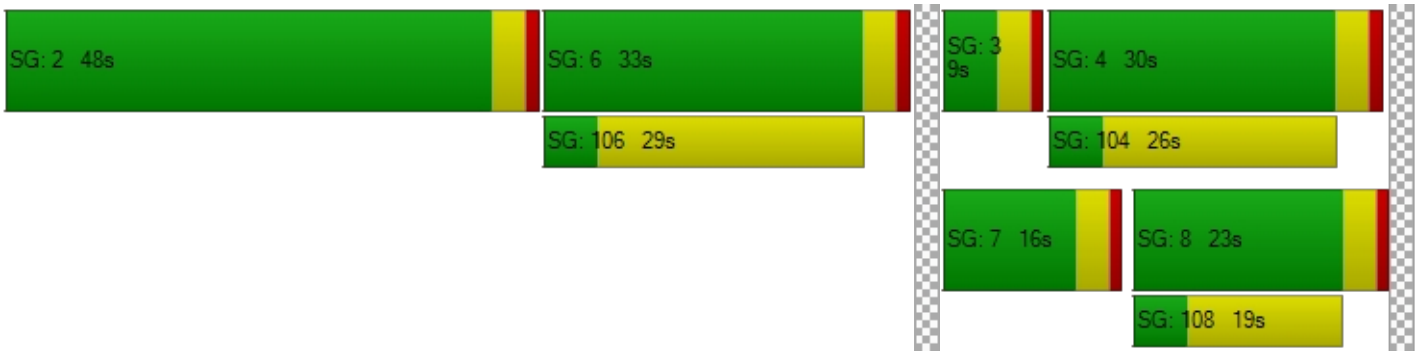
d_M, Delay for Movement [s/veh]	63.95	57.86	62.34	29.64	29.61	84.95	56.99	21.74	20.35	74.30	32.93	34.18
Movement LOS	E	E	E	C	C	F	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	61.92			65.37			36.14			34.60		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	50.92											
Intersection LOS	D											
Intersection V/C	0.693											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.204	2.811	0.000	2.873
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	733	317	433
d_b, Bicycle Delay [s]	34.50	24.07	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.657	4.333	1.948	2.069
Bicycle LOS	A	E	A	B

Sequence

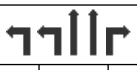
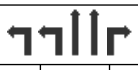
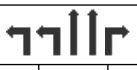
Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	36.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	228	643	85	59	766	139	149	155	92	143	309	42
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	7	2	0	1	2	27	22	0	12	51	35
Site-Generated Trips [veh/h]	0	0	6	7	0	0	0	106	0	101	94	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	242	689	98	70	813	149	185	292	98	265	473	80
Peak Hour Factor	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	65	186	26	19	219	40	50	79	26	71	128	22
Total Analysis Volume [veh/h]	261	743	106	76	877	161	200	315	106	286	510	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Unsig	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	44	0	9	36	0	14	36	0	31	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	67	5	60	60	9	20	20	13	23	23
g / C, Green / Cycle	0.09	0.56	0.04	0.50	0.50	0.08	0.16	0.16	0.11	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.08	0.22	0.02	0.26	0.11	0.06	0.09	0.07	0.09	0.17	0.17
s, saturation flow rate [veh/h]	3329	3427	3329	3427	1530	3329	3427	1530	3329	1800	1711
c, Capacity [veh/h]	316	1912	128	1719	767	253	558	249	358	349	332
d1, Uniform Delay [s]	53.33	14.97	56.78	20.04	16.66	54.49	46.31	45.18	52.29	46.93	46.94
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.46	0.60	4.35	1.09	0.62	5.43	0.90	1.15	4.15	6.90	7.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.39	0.59	0.51	0.21	0.79	0.56	0.43	0.80	0.87	0.87
d, Delay for Lane Group [s/veh]	58.79	15.56	61.13	21.12	17.29	59.92	47.21	46.34	56.44	53.83	54.18
Lane Group LOS	E	B	E	C	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.10	5.77	1.21	8.34	2.60	3.16	4.41	2.93	4.41	9.50	9.06
50th-Percentile Queue Length [ft/ln]	102.58	144.24	30.29	208.4	65.00	79.02	110.2	73.24	110.3	237.5	226.6
95th-Percentile Queue Length [veh/ln]	7.39	9.71	2.18	13.08	4.68	5.69	7.85	5.27	7.86	14.55	14.00
95th-Percentile Queue Length [ft/ln]	184.65	242.72	54.52	326.8	116.9	142.2	196.3	131.8	196.4	363.8	350.0

Movement, Approach, & Intersection Results

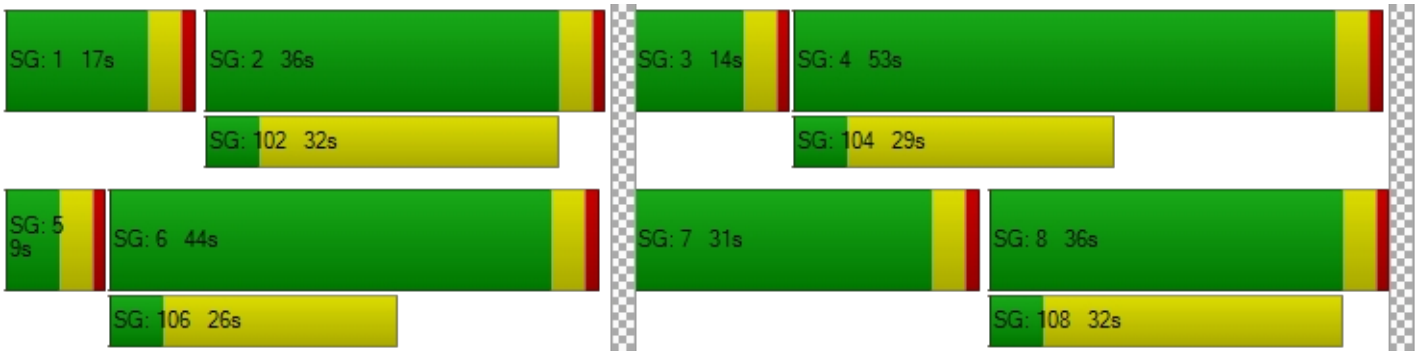
d_M, Delay for Movement [s/veh]	58.79	15.56	0.00	61.13	21.12	17.29	59.92	47.21	46.34	56.44	53.97	54.18
Movement LOS	E	B		E	C	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.80			23.30			51.15			54.79		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.72											
Intersection LOS	D											
Intersection V/C	0.564											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.018	2.908	2.930	2.675
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	533	533	817
d_b, Bicycle Delay [s]	26.67	32.27	32.27	21.00
l_b,int, Bicycle LOS Score for Intersection	2.388	2.479	2.072	2.287
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	34.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	46	3	220	4	8	0	1	182	33	263	473	2
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	35	0	39	0	0	0	0	24	0	86	62	0
Site-Generated Trips [veh/h]	0	0	31	0	0	0	0	119	0	11	195	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	3	303	4	8	0	1	336	35	376	758	2
Peak Hour Factor	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	23	1	85	1	2	0	0	94	10	105	212	1
Total Analysis Volume [veh/h]	94	3	339	4	9	0	1	375	39	420	847	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	35	0	9	35	0	37	26	0	50	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	36	29	36	0	41	41	32	72	72
g / C, Green / Cycle	0.30	0.30	0.24	0.30	0.00	0.34	0.34	0.26	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.22	0.01	0.00	0.11	0.03	0.25	0.24	0.24
s, saturation flow rate [veh/h]	1428	1390	1530	1421	1714	3427	1530	1714	1800	1799
c, Capacity [veh/h]	407	530	366	476	3	1161	518	452	1081	1081
d1, Uniform Delay [s]	31.08	31.08	44.64	29.88	59.81	29.45	26.91	43.07	12.51	12.52
k, delay calibration	0.11	0.25	0.31	0.11	0.11	0.50	0.50	0.16	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	0.19	22.99	0.02	46.07	0.74	0.28	11.86	1.07	1.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.10	0.93	0.03	0.31	0.32	0.08	0.93	0.39	0.39
d, Delay for Lane Group [s/veh]	31.20	31.27	67.63	29.90	105.8	30.19	27.20	54.92	13.59	13.59
Lane Group LOS	C	C	E	C	F	C	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.92	1.21	12.13	0.27	0.07	4.15	0.81	13.54	6.10	6.10
50th-Percentile Queue Length [ft/ln]	23.07	30.24	303.1	6.80	1.80	103.7	20.17	338.3	152.6	152.5
95th-Percentile Queue Length [veh/ln]	1.66	2.18	17.84	0.49	0.13	7.47	1.45	19.57	10.16	10.15
95th-Percentile Queue Length [ft/ln]	41.53	54.43	445.9	12.24	3.24	186.7	36.31	489.2	253.9	253.7

Movement, Approach, & Intersection Results

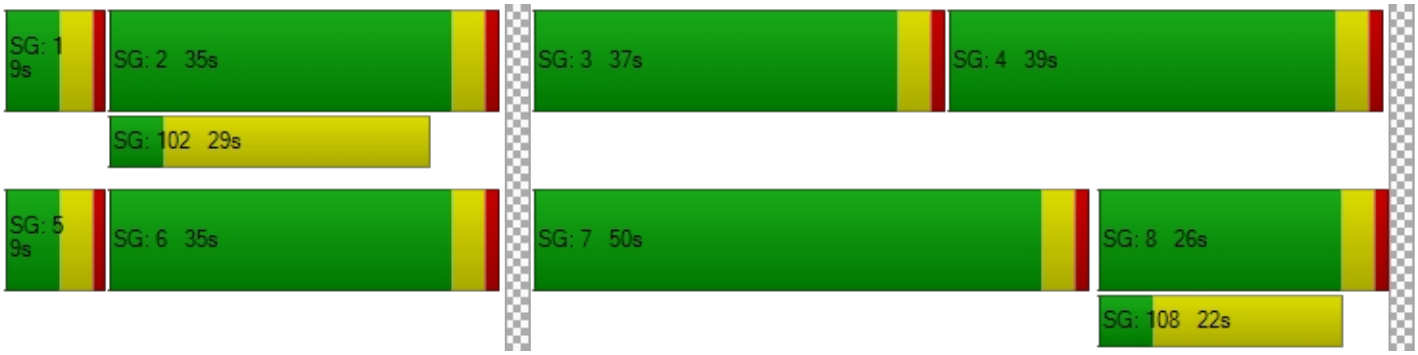
d_M, Delay for Movement [s/veh]	31.20	31.27	67.63	29.90	29.90	29.90	105.8	30.19	27.20	54.92	13.59	13.59
Movement LOS	C	C	E	C	C	C	F	C	C	D	B	B
d_A, Approach Delay [s/veh]	59.53			29.90			30.09			27.27		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	34.43											
Intersection LOS	C											
Intersection V/C	0.586											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.491	0.000	2.936	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	667	367	583
d_b, Bicycle Delay [s]	26.67	26.67	40.02	30.10
l_b,int, Bicycle LOS Score for Intersection	2.279	1.581	1.902	2.607
Bicycle LOS	B	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	16.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.340

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	3	0	397	746	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	146	0	60	3	0
Site-Generated Trips [veh/h]	0	0	0	150	206	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	149	0	631	1000	1
Peak Hour Factor	0.9060	0.9060	1.0000	0.9060	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	41	0	174	276	0
Total Analysis Volume [veh/h]	0	164	0	696	1104	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.34	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	37.94	16.26	10.74	0.00	0.00	0.00
Movement LOS	E	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	1.49	1.49	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	37.26	37.26	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	16.26		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.36					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	46.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.803

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	111	854	95	88	904	383	181	80	118	143	332	79
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	88	0	12	131	3	60	0	0	0	0	10
Site-Generated Trips [veh/h]	0	325	0	10	181	206	150	0	0	0	0	25
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	118	1318	101	115	1270	615	402	85	125	152	352	119
Peak Hour Factor	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	32	360	28	31	347	168	110	23	34	42	96	33
Total Analysis Volume [veh/h]	129	1440	110	126	1388	672	439	93	137	166	385	130
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	37	0	13	35	35	34	43	0	27	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	44	44	9	43	77	30	37	14	21	21
g / C, Green / Cycle	0.09	0.37	0.37	0.08	0.36	0.64	0.25	0.31	0.11	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.08	0.30	0.30	0.07	0.28	0.44	0.26	0.03	0.10	0.15	0.15
s, saturation flow rate [veh/h]	1714	3427	1735	1714	4903	1530	1714	3427	1714	1800	1647
c, Capacity [veh/h]	154	1264	640	129	1737	976	429	1056	196	311	285
d1, Uniform Delay [s]	53.78	34.15	34.16	55.41	34.89	14.05	45.00	29.52	52.08	48.24	48.31
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.47	0.11	0.11	0.13	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.46	5.81	10.91	32.30	3.95	3.97	48.43	0.04	9.48	8.15	9.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.81	0.81	0.98	0.80	0.69	1.02	0.09	0.84	0.86	0.87
d, Delay for Lane Group [s/veh]	65.24	39.96	45.06	87.71	38.84	18.02	93.43	29.56	61.56	56.39	57.74
Lane Group LOS	E	D	D	F	D	B	F	C	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.32	14.34	15.45	4.95	12.65	12.07	18.40	0.97	5.42	8.48	7.93
50th-Percentile Queue Length [ft/ln]	108.0	358.6	386.2	123.8	316.2	301.6	460.09	24.24	135.4	212.1	198.2
95th-Percentile Queue Length [veh/ln]	7.73	20.56	21.89	8.60	18.48	17.76	25.81	1.75	9.23	13.26	12.55
95th-Percentile Queue Length [ft/ln]	193.2	513.9	547.3	215.1	462.0	444.0	645.32	43.63	230.8	331.5	313.6

Movement, Approach, & Intersection Results

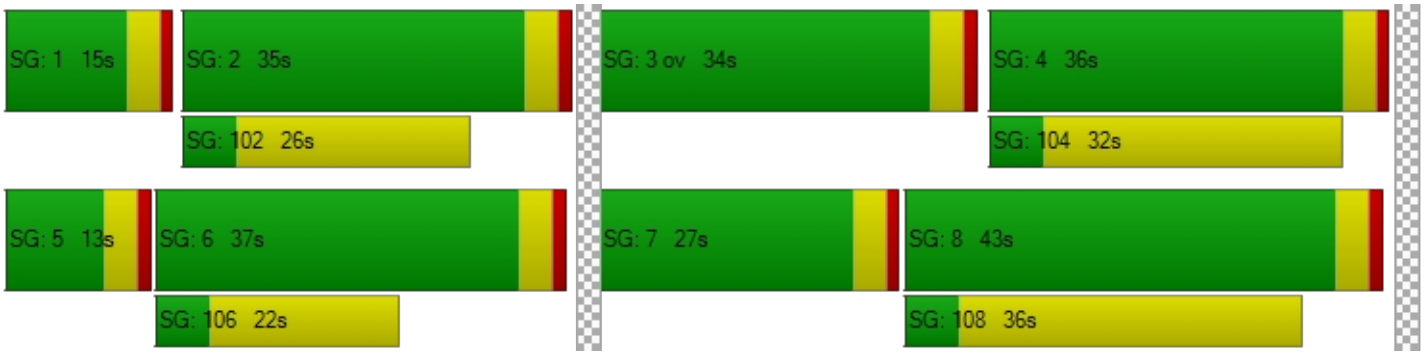
d_M, Delay for Movement [s/veh]	65.24	41.42	45.06	87.71	38.84	18.02	93.43	29.56	0.00	61.56	56.80	57.74
Movement LOS	E	D	D	F	D	B	F	C		E	E	E
d_A, Approach Delay [s/veh]	43.49			35.25			82.27			58.14		
Approach LOS	D			D			F			E		
d_I, Intersection Delay [s/veh]	45.97											
Intersection LOS	D											
Intersection V/C	0.803											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.215	3.252	2.747	2.512
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	517	650	533
d_b, Bicycle Delay [s]	31.54	33.00	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.483	2.762	1.999	2.121
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.518

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	29	126	6	43	129	75	30	216	16	7	341	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	2	0	0	0	6	0	0	6	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	10	0	0	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	134	6	48	137	80	32	245	17	7	385	70
Peak Hour Factor	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	44	2	16	45	26	10	80	6	2	125	23
Total Analysis Volume [veh/h]	40	174	8	63	178	104	42	319	22	9	501	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	29	0	0	29	0	9	82	0	9	82	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	68	68	4	38	1	36	36
g / C, Green / Cycle	0.57	0.57	0.03	0.32	0.01	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.14	0.21	0.02	0.19	0.01	0.28	0.06
s, saturation flow rate [veh/h]	1609	1606	1714	1780	1714	1800	1530
c, Capacity [veh/h]	949	948	54	570	20	540	459
d1, Uniform Delay [s]	12.78	14.01	57.67	34.31	58.91	40.72	31.24
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.58	1.08	20.28	1.01	14.68	7.47	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.36	0.77	0.60	0.45	0.93	0.20
d, Delay for Lane Group [s/veh]	13.35	15.09	77.95	35.32	73.58	48.19	31.45
Lane Group LOS	B	B	E	D	E	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.06	5.24	1.57	8.51	0.35	15.33	2.01
50th-Percentile Queue Length [ft/ln]	76.58	131.04	39.30	212.70	8.86	383.2	50.17
95th-Percentile Queue Length [veh/ln]	5.51	9.00	2.83	13.29	0.64	21.75	3.61
95th-Percentile Queue Length [ft/ln]	137.84	224.91	70.74	332.29	15.94	543.7	90.31

Movement, Approach, & Intersection Results

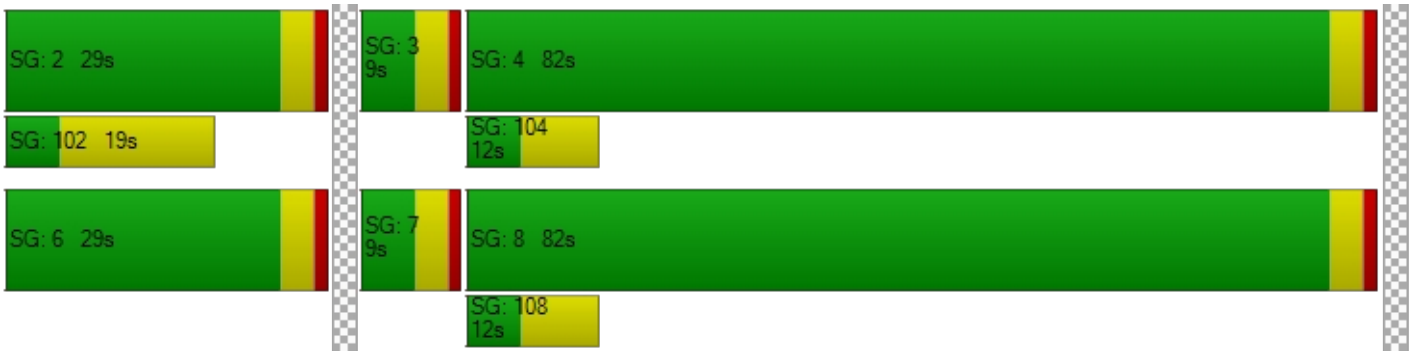
d_M, Delay for Movement [s/veh]	13.35	13.35	13.35	15.09	15.09	15.09	77.95	35.32	35.32	73.58	48.19	31.45
Movement LOS	B	B	B	B	B	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	13.35			15.09			40.00			46.04		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	32.98											
Intersection LOS	C											
Intersection V/C	0.518											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	1.940	2.048	2.454	0.000
Crosswalk LOS	A	B	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	417	1300	1300
d_b, Bicycle Delay [s]	37.60	37.60	7.35	7.35
l_b,int, Bicycle LOS Score for Intersection	1.926	2.129	2.192	2.551
Bicycle LOS	A	B	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.333

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	1	21	14	9	8	0	42	34	21	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	6	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	7	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	35	15	10	8	0	45	36	22	16
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	11	5	3	3	0	14	11	7	5
Total Analysis Volume [veh/h]	1	45	19	13	10	0	57	46	28	20
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	30	0	0	0	0	30	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	13	13
g / C, Green / Cycle	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10
s, saturation flow rate [veh/h]	1308	1575
c, Capacity [veh/h]	191	216
d1, Uniform Delay [s]	50.50	52.32
k, delay calibration	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	1.72	4.03
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.70
d, Delay for Lane Group [s/veh]	52.22	56.35
Lane Group LOS	D	E
Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	2.61	4.70
50th-Percentile Queue Length [ft/ln]	65.22	117.60
95th-Percentile Queue Length [veh/ln]	4.70	8.26
95th-Percentile Queue Length [ft/ln]	117.39	206.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.22	52.22	52.22	52.22	52.22	56.35	56.35	56.35	56.35	56.35
Movement LOS	D	D	D	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	52.22					56.35				
Approach LOS	D					E				
d_I, Intersection Delay [s/veh]	32.10									
Intersection LOS	C									
Intersection V/C	0.333									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.863	1.917
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433
d_b, Bicycle Delay [s]	36.82	36.82
l_b,int, Bicycle LOS Score for Intersection	1.614	1.682
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	9	42	159	11	5	1	9	169	11	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	1	7	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	10	0	0	0	0	11	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	45	180	19	5	1	10	190	12	6
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	14	57	6	2	0	3	61	4	2
Total Analysis Volume [veh/h]	13	57	229	24	6	1	13	242	15	8
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	52	0	0	9	0	52	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	82	76	82	73	73
g / C, Green / Cycle	0.68	0.63	0.68	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.06	0.15	0.01	0.13	0.02
s, saturation flow rate [veh/h]	1178	1764	1166	1800	1530
c, Capacity [veh/h]	803	1117	787	1102	936
d1, Uniform Delay [s]	6.70	9.45	6.52	10.44	9.17
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	0.49	0.01	0.46	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.23	0.02	0.22	0.02
d, Delay for Lane Group [s/veh]	6.91	9.94	6.53	10.90	9.22
Lane Group LOS	A	A	A	B	A
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.61	2.99	0.11	2.96	0.25
50th-Percentile Queue Length [ft/ln]	15.25	74.70	2.77	73.91	6.19
95th-Percentile Queue Length [veh/ln]	1.10	5.38	0.20	5.32	0.45
95th-Percentile Queue Length [ft/ln]	27.45	134.46	4.98	133.04	11.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.91	6.91	9.94	9.94	9.94	6.53	6.53	10.90	9.22	9.22
Movement LOS	A	A	A	A	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	9.30					10.54				
Approach LOS	A					B				
d_I, Intersection Delay [s/veh]	32.10									
Intersection LOS	C									
Intersection V/C	0.333									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.282	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	800
d_b, Bicycle Delay [s]	21.60	21.60
l_b,int, Bicycle LOS Score for Intersection	1.999	1.985
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	10	36	12	1	3	14	94	78	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	11	38	13	1	3	15	100	83	2
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	12	4	0	1	5	32	26	1
Total Analysis Volume [veh/h]	0	14	48	17	1	4	19	127	106	3
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	29	0	0	0	0	29	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13
g / C, Green / Cycle	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.08	0.09	0.07
s, saturation flow rate [veh/h]	973	1710	1530
c, Capacity [veh/h]	138	215	162
d1, Uniform Delay [s]	50.43	52.49	51.66
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	3.80	4.02	4.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.70	0.67
d, Delay for Lane Group [s/veh]	54.23	56.51	56.47
Lane Group LOS	D	E	E
Critical Lane Group	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.40	4.66	3.37
50th-Percentile Queue Length [ft/ln]	60.07	116.60	84.35
95th-Percentile Queue Length [veh/ln]	4.32	8.21	6.07
95th-Percentile Queue Length [ft/ln]	108.12	205.14	151.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.23	54.23	54.23	54.23	54.23	56.51	56.51	56.51	56.47	56.47
Movement LOS	D	D	D	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	54.23					56.49				
Approach LOS	D					E				
d_I, Intersection Delay [s/veh]	32.10									
Intersection LOS	C									
Intersection V/C	0.333									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.933	2.224
Crosswalk LOS	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	417
d_b, Bicycle Delay [s]	37.60	37.60
l_b,int, Bicycle LOS Score for Intersection	1.640	1.975
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	38.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.653

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	116	589	159	100	785	63	135	118	67	107	130	261
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	31	0	10	32	0	0	1	0	0	0	8
Site-Generated Trips [veh/h]	0	7	0	0	0	0	0	10	0	0	11	8
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	123	662	169	116	864	67	143	136	71	113	149	293
Peak Hour Factor	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	33	178	45	31	232	18	38	36	19	30	40	79
Total Analysis Volume [veh/h]	132	710	181	124	927	72	153	146	76	121	160	314
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	40	0	16	41	0	16	41	0	23	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	54	54	10	54	54	12	29	29	10	27	27
g / C, Green / Cycle	0.09	0.45	0.45	0.09	0.45	0.45	0.10	0.24	0.24	0.09	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.26	0.07	0.28	0.28	0.09	0.06	0.07	0.07	0.09	0.21
s, saturation flow rate [veh/h]	1714	1800	1675	1714	1800	1755	1714	1800	1599	1714	1800	1530
c, Capacity [veh/h]	157	814	758	149	807	786	171	432	384	150	409	348
d1, Uniform Delay [s]	53.67	24.19	24.19	53.91	25.42	25.42	53.36	37.03	37.14	53.78	39.33	45.08
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.47	2.85	3.06	11.20	3.67	3.77	14.49	0.33	0.39	9.87	0.61	10.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.57	0.57	0.83	0.63	0.63	0.89	0.27	0.28	0.81	0.39	0.90
d, Delay for Lane Group [s/veh]	65.14	27.04	27.25	65.11	29.09	29.19	67.86	37.36	37.53	63.66	39.94	55.65
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.42	10.16	9.51	4.15	11.72	11.45	5.25	2.80	2.61	4.00	4.09	10.07
50th-Percentile Queue Length [ft/ln]	110.4	254.0	237.6	103.6	292.9	286.3	131.1	70.02	65.27	99.98	102.2	251.6
95th-Percentile Queue Length [veh/ln]	7.87	15.39	14.56	7.46	17.33	17.00	9.00	5.04	4.70	7.20	7.36	15.27
95th-Percentile Queue Length [ft/ln]	196.6	384.8	364.0	186.6	433.2	425.0	225.0	126.0	117.4	179.9	184.0	381.7

Movement, Approach, & Intersection Results

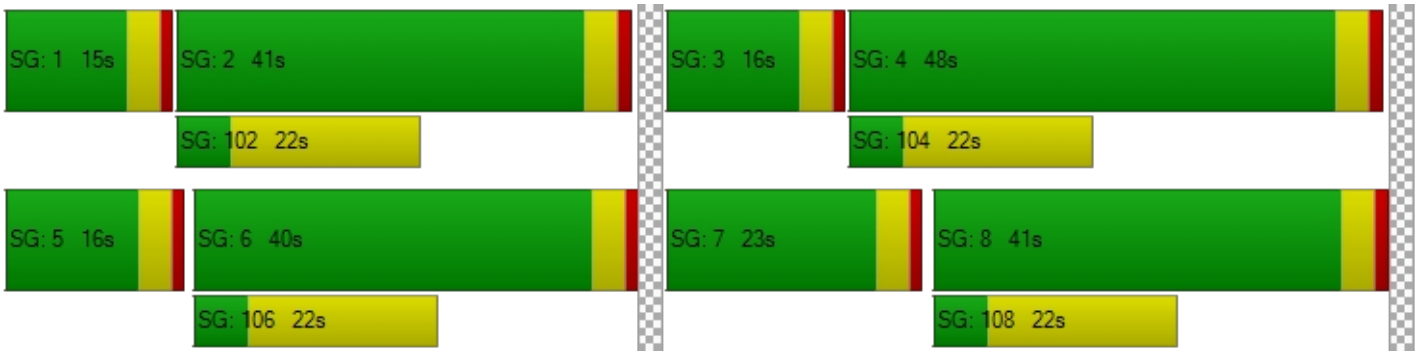
d_M, Delay for Movement [s/veh]	65.14	27.11	27.25	65.11	29.13	29.19	67.86	37.39	37.53	63.66	39.94	55.65
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	32.04			33.11			49.85			53.05		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.58											
Intersection LOS	D											
Intersection V/C	0.653											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.734	2.764	2.459	2.638
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	617	617	733
d_b, Bicycle Delay [s]	29.40	28.70	28.70	24.07
l_b,int, Bicycle LOS Score for Intersection	2.404	2.486	1.869	2.050
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.680

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	731	162	10	1158	67	27	177	83	258	306	38
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	1	13	0	4	22	0	0	2	2	0	1	3
Site-Generated Trips [veh/h]	11	13	0	0	0	0	0	0	10	0	1	6
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	801	172	15	1249	71	29	190	100	273	326	49
Peak Hour Factor	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	210	45	4	328	19	8	50	26	72	86	13
Total Analysis Volume [veh/h]	67	841	180	16	1311	75	30	199	105	286	342	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	27	0	9	26	0	32	36	0	48	52	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	66	66	2	62	62	3	14	14	22	32	32
g / C, Green / Cycle	0.05	0.55	0.55	0.02	0.52	0.52	0.03	0.11	0.11	0.19	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.04	0.25	0.12	0.01	0.38	0.05	0.02	0.09	0.09	0.17	0.11	0.11
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1598	1714	1800	1720
c, Capacity [veh/h]	85	1888	843	30	1778	794	48	203	180	318	487	465
d1, Uniform Delay [s]	56.42	16.04	13.72	58.47	22.49	14.60	57.70	51.74	51.99	47.78	35.94	35.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.00	0.76	0.58	14.10	2.77	0.24	12.63	6.18	8.52	9.11	0.56	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.45	0.21	0.54	0.74	0.09	0.63	0.77	0.81	0.90	0.41	0.41
d, Delay for Lane Group [s/veh]	71.42	16.80	14.30	72.57	25.27	14.84	70.34	57.91	60.51	56.88	36.50	36.55
Lane Group LOS	E	B	B	E	C	B	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.36	6.92	2.60	0.60	14.63	1.09	1.07	4.95	4.74	9.14	4.91	4.72
50th-Percentile Queue Length [ft/ln]	59.03	173.1	64.93	14.98	365.7	27.20	26.76	123.7	118.5	228.4	122.8	117.9
95th-Percentile Queue Length [veh/ln]	4.25	11.24	4.68	1.08	20.90	1.96	1.93	8.60	8.31	14.09	8.55	8.28
95th-Percentile Queue Length [ft/ln]	106.2	281.0	116.8	26.97	522.6	48.97	48.16	214.9	207.7	352.3	213.6	207.0

Movement, Approach, & Intersection Results

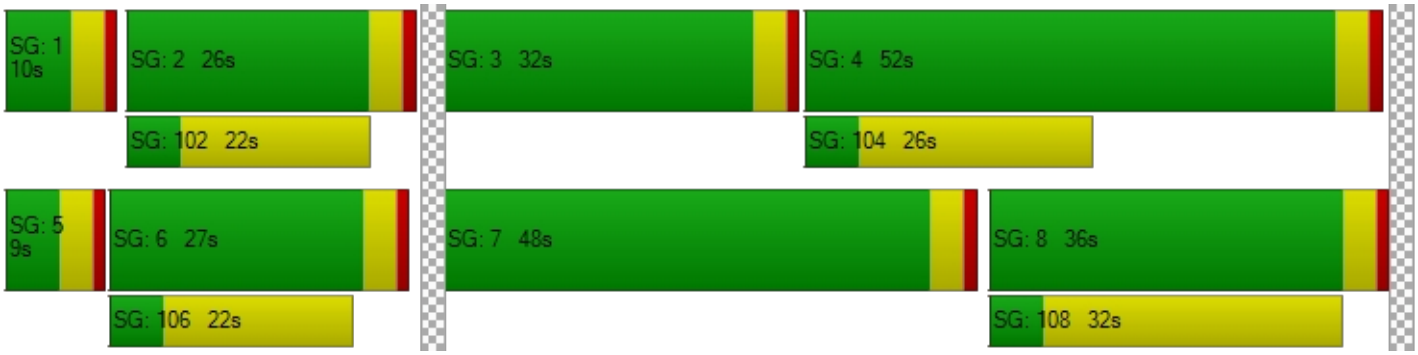
d_M, Delay for Movement [s/veh]	71.42	16.80	14.30	72.57	25.27	14.84	70.34	58.46	60.51	56.88	36.52	36.55
Movement LOS	E	B	B	E	C	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	19.75			25.25			60.17			45.10		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	30.72											
Intersection LOS	C											
Intersection V/C	0.680											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.081	2.846	2.475	2.525
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	367	533	800
d_b, Bicycle Delay [s]	39.20	40.02	32.27	21.60
l_b,int, Bicycle LOS Score for Intersection	2.457	2.716	1.835	2.120
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.323

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	6	102	8	8	123	45	21	43	2	21	147	7
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	108	8	8	130	48	22	46	2	22	156	7
Peak Hour Factor	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	32	2	2	38	14	6	13	1	6	46	2
Total Analysis Volume [veh/h]	7	126	9	9	152	56	26	54	2	26	183	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	722	755	679	647	751
Degree of Utilization, x	0.20	0.29	0.12	0.32	0.01

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.73	1.19	0.41	1.40	0.03
95th-Percentile Queue Length [ft]	18.19	29.76	10.24	34.89	0.81
Approach Delay [s/veh]	9.21	9.69	9.03	10.77	
Approach LOS	A	A	A	B	
Intersection Delay [s/veh]	9.86				
Intersection LOS	A				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.483

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	292	941	78	41	857	43	25	45	128	165	161	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	9	0	0	13	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	0	101	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	310	1012	83	43	1022	46	27	48	136	175	171	72
Peak Hour Factor	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	85	278	23	12	280	13	7	13	37	48	47	20
Total Analysis Volume [veh/h]	340	1111	91	47	1122	50	30	53	149	192	188	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	25	62	0	12	49	0	13	30	0	16	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	77	77	4	67	67	3	14	14	9	20	20
g / C, Green / Cycle	0.12	0.64	0.64	0.04	0.55	0.55	0.03	0.12	0.12	0.07	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.10	0.23	0.23	0.03	0.23	0.23	0.02	0.02	0.10	0.06	0.05	0.05
s, saturation flow rate [veh/h]	3329	3427	1731	1714	3427	1761	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	406	2195	1109	60	1898	975	46	398	178	249	561	251
d1, Uniform Delay [s]	51.52	10.11	10.11	57.42	15.42	15.43	57.80	47.61	51.93	54.51	44.39	44.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.65	0.47	0.93	18.99	0.65	1.27	14.03	0.15	9.98	5.04	0.35	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.36	0.36	0.78	0.41	0.41	0.65	0.13	0.84	0.77	0.33	0.32
d, Delay for Lane Group [s/veh]	56.18	10.57	11.03	76.41	16.08	16.69	71.83	47.76	61.91	59.56	44.74	44.95
Lane Group LOS	E	B	B	E	B	B	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.26	4.86	5.06	1.73	6.15	6.49	1.08	0.72	4.88	3.02	2.51	2.13
50th-Percentile Queue Length [ft/ln]	131.4	121.6	126.3	43.34	153.7	162.2	27.09	18.10	122.0	75.58	62.83	53.30
95th-Percentile Queue Length [veh/ln]	9.02	8.48	8.74	3.12	10.22	10.67	1.95	1.30	8.51	5.44	4.52	3.84
95th-Percentile Queue Length [ft/ln]	225.5	212.0	218.5	78.01	255.4	266.7	48.76	32.58	212.6	136.0	113.1	95.94

Movement, Approach, & Intersection Results

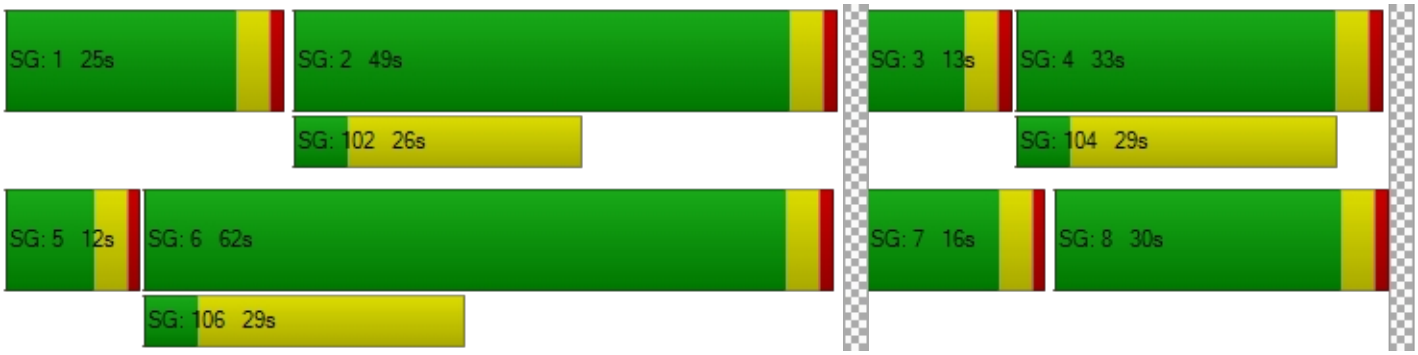
d_M, Delay for Movement [s/veh]	56.18	10.70	11.03	76.41	16.27	16.69	71.83	47.76	61.91	59.56	44.74	44.95
Movement LOS	E	B	B	E	B	B	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	20.75			18.60			59.96			50.98		
Approach LOS	C			B			E			D		
d_I, Intersection Delay [s/veh]	26.65											
Intersection LOS	C											
Intersection V/C	0.483											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.949	2.600	2.700
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	750	433	483
d_b, Bicycle Delay [s]	16.02	23.44	36.82	34.50
l_b,int, Bicycle LOS Score for Intersection	2.408	2.230	1.751	1.938
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.447

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	56	215	398	8	307	42	18	107	21	394	320	30
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	74	0	0	86	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	31	0	0	11	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	333	422	8	422	45	19	113	22	418	339	32
Peak Hour Factor	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	85	108	2	108	11	5	29	6	107	86	8
Total Analysis Volume [veh/h]	60	339	430	8	430	46	19	115	22	426	346	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	36	0	9	36	0	11	10	0	65	64	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	78	78	1	75	75	2	6	6	18	22	22
g / C, Green / Cycle	0.04	0.65	0.65	0.01	0.63	0.63	0.02	0.05	0.05	0.15	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.02	0.19	0.28	0.00	0.13	0.14	0.01	0.03	0.01	0.13	0.10	0.02
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1740	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	120	1175	999	17	1128	1090	34	176	78	508	631	282
d1, Uniform Delay [s]	56.77	8.92	10.07	59.08	9.66	9.67	58.29	55.88	54.79	49.40	44.42	40.82
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	0.62	1.36	18.42	0.43	0.45	13.52	4.08	1.92	3.77	0.75	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.29	0.43	0.47	0.21	0.22	0.56	0.65	0.28	0.84	0.55	0.12
d, Delay for Lane Group [s/veh]	59.96	9.54	11.42	77.50	10.09	10.12	71.81	59.96	56.71	53.16	45.17	41.00
Lane Group LOS	E	A	B	E	B	B	E	E	E	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.95	3.82	5.56	0.33	2.79	2.73	0.70	1.81	0.68	6.46	4.75	0.83
50th-Percentile Queue Length [ft/ln]	23.67	95.60	139.0	8.25	69.80	68.25	17.51	45.24	17.08	161.6	118.6	20.87
95th-Percentile Queue Length [veh/ln]	1.70	6.88	9.43	0.59	5.03	4.91	1.26	3.26	1.23	10.63	8.32	1.50
95th-Percentile Queue Length [ft/ln]	42.60	172.0	235.7	14.84	125.6	122.8	31.51	81.42	30.75	265.8	207.9	37.56

Movement, Approach, & Intersection Results

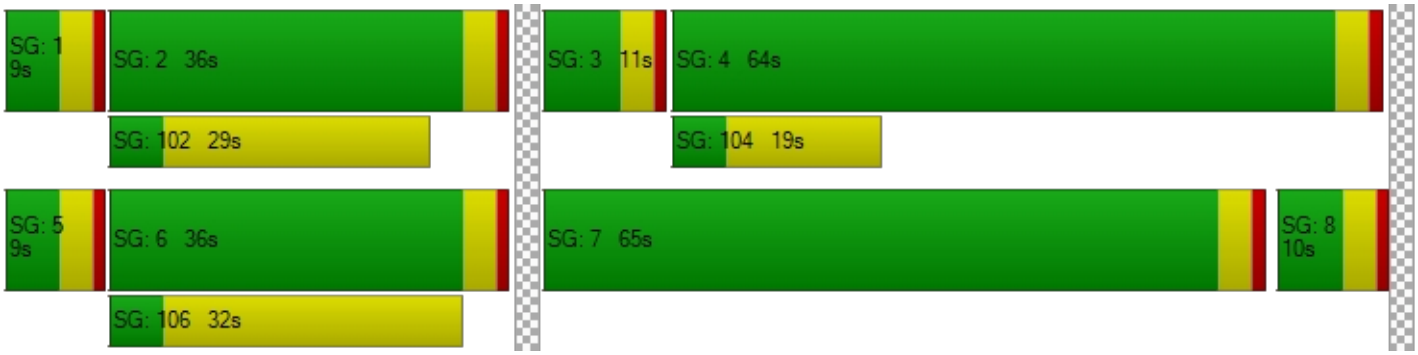
d_M, Delay for Movement [s/veh]	59.96	9.54	11.42	77.50	10.11	10.12	71.81	59.96	56.71	53.16	45.17	41.00
Movement LOS	E	A	B	E	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	14.16			11.22			60.94			49.23		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	29.16											
Intersection LOS	C											
Intersection V/C	0.447											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.360	2.694	2.906
Crosswalk LOS	F	B	B	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	533	100	1000
d_b, Bicycle Delay [s]	32.27	32.27	54.15	15.00
l_b,int, Bicycle LOS Score for Intersection	2.927	1.959	1.688	2.224
Bicycle LOS	C	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	44.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.817

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	466	1012	370	91	1138	69	86	116	267	506	305	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	88	0	1	130	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	300	0	22	159	0	0	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	494	1461	392	119	1495	73	91	123	283	536	323	99
Peak Hour Factor	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	130	384	103	31	393	19	24	32	74	141	85	26
Total Analysis Volume [veh/h]	519	1536	412	125	1572	77	96	129	298	564	340	104
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	44	0	13	36	0	13	40	40	23	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	65	65	9	57	57	5	11	32	19	25	25
g / C, Green / Cycle	0.14	0.54	0.54	0.08	0.47	0.47	0.04	0.09	0.27	0.16	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.16	0.45	0.27	0.07	0.32	0.05	0.03	0.04	0.19	0.17	0.13	0.13
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1657
c, Capacity [veh/h]	472	1852	827	129	2323	725	148	319	410	527	372	343
d1, Uniform Delay [s]	51.50	22.97	17.35	55.38	24.46	17.50	56.40	51.29	39.93	50.50	43.32	43.32
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.29	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	52.92	4.47	2.14	30.66	1.61	0.30	4.68	0.83	6.41	40.30	1.70	1.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.10	0.83	0.50	0.97	0.68	0.11	0.65	0.40	0.73	1.07	0.62	0.62
d, Delay for Lane Group [s/veh]	104.4	27.44	19.49	86.04	26.07	17.80	61.08	52.12	46.34	90.80	45.01	45.16
Lane Group LOS	F	C	B	F	C	B	E	D	D	F	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.53	18.46	7.51	4.86	11.65	1.25	1.53	1.87	8.69	10.83	6.42	5.92
50th-Percentile Queue Length [ft/ln]	263.3	461.5	187.6	121.5	291.3	31.20	38.22	46.74	217.3	270.8	160.4	148.1
95th-Percentile Queue Length [veh/ln]	16.54	25.51	12.00	8.48	17.25	2.25	2.75	3.37	13.53	16.75	10.57	9.92
95th-Percentile Queue Length [ft/ln]	413.4	637.6	299.9	212.0	431.2	56.17	68.79	84.13	338.1	418.7	264.3	247.8

Movement, Approach, & Intersection Results

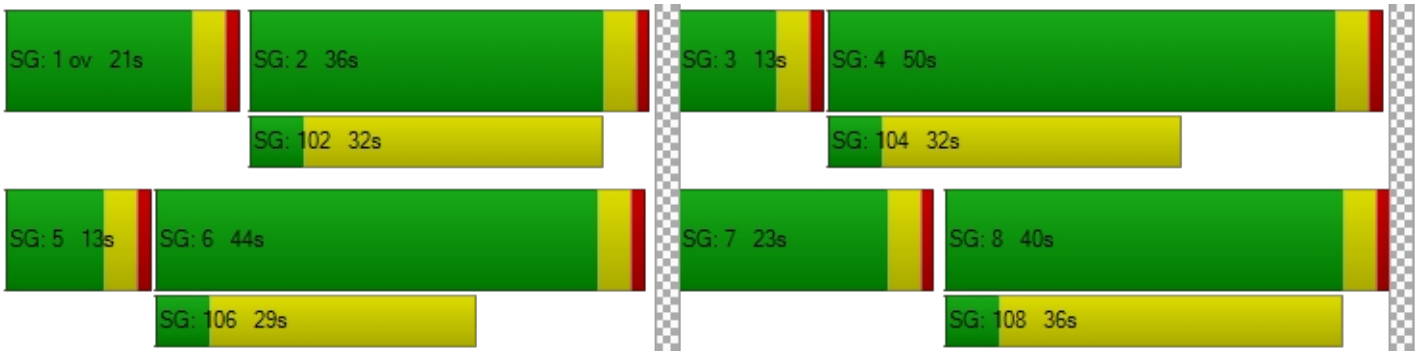
d_M, Delay for Movement [s/veh]	104.4	27.44	19.49	86.04	26.07	17.80	61.08	52.12	46.34	90.80	45.06	45.16
Movement LOS	F	C	B	F	C	B	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	42.30			29.93			50.47			70.66		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	44.20											
Intersection LOS	D											
Intersection V/C	0.817											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.395	3.168	2.919	2.842
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	533	600	767
d_b, Bicycle Delay [s]	26.67	32.27	29.40	22.82
l_b,int, Bicycle LOS Score for Intersection	3.595	2.535	1.991	2.391
Bicycle LOS	D	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.531

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	8	9	4	23	1	73	5	50	26	56	314	11
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	1	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	22	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	10	4	24	1	77	5	53	28	59	356	12
Peak Hour Factor	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	3	1	7	0	22	1	15	8	17	101	3
Total Analysis Volume [veh/h]	9	11	5	27	1	88	6	60	32	67	406	14
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	Permi
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	14	14	71	65	65
g / C, Green / Cycle	0.12	0.12	0.59	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.12	0.12	0.12
s, saturation flow rate [veh/h]	1651	1483	809	1800	1779
c, Capacity [veh/h]	231	223	459	974	963
d1, Uniform Delay [s]	48.17	51.95	12.16	14.32	14.32
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	3.87	1.08	0.51	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.70	0.22	0.22	0.22
d, Delay for Lane Group [s/veh]	48.66	55.82	13.24	14.83	14.84
Lane Group LOS	D	E	B	B	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.45	4.82	1.25	3.10	3.08
50th-Percentile Queue Length [ft/ln]	36.37	120.57	31.37	77.54	76.90
95th-Percentile Queue Length [veh/ln]	2.62	8.42	2.26	5.58	5.54
95th-Percentile Queue Length [ft/ln]	65.47	210.61	56.46	139.58	138.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.66	48.66	48.66	48.66	55.82	55.82	55.82	55.82	13.24	13.24	14.83	14.84
Movement LOS	D	D	D	D	E	E	E	E	B	B	B	B
d_A, Approach Delay [s/veh]	48.66				55.82				14.53			
Approach LOS	D				E				B			
d_I, Intersection Delay [s/veh]	27.58											
Intersection LOS	C											
Intersection V/C	0.531											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.780	0.000	2.726
Crosswalk LOS	A	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	250
d_b, Bicycle Delay [s]	45.94	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.601	1.670	1.933
Bicycle LOS	A	A	A

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	16	545	49	18	10	9	194	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	602	52	19	11	10	206	1
Peak Hour Factor	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	172	15	5	3	3	59	0
Total Analysis Volume [veh/h]	19	686	59	22	13	11	235	1
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	19	0	0	0	73	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	62	62	62	22
g / C, Green / Cycle	0.02	0.52	0.52	0.52	0.19
(v / s)_i Volume / Saturation Flow Rate	0.01	0.15	0.23	0.05	0.17
s, saturation flow rate [veh/h]	1714	1800	1800	1530	1548
c, Capacity [veh/h]	34	936	936	796	290
d1, Uniform Delay [s]	58.30	16.23	17.98	14.58	47.61
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.79	0.77	1.54	0.26	9.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.29	0.45	0.10	0.90
d, Delay for Lane Group [s/veh]	72.10	17.01	19.52	14.84	57.20
Lane Group LOS	E	B	B	B	E
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.70	4.34	7.51	1.18	8.34
50th-Percentile Queue Length [ft/ln]	17.55	108.38	187.80	29.41	208.48
95th-Percentile Queue Length [veh/ln]	1.26	7.75	12.01	2.12	13.08
95th-Percentile Queue Length [ft/ln]	31.59	193.75	300.18	52.94	326.88

Movement, Approach, & Intersection Results

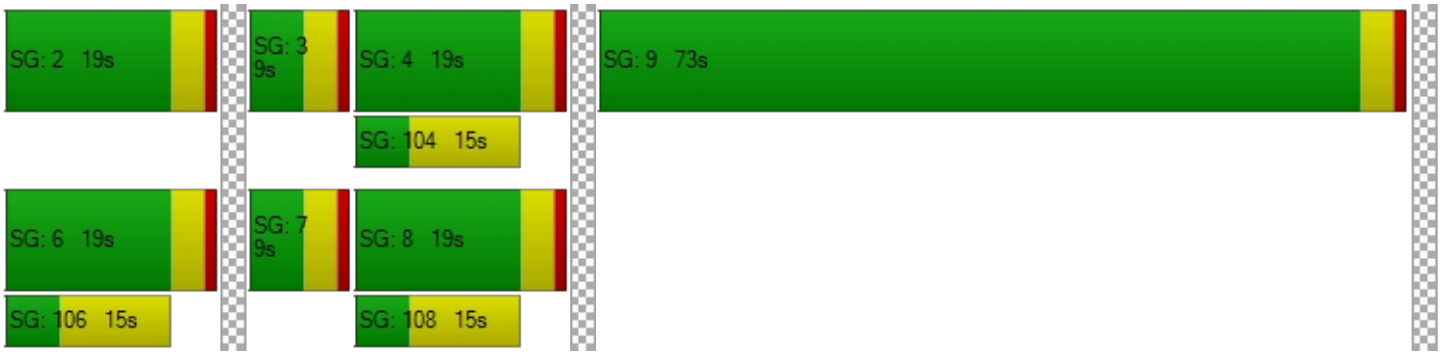
d_M, Delay for Movement [s/veh]	72.10	18.53	19.52	14.84	57.20	57.20	57.20	57.20
Movement LOS	E	B	B	B	E	E	E	E
d_A, Approach Delay [s/veh]	19.45				57.20			
Approach LOS	B				E			
d_I, Intersection Delay [s/veh]	27.58							
Intersection LOS	C							
Intersection V/C	0.531							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.105
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	1150
d_b, Bicycle Delay [s]	45.94	10.84
l_b,int, Bicycle LOS Score for Intersection	2.190	1.987
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	77.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	6	1	21	92	3	29	14	399	8	14	605	72
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	1	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	22	0	0	24	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	1	22	98	3	31	15	446	8	15	665	76
Peak Hour Factor	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	0	6	28	1	9	4	126	2	4	188	21
Total Analysis Volume [veh/h]	7	1	25	111	3	35	17	504	9	17	751	86
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop			Stop			Free			Free		
Flared Lane	No											
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance	No			No								
Number of Storage Spaces in Median	0			0			0			0		

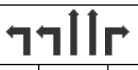
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.01	0.03	0.72	0.02	0.06	0.02	0.01	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	24.19	32.58	10.50	75.74	77.90	11.50	9.56	0.00	0.00	8.44	0.00	0.00
Movement LOS	C	D	B	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.25	0.25	0.25	4.50	4.50	0.19	0.06	0.00	0.00	0.05	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.21	6.21	6.21	112.5	112.5	4.73	1.62	0.00	0.00	1.22	0.00	0.00
d_A, Approach Delay [s/veh]	14.08			60.69			0.31			0.17		
Approach LOS	B			F			A			A		
d_I, Intersection Delay [s/veh]	6.27											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	55.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	439	581	136	84	759	31	35	281	464	265	376	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	30	0	0	32	0	0	1	0	0	0	1
Site-Generated Trips [veh/h]	24	7	0	0	0	0	0	0	22	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	489	653	144	89	837	33	37	299	514	281	399	88
Peak Hour Factor	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	128	171	38	23	219	9	10	78	134	73	104	23
Total Analysis Volume [veh/h]	511	682	150	93	875	34	39	312	537	294	417	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	44	0	14	35	0	11	47	0	15	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	42	42	8	31	31	4	43	43	11	50	50
g / C, Green / Cycle	0.16	0.35	0.35	0.07	0.26	0.26	0.03	0.36	0.36	0.09	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.15	0.20	0.10	0.05	0.25	0.25	0.01	0.09	0.35	0.09	0.15	0.15
s, saturation flow rate [veh/h]	3329	3427	1530	1714	1800	1776	3329	3427	1530	3329	1800	1689
c, Capacity [veh/h]	527	1196	534	116	465	459	104	1228	548	305	754	707
d1, Uniform Delay [s]	50.21	31.74	28.18	55.16	44.25	44.25	56.98	27.18	38.06	54.30	23.72	23.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.45	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.34	1.97	1.31	12.04	37.93	38.20	2.24	0.11	31.76	16.67	0.28	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.97	0.57	0.28	0.80	0.98	0.98	0.38	0.25	0.98	0.96	0.35	0.35
d, Delay for Lane Group [s/veh]	62.55	33.71	29.49	67.20	82.18	82.45	59.22	27.29	69.82	70.97	24.00	24.03
Lane Group LOS	E	C	C	E	F	F	E	C	E	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.50	8.33	3.32	3.16	18.29	18.09	0.61	3.19	20.15	5.12	5.12	4.82
50th-Percentile Queue Length [ft/ln]	212.5	208.3	83.05	79.02	457.3	452.2	15.32	79.86	503.6	128.0	127.9	120.3
95th-Percentile Queue Length [veh/ln]	13.28	13.07	5.98	5.69	25.31	25.07	1.10	5.75	27.51	8.84	8.83	8.41
95th-Percentile Queue Length [ft/ln]	332.0	326.7	149.4	142.2	632.7	626.6	27.58	143.7	687.7	220.8	220.6	210.3

Movement, Approach, & Intersection Results

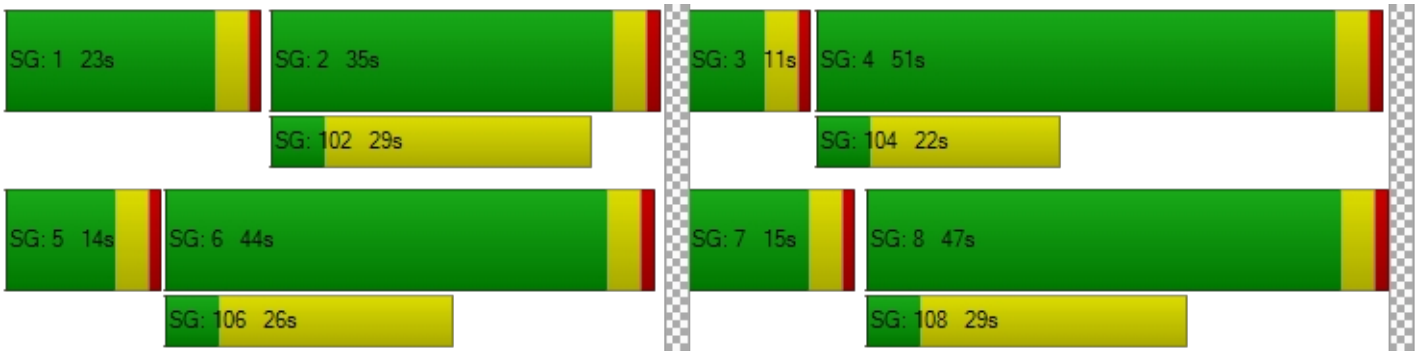
d_M, Delay for Movement [s/veh]	62.55	33.71	29.49	67.20	82.31	82.45	59.22	27.29	69.82	70.97	24.01	24.03
Movement LOS	E	C	C	E	F	F	E	C	E	E	C	C
d_A, Approach Delay [s/veh]	44.21			80.91			54.41			41.20		
Approach LOS	D			F			D			D		
d_I, Intersection Delay [s/veh]	54.97											
Intersection LOS	D											
Intersection V/C	0.847											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.034	2.669	2.867	2.906
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	517	717	783
d_b, Bicycle Delay [s]	26.67	33.00	24.70	22.20
l_b,int, Bicycle LOS Score for Intersection	2.668	2.386	2.292	2.222
Bicycle LOS	B	B	B	B

Sequence

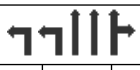
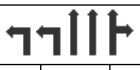
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	180	1217	675	109	1386	98	170	259	151	546	419	94
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	1	10	0	6	18	0	0	0	1	0	0	4
Site-Generated Trips [veh/h]	0	17	0	0	10	0	0	0	0	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	192	1317	716	122	1497	104	180	275	161	579	444	111
Peak Hour Factor	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	352	191	33	400	28	48	73	43	155	119	30
Total Analysis Volume [veh/h]	205	1407	765	130	1599	111	192	294	172	619	474	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	40	40	9	36	0	35	43	0	28	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	59	87	5	55	55	9	16	16	24	31	40
g / C, Green / Cycle	0.08	0.49	0.72	0.04	0.46	0.46	0.08	0.14	0.14	0.20	0.26	0.33
(v / s)_i Volume / Saturation Flow Rate	0.06	0.29	0.50	0.04	0.33	0.33	0.06	0.09	0.11	0.19	0.14	0.04
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1741	3329	3427	1530	3329	3427	2708
c, Capacity [veh/h]	250	2400	1106	139	1563	794	260	465	207	666	883	901
d1, Uniform Delay [s]	54.71	21.93	9.22	57.34	26.52	26.54	54.12	49.04	50.51	47.17	38.38	27.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.60	1.06	3.56	23.04	2.96	5.75	4.10	1.43	8.23	6.42	0.51	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.59	0.69	0.94	0.72	0.73	0.74	0.63	0.83	0.93	0.54	0.13
d, Delay for Lane Group [s/veh]	61.31	22.99	12.78	80.39	29.48	32.30	58.22	50.47	58.75	53.59	38.89	28.03
Lane Group LOS	E	C	B	F	C	C	E	D	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.28	9.52	10.80	2.41	13.54	14.41	2.99	4.26	5.50	9.64	6.07	1.21
50th-Percentile Queue Length [ft/ln]	82.04	238.1	270.0	60.24	338.4	360.3	74.67	106.5	137.5	240.8	151.8	30.33
95th-Percentile Queue Length [veh/ln]	5.91	14.59	16.19	4.34	19.57	20.64	5.38	7.65	9.35	14.73	10.12	2.18
95th-Percentile Queue Length [ft/ln]	147.6	364.6	404.8	108.4	489.3	515.9	134.4	191.2	233.6	368.1	252.9	54.59

Movement, Approach, & Intersection Results

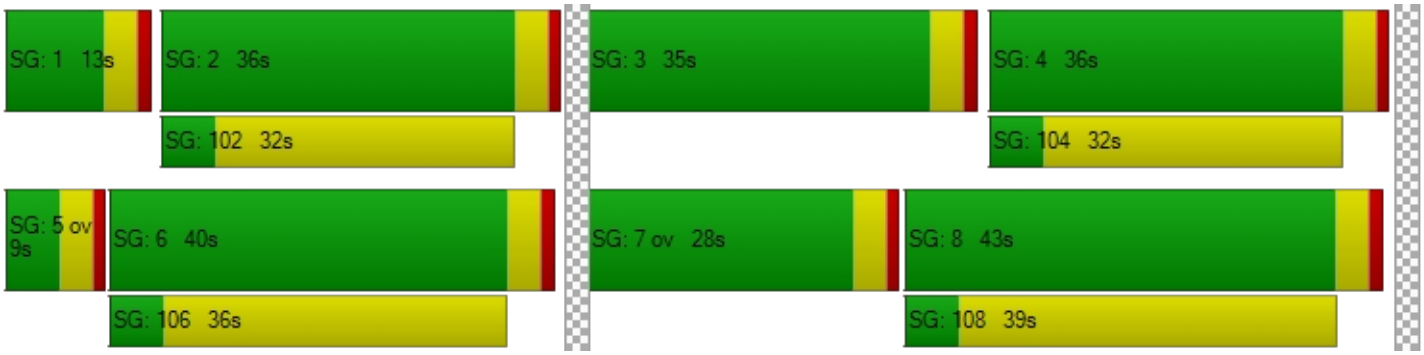
d_M, Delay for Movement [s/veh]	61.31	22.99	12.78	80.39	30.30	32.30	58.22	50.47	58.75	53.59	38.89	28.03
Movement LOS	E	C	B	F	C	C	E	D	E	D	D	C
d_A, Approach Delay [s/veh]	23.01			33.96			54.90			45.33		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.21											
Intersection LOS	C											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.446	3.174	2.917	3.125
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	533	650	533
d_b, Bicycle Delay [s]	29.40	32.27	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.867	2.572	1.922	2.560
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	23.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	762	445	0	774	408	0	0	0	490	0	531
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.000	1.060
In-Process Volume [veh/h]	0	9	0	0	6	7	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	0	0	101	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	823	445	0	826	540	0	0	0	519	0	563
Peak Hour Factor	1.000	0.924	1.000	1.000	0.924	0.924	1.000	1.000	1.000	0.924	1.000	0.924
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	223	111	0	223	146	0	0	0	140	0	152
Total Analysis Volume [veh/h]	0	891	445	0	894	584	0	0	0	562	0	609
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	43	0	0	43	0	0	0	0	77	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	77	77		35	35	35
g / C, Green / Cycle	0.64	0.64		0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.26	0.18		0.23	0.24	0.26
s, saturation flow rate [veh/h]	3427	4903		1714	1606	1530
c, Capacity [veh/h]	2204	3153		498	466	444
d1, Uniform Delay [s]	10.33	9.35		39.13	39.93	40.57
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.55	0.23		2.77	4.07	5.75
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.28		0.78	0.84	0.88
d, Delay for Lane Group [s/veh]	10.88	9.57		41.90	44.00	46.32
Lane Group LOS	B	A		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.58	3.34		10.90	11.25	11.61
50th-Percentile Queue Length [ft/ln]	139.48	83.52		272.3	281.3	290.2
95th-Percentile Queue Length [veh/ln]	9.45	6.01		16.31	16.75	17.20
95th-Percentile Queue Length [ft/ln]	236.32	150.34		407.7	418.8	429.9

Movement, Approach, & Intersection Results

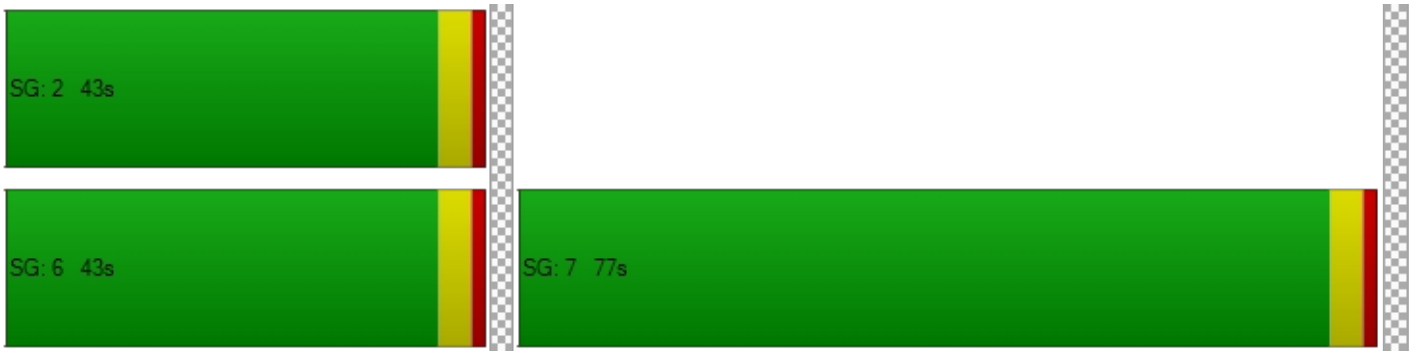
d_M, Delay for Movement [s/veh]	0.00	10.88	0.00	0.00	9.57	0.00	0.00	0.00	0.00	42.54	0.00	45.49
Movement LOS		B			A					D		D
d_A, Approach Delay [s/veh]	10.88			9.57			0.00			44.07		
Approach LOS	B			A			A			D		
d_I, Intersection Delay [s/veh]	23.64											
Intersection LOS	C											
Intersection V/C	0.515											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	650	0	1217
d_b, Bicycle Delay [s]	27.34	27.34	60.00	9.20
l_b,int, Bicycle LOS Score for Intersection	2.295	2.051	4.132	3.492
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	53.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.972

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	993	543	0	1748	0	0	0	0	738	0	637
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.060	1.000	1.060	1.060	1.060	1.060	1.060	1.060	1.000	1.060
In-Process Volume [veh/h]	0	26	0	0	124	0	0	0	0	0	0	62
Site-Generated Trips [veh/h]	0	180	0	0	143	16	0	0	0	0	0	120
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1259	576	0	2120	16	0	0	0	782	0	857
Peak Hour Factor	1.000	0.910	0.910	1.000	0.910	0.910	0.910	0.910	0.910	0.910	1.000	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	346	158	0	582	4	0	0	0	215	0	235
Total Analysis Volume [veh/h]	0	1384	633	0	2330	18	0	0	0	859	0	942
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	45	0	0	45	0	0	0	0	75	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	41	41		71	71
g / C, Green / Cycle	0.34	0.34		0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.28	0.36		0.26	0.62
s, saturation flow rate [veh/h]	4903	6538		3329	1530
c, Capacity [veh/h]	1675	2234		1970	905
d1, Uniform Delay [s]	36.23	39.50		13.48	24.50
k, delay calibration	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	4.81	31.44		0.15	40.99
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.83	1.04		0.44	1.04
d, Delay for Lane Group [s/veh]	41.04	70.94		13.64	65.49
Lane Group LOS	D	F		B	F
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	13.00	21.04		6.25	34.09
50th-Percentile Queue Length [ft/ln]	324.93	526.10		156.28	852.18
95th-Percentile Queue Length [veh/ln]	18.91	29.39		10.35	45.17
95th-Percentile Queue Length [ft/ln]	472.74	734.79		258.79	1129.32

Movement, Approach, & Intersection Results

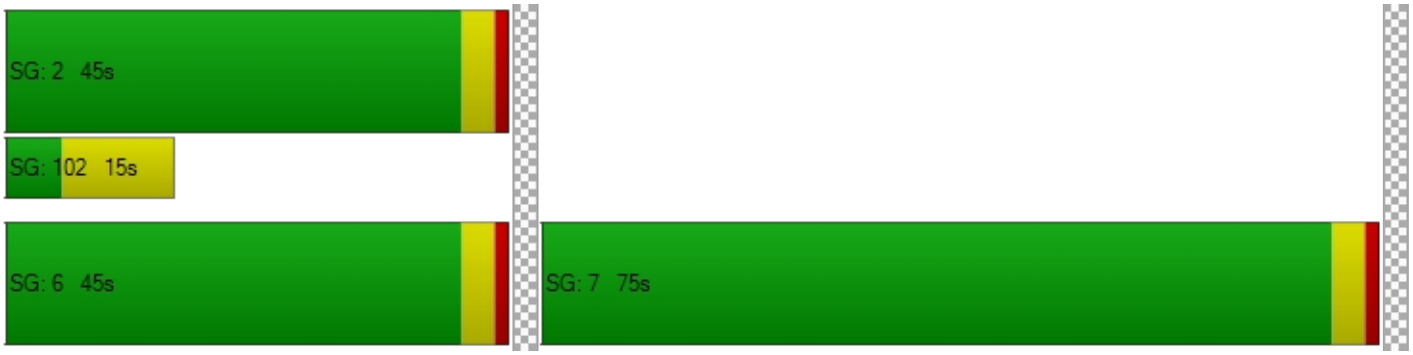
d_M, Delay for Movement [s/veh]	0.00	41.04	0.00	0.00	70.94	0.00	0.00	0.00	0.00	13.64	0.00	65.49
Movement LOS		D			F					B		F
d_A, Approach Delay [s/veh]	41.04			70.94			0.00			40.76		
Approach LOS	D			E			A			D		
d_I, Intersection Delay [s/veh]	53.58											
Intersection LOS	D											
Intersection V/C	0.972											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	683	0	1183
d_b, Bicycle Delay [s]	26.00	26.00	60.00	10.00
l_b,int, Bicycle LOS Score for Intersection	2.321	2.521	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	654	272	0	983	466	0	0	0	363	0	448
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.000	1.060
In-Process Volume [veh/h]	0	4	0	0	32	0	0	0	0	0	0	26
Site-Generated Trips [veh/h]	0	7	0	0	22	0	0	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	704	272	0	1096	466	0	0	0	385	0	525
Peak Hour Factor	1.000	0.960	0.868	1.000	0.960	1.000	1.000	1.000	1.000	0.960	1.000	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	183	78	0	285	117	0	0	0	100	0	137
Total Analysis Volume [veh/h]	0	733	313	0	1142	466	0	0	0	401	0	547
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	55	0	0	55	0	0	0	0	65	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	80	80		32	32
g / C, Green / Cycle	0.67	0.67		0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.15	0.33		0.23	0.20
s, saturation flow rate [veh/h]	4903	3427		1714	2708
c, Capacity [veh/h]	3275	2289		455	719
d1, Uniform Delay [s]	7.78	9.93		42.25	40.56
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.16	0.78		5.72	1.69
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.50		0.88	0.76
d, Delay for Lane Group [s/veh]	7.94	10.71		47.98	42.26
Lane Group LOS	A	B		D	D
Critical Lane Group	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	2.39	7.24		12.04	7.58
50th-Percentile Queue Length [ft/ln]	59.81	180.91		301.09	189.53
95th-Percentile Queue Length [veh/ln]	4.31	11.65		17.73	12.10
95th-Percentile Queue Length [ft/ln]	107.66	291.20		443.37	302.42

Movement, Approach, & Intersection Results

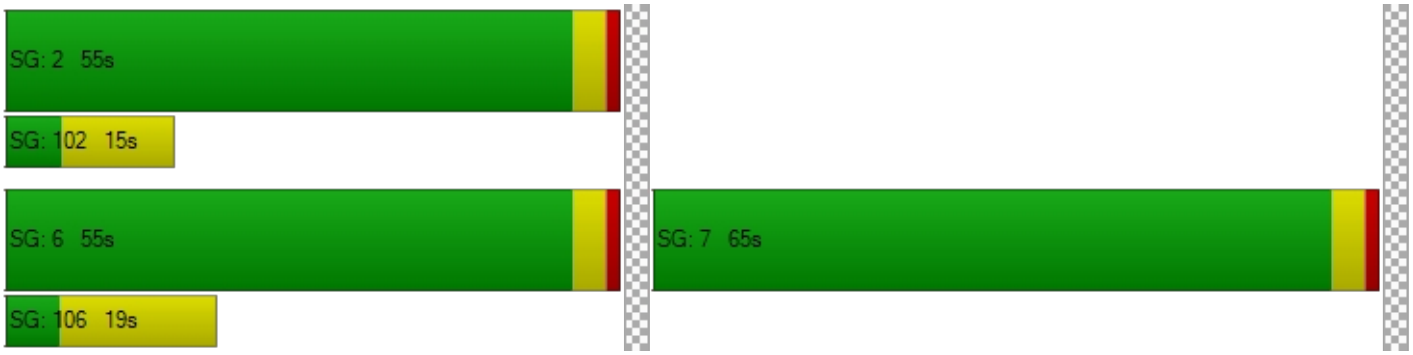
d_M, Delay for Movement [s/veh]	0.00	7.94	0.00	0.00	10.71	0.00	0.00	0.00	0.00	47.98	0.00	42.26
Movement LOS		A			B					D		D
d_A, Approach Delay [s/veh]	7.94			10.71			0.00			44.68		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	21.40											
Intersection LOS	C											
Intersection V/C	0.567											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.377
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	850	850	0	1017
d_b, Bicycle Delay [s]	19.84	19.84	60.00	14.50
l_b,int, Bicycle LOS Score for Intersection	1.963	2.502	4.132	1.560
Bicycle LOS	A	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.797

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1074	381	0	966	238	308	0	671	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1148	381	0	1030	238	308	0	671	0	0	0
Peak Hour Factor	1.000	0.927	1.000	1.000	0.927	1.000	0.927	1.000	0.927	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	310	95	0	278	60	83	0	181	0	0	0
Total Analysis Volume [veh/h]	0	1238	381	0	1111	238	332	0	724	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	19	0	0	19	0	101	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	52	52	60	60	
g / C, Green / Cycle	0.43	0.43	0.50	0.50	
(v / s)_i Volume / Saturation Flow Rate	0.25	0.32	0.10	0.47	
s, saturation flow rate [veh/h]	4903	3427	3329	1530	
c, Capacity [veh/h]	2129	1488	1662	764	
d1, Uniform Delay [s]	25.70	28.42	16.72	28.57	
k, delay calibration	0.50	0.50	0.11	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.17	3.46	0.06	9.98	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.58	0.75	0.20	0.95	
d, Delay for Lane Group [s/veh]	26.87	31.88	16.78	38.55	
Lane Group LOS	C	C	B	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.04	13.83	2.56	21.13	
50th-Percentile Queue Length [ft/ln]	225.90	345.65	64.12	528.33	
95th-Percentile Queue Length [veh/ln]	13.97	19.92	4.62	28.67	
95th-Percentile Queue Length [ft/ln]	349.15	498.10	115.41	716.81	

Movement, Approach, & Intersection Results

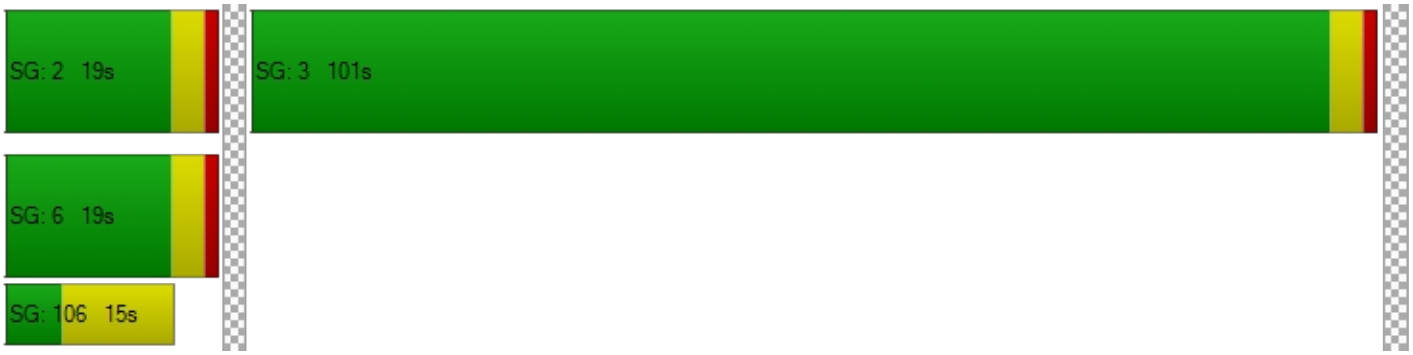
d_M, Delay for Movement [s/veh]	0.00	26.87	0.00	0.00	31.88	0.00	16.78	0.00	38.55	0.00	0.00	0.00
Movement LOS		C			C		B		D			
d_A, Approach Delay [s/veh]	26.87			31.88			31.70			0.00		
Approach LOS	C			C			C			A		
d_I, Intersection Delay [s/veh]	30.00											
Intersection LOS	C											
Intersection V/C	0.797											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1617	0
d_b, Bicycle Delay [s]	45.94	45.94	2.20	60.00
l_b,int, Bicycle LOS Score for Intersection	2.241	2.476	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	44.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.894

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1234	483	460	1488	0	401	6	617	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	21	0	92	32	0	5	0	0	0	0	0
Site-Generated Trips [veh/h]	0	36	0	138	5	0	132	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1365	512	718	1614	0	562	6	654	0	0	0
Peak Hour Factor	1.000	0.914	0.914	0.914	0.914	1.000	0.914	0.914	0.914	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	373	140	196	441	0	154	2	179	0	0	0
Total Analysis Volume [veh/h]	0	1493	560	786	1766	0	615	7	716	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	48	0	33	81	0	0	39	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	44	44	29	77	35	35	35	
g / C, Green / Cycle	0.37	0.37	0.24	0.64	0.29	0.29	0.29	
(v / s)_i Volume / Saturation Flow Rate	0.30	0.37	0.24	0.36	0.26	0.28	0.29	
s, saturation flow rate [veh/h]	4903	1530	3329	4903	1714	1599	1530	
c, Capacity [veh/h]	1798	561	805	3146	500	466	446	
d1, Uniform Delay [s]	34.60	37.96	45.17	12.04	40.69	41.75	42.49	
k, delay calibration	0.50	0.50	0.11	0.50	0.38	0.43	0.46	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.62	37.57	10.29	0.73	16.71	29.03	40.60	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.83	1.00	0.98	0.56	0.89	0.96	1.00	
d, Delay for Lane Group [s/veh]	39.23	75.53	55.46	12.77	57.40	70.78	83.09	
Lane Group LOS	D	E	E	B	E	E	F	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	13.81	21.95	12.67	8.55	14.82	16.58	18.08	
50th-Percentile Queue Length [ft/ln]	345.30	548.84	316.75	213.71	370.3	414.5	452.0	
95th-Percentile Queue Length [veh/ln]	19.91	29.64	18.51	13.34	21.13	23.26	25.05	
95th-Percentile Queue Length [ft/ln]	497.67	740.95	462.69	333.58	528.2	581.4	626.3	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	39.23	75.53	55.46	12.77	0.00	61.08	70.78	78.45	0.00	0.00	0.00
Movement LOS		D	E	E	B		E	E	E			
d_A, Approach Delay [s/veh]	49.13			25.92			70.42			0.00		
Approach LOS	D			C			E			A		
d_I, Intersection Delay [s/veh]	43.96											
Intersection LOS	D											
Intersection V/C	0.894											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.472	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	1283	583	0
d_b, Bicycle Delay [s]	24.07	7.70	30.10	60.00
I_b,int, Bicycle LOS Score for Intersection	2.689	2.963	3.767	4.132
Bicycle LOS	B	C	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	651	332	534	851	0	304	8	427	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	26	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	7	0	22	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	701	352	614	908	0	322	8	453	0	0	0
Peak Hour Factor	1.000	0.964	0.964	0.964	0.964	1.000	0.964	0.964	0.964	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	182	91	159	235	0	84	2	117	0	0	0
Total Analysis Volume [veh/h]	0	727	365	637	942	0	334	8	470	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	9	0	34	43	0	0	77	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	42	42	25	71	41	41	
g / C, Green / Cycle	0.35	0.35	0.21	0.60	0.34	0.34	
(v / s)_i Volume / Saturation Flow Rate	0.21	0.24	0.19	0.27	0.10	0.31	
s, saturation flow rate [veh/h]	3427	1530	3329	3427	3329	1534	
c, Capacity [veh/h]	1197	534	708	2040	1125	519	
d1, Uniform Delay [s]	32.25	33.37	45.99	13.55	29.22	38.19	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.30	6.92	4.48	0.75	0.15	7.32	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.61	0.68	0.90	0.46	0.30	0.92	
d, Delay for Lane Group [s/veh]	34.54	40.29	50.47	14.31	29.37	45.52	
Lane Group LOS	C	D	D	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.05	10.03	9.64	7.10	3.59	14.38	
50th-Percentile Queue Length [ft/ln]	226.27	250.86	241.10	177.41	89.63	359.52	
95th-Percentile Queue Length [veh/ln]	13.98	15.23	14.74	11.47	6.45	20.60	
95th-Percentile Queue Length [ft/ln]	349.61	380.74	368.42	286.63	161.33	515.00	

Movement, Approach, & Intersection Results

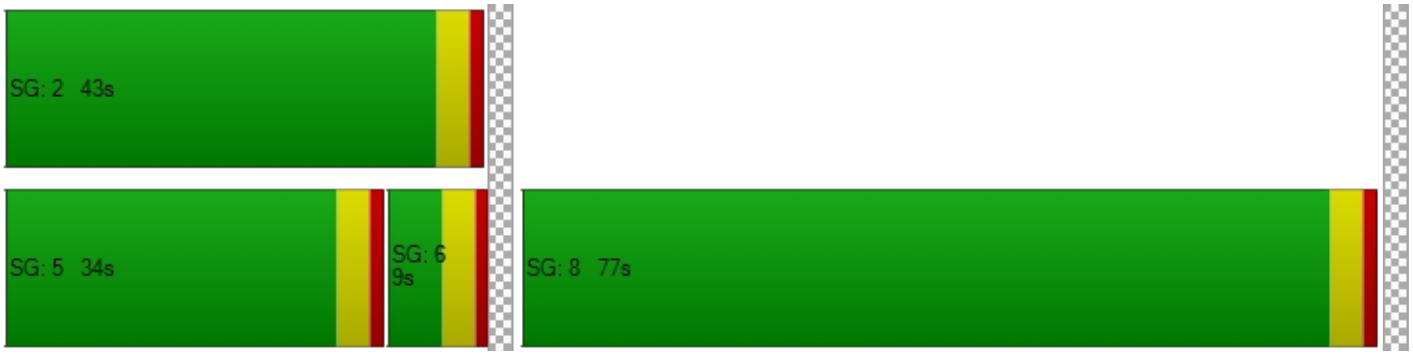
d_M, Delay for Movement [s/veh]	0.00	34.54	40.29	50.47	14.31	0.00	29.37	45.52	45.52	0.00	0.00	0.00
Movement LOS		C	D	D	B		C	D	D			
d_A, Approach Delay [s/veh]	36.47			28.90			38.87			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	33.60											
Intersection LOS	C											
Intersection V/C	0.742											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	650	1217	0
d_b, Bicycle Delay [s]	55.10	27.34	9.20	60.00
l_b,int, Bicycle LOS Score for Intersection	2.160	2.862	2.899	4.132
Bicycle LOS	B	C	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.720

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	420	718	357	500	741	821	855	0	501	428	0	550
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.000	1.060
In-Process Volume [veh/h]	0	4	0	13	6	0	0	0	0	0	0	7
Site-Generated Trips [veh/h]	0	7	0	10	0	0	0	0	0	0	0	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	445	772	378	553	791	870	906	0	531	454	0	600
Peak Hour Factor	0.955	0.955	0.955	0.955	0.955	0.955	0.955	1.000	0.955	0.955	1.000	0.955
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	116	202	99	145	207	228	237	0	139	119	0	157
Total Analysis Volume [veh/h]	466	808	396	579	828	911	949	0	556	475	0	628
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	62	0	0	62	0	58	0	0	58	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	74	74	74	74	38	38
g / C, Green / Cycle	0.62	0.62	0.62	0.62	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.36	0.16	0.44	0.17	0.29	0.14
s, saturation flow rate [veh/h]	1306	4903	1331	4903	3329	3329
c, Capacity [veh/h]	719	3026	735	3026	1053	1053
d1, Uniform Delay [s]	22.88	10.53	25.80	10.58	39.24	32.72
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.48	0.22	8.36	0.22	3.15	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.27	0.79	0.27	0.90	0.45
d, Delay for Lane Group [s/veh]	27.35	10.75	34.15	10.81	42.39	33.02
Lane Group LOS	C	B	C	B	D	C
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.37	3.24	7.78	3.33	13.69	5.57
50th-Percentile Queue Length [ft/ln]	134.30	80.94	194.49	83.36	342.30	139.17
95th-Percentile Queue Length [veh/ln]	9.17	5.83	12.35	6.00	19.76	9.44
95th-Percentile Queue Length [ft/ln]	229.33	145.69	308.84	150.04	494.02	235.91

Movement, Approach, & Intersection Results

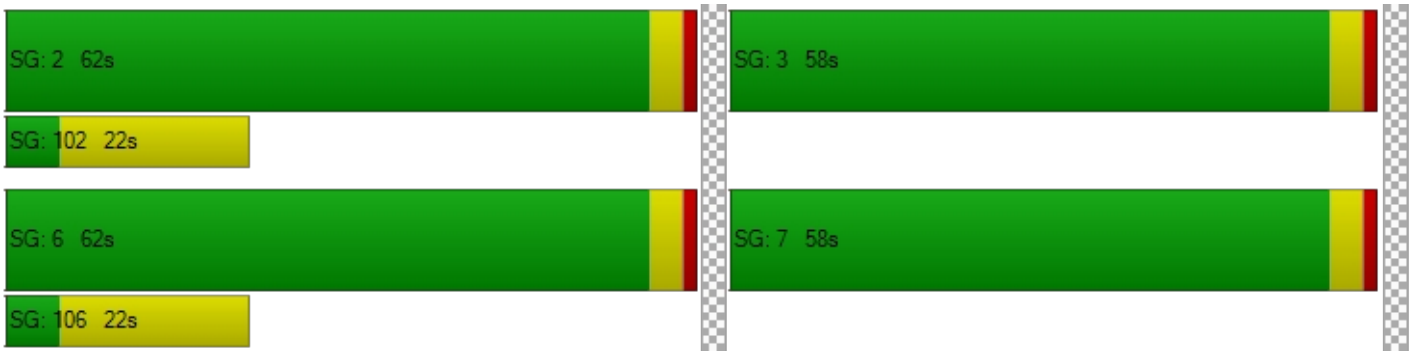
d_M, Delay for Movement [s/veh]	27.35	10.75	0.00	34.15	10.81	0.00	42.39	0.00	0.00	33.02	0.00	0.00
Movement LOS	C	B		C	B		D			C		
d_A, Approach Delay [s/veh]	16.82			20.42			42.39			33.02		
Approach LOS	B			C			D			C		
d_I, Intersection Delay [s/veh]	25.84											
Intersection LOS	C											
Intersection V/C	0.720											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.254	3.344
Crosswalk LOS	F	F	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	967	900	900
d_b, Bicycle Delay [s]	16.02	16.02	18.15	18.15
l_b,int, Bicycle LOS Score for Intersection	2.260	2.333	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	38.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	176	333	80	108	705	218	77	409	118	156	1102	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	4	4	0	0	0	4	0	6	6	6
Site-Generated Trips [veh/h]	0	0	7	7	0	0	0	7	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	353	96	125	747	231	82	445	125	171	1174	115
Peak Hour Factor	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	54	103	28	36	218	67	24	130	36	50	342	34
Total Analysis Volume [veh/h]	218	411	112	146	871	269	96	519	146	199	1368	134
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	29	0	11	27	0	12	59	0	21	68	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	36	36	7	34	34	8	45	45	16	53	53
g / C, Green / Cycle	0.08	0.30	0.30	0.06	0.28	0.28	0.07	0.38	0.38	0.13	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.07	0.08	0.07	0.04	0.18	0.18	0.06	0.15	0.10	0.12	0.40	0.09
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	250	1474	460	194	1393	435	114	1287	575	226	1511	675
d1, Uniform Delay [s]	54.93	32.02	31.66	55.64	37.40	37.32	55.37	27.56	25.86	51.14	31.21	20.55
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.23	0.47	1.25	5.77	2.13	6.48	14.82	0.20	0.23	10.51	2.33	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.28	0.24	0.75	0.63	0.62	0.84	0.40	0.25	0.88	0.91	0.20
d, Delay for Lane Group [s/veh]	64.16	32.50	32.91	61.41	39.53	43.80	70.18	27.77	26.09	61.65	33.54	20.70
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.58	3.12	2.63	2.33	7.67	7.62	3.34	5.52	2.93	6.53	18.45	2.34
50th-Percentile Queue Length [ft/ln]	89.50	77.88	65.65	58.30	191.8	190.5	83.52	138.0	73.28	163.2	461.1	58.58
95th-Percentile Queue Length [veh/ln]	6.44	5.61	4.73	4.20	12.22	12.15	6.01	9.37	5.28	10.72	25.49	4.22
95th-Percentile Queue Length [ft/ln]	161.0	140.1	118.1	104.9	305.4	303.7	150.3	234.3	131.9	267.9	637.2	105.4

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.16	32.50	32.91	61.41	39.53	43.80	70.18	27.77	26.09	61.65	33.54	20.70
Movement LOS	E	C	C	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	41.87			42.91			32.80			35.82		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	38.34											
Intersection LOS	D											
Intersection V/C	0.698											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.076	3.073	2.893	2.871
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	383	917	1067
d_b, Bicycle Delay [s]	37.60	39.20	17.60	13.07
l_b,int, Bicycle LOS Score for Intersection	1.967	2.267	2.187	2.963
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	36.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	170	66	105	390	270	118	333	69	166	1013	134
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	12	0	0	18	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	21	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	180	70	111	413	286	125	386	73	176	1092	142
Peak Hour Factor	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	53	21	33	122	84	37	114	22	52	322	42
Total Analysis Volume [veh/h]	61	212	83	131	487	337	147	455	86	208	1288	167
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	33	0	14	35	35	16	56	0	17	57	57
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	33	33	10	38	54	12	51	51	10	49	63
g / C, Green / Cycle	0.05	0.28	0.28	0.08	0.32	0.45	0.10	0.43	0.43	0.08	0.41	0.52
(v / s)_i Volume / Saturation Flow Rate	0.04	0.06	0.05	0.08	0.14	0.22	0.09	0.15	0.15	0.06	0.38	0.11
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1702	3329	3427	1530
c, Capacity [veh/h]	79	951	425	143	1078	685	171	765	723	269	1391	799
d1, Uniform Delay [s]	56.58	33.38	33.12	54.59	32.87	23.46	53.16	23.46	23.48	54.07	33.94	15.36
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.21	0.54	1.03	19.69	1.37	2.52	11.57	0.29	0.31	4.69	3.20	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.22	0.20	0.92	0.45	0.49	0.86	0.36	0.36	0.77	0.93	0.21
d, Delay for Lane Group [s/veh]	70.79	33.93	34.14	74.28	34.24	25.98	64.72	23.75	23.78	58.76	37.13	15.49
Lane Group LOS	E	C	C	E	C	C	E	C	C	E	D	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.14	2.47	1.98	4.71	5.86	7.18	4.91	5.40	5.13	3.26	18.08	2.47
50th-Percentile Queue Length [ft/ln]	53.58	61.65	49.53	117.6	146.6	179.4	122.7	134.9	128.3	81.42	452.0	61.82
95th-Percentile Queue Length [veh/ln]	3.86	4.44	3.57	8.26	9.84	11.57	8.54	9.21	8.85	5.86	25.06	4.45
95th-Percentile Queue Length [ft/ln]	96.45	110.9	89.15	206.6	245.9	289.2	213.6	230.1	221.2	146.5	626.4	111.2

Movement, Approach, & Intersection Results

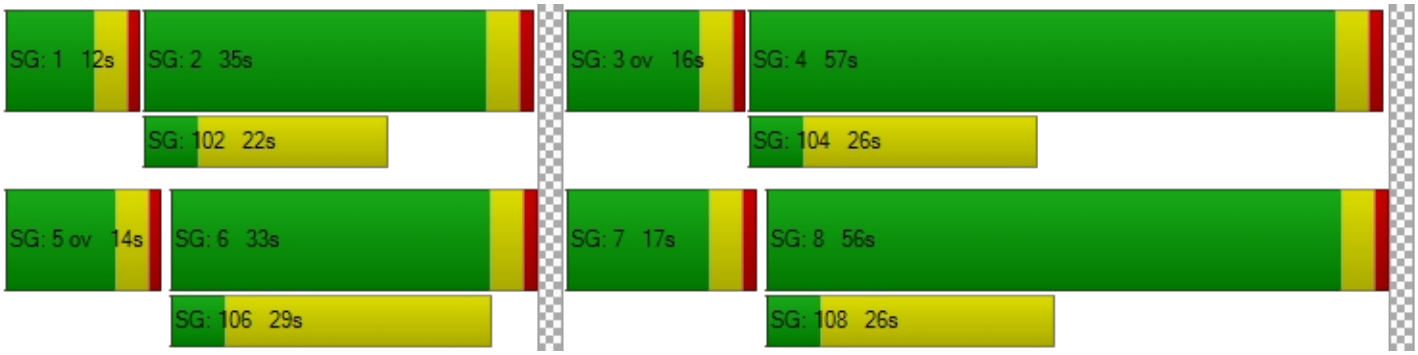
d_M, Delay for Movement [s/veh]	70.79	33.93	34.14	74.28	34.24	25.98	64.72	23.76	23.78	58.76	37.13	15.49
Movement LOS	E	C	C	E	C	C	E	C	C	E	D	B
d_A, Approach Delay [s/veh]	40.29			36.81			32.52			37.66		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	36.73											
Intersection LOS	D											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.653	2.709	2.778	2.934
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	517	867	883
d_b, Bicycle Delay [s]	34.50	33.00	19.27	18.70
l_b,int, Bicycle LOS Score for Intersection	1.853	2.347	2.127	2.932
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	33.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	28	937	55	409	1110	522	407	220	42	53	258	351
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	17	0	0	26	6	4	0	0	0	0	0
Site-Generated Trips [veh/h]	0	29	0	0	5	0	7	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	1039	58	434	1208	559	442	233	45	56	273	372
Peak Hour Factor	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	289	16	121	336	156	123	65	13	16	76	104
Total Analysis Volume [veh/h]	33	1157	65	483	1345	622	492	259	50	62	304	414
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	33	0	22	42	42	22	56	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	3	52	52	18	67	89	18	30	30	4	16	38
g / C, Green / Cycle	0.03	0.43	0.43	0.15	0.55	0.74	0.15	0.25	0.25	0.04	0.13	0.32
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.24	0.15	0.27	0.41	0.15	0.09	0.09	0.02	0.09	0.27
s, saturation flow rate [veh/h]	1714	3427	1751	3329	4903	1530	3329	1800	1700	3329	3427	1530
c, Capacity [veh/h]	49	1482	757	499	2716	1128	499	446	421	121	460	486
d1, Uniform Delay [s]	57.74	25.30	25.31	50.71	16.46	6.98	50.87	37.23	37.24	56.76	49.34	38.30
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.34
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.96	1.45	2.82	12.46	0.65	1.94	15.56	0.48	0.51	3.29	1.63	12.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.55	0.55	0.97	0.50	0.55	0.99	0.36	0.36	0.51	0.66	0.85
d, Delay for Lane Group [s/veh]	72.69	26.75	28.12	63.16	17.11	8.93	66.42	37.71	37.75	60.05	50.97	50.45
Lane Group LOS	E	C	C	E	B	A	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.20	8.78	9.27	8.05	7.56	6.76	8.42	3.92	3.72	0.98	4.44	12.91
50th-Percentile Queue Length [ft/ln]	29.90	219.6	231.8	201.3	189.0	168.9	210.6	98.07	92.89	24.47	110.9	322.8
95th-Percentile Queue Length [veh/ln]	2.15	13.64	14.27	12.71	12.07	11.02	13.19	7.06	6.69	1.76	7.89	18.80
95th-Percentile Queue Length [ft/ln]	53.83	341.1	356.6	317.6	301.8	275.4	329.6	176.5	167.2	44.05	197.2	470.1

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.69	27.16	28.12	63.16	17.11	8.93	66.42	37.73	37.75	60.05	50.97	50.45
Movement LOS	E	C	C	E	B	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	28.41			24.11			55.35			51.41		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	33.89											
Intersection LOS	C											
Intersection V/C	0.697											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.071	3.422	2.754	2.830
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	633	867	650
d_b, Bicycle Delay [s]	34.50	28.02	19.27	27.34
l_b,int, Bicycle LOS Score for Intersection	2.250	2.907	2.220	2.203
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	659.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	35.119

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	36	762	11	114	720	331	245	39	80	9	21	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	0	14	6	6	4	0	0	0	0	9
Site-Generated Trips [veh/h]	0	7	0	5	0	0	7	0	0	0	0	15
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	819	12	140	769	357	271	41	85	10	22	94
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	224	3	38	211	98	74	11	23	3	6	26
Total Analysis Volume [veh/h]	42	897	13	153	842	391	297	45	93	11	24	103
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	12	12	5	13	13	91	91	91	91
g / C, Green / Cycle	0.03	0.10	0.10	0.04	0.11	0.11	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.02	0.17	0.17	0.09	0.25	0.26	34.84	0.06	0.40	0.07
s, saturation flow rate [veh/h]	1714	3427	1787	1714	3427	1530	10	1530	88	1530
c, Capacity [veh/h]	54	347	181	71	383	171	63	1158	106	1158
d1, Uniform Delay [s]	57.71	53.92	53.92	57.50	53.30	53.30	53.50	3.77	34.77	3.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.12	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.16	336.4	347.4	523.9	548.7	598.2	2008.48	0.03	1.92	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	1.72	1.72	2.14	2.20	2.29	5.39	0.08	0.33	0.09
d, Delay for Lane Group [s/veh]	78.87	390.3	401.3	581.4	602.0	651.5	2061.98	3.80	36.69	3.83
Lane Group LOS	E	F	F	F	F	F	F	A	D	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.58	21.47	22.94	12.56	34.92	33.53	37.35	0.52	0.90	0.58
50th-Percentile Queue Length [ft/ln]	39.56	536.8	573.5	314.0	873.0	838.1	933.78	13.09	22.46	14.60
95th-Percentile Queue Length [veh/ln]	2.85	34.26	36.35	21.04	55.00	53.16	67.23	0.94	1.62	1.05
95th-Percentile Queue Length [ft/ln]	71.20	856.6	908.7	526.1	1375.	1328.	1680.80	23.57	40.43	26.29

Movement, Approach, & Intersection Results

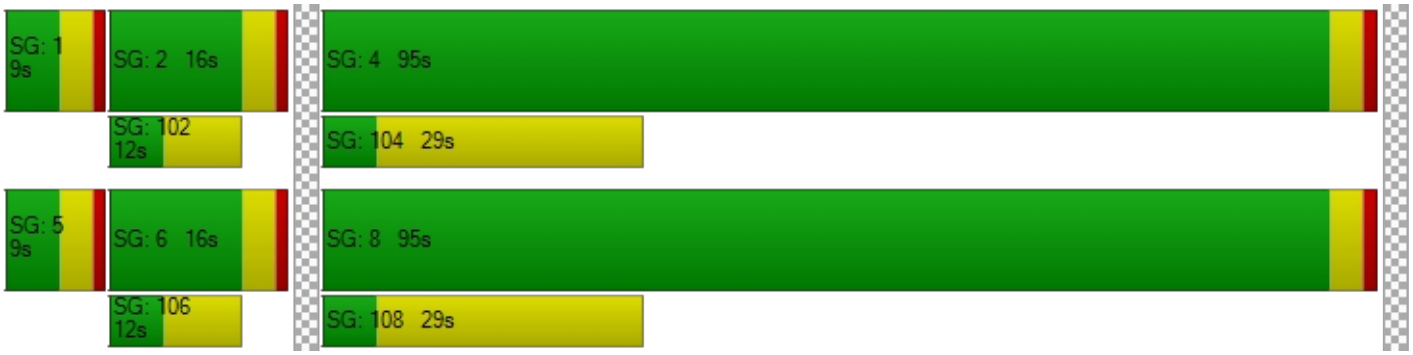
d_M, Delay for Movement [s/veh]	78.87	394.0	401.3	581.4	602.0	651.5	2061.	2061.	3.80	36.69	36.69	3.83
Movement LOS	E	F	F	F	F	F	F	F	A	D	D	A
d_A, Approach Delay [s/veh]	380.22			613.73			1621.95			12.17		
Approach LOS	F			F			F			B		
d_I, Intersection Delay [s/veh]	659.51											
Intersection LOS	F											
Intersection V/C	35.119											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.889	3.405	2.245	2.069
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	2.083	2.322	2.277	1.787
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	37.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.470

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	311	15	0	0	38	357	189	0	211	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	15	0	0	38	357	189	0	211	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	78	4	0	0	10	89	47	0	53	0	0	0
Total Analysis Volume [veh/h]	311	15	0	0	38	357	189	0	211	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	55	69	0	9	23	23	0	33	0	0	9	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	91	91	0	66	88	13	13	13	0	0
g / C, Green / Cycle	0.20	0.76	0.76	0.00	0.55	0.73	0.11	0.11	0.11	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.18	0.00	0.00	0.00	0.01	0.24	0.06	0.06	0.08	0.00	0.00
s, saturation flow rate [veh/h]	1687	3373	1772	1687	3373	1506	1687	1687	2665	1687	1772
c, Capacity [veh/h]	343	2548	1338	1	1864	1099	187	187	295	1	1
d1, Uniform Delay [s]	46.70	3.60	3.60	0.00	12.15	5.73	50.27	50.27	51.54	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.10	0.00	0.01	0.00	0.02	0.79	2.12	2.12	3.24	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.00	0.00	0.00	0.02	0.32	0.51	0.51	0.72	0.00	0.00
d, Delay for Lane Group [s/veh]	55.80	3.60	3.61	0.00	12.17	6.51	52.39	52.39	54.77	0.00	0.00
Lane Group LOS	E	A	A	A	B	A	D	D	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.90	0.03	0.03	0.00	0.24	3.10	2.79	2.79	3.20	0.00	0.00
50th-Percentile Queue Length [ft/ln]	247.3	0.67	0.73	0.00	5.90	77.42	69.74	69.74	79.99	0.00	0.00
95th-Percentile Queue Length [veh/ln]	15.05	0.05	0.05	0.00	0.42	5.57	5.02	5.02	5.76	0.00	0.00
95th-Percentile Queue Length [ft/ln]	376.3	1.21	1.31	0.00	10.62	139.3	125.5	125.5	143.9	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.80	3.60	3.61	0.00	12.17	6.51	52.39	52.39	54.77	0.00	0.00	0.00
Movement LOS	E	A	A	A	B	A	D	D	D	A	A	A
d_A, Approach Delay [s/veh]	53.40			7.06			53.65			0.00		
Approach LOS	D			A			D			A		
d_I, Intersection Delay [s/veh]	37.16											
Intersection LOS	D											
Intersection V/C	0.470											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.689	0.000	2.642	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1083	317	483	83
d_b, Bicycle Delay [s]	12.60	42.50	34.50	55.10
l_b,int, Bicycle LOS Score for Intersection	1.739	1.885	2.220	1.560
Bicycle LOS	A	A	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 998543: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Level Of Service Report
Intersection 998552: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Crosswalk	Yes		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Level Of Service Report
Intersection 998555: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Left	Thru	Left	Thru	Right	Left	Thru	Right	Thru	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Left	0.707	38.4	D
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.639	26.3	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.437	16.6	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.745	31.8	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.720	30.0	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.475	14.3	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.384	34.7	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.683	39.7	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	EB Left	0.826	46.6	D
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	SB Left	0.456	40.2	D
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.341	16.0	B
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.473	34.4	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.763	41.4	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.481	42.9	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.545	39.7	D
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.527	35.6	D
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.534	43.2	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.876	20.7	C
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.557	21.8	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	NB Left	0.685	43.4	D
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.741	45.1	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	4.042	1,871.6	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.806	52.4	D
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	NB Left	0.729	42.8	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.737	41.2	D
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.961	92.5	F
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.596	24.4	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.717	43.3	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.565	36.5	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.757	26.9	C
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.989	100.1	F
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.468	39.5	E
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.615	27.3	C
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.900	44.5	D
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	EB Thru	1.050	47.4	E
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.569	31.0	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	SB Left	0.621	43.0	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.478	23.8	C
			HCM 6th				

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Right	1.103	138.6	F
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	EB Thru	1.319	101.3	F
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	EB Thru	1.144	75.8	F
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.544	31.1	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	SB Left	0.607	33.4	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Right	0.955	65.2	E
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	WB Left	0.633	36.0	D
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.624	39.0	D
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	WB Left	0.952	87.5	F
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.262	12.9	B
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	1.081	94.8	F
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	WB Left	0.501	35.1	D
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	NB Thru	0.494	27.9	C
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.524	31.9	C
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	SB Left	0.742	41.1	D
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	EB Thru	0.335	9.8	A
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.609	34.2	C
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	NB Right	0.883	51.4	D
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.929	55.9	E
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.485	15.1	B
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Left	1.235	293.7	F

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.759	46.0	D
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	SB Left	0.898	52.6	D
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.515	19.0	B
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	WB Right	0.936	47.6	D
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Right	0.545	19.2	B
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.591	18.6	B
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	NB Right	0.876	48.4	D
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	EB Right	0.718	31.0	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	SB Left	1.035	54.0	D
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	WB Left	0.766	40.8	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	SB Left	0.715	39.4	D
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.666	36.0	D
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	33.585	550.2	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition	NB Left	0.793	41.0	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	38.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	302	571	0	0	461	146	0	0	0	287	0	135
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	15	5	0	0	8	0	0	0	0	26	0	0
Site-Generated Trips [veh/h]	130	12	0	0	12	0	0	0	0	120	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	465	622	0	0	509	155	0	0	0	450	0	143
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	122	164	0	0	134	41	0	0	0	118	0	38
Total Analysis Volume [veh/h]	489	655	0	0	536	163	0	0	0	474	0	151
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	50	76	0	0	26	0	0	0	0	0	44	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	36	77	36	36		35	35
g / C, Green / Cycle	0.30	0.64	0.30	0.30		0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.29	0.19	0.14	0.15		0.28	0.10
s, saturation flow rate [veh/h]	1714	3427	3427	1602		1714	1530
c, Capacity [veh/h]	521	2188	1033	483		505	451
d1, Uniform Delay [s]	40.68	9.69	33.90	34.27		41.24	33.10
k, delay calibration	0.28	0.50	0.50	0.50		0.34	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	17.73	0.35	1.43	3.43		20.71	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.30	0.45	0.48		0.94	0.33
d, Delay for Lane Group [s/veh]	58.41	10.04	35.33	37.70		61.95	33.54
Lane Group LOS	E	B	D	D		E	C
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	16.48	3.81	5.70	6.02		16.42	3.51
50th-Percentile Queue Length [ft/ln]	411.97	95.34	142.50	150.40		410.61	87.77
95th-Percentile Queue Length [veh/ln]	23.14	6.86	9.62	10.04		23.07	6.32
95th-Percentile Queue Length [ft/ln]	578.40	171.61	240.38	250.96		576.77	157.99

Movement, Approach, & Intersection Results

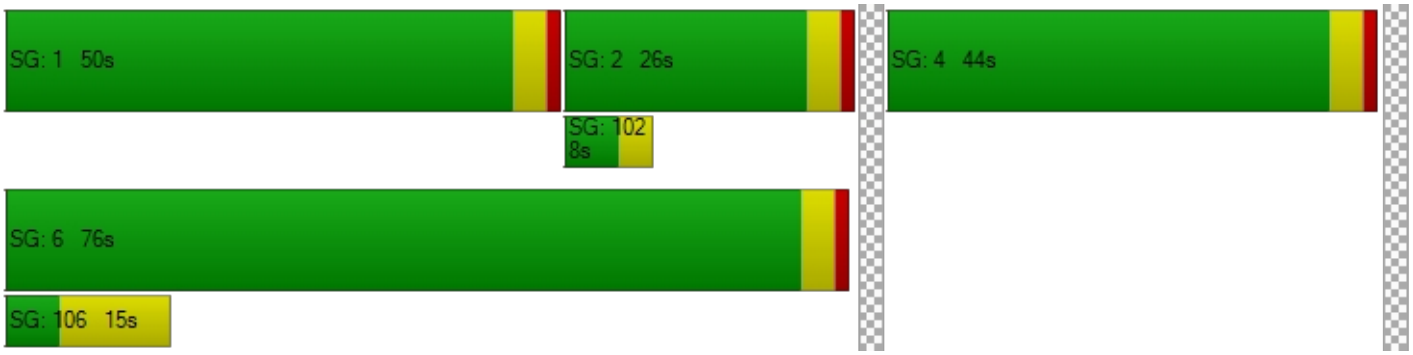
d_M, Delay for Movement [s/veh]	58.41	10.04	0.00	0.00	35.64	37.70	0.00	0.00	0.00	61.95	61.95	33.54
Movement LOS	E	B			D	D				E	E	C
d_A, Approach Delay [s/veh]	30.72			36.12			0.00			55.08		
Approach LOS	C			D			A			E		
d_I, Intersection Delay [s/veh]	38.42											
Intersection LOS	D											
Intersection V/C	0.707											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.074	2.159
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	367	0	667
d_b, Bicycle Delay [s]	9.60	40.02	60.00	26.67
l_b,int, Bicycle LOS Score for Intersection	2.503	1.944	4.132	2.591
Bicycle LOS	B	A	D	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	26.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	323	1038	0	0	732	395	0	0	0	341	0	332
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	0	5	0	0	8	0	0	0	0	7	0	0
Site-Generated Trips [veh/h]	0	12	0	0	12	0	0	0	0	12	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	342	1117	0	0	796	419	0	0	0	380	0	352
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	90	294	0	0	209	110	0	0	0	100	0	93
Total Analysis Volume [veh/h]	360	1176	0	0	838	441	0	0	0	400	0	371
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	21	59	0	0	38	0	0	0	0	0	61	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	15	80	61	61		32	32	32
g / C, Green / Cycle	0.13	0.66	0.51	0.51		0.27	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.11	0.34	0.24	0.29		0.12	0.12	0.24
s, saturation flow rate [veh/h]	3329	3427	3427	1530		1714	1714	1530
c, Capacity [veh/h]	417	2277	1733	774		461	461	412
d1, Uniform Delay [s]	51.47	10.30	19.41	20.60		36.29	36.29	42.32
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	5.40	0.84	0.97	3.04		0.64	0.64	7.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.52	0.48	0.57		0.43	0.43	0.90
d, Delay for Lane Group [s/veh]	56.88	11.14	20.38	23.64		36.93	36.93	49.71
Lane Group LOS	E	B	C	C		D	D	D
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.62	7.68	7.76	9.06		4.95	4.95	11.38
50th-Percentile Queue Length [ft/ln]	140.41	192.08	193.95	226.48		123.7	123.7	284.4
95th-Percentile Queue Length [veh/ln]	9.50	12.23	12.33	14.00		8.60	8.60	16.91
95th-Percentile Queue Length [ft/ln]	237.58	305.72	308.15	349.88		215.0	215.0	422.6

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.88	11.14	0.00	0.00	20.38	23.64	0.00	0.00	0.00	36.93	36.93	49.71
Movement LOS	E	B			C	C				D	D	D
d_A, Approach Delay [s/veh]	21.86			21.50			0.00			43.08		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	26.29											
Intersection LOS	C											
Intersection V/C	0.639											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.121	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	567	0	950
d_b, Bicycle Delay [s]	17.60	30.82	60.00	16.54
l_b,int, Bicycle LOS Score for Intersection	2.827	2.615	4.132	2.832
Bicycle LOS	C	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.437

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1132	0	0	1172	0	0	0	0	297	0	400
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.060	1.060
In-Process Volume [veh/h]	0	5	0	0	8	0	0	0	0	4	0	0
Site-Generated Trips [veh/h]	0	12	0	0	12	0	0	0	0	6	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1217	0	0	1262	0	0	0	0	325	0	424
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	320	0	0	332	0	0	0	0	86	0	112
Total Analysis Volume [veh/h]	0	1281	0	0	1328	0	0	0	0	342	0	446
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	52	0	0	52	0	0	0	0	0	68	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	89	89		23	23	23
g / C, Green / Cycle	0.74	0.74		0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.26	0.27		0.16	0.16	0.17
s, saturation flow rate [veh/h]	4903	4903		1714	1574	1530
c, Capacity [veh/h]	3612	3612		337	310	301
d1, Uniform Delay [s]	5.63	5.71		46.08	46.36	46.45
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.27	0.29		4.73	6.00	6.51
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.37		0.81	0.84	0.85
d, Delay for Lane Group [s/veh]	5.91	6.00		50.82	52.36	52.96
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.48	3.66		8.24	7.95	7.85
50th-Percentile Queue Length [ft/ln]	87.05	91.44		206.0	198.6	196.3
95th-Percentile Queue Length [veh/ln]	6.27	6.58		12.95	12.57	12.45
95th-Percentile Queue Length [ft/ln]	156.68	164.60		323.7	314.2	311.1

Movement, Approach, & Intersection Results

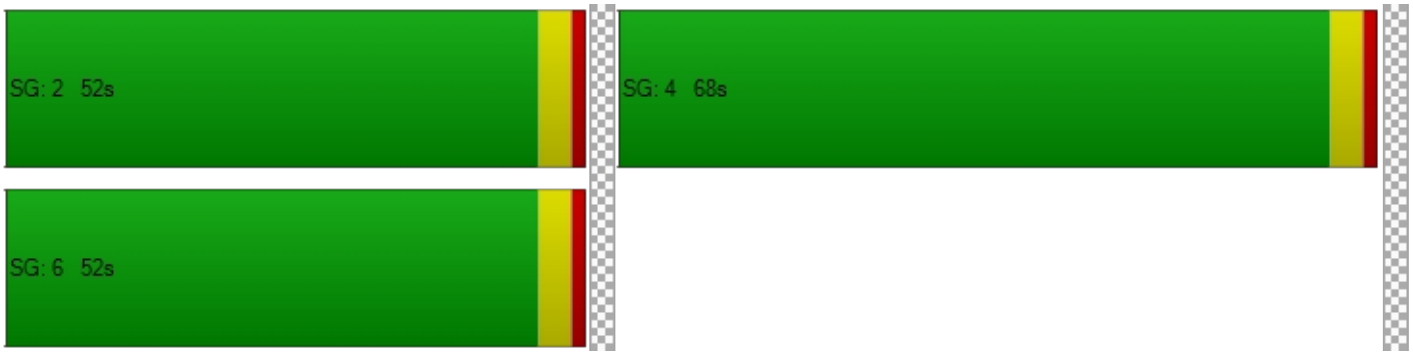
d_M, Delay for Movement [s/veh]	0.00	5.91	0.00	0.00	6.00	0.00	0.00	0.00	0.00	51.16	52.36	52.71
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	5.91			6.00			0.00			52.02		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	16.64											
Intersection LOS	B											
Intersection V/C	0.437											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	800	0	1067
d_b, Bicycle Delay [s]	21.60	21.60	60.00	13.07
l_b,int, Bicycle LOS Score for Intersection	2.264	2.290	4.132	2.860
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	687	307	72	673	0	193	2	359	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	20	22	0	34	0	0	0	16	0	0	0
Site-Generated Trips [veh/h]	0	142	88	0	132	0	0	0	177	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	890	435	76	879	0	205	2	574	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	234	114	20	231	0	54	1	151	0	0	0
Total Analysis Volume [veh/h]	0	937	458	80	925	0	216	2	604	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	37	0	10	47	0	0	73	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	52	52	6	62	50	50	
g / C, Green / Cycle	0.43	0.43	0.05	0.52	0.42	0.42	
(v / s)_i Volume / Saturation Flow Rate	0.27	0.30	0.05	0.27	0.13	0.39	
s, saturation flow rate [veh/h]	3427	1533	1714	3427	1715	1530	
c, Capacity [veh/h]	1480	662	86	1766	717	640	
d1, Uniform Delay [s]	26.58	27.79	56.80	19.31	23.27	33.57	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.24	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.03	6.13	31.16	1.12	0.24	14.45	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.63	0.70	0.93	0.52	0.30	0.94	
d, Delay for Lane Group [s/veh]	28.61	33.92	87.96	20.43	23.51	48.01	
Lane Group LOS	C	C	F	C	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	10.65	11.82	3.16	8.67	4.18	19.07	
50th-Percentile Queue Length [ft/ln]	266.17	295.60	78.93	216.70	104.42	476.74	
95th-Percentile Queue Length [veh/ln]	16.00	17.46	5.68	13.50	7.52	26.23	
95th-Percentile Queue Length [ft/ln]	399.95	436.59	142.07	337.40	187.96	655.79	

Movement, Approach, & Intersection Results

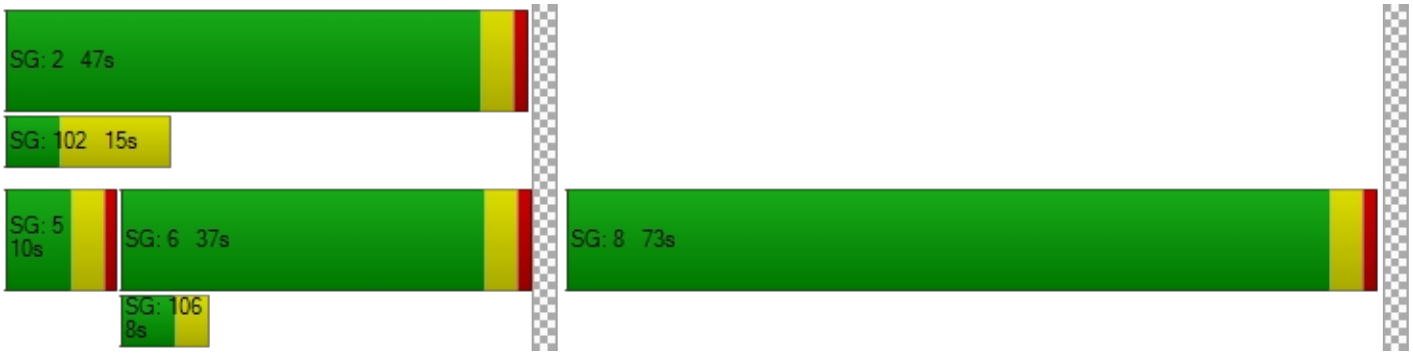
d_M, Delay for Movement [s/veh]	0.00	28.65	33.92	87.96	20.43	0.00	23.51	23.51	48.01	0.00	0.00	0.00
Movement LOS		C	C	F	C		C	C	D			
d_A, Approach Delay [s/veh]	30.38			25.81			41.51			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	31.79											
Intersection LOS	C											
Intersection V/C	0.745											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.223	1.965
Crosswalk LOS	F	F	B	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	717	1150	0
d_b, Bicycle Delay [s]	31.54	24.70	10.84	60.00
l_b,int, Bicycle LOS Score for Intersection	2.327	2.389	2.916	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.720

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1043	269	204	682	0	496	3	344	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	5	7	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	11	0	24	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1123	303	216	762	0	526	3	365	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	296	80	57	201	0	138	1	96	0	0	0
Total Analysis Volume [veh/h]	0	1182	319	227	802	0	554	3	384	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	67	0	14	81	0	0	39	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	70	70	10	84	28	28	28	
g / C, Green / Cycle	0.59	0.59	0.08	0.70	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.42	0.45	0.07	0.23	0.18	0.19	0.20	
s, saturation flow rate [veh/h]	1800	1674	3329	3427	1714	1668	1530	
c, Capacity [veh/h]	1054	981	277	2407	396	385	353	
d1, Uniform Delay [s]	17.66	18.66	54.11	6.94	43.50	43.74	44.53	
k, delay calibration	0.50	0.50	0.11	0.50	0.18	0.20	0.23	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.09	5.68	5.89	0.37	6.18	7.46	13.78	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.71	0.77	0.82	0.33	0.80	0.82	0.88	
d, Delay for Lane Group [s/veh]	21.75	24.34	59.99	7.31	49.68	51.19	58.32	
Lane Group LOS	C	C	E	A	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	15.22	16.37	3.60	3.79	9.49	9.63	10.24	
50th-Percentile Queue Length [ft/ln]	380.58	409.19	89.93	94.83	237.3	240.7	255.8	
95th-Percentile Queue Length [veh/ln]	21.62	23.00	6.48	6.83	14.55	14.72	15.48	
95th-Percentile Queue Length [ft/ln]	540.55	575.06	161.88	170.70	363.7	367.9	387.0	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	22.69	24.34	59.99	7.31	0.00	50.33	51.19	57.00	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	E			
d_A, Approach Delay [s/veh]	23.04			18.93			53.04			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	29.96											
Intersection LOS	C											
Intersection V/C	0.720											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.376	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	1283	583	0
d_b, Bicycle Delay [s]	13.54	7.70	30.10	60.00
I_b,int, Bicycle LOS Score for Intersection	2.798	2.409	3.112	4.132
Bicycle LOS	C	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.475

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1417	643	0	1189	41	193	0	409	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.000	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	5	0	0	12	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	5	0	18	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1519	687	0	1290	41	205	0	434	0	0	0
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	400	181	0	339	11	54	0	114	0	0	0
Total Analysis Volume [veh/h]	0	1599	723	0	1358	43	216	0	457	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	81	0	0	81	0	0	39	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	91	91	21	21	21	
g / C, Green / Cycle	0.76	0.76	0.18	0.18	0.18	
(v / s)_i Volume / Saturation Flow Rate	0.33	0.28	0.13	0.15	0.15	
s, saturation flow rate [veh/h]	4903	4903	1714	1530	1530	
c, Capacity [veh/h]	3710	3710	303	270	270	
d1, Uniform Delay [s]	5.28	4.92	46.52	47.80	47.80	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.37	0.28	3.11	7.10	7.10	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.43	0.37	0.71	0.84	0.84	
d, Delay for Lane Group [s/veh]	5.64	5.20	49.63	54.90	54.90	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	Yes	No	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	4.24	3.35	6.34	7.14	7.14	
50th-Percentile Queue Length [ft/ln]	106.04	83.84	158.4	178.4	178.4	
95th-Percentile Queue Length [veh/ln]	7.62	6.04	10.47	11.52	11.52	
95th-Percentile Queue Length [ft/ln]	190.47	150.91	261.6	287.9	287.9	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	5.64	0.00	0.00	5.20	0.00	49.63	54.90	54.90	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	5.64			5.20			53.21			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	14.30											
Intersection LOS	B											
Intersection V/C	0.475											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.310	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1283	1283	583	0
d_b, Bicycle Delay [s]	7.70	7.70	30.10	60.00
l_b,int, Bicycle LOS Score for Intersection	2.439	2.307	2.670	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.384

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	26	384	87	100	386	54	65	324	60	68	185	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	407	92	106	409	57	69	343	64	72	196	87
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	107	24	28	108	15	18	90	17	19	52	23
Total Analysis Volume [veh/h]	29	428	97	112	431	60	73	361	67	76	206	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	30	0	14	29	0	43	65	0	11	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	70	70	9	77	77	7	17	17	7	17	17
g / C, Green / Cycle	0.03	0.59	0.59	0.08	0.64	0.64	0.06	0.15	0.15	0.06	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.15	0.15	0.07	0.14	0.14	0.04	0.12	0.12	0.04	0.09	0.09
s, saturation flow rate [veh/h]	1714	1800	1687	1714	1800	1724	1714	1800	1704	1714	1800	1618
c, Capacity [veh/h]	45	1055	989	136	1150	1102	96	262	248	95	261	235
d1, Uniform Delay [s]	57.86	12.09	12.11	54.43	9.08	9.09	55.82	49.84	49.93	55.99	47.95	48.13
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.22	0.58	0.63	11.78	0.43	0.46	11.43	6.79	7.64	13.82	2.11	2.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.26	0.26	0.83	0.22	0.22	0.76	0.83	0.84	0.80	0.59	0.61
d, Delay for Lane Group [s/veh]	72.08	12.67	12.75	66.21	9.52	9.55	67.25	56.63	57.56	69.81	50.06	50.71
Lane Group LOS	E	B	B	E	A	A	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.05	3.62	3.45	3.78	2.79	2.70	2.49	6.86	6.64	2.64	4.47	4.21
50th-Percentile Queue Length [ft/ln]	26.27	90.58	86.35	94.41	69.69	67.39	62.17	171.6	166.0	66.01	111.6	105.3
95th-Percentile Queue Length [veh/ln]	1.89	6.52	6.22	6.80	5.02	4.85	4.48	11.16	10.87	4.75	7.93	7.58
95th-Percentile Queue Length [ft/ln]	47.29	163.0	155.4	169.9	125.4	121.2	111.9	279.0	271.7	118.8	198.3	189.5

Movement, Approach, & Intersection Results

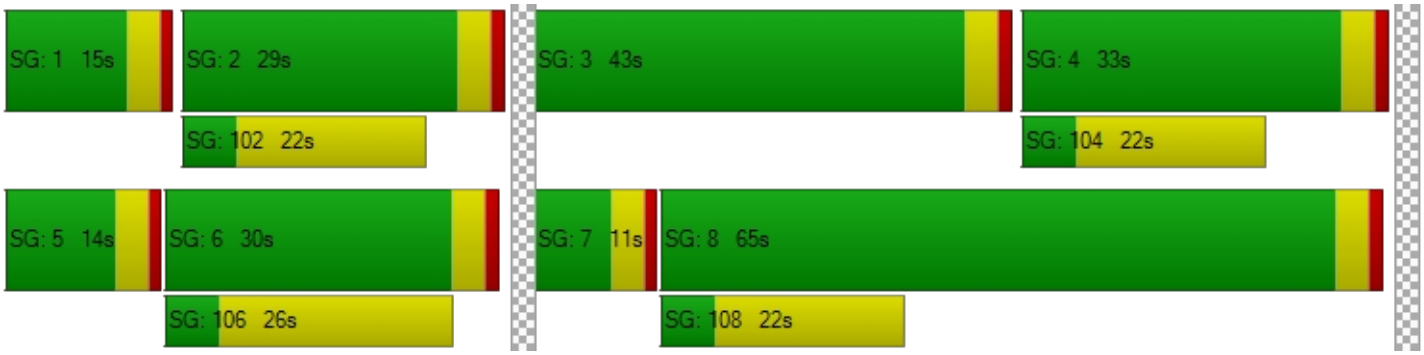
d_M, Delay for Movement [s/veh]	72.08	12.70	12.75	66.21	9.53	9.55	67.25	57.00	57.56	69.81	50.22	50.71
Movement LOS	E	B	B	E	A	A	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	15.82			20.06			58.57			54.32		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	34.70											
Intersection LOS	C											
Intersection V/C	0.384											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.535	2.548	2.470	2.622
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	417	1017	483
d_b, Bicycle Delay [s]	36.82	37.60	14.50	34.50
l_b,int, Bicycle LOS Score for Intersection	2.017	2.057	1.973	1.868
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.683

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	62	750	75	294	625	106	192	300	54	124	296	363
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	12	0	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	23	0	0	24	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	830	80	312	702	112	204	318	57	131	314	385
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	218	21	82	185	29	54	84	15	34	83	101
Total Analysis Volume [veh/h]	69	874	84	328	739	118	215	335	60	138	331	405
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	40	0	18	48	0	13	43	0	19	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	47	47	14	54	54	9	32	32	12	35	35
g / C, Green / Cycle	0.05	0.39	0.39	0.11	0.45	0.45	0.08	0.27	0.27	0.10	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.05	0.10	0.22	0.08	0.06	0.10	0.04	0.08	0.18	0.26
s, saturation flow rate [veh/h]	1714	3427	1530	3329	3427	1530	3329	3427	1530	1714	1800	1530
c, Capacity [veh/h]	86	1334	596	380	1553	693	250	914	408	166	519	441
d1, Uniform Delay [s]	56.42	30.04	23.68	52.25	22.87	19.44	54.88	35.77	33.59	53.22	37.23	41.32
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.25
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.86	2.52	0.50	5.95	1.05	0.53	8.50	0.25	0.16	10.17	1.31	15.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.66	0.14	0.86	0.48	0.17	0.86	0.37	0.15	0.83	0.64	0.92
d, Delay for Lane Group [s/veh]	72.28	32.57	24.18	58.19	23.91	19.97	63.38	36.02	33.76	63.39	38.53	57.03
Lane Group LOS	E	C	C	E	C	B	E	D	C	E	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.45	10.70	1.63	5.16	7.44	2.06	3.51	4.03	1.37	4.56	8.65	13.41
50th-Percentile Queue Length [ft/ln]	61.17	267.5	40.82	129.0	186.0	51.53	87.67	100.8	34.13	113.9	216.2	335.3
95th-Percentile Queue Length [veh/ln]	4.40	16.07	2.94	8.89	11.92	3.71	6.31	7.26	2.46	8.06	13.47	19.42
95th-Percentile Queue Length [ft/ln]	110.1	401.7	73.48	222.2	297.9	92.75	157.8	181.5	61.43	201.4	336.7	485.5

Movement, Approach, & Intersection Results

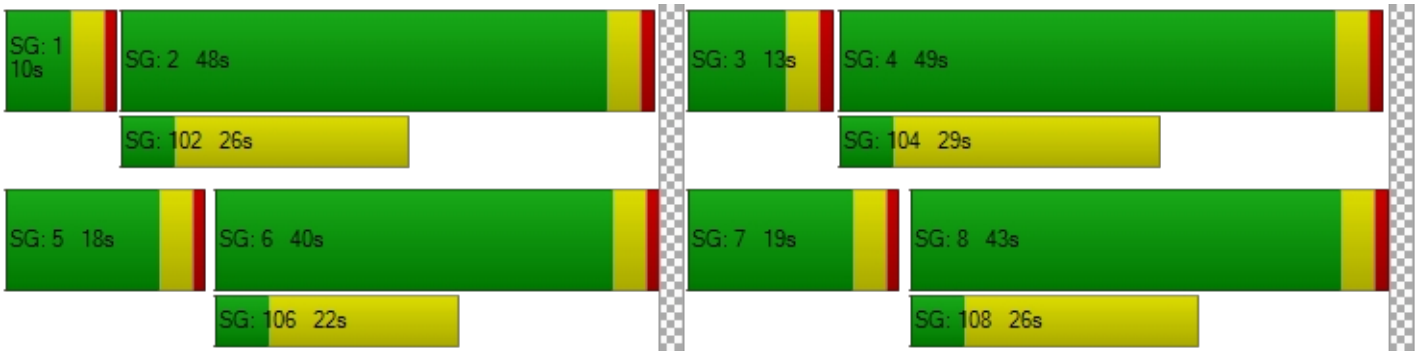
d_M, Delay for Movement [s/veh]	72.28	32.57	24.18	58.19	23.91	19.97	63.38	36.02	33.76	63.39	38.53	57.03
Movement LOS	E	C	C	E	C	B	E	D	C	E	D	E
d_A, Approach Delay [s/veh]	34.55			33.01			45.44			51.03		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.75											
Intersection LOS	D											
Intersection V/C	0.683											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.787	2.982	2.766	2.732
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	733	650	750
d_b, Bicycle Delay [s]	29.40	24.07	27.34	23.44
l_b,int, Bicycle LOS Score for Intersection	2.407	2.537	2.063	3.002
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	46.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.826

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	59	1316	65	357	973	241	426	251	51	69	171	354
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	8	0	0	12	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	17	0	0	18	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	1420	69	378	1061	255	452	266	54	73	181	375
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	374	18	99	279	67	119	70	14	19	48	99
Total Analysis Volume [veh/h]	66	1495	73	398	1117	268	476	280	57	77	191	395
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	40	0	19	38	0	21	40	0	21	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	39	39	15	50	50	17	45	45	5	33	33
g / C, Green / Cycle	0.04	0.33	0.33	0.13	0.41	0.41	0.14	0.38	0.38	0.04	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.02	0.30	0.05	0.12	0.23	0.18	0.14	0.08	0.04	0.02	0.06	0.26
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	126	1595	498	416	2022	631	472	1292	577	131	942	420
d1, Uniform Delay [s]	56.67	39.30	28.68	52.18	26.83	25.11	51.50	25.35	24.18	56.69	33.42	42.55
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.36
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.34	11.88	0.62	12.52	1.09	2.09	21.55	0.08	0.07	4.17	0.11	24.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.94	0.15	0.96	0.55	0.42	1.01	0.22	0.10	0.59	0.20	0.94
d, Delay for Lane Group [s/veh]	60.00	51.18	29.30	64.69	27.92	27.20	73.05	25.43	24.25	60.86	33.53	67.34
Lane Group LOS	E	D	C	E	C	C	F	C	C	E	C	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.04	15.81	1.59	6.66	8.25	5.79	8.48	2.74	1.07	1.22	2.17	14.23
50th-Percentile Queue Length [ft/ln]	26.04	395.2	39.72	166.5	206.2	144.7	211.9	68.47	26.74	30.62	54.18	355.7
95th-Percentile Queue Length [veh/ln]	1.87	22.33	2.86	10.90	12.96	9.73	13.31	4.93	1.93	2.20	3.90	20.42
95th-Percentile Queue Length [ft/ln]	46.87	558.2	71.49	272.4	324.0	243.3	332.7	123.2	48.13	55.11	97.52	510.4

Movement, Approach, & Intersection Results

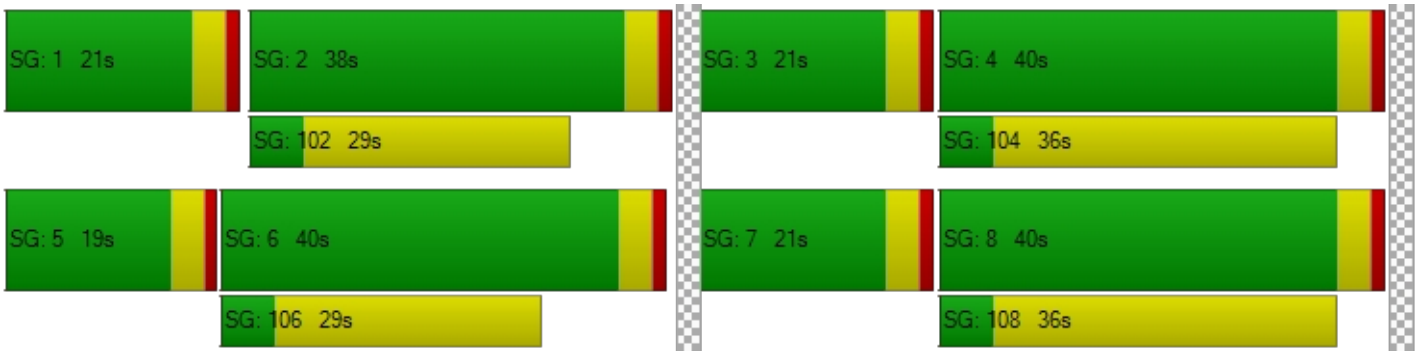
d_M, Delay for Movement [s/veh]	60.00	51.18	29.30	64.69	27.92	27.20	73.05	25.43	24.25	60.86	33.53	67.34
Movement LOS	E	D	C	E	C	C	F	C	C	E	C	E
d_A, Approach Delay [s/veh]	50.55			36.02			53.23			56.85		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	46.56											
Intersection LOS	D											
Intersection V/C	0.826											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.177	3.314	2.796	2.806
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	567	600	600
d_b, Bicycle Delay [s]	29.40	30.82	29.40	29.40
l_b,int, Bicycle LOS Score for Intersection	2.458	2.540	2.230	2.107
Bicycle LOS	B	B	B	B

Sequence

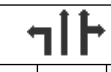
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	40.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.456

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	102	163	206	49	94	61	74	991	115	128	620	46
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	5	5	0	0	8	0	0	0	8	0	0	0
Site-Generated Trips [veh/h]	12	12	0	0	12	0	0	0	12	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	190	218	52	120	65	78	1050	142	136	657	49
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	33	50	57	14	32	17	21	276	37	36	173	13
Total Analysis Volume [veh/h]	132	200	229	55	126	68	82	1105	149	143	692	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	36	36	11	31	0	14	60	0	13	59	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	56	69	5	55	55	7	34	34	9	35	35
g / C, Green / Cycle	0.06	0.47	0.58	0.04	0.46	0.46	0.06	0.28	0.28	0.08	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.15	0.03	0.06	0.06	0.05	0.24	0.24	0.04	0.21	0.21
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1597	1714	3427	1693	3329	1800	1756
c, Capacity [veh/h]	188	847	886	70	819	726	103	960	474	250	531	518
d1, Uniform Delay [s]	55.61	18.93	12.52	57.01	18.87	18.95	55.65	41.17	41.17	53.64	37.71	37.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.67	0.66	0.71	16.98	0.30	0.37	12.79	2.68	5.46	2.07	1.76	1.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.24	0.26	0.78	0.12	0.13	0.79	0.87	0.87	0.57	0.71	0.71
d, Delay for Lane Group [s/veh]	60.28	19.58	13.23	73.99	19.18	19.32	68.45	43.85	46.64	55.71	39.47	39.52
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.09	3.47	3.18	1.98	1.68	1.61	2.82	12.09	12.32	2.16	10.08	9.84
50th-Percentile Queue Length [ft/ln]	52.15	86.86	79.39	49.61	42.02	40.13	70.41	302.3	307.9	53.99	251.9	246.0
95th-Percentile Queue Length [veh/ln]	3.75	6.25	5.72	3.57	3.03	2.89	5.07	17.80	18.07	3.89	15.28	14.99
95th-Percentile Queue Length [ft/ln]	93.87	156.3	142.9	89.29	75.63	72.24	126.7	444.8	451.8	97.19	382.0	374.6

Movement, Approach, & Intersection Results

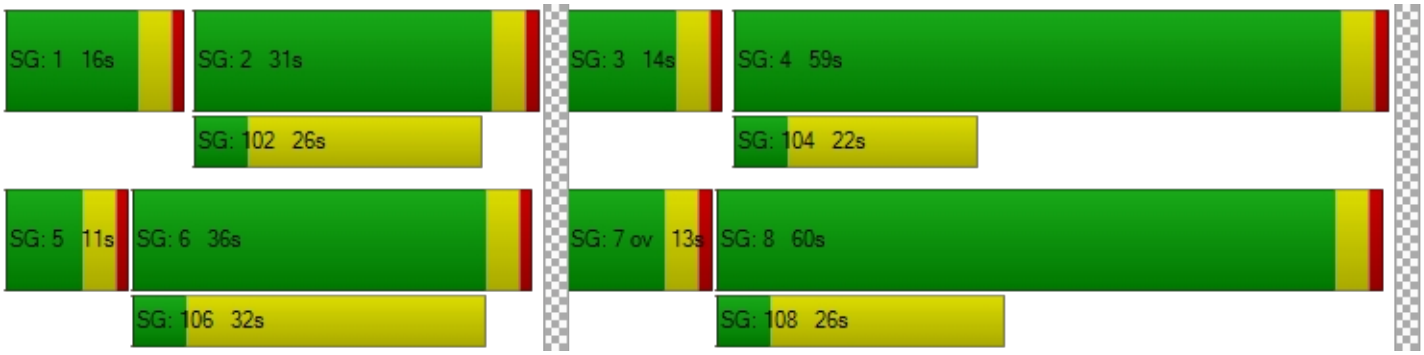
d_M, Delay for Movement [s/veh]	60.28	19.58	13.23	73.99	19.21	19.32	68.45	44.52	46.64	55.71	39.49	39.52
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.56			31.34			46.23			42.11		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	40.16											
Intersection LOS	D											
Intersection V/C	0.456											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.627	2.429	2.830	3.018
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	450	933	917
d_b, Bicycle Delay [s]	32.27	36.04	17.07	17.60
l_b,int, Bicycle LOS Score for Intersection	2.485	1.765	2.294	2.291
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	16.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.341

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	258	0	250	0	1047	169	0	558	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.000	1.060	1.060	1.000	1.060	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	47	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	320	0	265	0	1110	179	0	591	0
Peak Hour Factor	1.000	1.000	1.000	0.950	1.000	0.950	1.000	0.950	0.950	1.000	0.950	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	84	0	70	0	292	47	0	156	0
Total Analysis Volume [veh/h]	0	0	0	337	0	279	0	1168	188	0	622	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Split	Permi	Split	Permi	Permi	Unsig	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	43	0	0	0	77	0	0	77	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		16	16	96	96
g / C, Green / Cycle		0.13	0.13	0.80	0.80
(v / s)_i Volume / Saturation Flow Rate		0.10	0.10	0.24	0.13
s, saturation flow rate [veh/h]		3329	2708	4903	4903
c, Capacity [veh/h]		440	358	3928	3928
d1, Uniform Delay [s]		50.26	50.36	3.12	2.72
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.80	3.68	0.19	0.09
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.78	0.30	0.16
d, Delay for Lane Group [s/veh]		53.06	54.04	3.31	2.81
Lane Group LOS		D	D	A	A
Critical Lane Group		No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		5.06	4.24	1.97	0.91
50th-Percentile Queue Length [ft/ln]		126.46	105.93	49.31	22.87
95th-Percentile Queue Length [veh/ln]		8.75	7.61	3.55	1.65
95th-Percentile Queue Length [ft/ln]		218.67	190.32	88.75	41.17

Movement, Approach, & Intersection Results

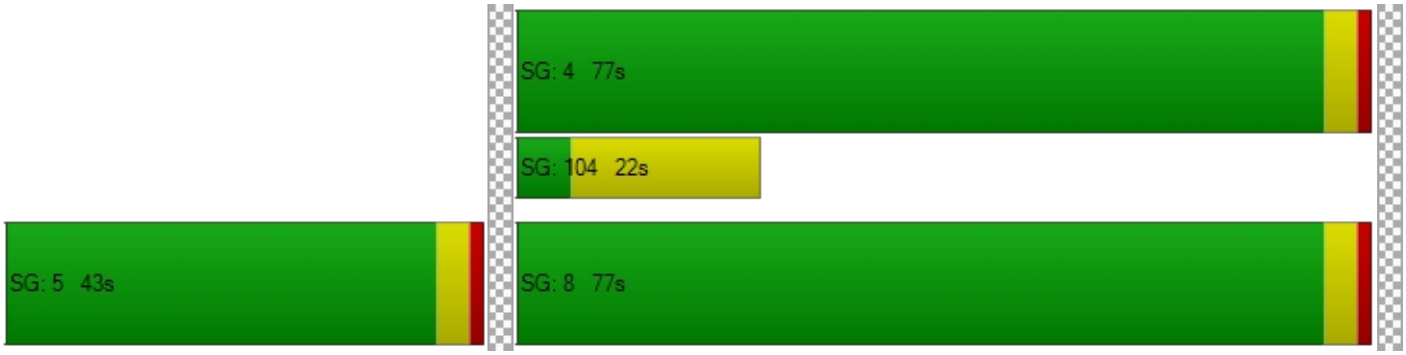
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	53.06	0.00	54.04	0.00	3.31	0.00	0.00	2.81	0.00
Movement LOS				D		D		A			A	
d_A, Approach Delay [s/veh]	0.00			53.51			3.31			2.81		
Approach LOS	A			D			A			A		
d_I, Intersection Delay [s/veh]	16.03											
Intersection LOS	B											
Intersection V/C	0.341											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.435	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	650	1217	1217
d_b, Bicycle Delay [s]	60.00	27.34	9.20	9.20
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.202	1.902
Bicycle LOS	D	A	B	A

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	34.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	276	0	514	0	0	0	439	912	0	0	798	162
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.000	1.000	1.000	1.060	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	47	0	0	0	39
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	293	0	545	0	0	0	465	1014	0	0	846	211
Peak Hour Factor	0.950	0.950	0.950	1.000	1.000	1.000	0.950	0.950	1.000	1.000	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	77	0	143	0	0	0	122	267	0	0	223	56
Total Analysis Volume [veh/h]	308	0	574	0	0	0	489	1067	0	0	891	222
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Unsig
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	0	0	58	85	0	0	27	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	67	67	67		21	45	21
g / C, Green / Cycle	0.56	0.56	0.56		0.17	0.38	0.17
(v / s)_i Volume / Saturation Flow Rate	0.18	0.19	0.19		0.15	0.22	0.14
s, saturation flow rate [veh/h]	1714	1533	1530		3329	4903	6538
c, Capacity [veh/h]	952	851	849		576	1854	1123
d1, Uniform Delay [s]	14.41	14.64	14.65		48.10	29.65	47.64
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.88	1.09	1.09		3.61	0.28	1.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.34	0.34		0.85	0.58	0.79
d, Delay for Lane Group [s/veh]	15.29	15.73	15.74		51.71	29.94	48.95
Lane Group LOS	B	B	B		D	C	D
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.60	4.52	4.52		7.37	8.17	6.48
50th-Percentile Queue Length [ft/ln]	115.0	113.0	112.9		184.26	204.32	161.94
95th-Percentile Queue Length [veh/ln]	8.12	8.01	8.01		11.82	12.86	10.65
95th-Percentile Queue Length [ft/ln]	202.9	200.1	200.1		295.57	321.53	266.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.31	15.73	15.74	0.00	0.00	0.00	51.71	29.94	0.00	0.00	48.95	0.00
Movement LOS	B	B	B				D	C			D	
d_A, Approach Delay [s/veh]	15.58			0.00			36.78			48.95		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	34.42											
Intersection LOS	C											
Intersection V/C	0.473											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.361	1.968	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	0	1350	383
d_b, Bicycle Delay [s]	33.00	60.00	6.34	39.20
l_b,int, Bicycle LOS Score for Intersection	3.015	4.132	2.415	1.927
Bicycle LOS	C	D	B	A

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	41.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	154	926	338	107	435	86	305	1060	81	292	590	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	42	39	0	50	0	0	0	0	63	0	0
Site-Generated Trips [veh/h]	39	230	93	0	309	0	0	0	47	97	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	202	1254	490	113	820	91	323	1124	133	470	625	65
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	53	330	129	30	216	24	85	296	35	124	164	17
Total Analysis Volume [veh/h]	213	1320	516	119	863	96	340	1183	140	495	658	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	44	0	9	40	0	23	40	0	27	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	46	46	5	42	42	15	33	33	20	39	39
g / C, Green / Cycle	0.08	0.38	0.38	0.04	0.35	0.35	0.12	0.28	0.28	0.17	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.27	0.34	0.04	0.18	0.06	0.10	0.24	0.09	0.15	0.13	0.04
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	250	1868	583	139	1704	532	406	1354	423	559	1579	493
d1, Uniform Delay [s]	54.85	31.46	34.69	57.15	30.99	27.25	51.50	41.43	34.60	48.81	31.86	28.87
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.06	2.28	17.74	13.90	1.08	0.74	4.60	1.92	0.46	4.93	0.18	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.71	0.89	0.86	0.51	0.18	0.84	0.87	0.33	0.89	0.42	0.14
d, Delay for Lane Group [s/veh]	62.91	33.75	52.43	71.05	32.07	27.99	56.11	43.35	35.05	53.74	32.04	28.99
Lane Group LOS	E	C	D	E	C	C	E	D	D	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.46	11.07	16.68	2.06	6.75	2.04	5.26	11.28	3.33	7.61	5.02	1.42
50th-Percentile Queue Length [ft/ln]	86.49	276.8	417.0	51.53	168.7	51.01	131.4	281.9	83.16	190.3	125.4	35.49
95th-Percentile Queue Length [veh/ln]	6.23	16.53	23.38	3.71	11.01	3.67	9.02	16.79	5.99	12.14	8.69	2.55
95th-Percentile Queue Length [ft/ln]	155.6	413.3	584.5	92.75	275.2	91.82	225.5	419.6	149.6	303.4	217.2	63.87

Movement, Approach, & Intersection Results

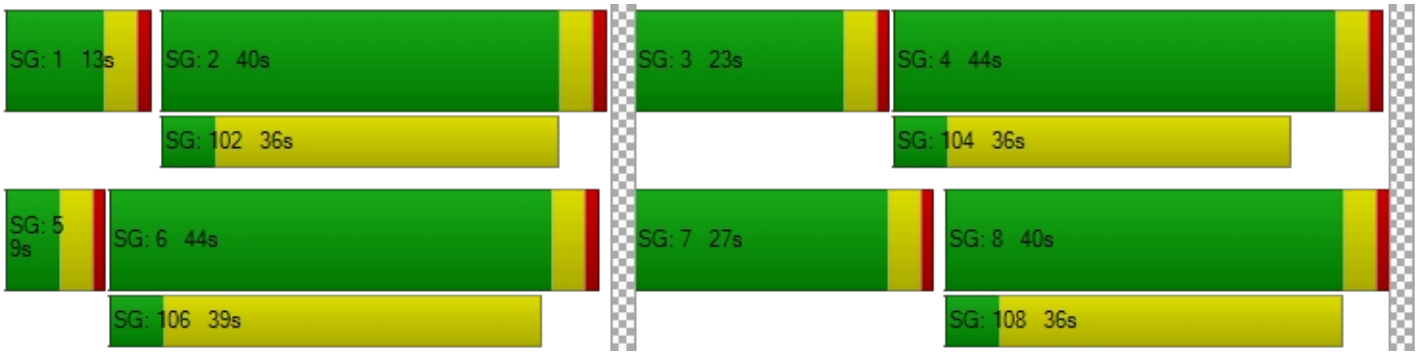
d_M, Delay for Movement [s/veh]	62.91	33.75	52.43	71.05	32.07	27.99	56.11	43.35	35.05	53.74	32.04	28.99
Movement LOS	E	C	D	E	C	C	E	D	D	D	C	C
d_A, Approach Delay [s/veh]	41.48			36.01			45.26			40.67		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.38											
Intersection LOS	D											
Intersection V/C	0.763											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.249	3.168	3.326	3.278
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	600	600	667
d_b, Bicycle Delay [s]	26.67	29.40	29.40	26.67
l_b,int, Bicycle LOS Score for Intersection	2.687	2.153	2.474	2.231
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	42.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.481

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	94	250	24	131	191	90	211	979	73	65	552	121
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	33	0	0	54	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	81	0	0	85	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	100	265	25	139	202	95	224	1152	77	69	724	128
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	70	7	37	53	25	59	303	20	18	191	34
Total Analysis Volume [veh/h]	105	279	26	146	213	100	236	1213	81	73	762	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	37	0	16	40	0	37	57	0	10	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	49	49	12	52	52	19	37	37	6	25	25
g / C, Green / Cycle	0.07	0.41	0.41	0.10	0.43	0.43	0.16	0.31	0.31	0.05	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.02	0.09	0.09	0.09	0.14	0.25	0.05	0.04	0.18	0.18
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1772	1585	1714	4903	1506	1687	3427	1666
c, Capacity [veh/h]	128	1391	621	171	763	683	267	1526	469	84	704	342
d1, Uniform Delay [s]	54.72	23.07	21.56	53.16	21.41	21.48	49.57	37.82	30.08	56.60	45.97	46.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.03	0.32	0.13	11.36	0.64	0.74	9.32	0.98	0.17	21.79	3.12	6.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.20	0.04	0.85	0.21	0.22	0.88	0.79	0.17	0.87	0.86	0.86
d, Delay for Lane Group [s/veh]	66.75	23.39	21.68	64.52	22.05	22.22	58.89	38.80	30.26	78.39	49.09	52.69
Lane Group LOS	E	C	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.56	2.63	0.47	4.87	3.02	2.81	7.61	10.93	1.74	2.71	8.92	9.09
50th-Percentile Queue Length [ft/ln]	88.88	65.78	11.73	121.7	75.49	70.19	190.1	273.2	43.55	67.67	223.0	227.3
95th-Percentile Queue Length [veh/ln]	6.40	4.74	0.84	8.49	5.43	5.05	12.13	16.35	3.14	4.87	13.82	14.04
95th-Percentile Queue Length [ft/ln]	159.9	118.4	21.11	212.1	135.8	126.3	303.2	408.7	78.39	121.8	345.5	350.9

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.75	23.39	21.68	64.52	22.09	22.22	58.89	38.80	30.26	78.39	49.85	52.69
Movement LOS	E	C	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	34.39			35.61			41.45			52.39		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	42.94											
Intersection LOS	D											
Intersection V/C	0.481											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.594	2.648	3.135	3.028
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	600	883	433
d_b, Bicycle Delay [s]	31.54	29.40	18.70	36.82
l_b,int, Bicycle LOS Score for Intersection	1.898	1.938	2.401	2.093
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.545

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	95	607	69	127	443	106	299	720	115	160	526	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	2	2	0	0	15	10	18	0	1	30	0
Site-Generated Trips [veh/h]	0	2	1	0	0	24	21	47	0	0	49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	101	647	76	135	470	151	348	828	122	171	637	61
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	170	20	36	124	40	92	218	32	45	168	16
Total Analysis Volume [veh/h]	106	681	80	142	495	159	366	872	128	180	671	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	17	40	0	20	43	0	30	48	0	12	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	56	56	12	59	59	16	28	28	8	20	36
g / C, Green / Cycle	0.08	0.47	0.47	0.10	0.49	0.49	0.13	0.23	0.23	0.07	0.17	0.30
(v / s)_i Volume / Saturation Flow Rate	0.06	0.22	0.22	0.08	0.14	0.10	0.11	0.18	0.08	0.05	0.14	0.04
s, saturation flow rate [veh/h]	1714	1800	1734	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	131	846	815	170	1689	754	438	1133	353	222	815	457
d1, Uniform Delay [s]	54.59	21.48	21.48	53.11	18.04	17.22	50.84	43.16	38.72	55.25	48.33	30.82
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.36	1.79	1.85	10.29	0.44	0.64	4.28	1.14	0.62	6.95	2.17	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.46	0.46	0.84	0.29	0.21	0.84	0.77	0.36	0.81	0.82	0.14
d, Delay for Lane Group [s/veh]	65.95	23.26	23.33	63.40	18.48	17.86	55.12	44.29	39.34	62.21	50.50	30.96
Lane Group LOS	E	C	C	E	B	B	E	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.57	7.71	7.45	4.69	4.15	2.62	5.62	8.17	3.24	2.90	6.62	1.39
50th-Percentile Queue Length [ft/ln]	89.16	192.7	186.1	117.2	103.8	65.43	140.5	204.1	81.03	72.50	165.5	34.69
95th-Percentile Queue Length [veh/ln]	6.42	12.26	11.92	8.24	7.48	4.71	9.51	12.85	5.83	5.22	10.84	2.50
95th-Percentile Queue Length [ft/ln]	160.4	306.5	298.0	206.0	186.8	117.7	237.7	321.3	145.8	130.5	270.9	62.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.95	23.29	23.33	63.40	18.48	17.86	55.12	44.29	39.34	62.21	50.50	30.96
Movement LOS	E	C	C	E	B	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	28.51			26.37			46.73			51.44		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.71											
Intersection LOS	D											
Intersection V/C	0.545											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.641	2.778	3.114	3.178
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	650	733	433
d_b, Bicycle Delay [s]	29.40	27.34	24.07	36.82
l_b,int, Bicycle LOS Score for Intersection	2.275	2.216	2.311	2.063
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	35.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.527

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	104	974	61	226	510	55	136	597	90	92	640	235
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	0	0	6	14	9	5	0	0	8	0
Site-Generated Trips [veh/h]	0	5	0	0	6	25	24	12	0	0	12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	1041	65	240	553	97	177	650	95	98	698	249
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	29	274	17	63	146	26	47	171	25	26	184	66
Total Analysis Volume [veh/h]	116	1096	68	253	582	102	186	684	100	103	735	262
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	40	0	16	43	0	13	55	0	9	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	60	60	11	65	65	9	28	28	5	25	25
g / C, Green / Cycle	0.05	0.50	0.50	0.09	0.54	0.54	0.07	0.24	0.24	0.04	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.03	0.22	0.04	0.08	0.17	0.07	0.06	0.14	0.07	0.03	0.15	0.17
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	169	2433	759	307	1842	822	239	1161	362	139	1014	316
d1, Uniform Delay [s]	56.02	19.62	15.94	53.53	15.46	13.75	54.77	40.62	37.40	56.86	44.41	45.56
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.89	0.61	0.23	5.60	0.45	0.31	5.46	0.48	0.41	7.59	1.00	5.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.45	0.09	0.83	0.32	0.12	0.78	0.59	0.28	0.74	0.73	0.83
d, Delay for Lane Group [s/veh]	60.91	20.22	16.17	59.12	15.91	14.06	60.23	41.10	37.81	64.45	45.42	51.09
Lane Group LOS	E	C	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.84	6.67	1.04	3.99	4.50	1.44	2.95	6.03	2.46	1.69	6.89	7.94
50th-Percentile Queue Length [ft/ln]	46.08	166.8	25.95	99.67	112.5	35.95	73.63	150.8	61.41	42.26	172.1	198.4
95th-Percentile Queue Length [veh/ln]	3.32	10.91	1.87	7.18	7.98	2.59	5.30	10.06	4.42	3.04	11.19	12.56
95th-Percentile Queue Length [ft/ln]	82.94	272.7	46.70	179.4	199.5	64.71	132.5	251.5	110.5	76.08	279.8	313.9

Movement, Approach, & Intersection Results

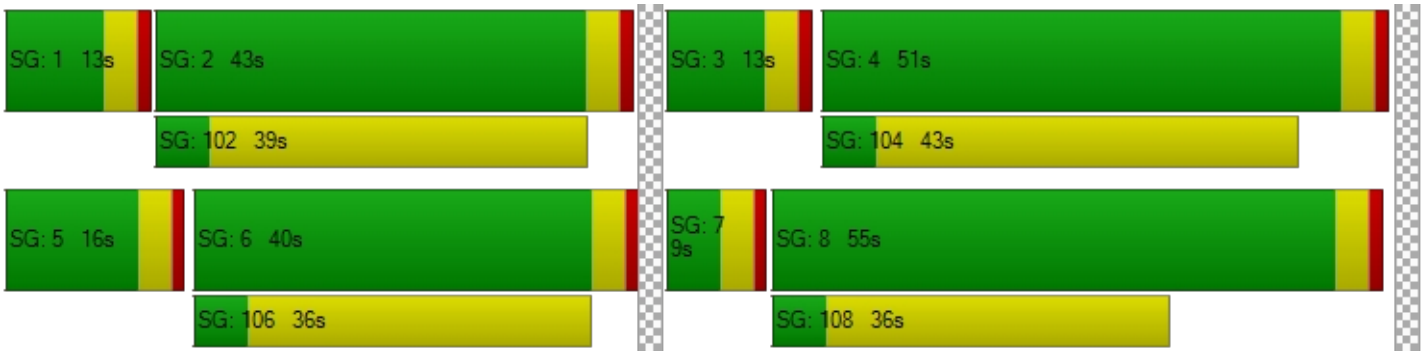
d_M, Delay for Movement [s/veh]	60.91	20.22	16.17	59.12	15.91	14.06	60.23	41.10	37.81	64.45	45.42	51.09
Movement LOS	E	C	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	23.69			27.38			44.43			48.55		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.57											
Intersection LOS	D											
Intersection V/C	0.527											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.088	3.313	3.169	3.092
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	650	850	783
d_b, Bicycle Delay [s]	29.40	27.34	19.84	22.20
l_b,int, Bicycle LOS Score for Intersection	2.264	2.333	2.093	2.165
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	43.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.534

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	133	256	98	23	224	93	137	439	167	42	256	30
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	10	0	0	16	0	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	24	0	0	24	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	305	104	24	277	99	145	465	177	46	271	32
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	37	80	27	6	73	26	38	122	47	12	71	8
Total Analysis Volume [veh/h]	148	321	109	25	292	104	153	489	186	48	285	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	16	27	0	12	23	23	0	51	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	52	52	3	43	43	33	33	16	16
g / C, Green / Cycle	0.10	0.43	0.43	0.02	0.36	0.36	0.28	0.28	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.09	0.12	0.13	0.01	0.09	0.07	0.25	0.25	0.11	0.11
s, saturation flow rate [veh/h]	1714	1800	1647	1714	3427	1530	1770	1508	1778	1583
c, Capacity [veh/h]	171	781	715	42	1227	548	493	420	231	206
d1, Uniform Delay [s]	53.19	21.95	21.99	57.97	27.02	26.52	41.77	41.79	50.96	51.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.12	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.99	0.92	1.02	13.18	0.46	0.77	7.05	8.22	7.80	9.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.29	0.29	0.60	0.24	0.19	0.91	0.91	0.84	0.84
d, Delay for Lane Group [s/veh]	65.18	22.87	23.02	71.15	27.48	27.29	48.82	50.01	58.76	60.05
Lane Group LOS	E	C	C	E	C	C	D	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.96	4.26	3.98	0.90	3.03	2.18	13.61	11.76	6.17	5.61
50th-Percentile Queue Length [ft/ln]	124.0	106.5	99.53	22.61	75.75	54.52	340.36	293.98	154.24	140.31
95th-Percentile Queue Length [veh/ln]	8.62	7.65	7.17	1.63	5.45	3.93	19.67	17.38	10.24	9.50
95th-Percentile Queue Length [ft/ln]	215.4	191.2	179.1	40.70	136.3	98.14	491.64	434.58	256.08	237.43

Movement, Approach, & Intersection Results

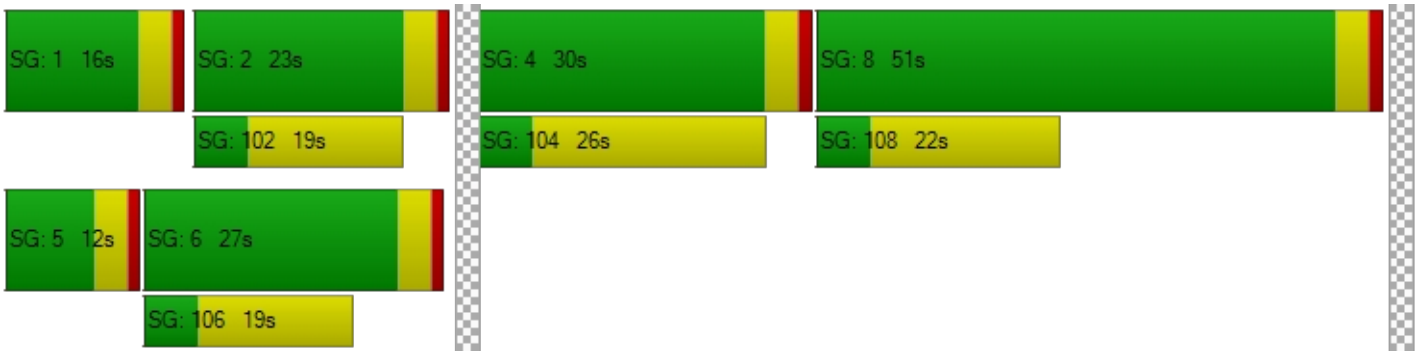
d_M, Delay for Movement [s/veh]	65.18	22.91	23.02	71.15	27.48	27.29	48.82	49.30	50.01	58.76	59.39	60.05
Movement LOS	E	C	C	E	C	C	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	33.76			30.03			49.37			59.37		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	43.22											
Intersection LOS	D											
Intersection V/C	0.534											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.530	2.619	2.479	2.388
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	317	783	433
d_b, Bicycle Delay [s]	39.20	42.50	22.20	36.82
l_b,int, Bicycle LOS Score for Intersection	2.036	1.907	2.243	1.862
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	167	0	536	0	1898	934	0	1348	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.000	1.060	1.060	1.000	1.060	1.000
In-Process Volume [veh/h]	0	0	0	42	0	0	0	16	0	0	16	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	24	0	0	21	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	219	0	568	0	2052	990	0	1466	0
Peak Hour Factor	1.000	1.000	1.000	0.950	1.000	0.950	1.000	0.950	0.950	1.000	0.950	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	58	0	149	0	540	261	0	386	0
Total Analysis Volume [veh/h]	0	0	0	231	0	598	0	2160	1042	0	1543	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	29	0	0	0	91	0	0	91	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		25	25	25	87	87	87
g / C, Green / Cycle		0.21	0.21	0.21	0.73	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate		0.13	0.20	0.20	0.44	0.68	0.31
s, saturation flow rate [veh/h]		1714	1530	1530	4903	1530	4903
c, Capacity [veh/h]		357	319	319	3555	1109	3555
d1, Uniform Delay [s]		43.46	46.74	46.74	8.11	14.23	6.62
k, delay calibration		0.11	0.29	0.29	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.04	25.80	25.80	0.78	15.89	0.39
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.65	0.94	0.94	0.61	0.94	0.43
d, Delay for Lane Group [s/veh]		45.51	72.54	72.54	8.89	30.12	7.01
Lane Group LOS		D	E	E	A	C	A
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		6.48	11.02	11.02	8.34	25.42	4.84
50th-Percentile Queue Length [ft/ln]		161.9	275.4	275.4	208.55	635.51	121.07
95th-Percentile Queue Length [veh/ln]		10.65	16.46	16.46	13.08	33.69	8.45
95th-Percentile Queue Length [ft/ln]		266.3	411.5	411.5	326.97	842.22	211.29

Movement, Approach, & Intersection Results

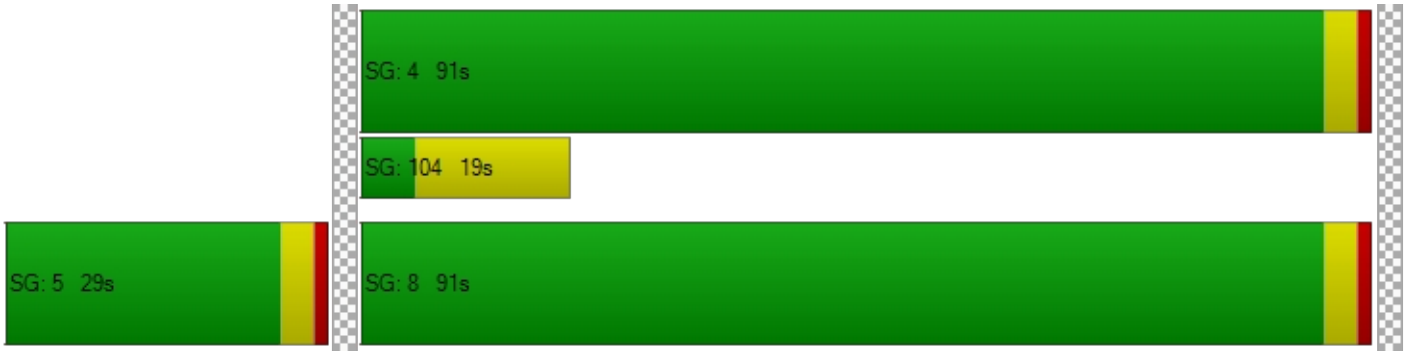
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	45.51	0.00	72.54	0.00	8.89	30.12	0.00	7.01	0.00
Movement LOS				D		E		A	C		A	
d_A, Approach Delay [s/veh]	0.00			65.01			15.80			7.01		
Approach LOS	A			E			B			A		
d_I, Intersection Delay [s/veh]	20.68											
Intersection LOS	C											
Intersection V/C	0.876											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.348	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	417	1450	1450
d_b, Bicycle Delay [s]	60.00	37.60	4.54	4.54
l_b,int, Bicycle LOS Score for Intersection	4.132	2.927	3.321	2.408
Bicycle LOS	D	C	C	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	21.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.557

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	731	0	465	0	0	0	0	1092	0	0	1114	292
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.060	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	58	0	0	16	35
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	24	0	0	21	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	775	0	493	0	0	0	0	1240	0	0	1218	345
Peak Hour Factor	0.950	1.000	0.950	1.000	1.000	1.000	1.000	0.950	1.000	1.000	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	204	0	130	0	0	0	0	326	0	0	321	91
Total Analysis Volume [veh/h]	816	0	519	0	0	0	0	1305	0	0	1282	363
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	97	0	0	0	0	0	0	23	0	0	23	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	39	39	39		73	73	73
g / C, Green / Cycle	0.33	0.33	0.33		0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.29		0.27	0.26	0.24
s, saturation flow rate [veh/h]	1714	1681	1530		4903	4903	1530
c, Capacity [veh/h]	562	550	501		2970	2970	927
d1, Uniform Delay [s]	36.64	36.90	38.26		12.71	12.63	12.22
k, delay calibration	0.11	0.11	0.11		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.57	2.88	5.54		0.47	0.46	1.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.81	0.89		0.44	0.43	0.39
d, Delay for Lane Group [s/veh]	39.22	39.79	43.80		13.18	13.08	13.47
Lane Group LOS	D	D	D		B	B	B
Critical Lane Group	No	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.15	12.28	13.04		6.20	6.05	5.19
50th-Percentile Queue Length [ft/ln]	303.8	306.9	326.0		154.90	151.18	129.76
95th-Percentile Queue Length [veh/ln]	17.87	18.02	18.96		10.28	10.08	8.93
95th-Percentile Queue Length [ft/ln]	446.7	450.5	474.1		256.96	252.01	223.17

Movement, Approach, & Intersection Results

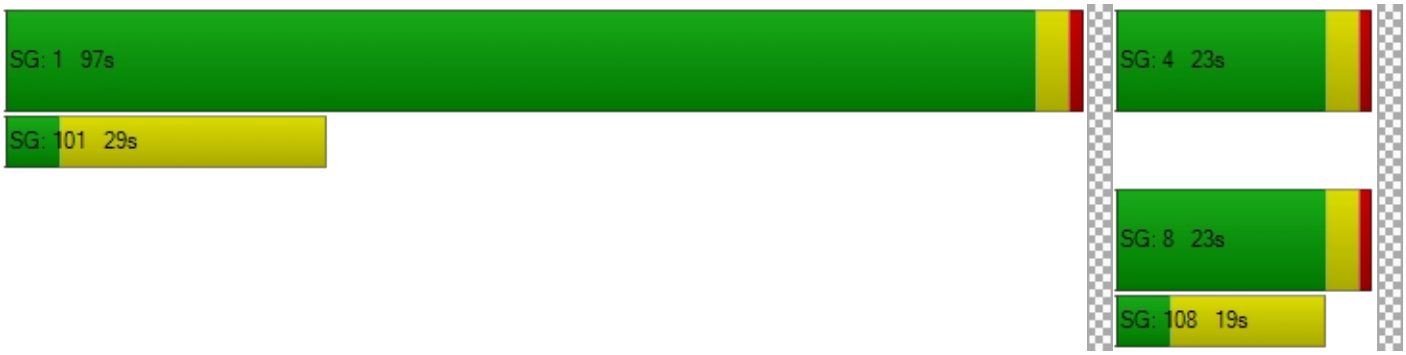
d_M, Delay for Movement [s/veh]	39.48	0.00	43.23	0.00	0.00	0.00	0.00	13.18	0.00	0.00	13.08	13.47
Movement LOS	D		D					B			B	B
d_A, Approach Delay [s/veh]	40.93			0.00			13.18			13.17		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	21.82											
Intersection LOS	C											
Intersection V/C	0.557											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.472	0.000	0.000	3.092
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1550	0	317	317
d_b, Bicycle Delay [s]	3.04	60.00	42.50	42.50
l_b,int, Bicycle LOS Score for Intersection	3.762	4.132	2.277	2.464
Bicycle LOS	D	D	B	B

Sequence

Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	43.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	260	348	189	62	209	155	236	931	176	104	748	47
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	51	10	0	0	17	0	0	0	58	1	0	0
Site-Generated Trips [veh/h]	19	21	0	4	20	0	0	2	22	0	2	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	346	400	200	70	259	164	250	989	267	111	795	53
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	91	105	53	18	68	43	66	260	70	29	209	14
Total Analysis Volume [veh/h]	364	421	211	74	273	173	263	1041	281	117	837	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	31	56	0	11	36	0	15	44	44	9	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	54	54	7	33	33	11	39	70	5	33	33
g / C, Green / Cycle	0.23	0.45	0.45	0.05	0.28	0.28	0.09	0.32	0.58	0.04	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.21	0.23	0.14	0.04	0.13	0.13	0.08	0.30	0.18	0.04	0.24	0.04
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1573	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	386	805	684	94	498	435	305	1108	890	139	937	418
d1, Uniform Delay [s]	45.75	23.95	21.29	56.03	36.10	36.25	53.75	39.46	12.86	57.11	41.93	32.89
k, delay calibration	0.34	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.26	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.18	2.43	1.17	13.53	3.18	3.83	7.13	4.66	0.48	12.79	3.27	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.52	0.31	0.79	0.47	0.49	0.86	0.94	0.32	0.84	0.89	0.13
d, Delay for Lane Group [s/veh]	71.93	26.38	22.46	69.56	39.29	40.09	60.88	44.12	13.34	69.90	45.19	33.03
Lane Group LOS	E	C	C	E	D	D	E	D	B	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.41	9.08	4.02	2.57	6.17	5.63	4.21	15.43	3.93	2.01	12.25	1.26
50th-Percentile Queue Length [ft/ln]	335.2	226.9	100.5	64.18	154.3	140.8	105.3	385.8	98.24	50.21	306.1	31.44
95th-Percentile Queue Length [veh/ln]	19.42	14.02	7.24	4.62	10.25	9.53	7.58	21.87	7.07	3.61	17.99	2.26
95th-Percentile Queue Length [ft/ln]	485.4	350.4	181.0	115.5	256.2	238.1	189.5	546.8	176.8	90.37	449.6	56.60

Movement, Approach, & Intersection Results

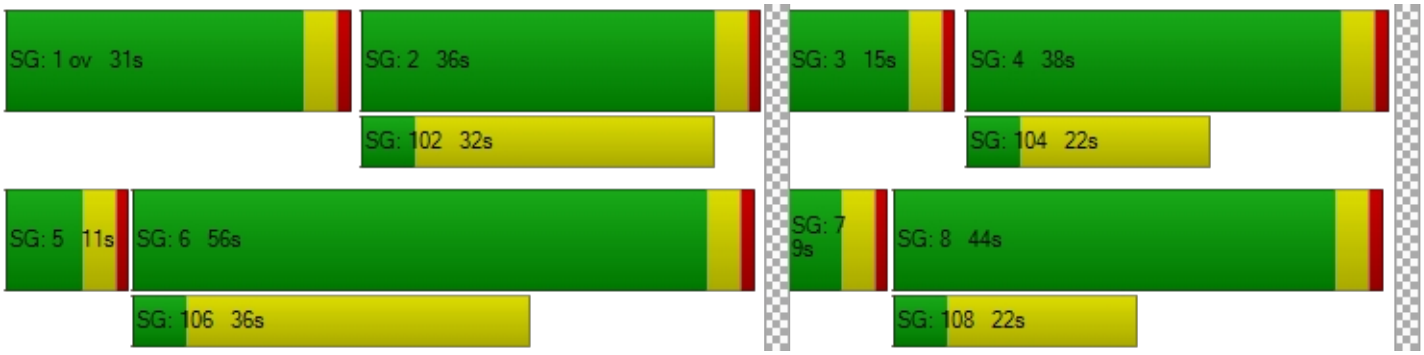
d_M, Delay for Movement [s/veh]	71.93	26.38	22.46	69.56	39.40	40.09	60.88	44.12	13.34	69.90	45.19	33.03
Movement LOS	E	C	C	E	D	D	E	D	B	E	D	C
d_A, Approach Delay [s/veh]	42.20			43.92			41.44			47.38		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.40											
Intersection LOS	D											
Intersection V/C	0.685											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.640	2.561	3.101	3.118
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	533	667	567
d_b, Bicycle Delay [s]	19.27	32.27	26.67	30.82
l_b,int, Bicycle LOS Score for Intersection	3.203	1.989	2.867	2.393
Bicycle LOS	C	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	45.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	276	828	230	281	634	195	247	860	100	135	567	123
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	87	26	0	120	1	0	0	0	36	0	0
Site-Generated Trips [veh/h]	5	373	54	0	464	0	0	0	6	57	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	298	1338	324	298	1256	208	262	912	112	236	601	130
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	78	352	85	78	331	55	69	240	29	62	158	34
Total Analysis Volume [veh/h]	314	1408	341	314	1322	219	276	960	118	248	633	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	26	40	0	26	40	40	14	40	0	14	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	22	45	45	22	45	59	10	27	27	10	27	53
g / C, Green / Cycle	0.18	0.37	0.37	0.18	0.37	0.49	0.08	0.23	0.23	0.08	0.23	0.45
(v / s)_i Volume / Saturation Flow Rate	0.18	0.29	0.22	0.18	0.27	0.14	0.08	0.20	0.08	0.07	0.13	0.09
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	314	1817	567	314	1817	745	277	1125	351	277	1125	683
d1, Uniform Delay [s]	48.99	33.35	30.59	48.99	32.55	18.41	54.97	44.30	38.60	54.47	40.90	20.22
k, delay calibration	0.25	0.50	0.50	0.25	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	36.00	3.30	4.67	36.00	2.59	1.00	23.92	1.95	0.56	9.80	0.44	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.78	0.60	1.00	0.73	0.29	0.99	0.85	0.34	0.89	0.56	0.20
d, Delay for Lane Group [s/veh]	84.99	36.66	35.26	84.99	35.14	19.42	78.89	46.25	39.16	64.28	41.35	20.36
Lane Group LOS	F	D	D	F	D	B	E	D	D	E	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.50	12.46	8.67	12.50	11.35	3.84	5.09	9.28	2.97	4.09	5.57	2.37
50th-Percentile Queue Length [ft/ln]	312.4	311.5	216.7	312.4	283.6	95.89	127.1	232.0	74.29	102.1	139.3	59.33
95th-Percentile Queue Length [veh/ln]	18.30	18.25	13.50	18.30	16.87	6.90	8.78	14.28	5.35	7.35	9.45	4.27
95th-Percentile Queue Length [ft/ln]	457.4	456.3	337.5	457.4	421.8	172.6	219.6	356.9	133.7	183.8	236.1	106.7

Movement, Approach, & Intersection Results

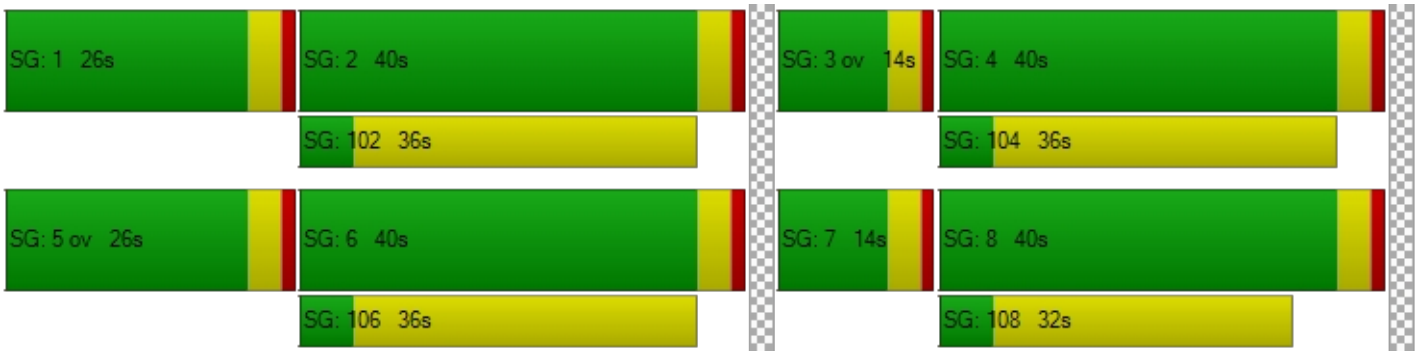
d_M, Delay for Movement [s/veh]	84.99	36.66	35.26	84.99	35.14	19.42	78.89	46.25	39.16	64.28	41.35	20.36
Movement LOS	F	D	D	F	D	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	43.78			41.72			52.28			44.11		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.06											
Intersection LOS	D											
Intersection V/C	0.741											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.198	3.263	3.137	3.150
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	600	600
d_b, Bicycle Delay [s]	29.40	29.40	29.40	29.40
l_b,int, Bicycle LOS Score for Intersection	2.694	2.580	2.304	2.120
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	1,871.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.042

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	60	0	118	0	0	0	0	1326	54	104	760	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	1	0	0	0	0	26	0	1	36	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	54	0	0	57	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	0	126	0	0	0	0	1486	57	111	899	0
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	0	33	0	0	0	0	391	15	29	237	0
Total Analysis Volume [veh/h]	67	0	133	0	0	0	0	1564	60	117	946	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	4.04	0.00	0.41	0.00	0.00	0.00	0.00	0.02	0.00	0.29	0.01	0.00
d_M, Delay for Movement [s/veh]	1871.	1914.	1665.	207.2	277.4	11.63	9.91	0.00	0.00	17.42	0.00	0.00
Movement LOS	F	F	F	F	F	B	A	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	22.69	22.69	22.69	0.00	0.00	0.00	0.00	0.00	0.00	1.18	0.00	0.00
95th-Percentile Queue Length [ft/ln]	567.1	567.1	567.1	0.00	0.00	0.00	0.00	0.00	0.00	29.41	0.00	0.00
d_A, Approach Delay [s/veh]	1734.49			165.44			0.00			1.92		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	120.86											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	52.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.806

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	138	673	87	131	551	71	256	837	177	287	553	119
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	0	0	1	0	0	21	0	0	28	0
Site-Generated Trips [veh/h]	0	3	0	0	0	0	0	42	0	0	45	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	720	92	139	585	75	271	950	188	304	659	126
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	38	189	24	37	154	20	71	250	49	80	173	33
Total Analysis Volume [veh/h]	154	758	97	146	616	79	285	1000	198	320	694	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	37	0	15	36	0	28	40	0	28	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	33	33	11	32	32	22	36	36	24	38	38
g / C, Green / Cycle	0.10	0.28	0.28	0.09	0.27	0.27	0.18	0.30	0.30	0.20	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.09	0.24	0.24	0.09	0.20	0.20	0.17	0.29	0.13	0.19	0.20	0.09
s, saturation flow rate [veh/h]	1714	1800	1729	1714	1800	1729	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	171	495	476	157	480	461	313	1028	459	343	1088	486
d1, Uniform Delay [s]	53.40	41.62	41.62	54.11	40.18	40.18	48.08	41.51	33.77	47.21	35.06	30.62
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.20	0.11	0.11	0.26	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.08	19.67	20.31	19.95	9.77	10.16	16.87	8.10	0.64	22.32	0.63	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.88	0.88	0.93	0.74	0.74	0.91	0.97	0.43	0.93	0.64	0.27
d, Delay for Lane Group [s/veh]	68.47	61.29	61.93	74.06	49.94	50.34	64.95	49.62	34.41	69.53	35.68	30.92
Lane Group LOS	E	E	E	E	D	D	E	D	C	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.31	14.95	14.45	5.24	10.81	10.45	9.80	15.59	4.73	11.48	8.73	2.93
50th-Percentile Queue Length [ft/ln]	132.6	373.8	361.2	131.0	270.3	261.2	245.0	389.8	118.3	287.0	218.2	73.28
95th-Percentile Queue Length [veh/ln]	9.08	21.29	20.68	9.00	16.21	15.75	14.94	22.07	8.30	17.04	13.58	5.28
95th-Percentile Queue Length [ft/ln]	227.0	532.3	517.1	224.9	405.1	393.7	373.4	551.7	207.5	426.0	339.3	131.9

Movement, Approach, & Intersection Results

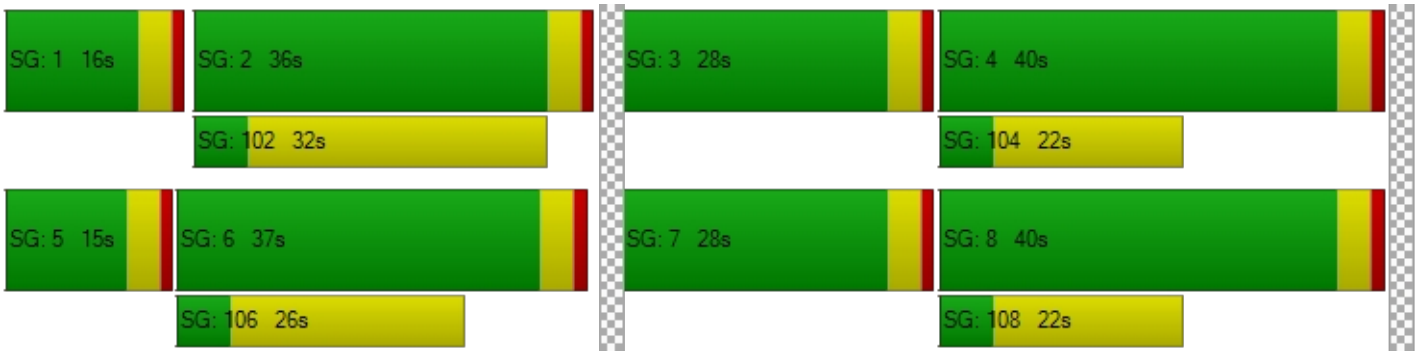
d_M, Delay for Movement [s/veh]	68.47	61.56	61.93	74.06	50.11	50.34	64.95	49.62	34.41	69.53	35.68	30.92
Movement LOS	E	E	E	E	D	D	E	D	C	E	D	C
d_A, Approach Delay [s/veh]	62.65			54.29			50.53			44.58		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	52.44											
Intersection LOS	D											
Intersection V/C	0.806											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.733	2.708	2.860	2.856
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	533	600	600
d_b, Bicycle Delay [s]	31.54	32.27	29.40	29.40
l_b,int, Bicycle LOS Score for Intersection	2.392	2.253	2.783	2.506
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	42.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	103	798	135	153	488	119	200	689	134	200	501	162
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	7	3	0	10	5	3	13	0	1	15	0
Site-Generated Trips [veh/h]	0	8	0	0	9	9	9	21	0	0	24	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	109	861	146	162	536	140	224	764	142	213	570	172
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	29	227	38	43	141	37	59	201	37	56	150	45
Total Analysis Volume [veh/h]	115	906	154	171	564	147	236	804	149	224	600	181
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	25	39	0	18	32	0	27	41	0	22	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	42	42	14	45	45	18	31	31	17	30	30
g / C, Green / Cycle	0.08	0.35	0.35	0.11	0.38	0.38	0.15	0.26	0.26	0.15	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.07	0.26	0.10	0.10	0.16	0.10	0.14	0.23	0.10	0.13	0.18	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	142	1190	531	196	1297	579	264	890	397	249	861	384
d1, Uniform Delay [s]	54.07	34.77	28.44	52.26	27.74	25.64	49.81	42.96	36.43	50.41	40.79	38.16
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.26	4.63	1.38	11.23	1.06	1.05	11.29	3.76	0.59	11.15	1.03	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.76	0.29	0.87	0.43	0.25	0.89	0.90	0.37	0.90	0.70	0.47
d, Delay for Lane Group [s/veh]	64.33	39.40	29.82	63.49	28.80	26.69	61.10	46.72	37.02	61.56	41.82	39.06
Lane Group LOS	E	D	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.82	12.39	3.44	5.67	6.20	3.07	7.76	11.91	3.66	7.37	8.15	4.63
50th-Percentile Queue Length [ft/ln]	95.50	309.7	85.89	141.7	155.0	76.65	193.9	297.7	91.56	184.2	203.7	115.6
95th-Percentile Queue Length [veh/ln]	6.88	18.16	6.18	9.58	10.29	5.52	12.33	17.57	6.59	11.82	12.83	8.16
95th-Percentile Queue Length [ft/ln]	171.8	454.0	154.6	239.4	257.2	137.9	308.1	439.2	164.8	295.5	320.8	203.8

Movement, Approach, & Intersection Results

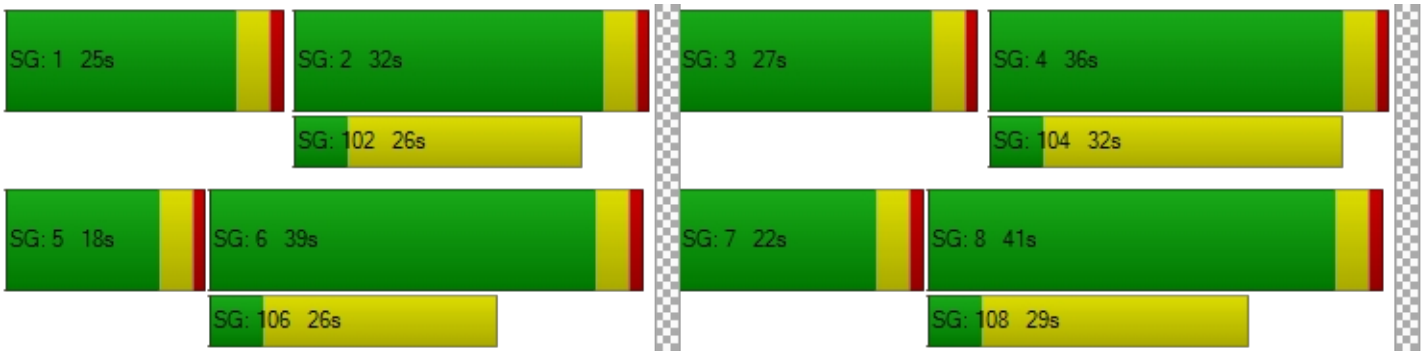
d_M, Delay for Movement [s/veh]	64.33	39.40	29.82	63.49	28.80	26.69	61.10	46.72	37.02	61.56	41.82	39.06
Movement LOS	E	D	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	40.58			35.17			48.36			45.72		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.85											
Intersection LOS	D											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.903	3.009	2.801	2.815
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	467	617	533
d_b, Bicycle Delay [s]	30.10	35.27	28.70	32.27
l_b,int, Bicycle LOS Score for Intersection	2.529	2.287	2.541	2.389
Bicycle LOS	B	B	B	B

Sequence

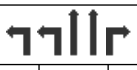
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	41.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	163	520	116	127	235	114	349	622	387	100	360	144
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	15	61	0	0	76	0	0	0	24	0	0	0
Site-Generated Trips [veh/h]	7	1	0	42	0	0	0	36	0	0	29	39
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	613	123	177	325	121	370	695	434	106	411	192
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	161	32	47	86	32	97	183	114	28	108	51
Total Analysis Volume [veh/h]	205	645	129	186	342	127	389	732	457	112	433	202
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	18	30	30	18	30	30	40	63	63	9	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	33	42	14	33	54	17	52	70	5	40	40
g / C, Green / Cycle	0.12	0.28	0.35	0.12	0.28	0.45	0.14	0.43	0.58	0.04	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.08	0.11	0.10	0.08	0.12	0.41	0.30	0.03	0.19	0.19
s, saturation flow rate [veh/h]	3329	3427	1530	1714	3427	1530	3329	1800	1530	3329	1800	1609
c, Capacity [veh/h]	388	953	540	200	953	695	477	775	888	139	592	529
d1, Uniform Delay [s]	49.89	38.52	27.43	52.51	34.74	19.47	49.87	32.82	15.07	57.02	33.20	33.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.34	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.11	3.86	1.04	16.84	1.05	0.58	3.47	16.47	2.13	10.49	0.85	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.68	0.24	0.93	0.36	0.18	0.82	0.95	0.51	0.81	0.57	0.57
d, Delay for Lane Group [s/veh]	51.00	42.38	28.47	69.35	35.80	20.04	53.35	49.29	17.20	67.51	34.05	34.21
Lane Group LOS	D	D	C	E	D	C	D	D	B	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.96	8.92	2.79	6.48	4.16	2.23	5.89	23.41	7.76	1.89	8.13	7.34
50th-Percentile Queue Length [ft/ln]	74.03	223.1	69.71	161.9	104.0	55.82	147.2	585.3	194.0	47.15	203.3	183.4
95th-Percentile Queue Length [veh/ln]	5.33	13.82	5.02	10.65	7.49	4.02	9.87	31.35	12.33	3.39	12.81	11.78
95th-Percentile Queue Length [ft/ln]	133.2	345.6	125.4	266.2	187.3	100.4	246.7	783.7	308.2	84.87	320.3	294.5

Movement, Approach, & Intersection Results

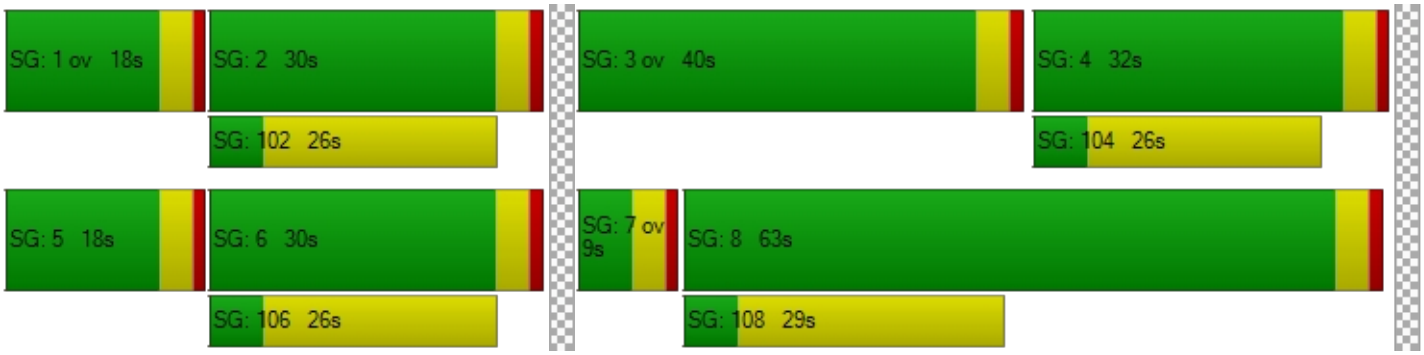
d_M, Delay for Movement [s/veh]	51.00	42.38	28.47	69.35	35.80	20.04	53.35	49.29	17.20	67.51	34.09	34.21
Movement LOS	D	D	C	E	D	C	D	D	B	E	C	C
d_A, Approach Delay [s/veh]	42.35			42.27			41.00			39.13		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.19											
Intersection LOS	D											
Intersection V/C	0.737											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.872	2.775	2.935	2.760
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	983	467
d_b, Bicycle Delay [s]	36.82	36.82	15.50	35.27
l_b,int, Bicycle LOS Score for Intersection	2.367	2.100	4.163	2.176
Bicycle LOS	B	B	D	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	92.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.961

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	138	1069	219	69	777	93	84	606	98	116	542	59
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	113	18	0	156	0	0	0	0	30	0	0
Site-Generated Trips [veh/h]	68	432	50	0	527	0	0	0	78	50	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	214	1678	300	73	1507	99	89	642	182	203	575	63
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	56	442	79	19	397	26	23	169	48	53	151	17
Total Analysis Volume [veh/h]	225	1766	316	77	1586	104	94	676	192	214	605	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	49	0	9	40	0	21	44	0	18	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	45	45	5	36	36	8	40	40	14	46	46
g / C, Green / Cycle	0.12	0.38	0.38	0.04	0.30	0.30	0.07	0.33	0.33	0.12	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.13	0.41	0.42	0.04	0.33	0.33	0.05	0.38	0.13	0.12	0.34	0.04
s, saturation flow rate [veh/h]	1714	3427	1666	1714	3427	1744	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	200	1285	625	71	1028	523	119	600	510	200	685	583
d1, Uniform Delay [s]	53.00	37.50	37.50	57.50	42.00	42.00	55.00	40.00	30.49	53.00	34.65	24.04
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.38	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	70.26	50.06	69.63	71.86	55.46	66.18	11.18	76.80	0.46	50.16	12.21	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.13	1.08	1.11	1.08	1.09	1.09	0.79	1.13	0.38	1.07	0.88	0.11
d, Delay for Lane Group [s/veh]	123.2	87.56	107.1	129.3	97.46	108.1	66.17	116.8	30.95	103.1	46.86	24.13
Lane Group LOS	F	F	F	F	F	F	E	F	C	F	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.92	27.39	30.02	3.59	22.94	24.90	3.17	30.20	4.31	8.80	18.49	1.24
50th-Percentile Queue Length [ft/ln]	247.9	684.7	750.6	89.79	573.4	622.5	79.21	755.1	107.7	220.0	462.3	30.94
95th-Percentile Queue Length [veh/ln]	15.81	37.97	41.88	6.47	32.49	34.96	5.70	42.40	7.72	14.05	25.54	2.23
95th-Percentile Queue Length [ft/ln]	395.2	949.3	1047.	161.6	812.2	873.8	142.5	1059.	192.9	351.2	638.6	55.69

Movement, Approach, & Intersection Results

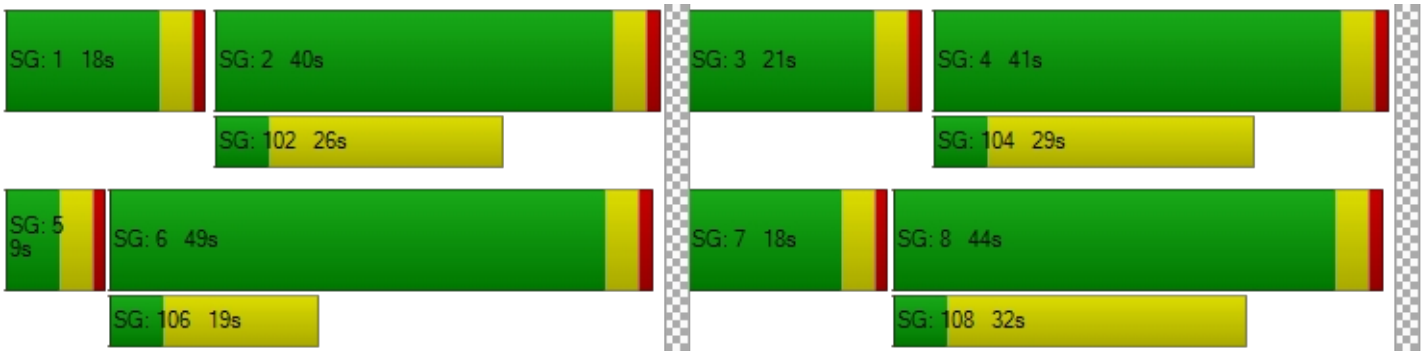
d_M, Delay for Movement [s/veh]	123.2	91.73	107.1	129.3	100.6	108.1	66.17	116.8	30.95	103.1	46.86	24.13
Movement LOS	F	F	F	F	F	F	E	F	C	F	D	C
d_A, Approach Delay [s/veh]	96.92			102.31			94.72			58.78		
Approach LOS	F			F			F			E		
d_I, Intersection Delay [s/veh]	92.47											
Intersection LOS	F											
Intersection V/C	0.961											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.265	3.124	2.776	2.623
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	600	667	617
d_b, Bicycle Delay [s]	23.44	29.40	26.67	28.70
l_b,int, Bicycle LOS Score for Intersection	2.828	2.531	3.147	3.020
Bicycle LOS	C	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	24.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	96	151	218	18	141	22	31	636	65	90	429	27
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	1	2	0	1	0	0	18	0	3	30	0
Site-Generated Trips [veh/h]	0	0	3	0	0	0	0	50	0	3	50	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	161	236	19	150	23	33	742	69	101	535	29
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	42	62	5	39	6	9	195	18	27	141	8
Total Analysis Volume [veh/h]	107	169	248	20	158	24	35	781	73	106	563	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	33	0	0	33	0	0	87	0	0	87	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	45	45	45	45	67	67	67	67	67	67
g / C, Green / Cycle	0.38	0.38	0.38	0.38	0.38	0.38	0.56	0.56	0.56	0.56	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.16	0.02	0.09	0.02	0.04	0.43	0.05	0.16	0.31	0.02
s, saturation flow rate [veh/h]	1221	1800	1530	985	1800	1530	836	1800	1530	656	1800	1530
c, Capacity [veh/h]	431	677	575	355	677	575	338	1003	853	186	1003	853
d1, Uniform Delay [s]	31.88	25.80	27.90	30.08	25.62	23.75	27.94	20.75	12.34	46.73	17.10	11.99
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.20	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.37	0.88	2.35	0.30	0.81	0.14	0.13	2.41	0.04	2.73	0.49	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.25	0.43	0.06	0.23	0.04	0.10	0.78	0.09	0.57	0.56	0.04
d, Delay for Lane Group [s/veh]	33.26	26.68	30.25	30.38	26.43	23.88	28.07	23.17	12.38	49.46	17.59	12.01
Lane Group LOS	C	C	C	C	C	C	C	C	B	D	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.55	3.50	5.67	0.45	3.25	0.46	0.72	17.08	0.92	3.19	9.88	0.38
50th-Percentile Queue Length [ft/ln]	63.63	87.59	141.8	11.18	81.29	11.45	18.04	426.9	23.04	79.63	247.0	9.51
95th-Percentile Queue Length [veh/ln]	4.58	6.31	9.58	0.81	5.85	0.82	1.30	23.86	1.66	5.73	15.04	0.68
95th-Percentile Queue Length [ft/ln]	114.5	157.6	239.4	20.13	146.3	20.61	32.46	596.4	41.48	143.3	375.8	17.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.26	26.68	30.25	30.38	26.43	23.88	28.07	23.17	12.38	49.46	17.59	12.01
Movement LOS	C	C	C	C	C	C	C	C	B	D	B	B
d_A, Approach Delay [s/veh]	29.71			26.52			22.47			22.17		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	24.37											
Intersection LOS	C											
Intersection V/C	0.596											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.507	2.303	2.684	2.685
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	483	1383	1383
d_b, Bicycle Delay [s]	34.50	34.50	5.70	5.70
l_b,int, Bicycle LOS Score for Intersection	2.424	1.893	3.026	2.715
Bicycle LOS	B	A	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	43.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.717

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	175	861	169	138	729	67	78	565	168	144	309	92
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	4	2	0	1	0	0	10	0	3	17	0
Site-Generated Trips [veh/h]	0	3	3	0	0	0	0	29	0	3	29	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	186	920	184	146	774	71	83	638	178	159	374	98
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	49	242	48	38	204	19	22	168	47	42	98	26
Total Analysis Volume [veh/h]	196	968	194	154	815	75	87	672	187	167	394	103
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	50	0	17	39	0	12	35	0	18	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	52	52	13	48	48	8	26	26	13	32	32
g / C, Green / Cycle	0.13	0.43	0.43	0.10	0.40	0.40	0.06	0.22	0.22	0.11	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.11	0.33	0.33	0.09	0.25	0.25	0.05	0.20	0.12	0.10	0.22	0.07
s, saturation flow rate [veh/h]	1714	1800	1697	1714	1800	1747	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	225	775	731	179	726	705	108	752	336	192	483	411
d1, Uniform Delay [s]	51.11	29.09	29.22	52.86	28.49	28.49	55.48	45.47	41.65	52.39	41.09	34.42
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.24	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.89	7.22	7.89	11.24	3.98	4.10	12.86	4.00	1.45	11.18	7.20	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.77	0.78	0.86	0.62	0.62	0.80	0.89	0.56	0.87	0.82	0.25
d, Delay for Lane Group [s/veh]	61.00	36.30	37.11	64.09	32.47	32.59	68.34	49.48	43.09	63.57	48.29	34.73
Lane Group LOS	E	D	D	E	C	C	E	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.39	15.88	15.29	5.12	11.04	10.74	2.98	10.09	5.06	5.54	11.81	2.41
50th-Percentile Queue Length [ft/ln]	159.7	396.9	382.3	128.0	276.0	268.5	74.61	252.2	126.6	138.4	295.2	60.26
95th-Percentile Queue Length [veh/ln]	10.54	22.41	21.71	8.83	16.49	16.12	5.37	15.30	8.75	9.40	17.45	4.34
95th-Percentile Queue Length [ft/ln]	263.3	560.2	542.6	220.8	412.2	402.9	134.3	382.4	218.8	234.9	436.1	108.4

Movement, Approach, & Intersection Results

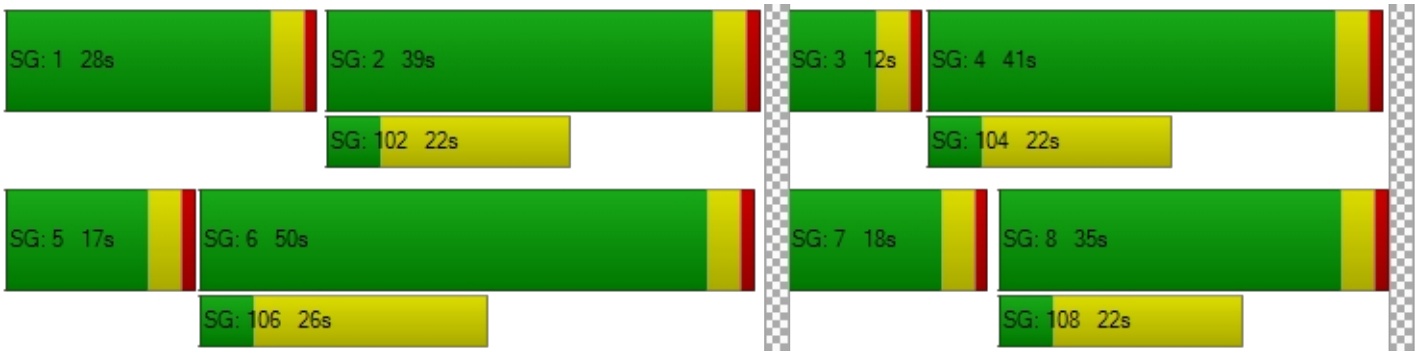
d_M, Delay for Movement [s/veh]	61.00	36.62	37.11	64.09	32.52	32.59	68.34	49.48	43.09	63.57	48.29	34.73
Movement LOS	E	D	D	E	C	C	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	40.21			37.19			49.95			50.03		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.34											
Intersection LOS	D											
Intersection V/C	0.717											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.808	2.744	2.629	2.742
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	583	517	617
d_b, Bicycle Delay [s]	22.82	30.10	33.00	28.70
l_b,int, Bicycle LOS Score for Intersection	2.680	2.421	2.340	2.655
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	36.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.565

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	85	770	56	108	507	77	101	475	89	64	311	53
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	10	2	0	11	0	0	3	0	3	5	0
Site-Generated Trips [veh/h]	0	8	3	0	9	0	0	9	0	3	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	834	64	114	557	82	107	516	94	74	344	56
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	219	17	30	147	22	28	136	25	19	91	15
Total Analysis Volume [veh/h]	95	878	67	120	586	86	113	543	99	78	362	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	26	35	0	18	27	0	30	49	0	18	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	62	62	10	64	64	10	25	25	7	22	22
g / C, Green / Cycle	0.07	0.52	0.52	0.08	0.53	0.53	0.08	0.21	0.21	0.06	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.27	0.27	0.07	0.19	0.19	0.07	0.18	0.18	0.05	0.12	0.12
s, saturation flow rate [veh/h]	1714	1800	1756	1714	1800	1721	1714	1800	1705	1714	1800	1714
c, Capacity [veh/h]	120	930	907	145	956	914	140	374	354	99	331	315
d1, Uniform Delay [s]	54.95	19.10	19.10	54.05	16.28	16.29	54.16	46.11	46.14	55.80	45.39	45.46
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.10	2.03	2.08	11.14	1.05	1.10	10.32	6.84	7.32	12.80	2.14	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.51	0.51	0.83	0.36	0.36	0.81	0.88	0.88	0.79	0.65	0.66
d, Delay for Lane Group [s/veh]	66.05	21.13	21.19	65.19	17.33	17.39	64.48	52.95	53.45	68.60	47.54	47.79
Lane Group LOS	E	C	C	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.20	9.14	8.93	4.01	5.67	5.45	3.76	10.19	9.73	2.68	6.12	5.92
50th-Percentile Queue Length [ft/ln]	79.96	228.4	223.1	100.3	141.8	136.1	93.93	254.8	243.2	67.09	153.0	147.8
95th-Percentile Queue Length [veh/ln]	5.76	14.10	13.83	7.23	9.58	9.27	6.76	15.43	14.85	4.83	10.18	9.90
95th-Percentile Queue Length [ft/ln]	143.9	352.3	345.6	180.6	239.5	231.8	169.0	385.7	371.1	120.7	254.4	247.6

Movement, Approach, & Intersection Results

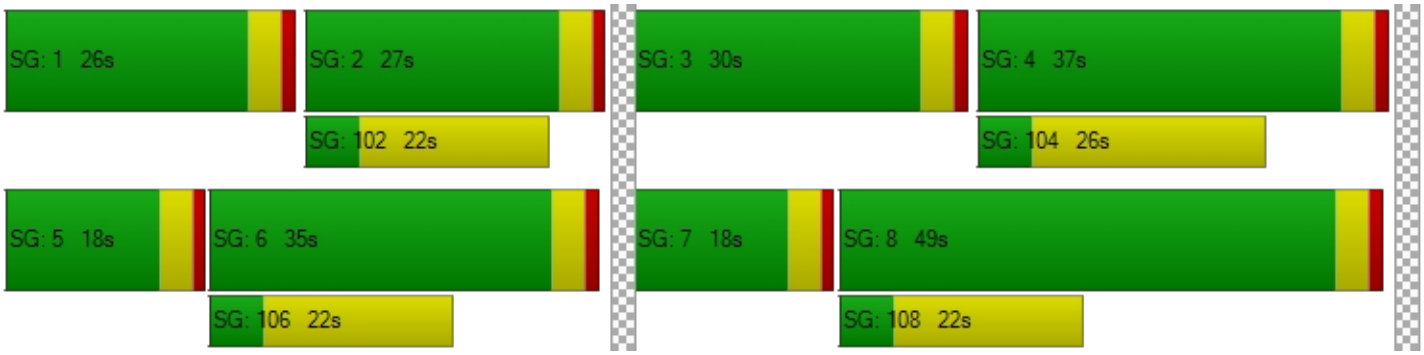
d_M, Delay for Movement [s/veh]	66.05	21.16	21.19	65.19	17.36	17.39	64.48	53.15	53.45	68.60	47.64	47.79
Movement LOS	E	C	C	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	25.26			24.61			54.88			50.93		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.49											
Intersection LOS	D											
Intersection V/C	0.565											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.667	2.767	2.568	2.555
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	383	750	550
d_b, Bicycle Delay [s]	33.00	39.20	23.44	31.54
l_b,int, Bicycle LOS Score for Intersection	2.418	2.213	2.182	1.971
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	664	283	196	515	0	0	0	0	201	0	88
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	76	0	0	100	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	0	0	0	0	0	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	784	300	208	646	0	0	0	0	213	0	97
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	206	79	55	170	0	0	0	0	56	0	26
Total Analysis Volume [veh/h]	0	825	316	219	680	0	0	0	0	224	0	102
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	30	46	0	48	64	0	0	26	0	0	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	68	68	18	86	86	22	22	22	22
g / C, Green / Cycle	0.00	0.57	0.57	0.15	0.72	0.72	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.46	0.21	0.13	0.38	0.00	0.00	0.00	0.17	0.07
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1530	1638	1530	1309	1530
c, Capacity [veh/h]	1	1027	873	250	1288	1095	330	281	300	281
d1, Uniform Delay [s]	0.00	20.42	13.94	50.17	7.79	0.00	0.00	0.00	49.34	42.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.22	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	6.65	1.16	9.33	1.55	0.00	0.00	0.00	7.29	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.80	0.36	0.88	0.53	0.00	0.00	0.00	0.75	0.36
d, Delay for Lane Group [s/veh]	0.00	27.07	15.10	59.50	9.34	0.00	0.00	0.00	56.63	43.67
Lane Group LOS	A	C	B	E	A	A	A	A	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	19.29	4.83	7.07	7.74	0.00	0.00	0.00	7.21	2.72
50th-Percentile Queue Length [ft/ln]	0.00	482.3	120.7	176.8	193.4	0.00	0.00	0.00	180.27	68.03
95th-Percentile Queue Length [veh/ln]	0.00	26.50	8.44	11.43	12.30	0.00	0.00	0.00	11.61	4.90
95th-Percentile Queue Length [ft/ln]	0.00	662.4	210.9	285.8	307.5	0.00	0.00	0.00	290.36	122.46

Movement, Approach, & Intersection Results

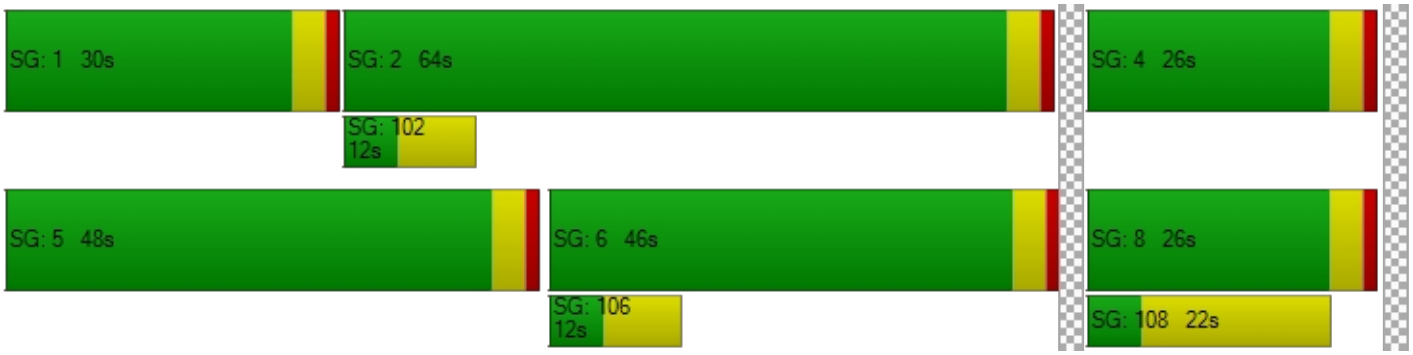
d_M, Delay for Movement [s/veh]	0.00	27.07	15.10	59.50	9.34	0.00	0.00	0.00	0.00	56.63	56.63	43.67
Movement LOS	A	C	B	E	A	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	23.75			21.56			0.00			52.57		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	26.89											
Intersection LOS	C											
Intersection V/C	0.757											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.033	0.000	1.955	2.235
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	1000	367	367
d_b, Bicycle Delay [s]	25.35	15.00	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	3.442	3.043	1.560	2.098
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	100.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.989

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	143	1366	112	38	688	56	87	141	294	122	67	73
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	131	0	0	186	0	0	0	0	2	0	0
Site-Generated Trips [veh/h]	4	550	0	0	655	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	156	2129	119	40	1570	59	92	149	312	131	71	77
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	41	560	31	11	413	16	24	39	82	34	19	20
Total Analysis Volume [veh/h]	164	2241	125	42	1653	62	97	157	328	138	75	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	68	0	9	55	0	10	29	0	14	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	65	65	4	56	56	6	25	25	10	29
g / C, Green / Cycle	0.11	0.54	0.54	0.03	0.46	0.46	0.05	0.21	0.21	0.08	0.24
(v / s)_i Volume / Saturation Flow Rate	0.10	0.66	0.67	0.02	0.48	0.04	0.06	0.09	0.21	0.08	0.09
s, saturation flow rate [veh/h]	1714	1800	1767	1714	3427	1530	1714	1800	1530	1714	1649
c, Capacity [veh/h]	192	978	960	54	1587	708	86	375	319	143	398
d1, Uniform Delay [s]	52.31	27.40	27.40	57.67	32.22	18.04	57.00	41.20	47.50	54.83	38.11
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.35	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.23	104.0	113.6	20.28	34.32	0.24	86.09	0.74	49.58	27.59	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	1.21	1.23	0.77	1.04	0.09	1.13	0.42	1.03	0.97	0.39
d, Delay for Lane Group [s/veh]	62.54	131.4	141.0	77.95	66.54	18.28	143.0	41.94	97.08	82.42	38.74
Lane Group LOS	E	F	F	E	F	B	F	D	F	F	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.39	54.66	56.24	1.57	29.73	1.02	4.65	4.12	13.85	5.25	3.93
50th-Percentile Queue Length [ft/ln]	134.8	1366.	1405.	39.30	743.1	25.44	116.1	103.0	346.3	131.20	98.19
95th-Percentile Queue Length [veh/ln]	9.20	77.13	80.08	2.83	39.92	1.83	8.36	7.42	20.27	9.00	7.07
95th-Percentile Queue Length [ft/ln]	230.0	1928.	2002.	70.74	998.0	45.79	209.1	185.4	506.8	225.12	176.75

Movement, Approach, & Intersection Results

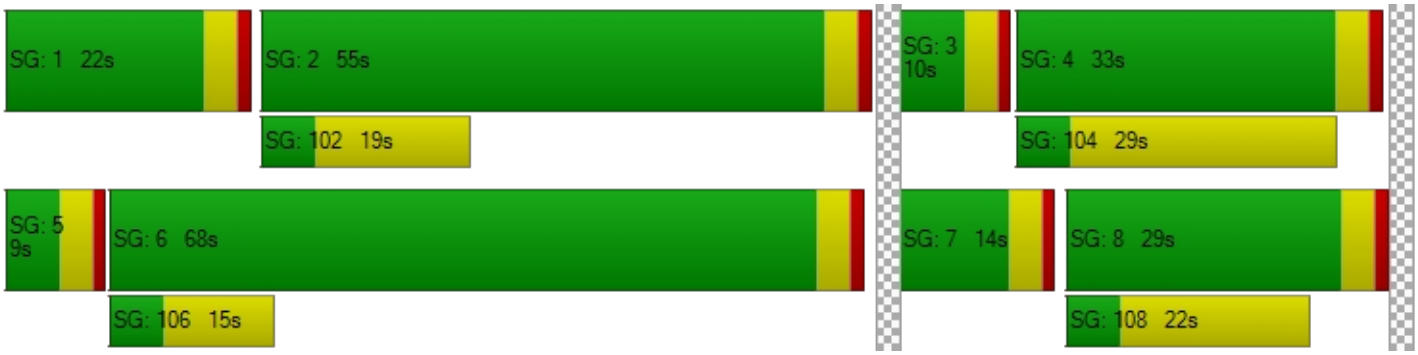
d_M, Delay for Movement [s/veh]	62.54	135.9	141.0	77.95	66.54	18.28	143.0	41.94	97.08	82.42	38.74	38.74
Movement LOS	E	F	F	E	F	B	F	D	F	F	D	D
d_A, Approach Delay [s/veh]	131.46			65.11			89.88			59.24		
Approach LOS	F			E			F			E		
d_I, Intersection Delay [s/veh]	100.08											
Intersection LOS	F											
Intersection V/C	0.989											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.224	3.191	2.362	2.156
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1067	850	417	483
d_b, Bicycle Delay [s]	13.07	19.84	37.60	34.50
l_b,int, Bicycle LOS Score for Intersection	3.647	3.009	2.520	2.045
Bicycle LOS	D	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	39.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.468

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	88	400	0	0	314	39	80	0	165	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.060	1.060	1.000	1.000	1.060	1.060	1.060	1.000	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	3	0	0	2	2	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	0	3	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	430	0	0	338	43	85	0	175	0	0	0
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	0.950	1.000	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	113	0	0	89	11	22	0	46	0	0	0
Total Analysis Volume [veh/h]	98	453	0	0	356	45	89	0	184	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.27	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.36	0.00	0.00	0.00	0.00	0.00	39.51	0.00	12.35	0.00	0.00	0.00
Movement LOS	A	A			A	A	E		B			
95th-Percentile Queue Length [veh/ln]	0.27	0.27	0.00	0.00	0.00	0.00	2.24	0.00	1.11	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.85	6.85	0.00	0.00	0.00	0.00	55.97	0.00	27.73	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1.49			0.00			21.21			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	5.39											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	27.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	907	60	95	571	0	5	0	30	191	0	49
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	88	100	0	0	0	0	0	9	0	76
Site-Generated Trips [veh/h]	0	4	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	965	152	201	605	0	5	0	32	211	0	128
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	254	40	53	159	0	1	0	8	56	0	34
Total Analysis Volume [veh/h]	0	1016	160	212	637	0	5	0	34	222	0	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	53	9	0	74	30	0	0	9	0	0	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	65	65	17	82	82	4	4	18	18
g / C, Green / Cycle	0.00	0.54	0.54	0.14	0.69	0.69	0.03	0.03	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.00	0.33	0.33	0.12	0.18	0.18	0.00	0.02	0.13	0.09
s, saturation flow rate [veh/h]	1714	1800	1716	1714	1800	1800	1714	1392	1687	1530
c, Capacity [veh/h]	1	980	934	243	1234	1234	52	42	253	229
d1, Uniform Delay [s]	0.00	18.70	18.72	50.40	7.20	7.20	56.58	57.83	49.93	47.56
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	2.87	3.03	9.29	0.51	0.51	0.79	28.66	9.44	2.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.61	0.62	0.87	0.26	0.26	0.10	0.81	0.88	0.59
d, Delay for Lane Group [s/veh]	0.00	21.57	21.75	59.69	7.71	7.71	57.37	86.49	59.37	49.95
Lane Group LOS	A	C	C	E	A	A	E	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	11.89	11.41	6.85	3.11	3.11	0.16	1.36	7.17	3.92
50th-Percentile Queue Length [ft/ln]	0.00	297.2	285.1	171.2	77.67	77.67	3.98	34.06	179.24	98.04
95th-Percentile Queue Length [veh/ln]	0.00	17.54	16.94	11.14	5.59	5.59	0.29	2.45	11.56	7.06
95th-Percentile Queue Length [ft/ln]	0.00	438.6	423.5	278.5	139.8	139.8	7.16	61.30	289.02	176.46

Movement, Approach, & Intersection Results

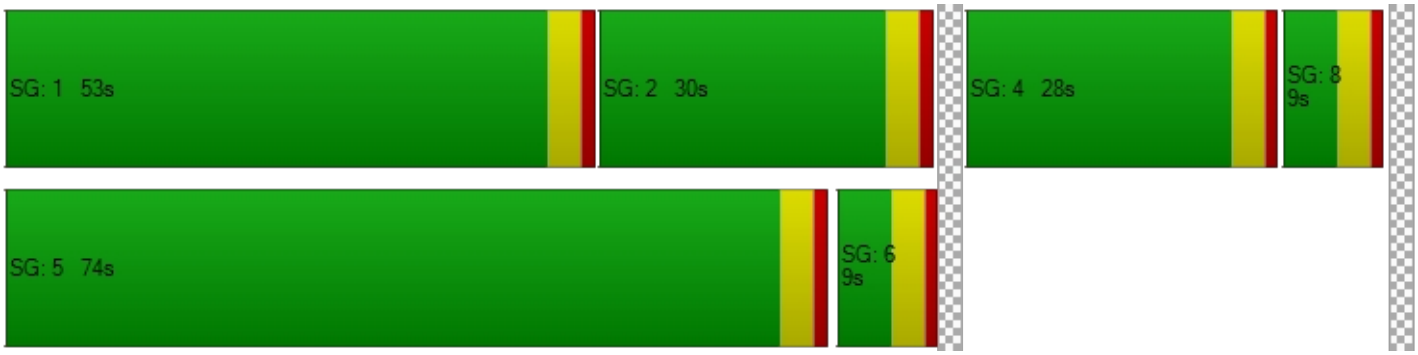
d_M, Delay for Movement [s/veh]	0.00	21.64	21.75	59.69	7.71	7.71	57.37	71.93	86.49	59.37	59.37	49.95
Movement LOS	A	C	C	E	A	A	E	E	F	E	E	D
d_A, Approach Delay [s/veh]	21.66			20.69			82.76			55.81		
Approach LOS	C			C			F			E		
d_I, Intersection Delay [s/veh]	27.34											
Intersection LOS	C											
Intersection V/C	0.615											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	433	83	400
d_b, Bicycle Delay [s]	55.10	36.82	55.10	38.40
l_b,int, Bicycle LOS Score for Intersection	2.530	2.260	1.592	2.149
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	44.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.900

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	1	1458	200	199	841	1	0	1	0	107	0	206
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	554	28	0	655	0	0	0	0	28	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	2012	228	211	1496	1	0	1	0	135	0	218
Peak Hour Factor	0.946	0.946	0.946	0.950	0.946	0.950	0.950	0.950	0.946	0.946	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	532	60	56	395	0	0	0	0	36	0	57
Total Analysis Volume [veh/h]	1	2127	241	222	1581	1	0	1	0	143	0	229
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	56	0	16	63	0	32	30	0	18	16	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	72	72	12	84	84	0	8	12	20
g / C, Green / Cycle	0.00	0.60	0.60	0.10	0.70	0.70	0.00	0.07	0.10	0.17
(v / s)_i Volume / Saturation Flow Rate	0.00	0.62	0.16	0.13	0.46	0.00	0.00	0.00	0.08	0.15
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1714	1530
c, Capacity [veh/h]	2	2054	917	171	2392	1068	1	124	169	255
d1, Uniform Delay [s]	59.86	24.03	11.43	54.00	10.16	5.48	0.00	52.05	53.22	48.99
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	81.55	29.67	0.70	142.0	1.45	0.00	0.00	0.03	11.07	10.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	1.04	0.26	1.30	0.66	0.00	0.00	0.01	0.85	0.90
d, Delay for Lane Group [s/veh]	141.4	53.71	12.13	196.0	11.61	5.48	0.00	52.07	64.29	59.79
Lane Group LOS	F	F	B	F	B	A	A	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.09	35.34	3.18	11.93	11.04	0.01	0.00	0.03	4.76	7.46
50th-Percentile Queue Length [ft/ln]	2.16	883.5	79.40	298.2	276.0	0.19	0.00	0.73	118.94	186.58
95th-Percentile Queue Length [veh/ln]	0.16	46.47	5.72	19.27	16.49	0.01	0.00	0.05	8.33	11.94
95th-Percentile Queue Length [ft/ln]	3.89	1161.	142.9	481.8	412.2	0.35	0.00	1.31	208.37	298.59

Movement, Approach, & Intersection Results

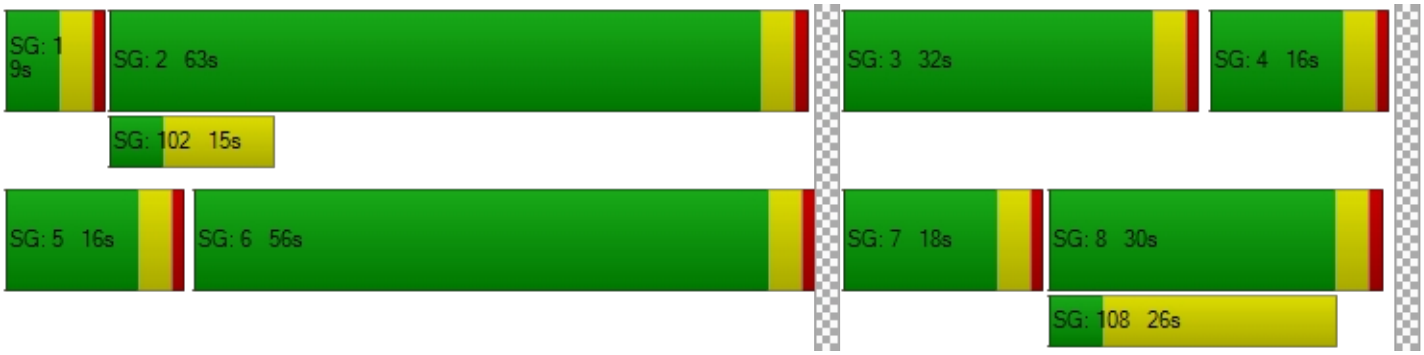
d_M, Delay for Movement [s/veh]	141.4	53.71	12.13	196.0	11.61	5.48	0.00	52.07	52.07	64.29	59.79	59.79
Movement LOS	F	F	B	F	B	A	A	D	D	E	E	E
d_A, Approach Delay [s/veh]	49.51			34.31			52.07			61.52		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	44.46											
Intersection LOS	D											
Intersection V/C	0.900											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.179	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	983	433	200
d_b, Bicycle Delay [s]	19.27	15.50	36.82	48.60
l_b,int, Bicycle LOS Score for Intersection	3.514	3.048	1.561	2.173
Bicycle LOS	D	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	47.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.050

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	30	215	48	118	172	40	129	224	33	32	148	129
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	3	0	0	2	0	0	10	0	0	17	0
Site-Generated Trips [veh/h]	0	3	0	0	3	0	0	28	0	0	28	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	234	51	125	187	42	137	275	35	34	202	137
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	62	13	33	49	11	36	72	9	9	53	36
Total Analysis Volume [veh/h]	34	246	54	132	197	44	144	289	37	36	213	144
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	404	442	419	433	459	404	443
Degree of Utilization, x	0.69	0.12	0.89	1.05	0.08	0.62	0.33

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.08	0.41	9.28	14.10	0.26	3.99	1.39
95th-Percentile Queue Length [ft]	127.08	10.35	232.01	352.52	6.53	99.74	34.86
Approach Delay [s/veh]	26.52		50.40	81.90		21.14	
Approach LOS	D		F	F		C	
Intersection Delay [s/veh]	47.42						
Intersection LOS	E						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.569

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	45	922	34	78	735	100	139	250	53	29	195	136
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	6	1	0	4	0	0	10	0	1	17	0
Site-Generated Trips [veh/h]	0	6	1	0	3	0	0	28	0	1	28	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	989	38	83	786	106	147	303	56	33	252	144
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	260	10	22	207	28	39	80	15	9	66	38
Total Analysis Volume [veh/h]	51	1041	40	87	827	112	155	319	59	35	265	152
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	48	0	12	51	0	21	41	0	19	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	66	66	8	69	69	13	27	27	4	18	18
g / C, Green / Cycle	0.04	0.55	0.55	0.06	0.58	0.58	0.11	0.22	0.22	0.03	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.03	0.30	0.30	0.05	0.27	0.27	0.09	0.09	0.04	0.02	0.12	0.13
s, saturation flow rate [veh/h]	1714	1800	1777	1714	1800	1726	1714	3427	1530	1714	1800	1586
c, Capacity [veh/h]	65	989	976	108	1035	992	182	768	343	52	266	235
d1, Uniform Delay [s]	57.25	17.46	17.46	55.48	14.79	14.79	52.69	39.84	37.58	57.61	49.57	49.81
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.60	2.20	2.23	12.86	1.49	1.56	10.55	0.36	0.24	14.28	6.14	8.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.55	0.55	0.80	0.46	0.46	0.85	0.42	0.17	0.68	0.82	0.85
d, Delay for Lane Group [s/veh]	75.85	19.66	19.69	68.34	16.28	16.35	63.25	40.20	37.82	71.89	55.71	58.05
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.87	10.05	9.93	2.98	7.79	7.49	5.12	4.08	1.43	1.26	6.79	6.35
50th-Percentile Queue Length [ft/ln]	46.73	251.1	248.2	74.61	194.7	187.2	128.0	102.0	35.82	31.46	169.7	158.6
95th-Percentile Queue Length [veh/ln]	3.36	15.24	15.10	5.37	12.37	11.98	8.83	7.34	2.58	2.26	11.06	10.48
95th-Percentile Queue Length [ft/ln]	84.11	381.1	377.4	134.3	309.2	299.4	220.7	183.6	64.47	56.62	276.6	261.9

Movement, Approach, & Intersection Results

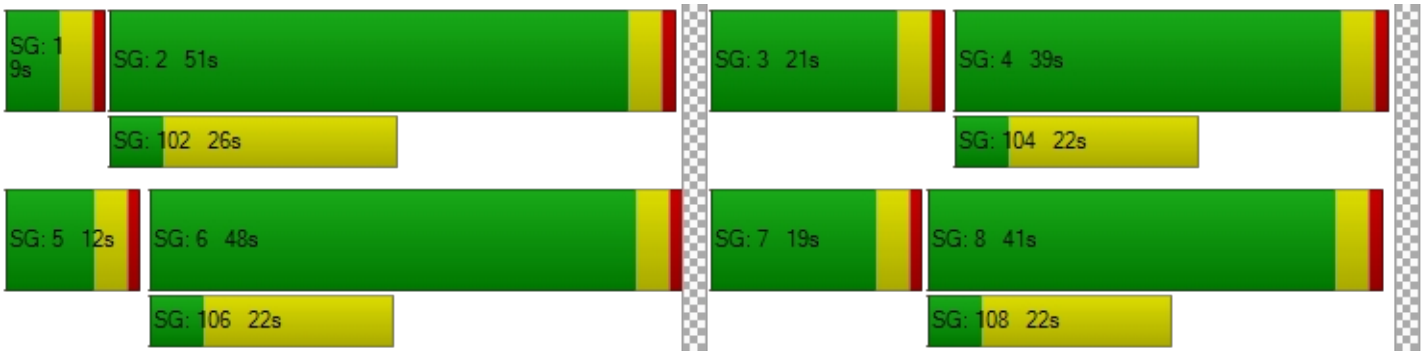
d_M, Delay for Movement [s/veh]	75.85	19.68	19.69	68.34	16.31	16.35	63.25	40.20	37.82	71.89	56.12	58.05
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	22.21			20.73			46.64			57.99		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	31.01											
Intersection LOS	C											
Intersection V/C	0.569											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.715	2.854	2.624	2.614
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	783	617	583
d_b, Bicycle Delay [s]	24.07	22.20	28.70	30.10
l_b,int, Bicycle LOS Score for Intersection	2.494	2.406	1.999	1.933
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	43.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.621

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	833	164	64	696	56	75	453	101	111	270	46
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	4	5	0	0	5	17	12	5	2	0	8	0
Site-Generated Trips [veh/h]	7	5	0	0	5	19	18	12	7	0	12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	893	174	68	748	95	110	497	116	118	306	49
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	34	235	46	18	197	25	29	131	31	31	81	13
Total Analysis Volume [veh/h]	138	940	183	72	787	100	116	523	122	124	322	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	65	0	11	61	0	14	30	0	14	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	42	42	6	37	37	10	46	46	10	46	46
g / C, Green / Cycle	0.09	0.35	0.35	0.05	0.31	0.31	0.08	0.38	0.38	0.08	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.08	0.32	0.32	0.04	0.25	0.25	0.07	0.18	0.19	0.07	0.11	0.11
s, saturation flow rate [veh/h]	1714	1800	1700	1714	1800	1730	1714	1800	1684	1714	1800	1714
c, Capacity [veh/h]	157	631	596	91	562	540	140	683	639	143	686	653
d1, Uniform Delay [s]	53.84	37.20	37.29	56.14	37.90	37.90	54.27	28.35	28.37	54.35	25.71	25.74
k, delay calibration	0.11	0.19	0.19	0.11	0.12	0.12	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.18	9.17	10.11	13.94	2.98	3.10	11.67	2.48	2.66	14.41	1.01	1.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.91	0.92	0.79	0.80	0.80	0.83	0.49	0.49	0.87	0.28	0.28
d, Delay for Lane Group [s/veh]	68.01	46.37	47.39	70.08	40.88	41.00	65.94	30.83	31.03	68.75	26.71	26.81
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.73	17.52	16.81	2.51	12.59	12.11	3.90	7.73	7.29	4.27	3.97	3.84
50th-Percentile Queue Length [ft/ln]	118.2	438.0	420.2	62.72	314.6	302.8	97.59	193.1	182.1	106.7	99.18	95.91
95th-Percentile Queue Length [veh/ln]	8.30	24.39	23.53	4.52	18.41	17.82	7.03	12.29	11.71	7.66	7.14	6.91
95th-Percentile Queue Length [ft/ln]	207.4	609.7	588.3	112.8	460.1	445.5	175.6	307.1	292.8	191.4	178.5	172.6

Movement, Approach, & Intersection Results

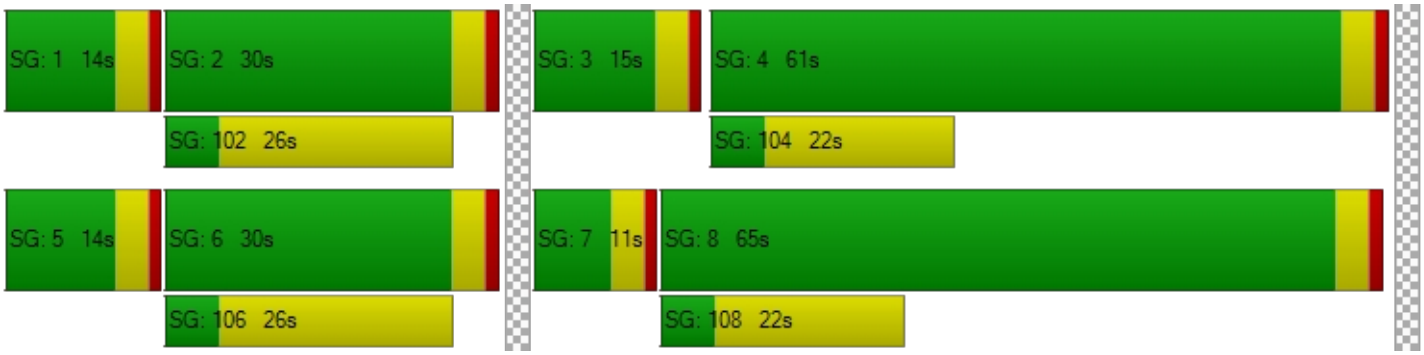
d_M, Delay for Movement [s/veh]	68.01	46.77	47.39	70.08	40.93	41.00	65.94	30.90	31.03	68.75	26.75	26.81
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	49.18			43.13			36.26			37.22		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.98											
Intersection LOS	D											
Intersection V/C	0.621											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.841	2.804	2.573	2.564
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	950	433	433
d_b, Bicycle Delay [s]	14.50	16.54	36.82	36.82
l_b,int, Bicycle LOS Score for Intersection	2.600	2.351	2.187	1.970
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	23.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.478

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	18	868	69	34	681	106	136	178	9	42	83	20
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	2	0	0	4	1	5	9	0	10	2	0
Site-Generated Trips [veh/h]	0	2	0	0	4	0	5	9	0	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	924	73	36	730	113	154	207	10	65	90	21
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	243	19	9	192	30	41	54	3	17	24	6
Total Analysis Volume [veh/h]	20	973	77	38	768	119	162	218	11	68	95	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	33	0	14	38	0	34	59	0	14	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	78	78	4	79	79	13	17	17	6	9	9
g / C, Green / Cycle	0.02	0.65	0.65	0.03	0.66	0.66	0.11	0.14	0.14	0.05	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.01	0.30	0.30	0.02	0.25	0.25	0.09	0.12	0.01	0.04	0.05	0.01
s, saturation flow rate [veh/h]	1714	1800	1754	1714	1800	1717	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	35	1162	1132	52	1180	1125	192	253	215	87	142	121
d1, Uniform Delay [s]	58.25	10.70	10.70	57.69	9.53	9.53	52.26	50.46	44.67	56.33	53.74	51.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.77	1.30	1.33	17.69	0.95	1.00	9.68	8.54	0.10	14.34	5.35	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.46	0.46	0.73	0.38	0.38	0.84	0.86	0.05	0.79	0.67	0.18
d, Delay for Lane Group [s/veh]	72.03	12.00	12.03	75.38	10.48	10.52	61.94	59.00	44.77	70.66	59.09	52.37
Lane Group LOS	E	B	B	E	B	B	E	E	D	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.74	7.14	6.97	1.40	5.52	5.28	5.30	7.00	0.29	2.38	3.00	0.65
50th-Percentile Queue Length [ft/ln]	18.41	178.4	174.2	35.00	137.9	131.9	132.4	174.9	7.29	59.55	75.05	16.13
95th-Percentile Queue Length [veh/ln]	1.33	11.52	11.30	2.52	9.37	9.05	9.07	11.33	0.52	4.29	5.40	1.16
95th-Percentile Queue Length [ft/ln]	33.14	288.0	282.4	62.99	234.2	226.1	226.8	283.3	13.12	107.1	135.1	29.04

Movement, Approach, & Intersection Results

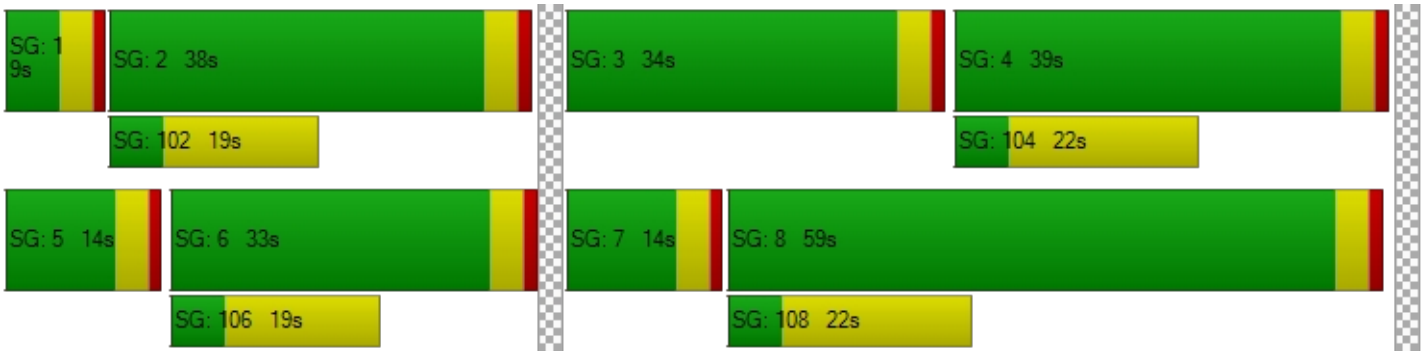
d_M, Delay for Movement [s/veh]	72.03	12.01	12.03	75.38	10.50	10.52	61.94	59.00	44.77	70.66	59.09	52.37
Movement LOS	E	B	B	E	B	B	E	E	D	E	E	D
d_A, Approach Delay [s/veh]	13.14			13.16			59.82			62.54		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	23.80											
Intersection LOS	C											
Intersection V/C	0.478											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.689	2.721	2.299	2.273
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	567	917	583
d_b, Bicycle Delay [s]	34.50	30.82	17.60	30.10
l_b,int, Bicycle LOS Score for Intersection	2.442	2.323	2.205	1.865
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	138.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.103

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	16	1461	163	160	882	2	5	2	5	165	0	124
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.060	1.060	1.060	1.000
In-Process Volume [veh/h]	144	0	0	0	0	0	0	106	93	0	116	0
Site-Generated Trips [veh/h]	394	454	0	69	340	56	49	116	291	0	112	69
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	555	1915	173	229	1222	58	54	224	389	175	228	193
Peak Hour Factor	0.950	0.972	0.950	0.972	0.972	0.972	0.972	0.950	0.950	0.950	0.950	0.972
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	146	493	46	59	314	15	14	59	102	46	60	50
Total Analysis Volume [veh/h]	584	1970	182	236	1257	60	56	236	409	184	240	199
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	35	46	0	20	31	0	10	40	0	14	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	31	42	42	16	27	27	5	36	10	41
g / C, Green / Cycle	0.26	0.35	0.35	0.13	0.23	0.23	0.04	0.30	0.08	0.34
(v / s)_i Volume / Saturation Flow Rate	0.34	0.41	0.43	0.14	0.26	0.04	0.03	0.40	0.11	0.26
s, saturation flow rate [veh/h]	1714	3427	1725	1714	4903	1530	1714	1619	1714	1667
c, Capacity [veh/h]	443	1200	604	229	1103	344	73	486	143	568
d1, Uniform Delay [s]	44.50	39.00	39.00	52.00	46.50	37.51	56.87	42.00	55.00	35.39
k, delay calibration	0.50	0.50	0.50	0.12	0.50	0.50	0.11	0.50	0.11	0.30
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	158.6	90.03	113.1	37.93	74.03	1.10	15.54	161.37	140.81	6.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.32	1.18	1.22	1.03	1.14	0.17	0.77	1.33	1.29	0.77
d, Delay for Lane Group [s/veh]	203.1	129.0	152.1	89.93	120.5	38.61	72.41	203.37	195.81	41.39
Lane Group LOS	F	F	F	F	F	D	E	F	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	32.55	32.33	36.42	9.27	18.45	1.54	2.00	35.96	9.90	12.31
50th-Percentile Queue Length [ft/ln]	813.8	808.2	910.5	231.6	461.2	38.46	49.90	898.93	247.50	307.82
95th-Percentile Queue Length [veh/ln]	48.54	46.33	52.50	14.46	27.35	2.77	3.59	53.65	16.35	18.07
95th-Percentile Queue Length [ft/ln]	1213.	1158.	1312.	361.5	683.7	69.23	89.81	1341.22	408.75	451.68

Movement, Approach, & Intersection Results

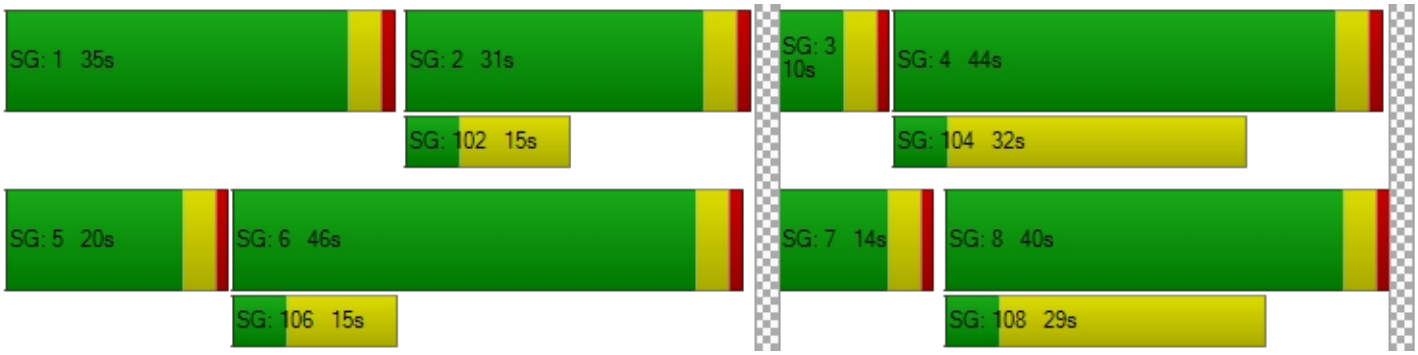
d_M, Delay for Movement [s/veh]	203.1	135.5	152.1	89.93	120.5	38.61	72.41	203.3	203.3	195.8	41.39	41.39
Movement LOS	F	F	F	F	F	D	E	F	F	F	D	D
d_A, Approach Delay [s/veh]	151.07			112.71			192.91			87.00		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	138.57											
Intersection LOS	F											
Intersection V/C	1.103											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.248	3.350	2.471	2.370
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	450	600	667
d_b, Bicycle Delay [s]	25.35	36.04	29.40	26.67
l_b,int, Bicycle LOS Score for Intersection	3.064	2.414	2.716	2.588
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	101.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.319

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	15	213	12	34	162	31	62	171	22	10	113	42
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	8	0	0	0	0	2	3	135	6	0	144	0
Site-Generated Trips [veh/h]	12	0	0	0	0	3	3	144	14	0	142	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	226	13	36	172	38	72	460	43	11	406	45
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	59	3	9	45	10	19	121	11	3	107	12
Total Analysis Volume [veh/h]	38	238	14	38	181	40	76	484	45	12	427	47
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	419	413	605	486
Degree of Utilization, x	0.69	0.63	1.32	1.05

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.13	4.14	26.75	15.16
95th-Percentile Queue Length [ft]	128.14	103.56	668.76	379.12
Approach Delay [s/veh]	28.82	25.23	181.47	85.22
Approach LOS	D	D	F	F
Intersection Delay [s/veh]	101.28			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	75.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.144

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	33	51	48	20	4	12	42	7	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	35	54	51	21	4	13	45	7	1
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	9	14	13	6	1	3	12	2	0
Total Analysis Volume [veh/h]	0	37	57	54	22	4	14	47	7	1
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	443	417
Degree of Utilization, x	0.38	0.18

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.77	0.63
95th-Percentile Queue Length [ft]	44.32	15.70
Approach Delay [s/veh]	16.08	13.46
Approach LOS	C	B
Intersection Delay [s/veh]	75.77	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	39	2	143	22	4	12	39	142	7	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	13	115	0	0	0	0	132	0	0
Site-Generated Trips [veh/h]	0	14	118	0	0	0	0	130	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	29	385	23	4	13	41	413	7	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	8	101	6	1	3	11	109	2	1
Total Analysis Volume [veh/h]	43	31	405	24	4	14	43	435	7	5
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	507	504
Degree of Utilization, x	1.14	1.14

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	18.34	18.11
95th-Percentile Queue Length [ft]	458.50	452.84
Approach Delay [s/veh]	115.82	114.09
Approach LOS	F	F
Intersection Delay [s/veh]	75.77	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	3	16	240	40	0	5	39	95	31	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	3	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	17	254	42	0	5	41	101	36	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	67	11	0	1	11	27	9	2
Total Analysis Volume [veh/h]	3	18	267	44	0	5	43	106	38	7
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	424	385	425
Degree of Utilization, x	0.78	0.40	0.11

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.81	1.87	0.35
95th-Percentile Queue Length [ft]	170.31	46.81	8.84
Approach Delay [s/veh]	36.06	16.76	
Approach LOS	E	C	
Intersection Delay [s/veh]	75.77		
Intersection LOS	F		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	31.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.544

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	50	874	82	66	634	13	20	165	39	57	148	63
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	49	0	0	0	0	14	2	54	60	0	69	0
Site-Generated Trips [veh/h]	26	0	0	0	0	14	2	92	24	0	90	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	926	87	70	672	42	25	321	125	60	316	67
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	34	244	23	18	177	11	7	84	33	16	83	18
Total Analysis Volume [veh/h]	135	975	92	74	707	44	26	338	132	63	333	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	36	0	22	27	0	9	26	0	36	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	70	70	7	65	65	3	22	22	6	25	25
g / C, Green / Cycle	0.10	0.58	0.58	0.06	0.54	0.54	0.02	0.18	0.18	0.05	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.08	0.30	0.30	0.04	0.21	0.21	0.02	0.10	0.09	0.04	0.19	0.05
s, saturation flow rate [veh/h]	1714	1800	1746	1714	1800	1763	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	164	1047	1016	95	975	955	42	620	277	83	369	314
d1, Uniform Delay [s]	53.29	15.01	15.02	55.95	15.96	15.96	58.00	44.67	44.07	56.38	46.51	39.75
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.96	1.82	1.89	12.77	1.17	1.20	14.32	0.75	1.28	12.90	8.16	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.52	0.52	0.78	0.39	0.39	0.62	0.55	0.48	0.76	0.90	0.23
d, Delay for Lane Group [s/veh]	63.25	16.83	16.90	68.72	17.13	17.16	72.32	45.42	45.34	69.28	54.67	40.11
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.45	9.07	8.84	2.55	6.26	6.14	0.95	4.64	3.62	2.19	10.49	1.79
50th-Percentile Queue Length [ft/ln]	111.2	226.8	220.9	63.75	156.5	153.6	23.70	116.0	90.60	54.64	262.1	44.75
95th-Percentile Queue Length [veh/ln]	7.91	14.01	13.71	4.59	10.37	10.21	1.71	8.17	6.52	3.93	15.80	3.22
95th-Percentile Queue Length [ft/ln]	197.7	350.3	342.8	114.7	259.1	255.2	42.67	204.3	163.0	98.36	394.9	80.54

Movement, Approach, & Intersection Results

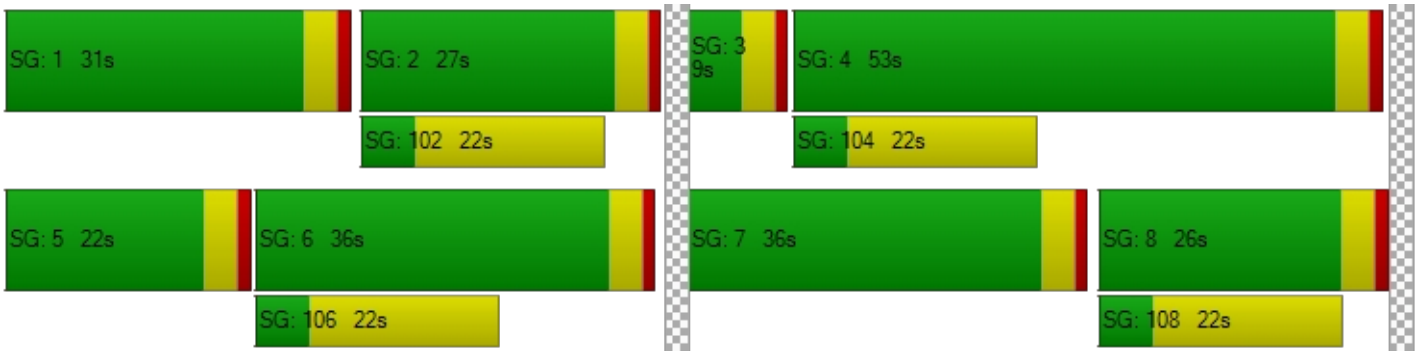
d_M, Delay for Movement [s/veh]	63.25	16.86	16.90	68.72	17.14	17.16	72.32	45.42	45.34	69.28	54.67	40.11
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	22.07			21.77			46.81			54.43		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	31.15											
Intersection LOS	C											
Intersection V/C	0.544											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.725	2.685	2.512	2.626
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	383	367	817
d_b, Bicycle Delay [s]	32.27	39.20	40.02	21.00
l_b,int, Bicycle LOS Score for Intersection	2.551	2.240	1.969	2.330
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	33.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.607

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	68	1025	112	64	785	62	76	231	66	117	164	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	35	0	0	0	0	9	8	5	30	0	8	0
Site-Generated Trips [veh/h]	44	0	0	0	0	10	10	12	46	0	12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	151	1087	119	68	832	85	99	262	146	124	194	61
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	40	286	31	18	219	22	26	69	38	33	51	16
Total Analysis Volume [veh/h]	159	1144	125	72	876	89	104	276	154	131	204	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	54	0	10	40	0	26	41	0	15	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	69	69	6	62	62	9	18	18	11	20	20
g / C, Green / Cycle	0.11	0.58	0.58	0.05	0.52	0.52	0.08	0.15	0.15	0.09	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.09	0.36	0.36	0.04	0.27	0.27	0.06	0.13	0.13	0.08	0.08	0.08
s, saturation flow rate [veh/h]	1714	1800	1739	1714	1800	1742	1714	1800	1589	1714	1800	1656
c, Capacity [veh/h]	187	1035	999	86	928	898	131	272	240	156	298	274
d1, Uniform Delay [s]	52.48	16.88	16.95	56.52	19.35	19.35	54.50	49.44	49.61	53.71	45.24	45.35
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.18	2.81	2.97	18.87	2.15	2.22	10.36	6.44	8.21	11.48	1.12	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.62	0.63	0.84	0.53	0.53	0.79	0.83	0.85	0.84	0.46	0.48
d, Delay for Lane Group [s/veh]	62.66	19.69	19.92	75.40	21.50	21.57	64.85	55.88	57.82	65.19	46.35	46.62
Lane Group LOS	E	B	B	E	C	C	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.23	12.09	11.85	2.61	9.47	9.19	3.47	7.05	6.51	4.39	3.81	3.62
50th-Percentile Queue Length [ft/ln]	130.7	302.1	296.1	65.31	236.8	229.7	86.70	176.3	162.6	109.6	95.22	90.58
95th-Percentile Queue Length [veh/ln]	8.98	17.79	17.49	4.70	14.52	14.16	6.24	11.41	10.69	7.82	6.86	6.52
95th-Percentile Queue Length [ft/ln]	224.5	444.7	437.2	117.5	363.0	354.0	156.0	285.2	267.2	195.5	171.4	163.0

Movement, Approach, & Intersection Results

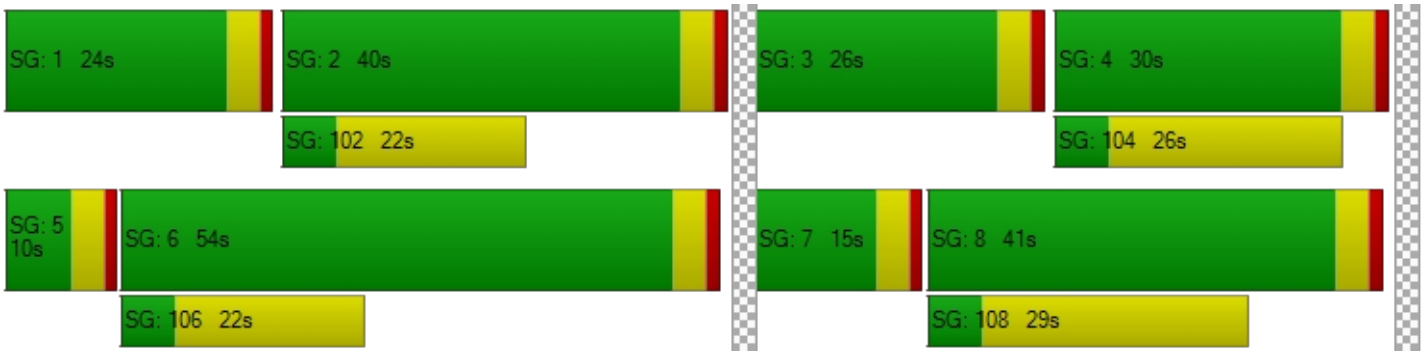
d_M, Delay for Movement [s/veh]	62.66	19.79	19.92	75.40	21.53	21.57	64.85	56.23	57.82	65.19	46.44	46.62
Movement LOS	E	B	B	E	C	C	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	24.57			25.28			58.37			52.63		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	33.39											
Intersection LOS	C											
Intersection V/C	0.607											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.970	2.850	2.507	2.485
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	600	617	433
d_b, Bicycle Delay [s]	20.42	29.40	28.70	36.82
l_b,int, Bicycle LOS Score for Intersection	2.738	2.415	2.000	1.889
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	65.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.955

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	119	208	360	107	282	534	817	1020	94	152	605	306
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	8	0	0	5	51
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	12	0	0	12	132
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	126	220	382	113	299	566	866	1101	100	161	658	507
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	33	58	101	30	79	149	228	290	26	42	173	133
Total Analysis Volume [veh/h]	133	232	402	119	315	596	912	1159	105	169	693	534
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	32	0	12	31	0	34	64	0	12	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	28	28	8	27	27	27	30	60	60	8	38	38
g / C, Green / Cycle	0.08	0.23	0.23	0.07	0.23	0.23	0.23	0.25	0.50	0.50	0.07	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.08	0.07	0.26	0.07	0.18	0.19	0.19	0.27	0.24	0.07	0.05	0.14	0.35
s, saturation flow rate [veh/h]	1714	3427	1530	171	180	153	153	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	129	800	357	114	405	344	344	832	2453	765	221	1553	485
d1, Uniform Delay [s]	55.50	37.83	46.00	56.0	43.6	44.7	44.7	45.00	19.62	16.09	55.09	32.63	41.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.12	0.11	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	46.07	0.92	86.32	50.2	13.6	24.0	24.0	48.34	0.14	0.08	5.42	0.20	71.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.29	1.13	1.04	0.78	0.87	0.87	1.10	0.47	0.14	0.76	0.45	1.10
d, Delay for Lane Group [s/veh]	101.5	38.74	132.3	106.	57.3	68.8	68.8	93.34	19.77	16.17	60.51	32.83	112.6
Lane Group LOS	F	D	F	F	E	E	E	F	B	B	E	C	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.53	2.92	19.12	5.05	10.3	10.8	10.8	17.86	7.00	1.57	2.68	5.38	23.75
50th-Percentile Queue Length [ft/ln]	138.2	73.07	477.9	126.	257.	269.	269.	446.4	175.0	39.25	67.00	134.5	593.8
95th-Percentile Queue Length [veh/ln]	9.49	5.26	28.07	8.85	15.5	16.1	16.1	26.12	11.34	2.83	4.82	9.19	33.77
95th-Percentile Queue Length [ft/ln]	237.3	131.5	701.7	221.	389.	404.	404.	653.0	283.4	70.65	120.6	229.6	844.3

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	101.5	38.74	132.3	106.2	57.37	68.85	93.34	19.77	16.17	60.51	32.83	112.6
Movement LOS	F	D	F	F	E	E	F	B	B	E	C	F
d_A, Approach Delay [s/veh]	98.68			69.66			50.43			66.73		
Approach LOS	F			E			D			E		
d_I, Intersection Delay [s/veh]	65.25											
Intersection LOS	E											
Intersection V/C	0.955											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.688	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	450	1000	633
d_b, Bicycle Delay [s]	35.27	36.04	15.00	28.02
l_b,int, Bicycle LOS Score for Intersection	2.192	2.409	2.756	2.327
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	36.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.633

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	74	48	43	114	42	359	674	752	63	37	631	140
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	51	0	0	0	8	0	0	56	0
Site-Generated Trips [veh/h]	0	0	0	176	0	0	0	12	0	0	144	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	51	46	348	45	381	714	817	67	39	869	148
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	21	13	12	92	12	100	188	215	18	10	229	39
Total Analysis Volume [veh/h]	82	54	48	366	47	401	752	860	71	41	915	156
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	27	0	30	23	0	37	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	8	20	20	20	30	72	72	4	45	45
g / C, Green / Cycle	0.07	0.07	0.07	0.17	0.17	0.17	0.25	0.60	0.60	0.03	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.03	0.12	0.12	0.15	0.23	0.18	0.05	0.02	0.21	0.21
s, saturation flow rate [veh/h]	1714	1800	1537	1714	1733	2708	3329	4903	1530	1714	3427	1669
c, Capacity [veh/h]	115	121	103	290	293	458	845	2935	916	55	1291	629
d1, Uniform Delay [s]	54.84	53.78	53.96	47.08	47.05	48.63	43.16	11.73	10.14	57.60	29.49	29.53
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.91	2.45	3.43	3.21	3.13	5.47	3.49	0.25	0.17	18.10	1.74	3.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.43	0.48	0.71	0.71	0.88	0.89	0.29	0.08	0.75	0.56	0.56
d, Delay for Lane Group [s/veh]	62.75	56.23	57.39	50.30	50.18	54.10	46.65	11.98	10.31	75.70	31.23	33.09
Lane Group LOS	E	E	E	D	D	D	D	B	B	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.68	1.61	1.54	6.06	6.09	6.19	11.09	3.71	0.82	1.51	8.45	8.59
50th-Percentile Queue Length [ft/ln]	67.07	40.17	38.58	151.6	152.3	154.6	277.2	92.75	20.55	37.77	211.2	214.8
95th-Percentile Queue Length [veh/ln]	4.83	2.89	2.78	10.10	10.14	10.27	16.55	6.68	1.48	2.72	13.22	13.40
95th-Percentile Queue Length [ft/ln]	120.7	72.30	69.45	252.5	253.5	256.6	413.7	166.9	36.98	67.98	330.4	335.0

Movement, Approach, & Intersection Results

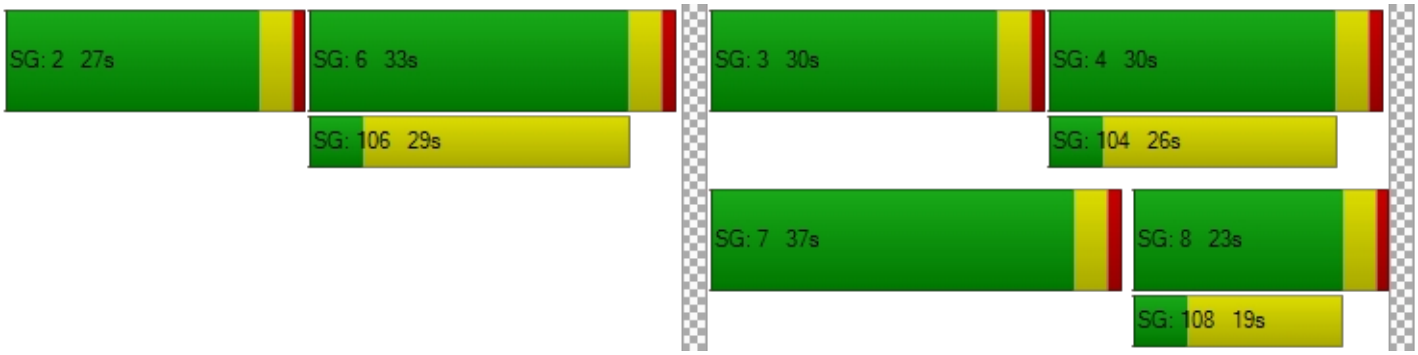
d_M, Delay for Movement [s/veh]	62.75	56.27	57.39	50.25	50.18	54.10	46.65	11.98	10.31	75.70	31.63	33.09
Movement LOS	E	E	E	D	D	D	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	59.45			52.14			27.40			33.46		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	36.04											
Intersection LOS	D											
Intersection V/C	0.633											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.230	2.757	0.000	2.941
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	383	317	433
d_b, Bicycle Delay [s]	34.50	39.20	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.711	2.903	2.485	2.171
Bicycle LOS	A	C	B	B

Sequence

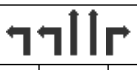
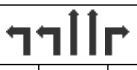
Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	39.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.624

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	158	754	90	148	608	171	182	575	229	108	268	65
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	10	6	0	2	2	35	24	0	9	54	35
Site-Generated Trips [veh/h]	0	0	11	12	0	0	0	188	0	97	144	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	167	809	112	169	646	183	228	822	243	220	482	120
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	44	213	29	44	170	48	60	216	64	58	127	32
Total Analysis Volume [veh/h]	176	852	118	178	680	193	240	865	256	232	507	126
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Unsig	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	37	0	12	36	0	23	57	0	14	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	52	8	52	52	11	34	34	10	33	33
g / C, Green / Cycle	0.07	0.43	0.07	0.43	0.43	0.09	0.29	0.29	0.08	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.05	0.20	0.13	0.07	0.25	0.17	0.07	0.18	0.18
s, saturation flow rate [veh/h]	3329	3427	3329	3427	1530	3329	3427	1530	3329	1800	1678
c, Capacity [veh/h]	229	1478	222	1470	656	307	978	437	277	498	464
d1, Uniform Delay [s]	54.92	25.83	55.22	24.41	22.39	53.29	40.98	36.79	54.19	38.38	38.39
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.32	1.64	6.61	1.05	1.14	4.34	2.88	1.25	6.57	1.49	1.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.58	0.80	0.46	0.29	0.78	0.88	0.59	0.84	0.66	0.66
d, Delay for Lane Group [s/veh]	60.24	27.48	61.83	25.46	23.53	57.63	43.85	38.04	60.77	39.87	39.99
Lane Group LOS	E	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.79	9.44	2.86	7.06	3.77	3.73	12.51	6.59	3.70	8.70	8.13
50th-Percentile Queue Length [ft/ln]	69.64	236.08	71.44	176.4	94.26	93.22	312.7	164.8	92.59	217.5	203.3
95th-Percentile Queue Length [veh/ln]	5.01	14.48	5.14	11.41	6.79	6.71	18.31	10.80	6.67	13.54	12.81
95th-Percentile Queue Length [ft/ln]	125.35	362.07	128.6	285.3	169.6	167.8	457.7	270.0	166.6	338.4	320.2

Movement, Approach, & Intersection Results

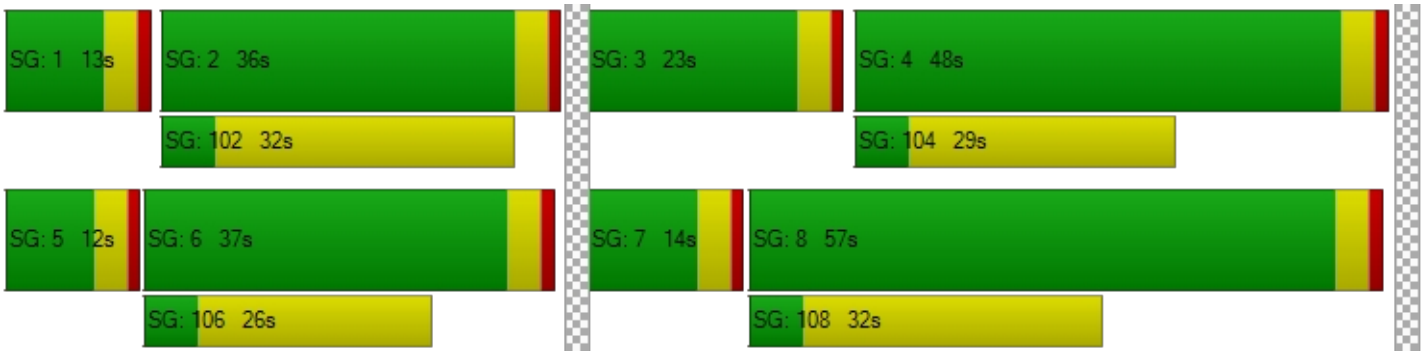
d_M, Delay for Movement [s/veh]	60.24	27.48	0.00	61.83	25.46	23.53	57.63	43.85	38.04	60.77	39.91	39.99
Movement LOS	E	C		E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	33.09			31.26			45.19			45.52		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.96											
Intersection LOS	D											
Intersection V/C	0.624											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.008	2.925	3.013	2.778
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	533	883	733
d_b, Bicycle Delay [s]	31.54	32.27	18.70	24.07
l_b,int, Bicycle LOS Score for Intersection	2.408	2.427	2.682	2.273
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	87.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.952

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	46	3	492	3	0	1	0	791	45	140	261	2
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	35	0	61	0	0	0	0	29	0	90	64	0
Site-Generated Trips [veh/h]	0	0	46	0	0	0	0	211	0	61	257	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	3	629	3	0	1	0	1078	48	299	598	2
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	22	1	166	1	0	0	0	284	13	79	157	1
Total Analysis Volume [veh/h]	88	3	662	3	0	1	0	1135	51	315	629	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	49	0	9	47	0	9	39	0	23	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	54	54	49	54	0	35	35	19	54	54
g / C, Green / Cycle	0.45	0.45	0.41	0.45	0.00	0.29	0.29	0.16	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.43	0.00	0.00	0.33	0.03	0.18	0.18	0.18
s, saturation flow rate [veh/h]	1439	1489	1530	832	1714	3427	1530	1714	1800	1798
c, Capacity [veh/h]	681	786	627	464	0	995	444	274	811	810
d1, Uniform Delay [s]	18.78	18.72	35.42	18.28	0.00	42.57	31.25	50.40	21.97	21.97
k, delay calibration	0.11	0.11	0.50	0.11	0.11	0.50	0.50	0.26	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.03	51.67	0.01	0.00	75.41	0.52	86.60	1.41	1.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.06	1.06	0.01	0.00	1.14	0.11	1.15	0.39	0.39
d, Delay for Lane Group [s/veh]	18.82	18.76	87.09	18.29	0.00	117.9	31.77	137.0	23.38	23.38
Lane Group LOS	B	B	F	B	A	F	C	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.68	0.78	26.82	0.06	0.00	24.98	1.16	14.81	6.23	6.22
50th-Percentile Queue Length [ft/ln]	17.10	19.52	670.4	1.57	0.00	624.5	28.99	370.3	155.6	155.5
95th-Percentile Queue Length [veh/ln]	1.23	1.41	36.75	0.11	0.00	35.93	2.09	22.52	10.32	10.31
95th-Percentile Queue Length [ft/ln]	30.78	35.14	918.6	2.83	0.00	898.1	52.18	563.0	257.9	257.7

Movement, Approach, & Intersection Results

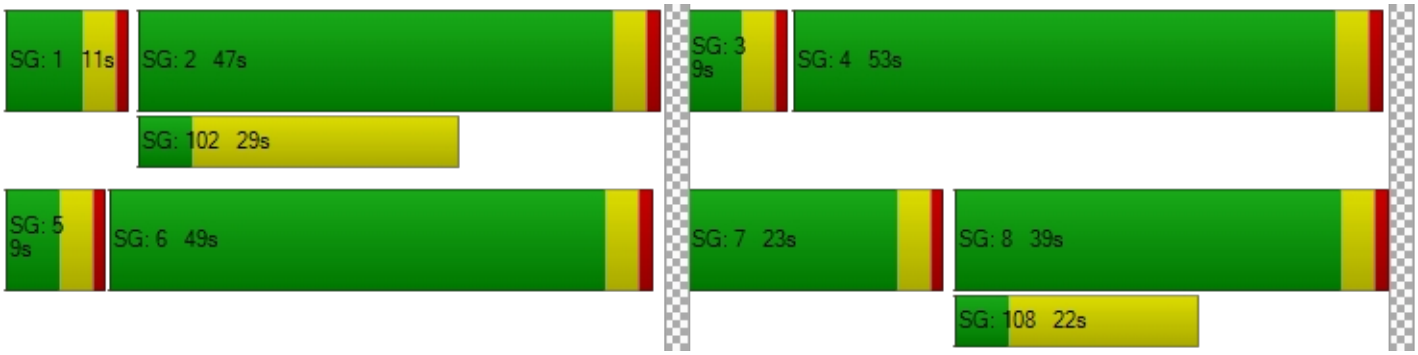
d_M, Delay for Movement [s/veh]	18.82	18.76	87.09	18.29	18.29	18.29	0.00	117.9	31.77	137.0	23.38	23.38
Movement LOS	B	B	F	B	B	B	A	F	C	F	C	C
d_A, Approach Delay [s/veh]	78.84			18.29			114.28			61.21		
Approach LOS	E			B			F			E		
d_I, Intersection Delay [s/veh]	87.53											
Intersection LOS	F											
Intersection V/C	0.952											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.533	0.000	3.004	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	900	583	817
d_b, Bicycle Delay [s]	18.15	18.15	30.10	21.00
l_b,int, Bicycle LOS Score for Intersection	2.802	1.566	2.538	2.340
Bicycle LOS	C	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.262

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	1295	400	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	153	0	82	1	0
Site-Generated Trips [veh/h]	0	0	0	257	318	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	153	0	1712	743	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	40	0	451	196	0
Total Analysis Volume [veh/h]	0	161	0	1802	782	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.26	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	48.45	12.94	9.33	0.00	0.00	0.00
Movement LOS	E	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.05	1.05	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	26.20	26.20	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.94		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.76					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	94.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.081

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	1021	140	76	775	225	468	667	302	75	184	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	130	0	10	159	1	82	0	0	0	0	18
Site-Generated Trips [veh/h]	0	549	0	33	280	318	257	0	0	0	0	42
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	1761	148	124	1261	558	835	707	320	80	195	121
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	463	39	33	332	147	220	186	84	21	51	32
Total Analysis Volume [veh/h]	73	1854	156	131	1327	587	879	744	337	84	205	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	30	0	10	30	30	44	67	0	13	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	43	43	6	43	87	40	47	7	15	15
g / C, Green / Cycle	0.05	0.36	0.36	0.05	0.36	0.73	0.33	0.39	0.06	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.04	0.39	0.39	0.08	0.27	0.38	0.51	0.22	0.05	0.10	0.10
s, saturation flow rate [veh/h]	1714	3427	1730	1714	4903	1530	1714	3427	1714	1800	1577
c, Capacity [veh/h]	86	1238	625	86	1772	1114	571	1350	105	220	192
d1, Uniform Delay [s]	56.56	38.32	38.32	57.00	33.56	7.20	40.00	28.14	55.59	51.19	51.42
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.04	48.72	60.83	250.2	2.96	1.79	250.90	0.35	12.85	6.25	8.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	1.08	1.08	1.53	0.75	0.53	1.54	0.55	0.80	0.79	0.82
d, Delay for Lane Group [s/veh]	76.60	87.04	99.16	307.2	36.51	8.99	290.90	28.50	68.43	57.44	59.94
Lane Group LOS	E	F	F	F	D	A	F	C	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.67	26.20	28.55	8.55	11.63	6.42	56.40	8.30	2.88	5.45	5.11
50th-Percentile Queue Length [ft/ln]	66.79	655.0	713.7	213.8	290.8	160.5	1410.03	207.56	72.11	136.3	127.6
95th-Percentile Queue Length [veh/ln]	4.81	36.38	39.44	14.75	17.23	10.58	86.20	13.03	5.19	9.28	8.81
95th-Percentile Queue Length [ft/ln]	120.2	909.5	986.1	368.8	430.7	264.4	2154.98	325.70	129.8	232.0	220.3

Movement, Approach, & Intersection Results

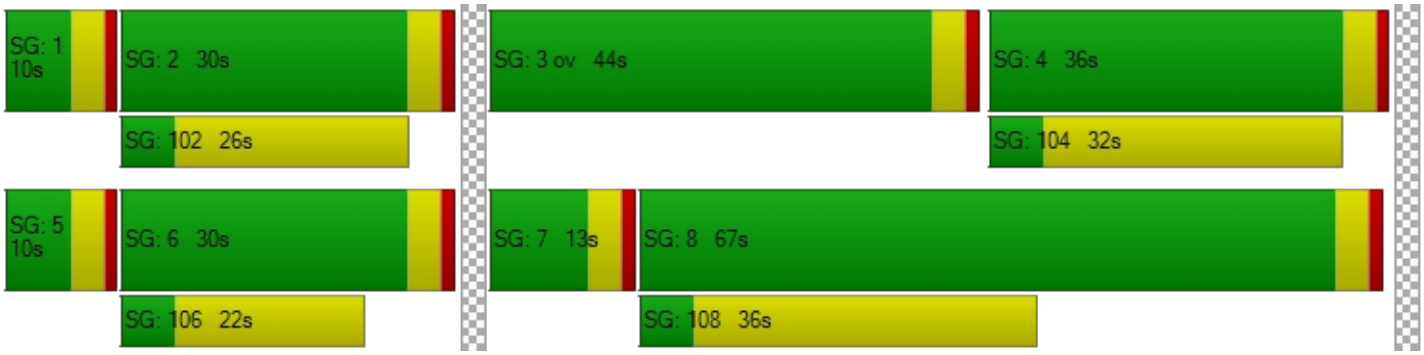
d_M, Delay for Movement [s/veh]	76.60	90.45	99.16	307.2	36.51	8.99	290.9	28.50	0.00	68.43	57.82	59.94
Movement LOS	E	F	F	F	D	A	F	C		E	E	E
d_A, Approach Delay [s/veh]	90.61			45.95			170.61			60.61		
Approach LOS	F			D			F			E		
d_I, Intersection Delay [s/veh]	94.83											
Intersection LOS	F											
Intersection V/C	1.081											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.243	3.338	2.872	2.597
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	1050	533
d_b, Bicycle Delay [s]	36.82	36.82	13.54	32.27
l_b,int, Bicycle LOS Score for Intersection	2.705	2.684	2.899	1.903
Bicycle LOS	B	B	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	35.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.501

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	17	158	25	39	100	35	68	546	12	13	227	35
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	1	0	0	0	5	0	0	10	0
Site-Generated Trips [veh/h]	0	0	0	2	0	0	0	21	0	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	167	27	44	106	37	72	605	13	14	281	37
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	44	7	12	28	10	19	159	3	4	74	10
Total Analysis Volume [veh/h]	19	176	28	46	112	39	76	637	14	15	296	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	23	0	0	23	0	79	88	0	9	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	60	60	7	46	2	41	41
g / C, Green / Cycle	0.50	0.50	0.06	0.38	0.02	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.13	0.12	0.04	0.36	0.01	0.16	0.03
s, saturation flow rate [veh/h]	1720	1592	1714	1793	1714	1800	1530
c, Capacity [veh/h]	894	834	100	686	28	613	521
d1, Uniform Delay [s]	17.12	16.86	55.65	35.89	58.55	31.21	26.76
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.67	0.67	11.03	7.82	14.54	0.59	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.24	0.76	0.95	0.53	0.48	0.07
d, Delay for Lane Group [s/veh]	17.79	17.53	66.68	43.71	73.09	31.80	26.82
Lane Group LOS	B	B	E	D	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.68	3.21	2.58	19.57	0.57	6.85	0.77
50th-Percentile Queue Length [ft/ln]	91.94	80.25	64.39	489.30	14.17	171.3	19.29
95th-Percentile Queue Length [veh/ln]	6.62	5.78	4.64	26.83	1.02	11.15	1.39
95th-Percentile Queue Length [ft/ln]	165.50	144.45	115.91	670.68	25.50	278.7	34.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.79	17.79	17.79	17.53	17.53	17.53	66.68	43.71	43.71	73.09	31.80	26.82
Movement LOS	B	B	B	B	B	B	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	17.79			17.53			46.11			33.02		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	35.07											
Intersection LOS	D											
Intersection V/C	0.501											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	1.908	1.968	2.437	0.000
Crosswalk LOS	A	A	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	1400	233
d_b, Bicycle Delay [s]	42.50	42.50	5.40	46.82
I_b,int, Bicycle LOS Score for Intersection	1.928	1.885	2.759	2.137
Bicycle LOS	A	A	C	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.494

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	5	19	54	26	3	0	14	23	8	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	9	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	41	57	28	3	0	15	24	8	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	11	15	7	1	0	4	6	2	3
Total Analysis Volume [veh/h]	5	43	60	29	3	0	16	25	8	14
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	12	12
g / C, Green / Cycle	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.08	0.04
s, saturation flow rate [veh/h]	1649	1613
c, Capacity [veh/h]	204	198
d1, Uniform Delay [s]	53.04	50.56
k, delay calibration	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	4.06	0.92
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.32
d, Delay for Lane Group [s/veh]	57.11	51.48
Lane Group LOS	E	D
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	4.38	1.83
50th-Percentile Queue Length [ft/ln]	109.42	45.66
95th-Percentile Queue Length [veh/ln]	7.81	3.29
95th-Percentile Queue Length [ft/ln]	195.20	82.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.11	57.11	57.11	57.11	57.11	51.48	51.48	51.48	51.48	51.48
Movement LOS	E	E	E	E	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	57.11					51.48				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	27.90									
Intersection LOS	C									
Intersection V/C	0.494									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.871	1.977
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250
d_b, Bicycle Delay [s]	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.715	1.614
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	8	128	402	18	1	6	12	184	18	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	6	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	0	11	12	0	0	0	18	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	136	437	37	1	6	13	214	19	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	36	115	10	0	2	3	56	5	3
Total Analysis Volume [veh/h]	8	143	460	39	1	6	14	225	20	11
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	64	0	0	9	0	64	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	79	73	79	69	69
g / C, Green / Cycle	0.66	0.61	0.66	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.13	0.28	0.02	0.13	0.02
s, saturation flow rate [veh/h]	1199	1775	958	1800	1530
c, Capacity [veh/h]	804	1076	569	1040	884
d1, Uniform Delay [s]	7.88	12.94	8.71	12.23	10.92
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	1.44	0.02	0.48	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.46	0.04	0.22	0.04
d, Delay for Lane Group [s/veh]	8.40	14.38	8.74	12.71	10.99
Lane Group LOS	A	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.51	7.54	0.17	3.01	0.37
50th-Percentile Queue Length [ft/ln]	37.72	188.49	4.36	75.32	9.30
95th-Percentile Queue Length [veh/ln]	2.72	12.04	0.31	5.42	0.67
95th-Percentile Queue Length [ft/ln]	67.89	301.07	7.84	135.58	16.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.40	8.40	14.38	14.38	14.38	8.74	8.74	12.71	10.99	10.99
Movement LOS	A	A	B	B	B	A	A	B	B	B
d_A, Approach Delay [s/veh]	12.99					12.23				
Approach LOS	B					B				
d_I, Intersection Delay [s/veh]	27.90									
Intersection LOS	C									
Intersection V/C	0.494									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.387	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	1000
d_b, Bicycle Delay [s]	15.00	15.00
l_b,int, Bicycle LOS Score for Intersection	2.396	1.974
Bicycle LOS	B	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	7	16	152	12	4	4	7	52	62	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	17	161	13	4	4	7	55	66	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	4	42	3	1	1	2	14	17	1
Total Analysis Volume [veh/h]	7	18	169	14	4	4	7	58	69	2
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	28	0	0	0	0	28	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17
g / C, Green / Cycle	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.12	0.04	0.05
s, saturation flow rate [veh/h]	1717	1680	1530
c, Capacity [veh/h]	274	270	214
d1, Uniform Delay [s]	50.53	46.14	46.53
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	4.65	0.49	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.26	0.33
d, Delay for Lane Group [s/veh]	55.18	46.63	47.43
Lane Group LOS	E	D	D
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.59	1.89	1.97
50th-Percentile Queue Length [ft/ln]	164.70	47.18	49.34
95th-Percentile Queue Length [veh/ln]	10.80	3.40	3.55
95th-Percentile Queue Length [ft/ln]	269.93	84.93	88.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.18	55.18	55.18	55.18	55.18	46.63	46.63	46.63	47.43	47.43
Movement LOS	E	E	E	E	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	55.18					47.04				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	27.90									
Intersection LOS	C									
Intersection V/C	0.494									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.961	2.266
Crosswalk LOS	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	400
d_b, Bicycle Delay [s]	38.40	38.40
l_b,int, Bicycle LOS Score for Intersection	1.857	1.781
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	31.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	173	956	47	48	575	25	53	305	64	44	212	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	37	0	10	50	0	0	0	0	0	1	12
Site-Generated Trips [veh/h]	0	12	0	12	12	0	0	11	0	0	18	14
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	1062	50	73	672	27	56	334	68	47	244	101
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	48	279	13	19	177	7	15	88	18	12	64	27
Total Analysis Volume [veh/h]	193	1118	53	77	707	28	59	352	72	49	257	106
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	35	68	0	13	46	0	11	29	0	10	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	76	76	7	67	67	5	17	17	4	16	16
g / C, Green / Cycle	0.13	0.63	0.63	0.06	0.56	0.56	0.04	0.14	0.14	0.04	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.11	0.33	0.33	0.04	0.21	0.21	0.03	0.12	0.12	0.03	0.10	0.11
s, saturation flow rate [veh/h]	1714	1800	1772	1714	1800	1776	1714	1800	1696	1714	1800	1626
c, Capacity [veh/h]	224	1135	1117	97	1002	989	75	257	242	62	244	220
d1, Uniform Delay [s]	51.09	12.17	12.18	55.90	14.84	14.84	56.80	50.12	50.23	57.35	50.08	50.27
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.35	1.70	1.73	13.34	1.05	1.06	16.12	7.37	8.43	18.95	5.11	6.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.52	0.52	0.79	0.37	0.37	0.78	0.84	0.86	0.78	0.77	0.80
d, Delay for Lane Group [s/veh]	60.43	13.86	13.92	69.24	15.89	15.91	72.92	57.49	58.66	76.30	55.19	56.72
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.26	8.78	8.69	2.66	5.82	5.74	2.11	6.86	6.63	1.80	5.78	5.49
50th-Percentile Queue Length [ft/ln]	156.5	219.5	217.1	66.58	145.4	143.6	52.70	171.4	165.8	45.09	144.6	137.2
95th-Percentile Queue Length [veh/ln]	10.36	13.64	13.52	4.79	9.77	9.68	3.79	11.15	10.86	3.25	9.73	9.33
95th-Percentile Queue Length [ft/ln]	259.0	341.0	337.9	119.8	244.2	241.9	94.87	278.8	271.4	81.17	243.2	233.3

Movement, Approach, & Intersection Results

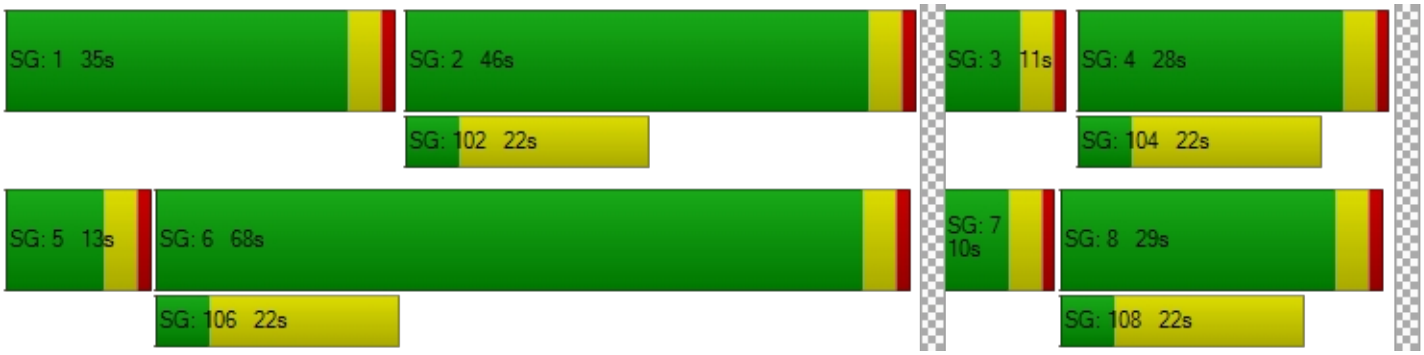
d_M, Delay for Movement [s/veh]	60.43	13.89	13.92	69.24	15.90	15.91	72.92	57.94	58.66	76.30	55.60	56.72
Movement LOS	E	B	B	E	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	20.48			20.96			59.88			58.35		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	31.88											
Intersection LOS	C											
Intersection V/C	0.524											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.743	2.724	2.502	2.613
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1067	700	417	400
d_b, Bicycle Delay [s]	13.07	25.35	37.60	38.40
l_b,int, Bicycle LOS Score for Intersection	2.685	2.230	1.958	1.900
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	41.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	182	958	368	67	880	54	92	340	135	232	281	75
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	2	21	0	4	21	0	0	1	3	0	2	6
Site-Generated Trips [veh/h]	18	22	0	10	24	0	0	2	9	0	2	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	213	1058	390	85	978	57	98	363	155	246	302	96
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	56	278	103	22	257	15	26	96	41	65	79	25
Total Analysis Volume [veh/h]	224	1114	411	89	1029	60	103	382	163	259	318	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	42	0	11	32	0	18	43	0	24	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	55	55	7	45	45	9	22	22	20	33	33
g / C, Green / Cycle	0.14	0.46	0.46	0.06	0.38	0.38	0.07	0.18	0.18	0.17	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.13	0.33	0.27	0.05	0.30	0.04	0.06	0.16	0.16	0.15	0.12	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1621	1714	1800	1654
c, Capacity [veh/h]	243	1574	703	100	1289	575	128	331	298	283	494	454
d1, Uniform Delay [s]	50.85	25.98	23.98	56.12	33.38	24.31	54.69	47.52	47.62	49.24	35.92	35.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.16	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.67	2.71	3.54	21.83	5.23	0.36	11.29	6.69	7.88	15.45	0.62	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.71	0.58	0.89	0.80	0.10	0.81	0.86	0.87	0.91	0.44	0.44
d, Delay for Lane Group [s/veh]	64.52	28.69	27.52	77.95	38.61	24.68	65.98	54.20	55.49	64.70	36.54	36.64
Lane Group LOS	E	C	C	E	D	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.55	13.07	9.19	3.28	14.10	1.18	3.47	8.87	8.18	8.83	5.36	4.97
50th-Percentile Queue Length [ft/ln]	188.7	326.8	229.7	82.06	352.4	29.40	86.65	221.6	204.4	220.6	133.9	124.2
95th-Percentile Queue Length [veh/ln]	12.06	19.00	14.16	5.91	20.26	2.12	6.24	13.75	12.87	13.70	9.15	8.63
95th-Percentile Queue Length [ft/ln]	301.4	475.0	354.0	147.7	506.4	52.92	155.9	343.7	321.7	342.4	228.8	215.7

Movement, Approach, & Intersection Results

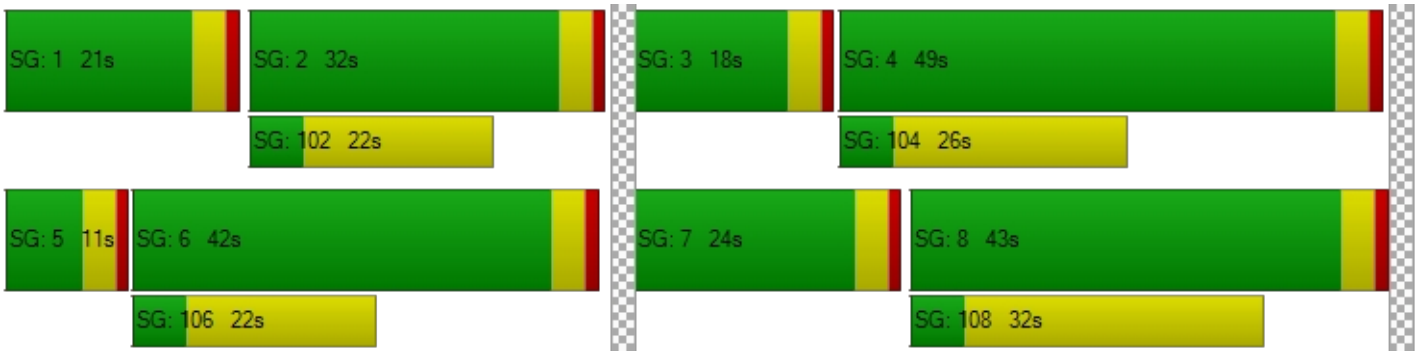
d_M, Delay for Movement [s/veh]	64.52	28.69	27.52	77.95	38.61	24.68	65.98	54.53	55.49	64.70	36.57	36.64
Movement LOS	E	C	C	E	D	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	33.00			40.87			56.59			47.33		
Approach LOS	C			D			E			D		
d_I, Intersection Delay [s/veh]	41.06											
Intersection LOS	D											
Intersection V/C	0.742											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.131	2.874	2.559	2.619
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	467	650	750
d_b, Bicycle Delay [s]	28.02	35.27	27.34	23.44
l_b,int, Bicycle LOS Score for Intersection	3.003	2.531	2.094	2.119
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.335

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	164	64	4	101	23	42	130	1	7	77	12
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	174	68	4	107	24	45	138	1	7	82	13
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	46	18	1	28	6	12	36	0	2	22	3
Total Analysis Volume [veh/h]	0	183	72	4	113	25	47	145	1	7	86	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	761	727	691	624	716
Degree of Utilization, x	0.34	0.20	0.28	0.15	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.48	0.72	1.14	0.52	0.06
95th-Percentile Queue Length [ft]	36.96	18.02	28.54	13.04	1.49
Approach Delay [s/veh]	10.10	9.15	10.22	9.26	
Approach LOS	B	A	B	A	
Intersection Delay [s/veh]	9.81				
Intersection LOS	A				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.609

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	257	937	121	64	940	30	75	256	340	136	91	88
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	16	0	0	11	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	0	97	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	272	1020	128	68	1104	32	80	271	360	144	96	93
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	72	268	34	18	291	8	21	71	95	38	25	24
Total Analysis Volume [veh/h]	286	1074	135	72	1162	34	84	285	379	152	101	98
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	40	0	11	35	0	19	58	0	11	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	58	58	6	52	52	7	33	33	7	32	32
g / C, Green / Cycle	0.10	0.48	0.48	0.05	0.44	0.44	0.06	0.27	0.27	0.06	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.09	0.24	0.24	0.04	0.23	0.23	0.05	0.08	0.25	0.05	0.03	0.06
s, saturation flow rate [veh/h]	3329	3427	1699	1714	3427	1774	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	333	1658	822	91	1497	775	108	931	415	194	914	408
d1, Uniform Delay [s]	53.17	20.93	20.93	56.16	24.72	24.72	55.37	34.73	42.32	55.75	33.24	34.47
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.13	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.46	1.03	2.07	14.13	1.33	2.55	11.19	0.18	9.58	6.75	0.05	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.49	0.49	0.79	0.53	0.53	0.78	0.31	0.91	0.78	0.11	0.24
d, Delay for Lane Group [s/veh]	59.63	21.96	22.99	70.29	26.04	27.27	66.56	34.91	51.90	62.50	33.29	34.77
Lane Group LOS	E	C	C	E	C	C	E	C	D	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.54	7.80	7.97	2.51	8.40	8.96	2.84	3.35	11.89	2.45	1.13	2.29
50th-Percentile Queue Length [ft/ln]	113.5	195.0	199.3	62.81	209.9	223.9	71.06	83.80	297.3	61.30	28.20	57.26
95th-Percentile Queue Length [veh/ln]	8.04	12.38	12.60	4.52	13.15	13.87	5.12	6.03	17.55	4.41	2.03	4.12
95th-Percentile Queue Length [ft/ln]	200.8	309.5	315.1	113.0	328.7	346.7	127.9	150.8	438.7	110.3	50.76	103.0

Movement, Approach, & Intersection Results

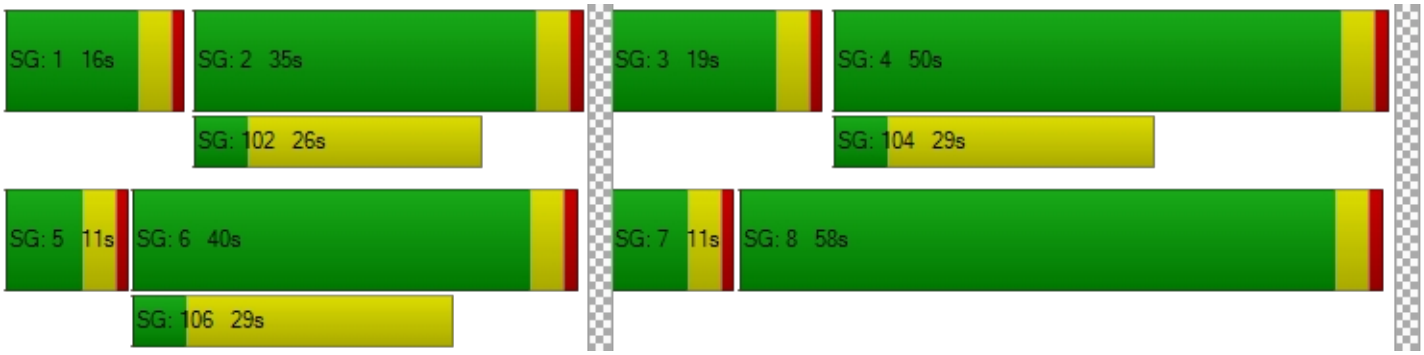
d_M, Delay for Movement [s/veh]	59.63	22.21	22.99	70.29	26.44	27.27	66.56	34.91	51.90	62.50	33.29	34.77
Movement LOS	E	C	C	E	C	C	E	C	D	E	C	C
d_A, Approach Delay [s/veh]	29.44			28.95			47.07			46.35		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.23											
Intersection LOS	C											
Intersection V/C	0.609											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.961	2.658	2.727
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	517	900	767
d_b, Bicycle Delay [s]	29.40	33.00	18.15	22.82
l_b,int, Bicycle LOS Score for Intersection	2.382	2.257	2.177	1.849
Bicycle LOS	B	B	B	A

Sequence

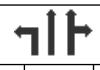
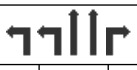
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	51.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.883

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	32	371	673	11	254	25	40	443	23	718	443	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	96	0	0	90	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	46	0	0	61	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	535	713	12	420	27	42	470	24	761	470	75
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	141	188	3	111	7	11	124	6	200	124	20
Total Analysis Volume [veh/h]	36	563	751	13	442	28	44	495	25	801	495	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	56	0	9	56	0	32	22	0	33	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	55	55	2	54	54	4	18	18	29	43	43
g / C, Green / Cycle	0.03	0.46	0.46	0.01	0.45	0.45	0.03	0.15	0.15	0.24	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.01	0.31	0.49	0.01	0.13	0.13	0.03	0.14	0.02	0.24	0.14	0.05
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1763	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	97	828	704	25	802	786	59	514	230	805	1225	547
d1, Uniform Delay [s]	57.16	25.45	32.39	58.67	21.22	21.24	57.44	50.67	44.07	45.44	28.95	26.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.33	4.47	53.14	14.89	0.94	0.96	17.26	11.59	0.21	13.76	0.22	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.68	1.07	0.51	0.30	0.30	0.75	0.96	0.11	1.00	0.40	0.14
d, Delay for Lane Group [s/veh]	59.49	29.92	85.53	73.57	22.16	22.20	74.70	62.26	44.28	59.19	29.17	26.24
Lane Group LOS	E	C	F	E	C	C	E	E	D	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.57	13.41	30.09	0.50	4.46	4.40	1.61	8.19	0.66	13.35	5.39	1.56
50th-Percentile Queue Length [ft/ln]	14.20	335.1	752.3	12.45	111.5	109.9	40.15	204.7	16.50	333.6	134.7	39.00
95th-Percentile Queue Length [veh/ln]	1.02	19.41	41.06	0.90	7.92	7.84	2.89	12.88	1.19	19.34	9.20	2.81
95th-Percentile Queue Length [ft/ln]	25.55	485.2	1026.	22.40	198.0	195.9	72.26	322.0	29.70	483.4	229.9	70.21

Movement, Approach, & Intersection Results

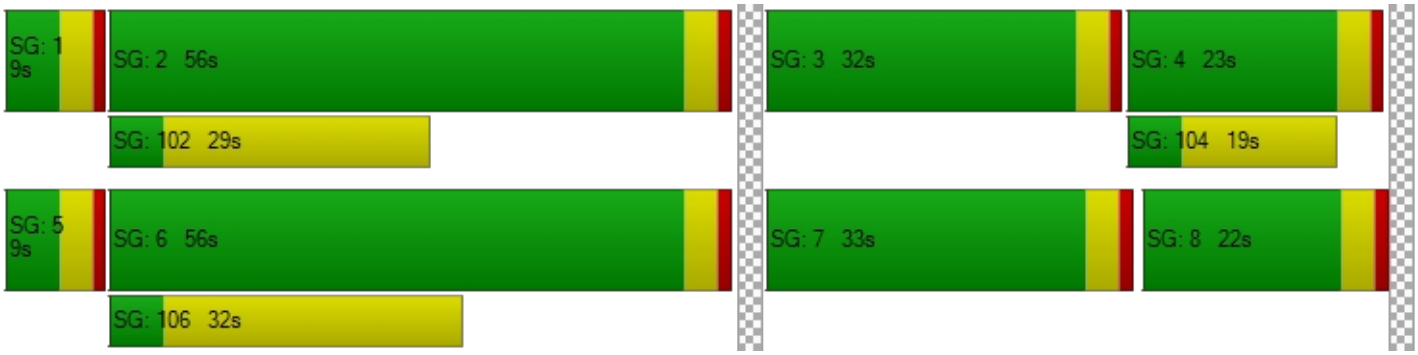
d_M, Delay for Movement [s/veh]	59.49	29.92	85.53	73.57	22.18	22.20	74.70	62.26	44.28	59.19	29.17	26.24
Movement LOS	E	C	F	E	C	C	E	E	D	E	C	C
d_A, Approach Delay [s/veh]	61.64			23.56			62.43			46.49		
Approach LOS	E			C			E			D		
d_I, Intersection Delay [s/veh]	51.36											
Intersection LOS	D											
Intersection V/C	0.883											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.431	2.766	3.062
Crosswalk LOS	F	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	300	317
d_b, Bicycle Delay [s]	19.27	19.27	43.35	42.50
l_b,int, Bicycle LOS Score for Intersection	3.787	1.958	2.025	2.694
Bicycle LOS	D	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	55.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.929

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	247	951	696	98	948	67	178	452	354	395	240	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	129	0	2	157	0	0	0	0	0	0	1
Site-Generated Trips [veh/h]	0	513	0	20	261	0	0	0	0	0	0	37
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	262	1650	738	126	1423	71	189	479	375	419	254	125
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	69	434	194	33	374	19	50	126	99	110	67	33
Total Analysis Volume [veh/h]	276	1737	777	133	1498	75	199	504	395	441	267	132
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	18	47	0	13	42	0	24	40	40	20	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	58	58	9	53	53	9	21	39	16	28	28
g / C, Green / Cycle	0.12	0.48	0.48	0.08	0.44	0.44	0.08	0.18	0.33	0.13	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.08	0.51	0.51	0.08	0.31	0.05	0.06	0.15	0.26	0.13	0.12	0.12
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1602
c, Capacity [veh/h]	388	1647	735	129	2152	672	264	609	501	444	417	371
d1, Uniform Delay [s]	51.05	31.16	31.16	55.50	27.20	19.86	54.10	47.56	36.55	51.95	40.11	40.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.48	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.41	38.16	49.19	46.07	1.89	0.34	4.34	2.95	11.31	18.38	0.95	1.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	1.05	1.06	1.03	0.70	0.11	0.75	0.83	0.79	0.99	0.51	0.51
d, Delay for Lane Group [s/veh]	53.46	69.33	80.35	101.5	29.09	20.20	58.44	50.51	47.87	70.33	41.06	41.19
Lane Group LOS	D	F	F	F	C	C	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.13	31.59	30.46	5.53	11.74	1.31	3.10	7.50	11.98	7.74	5.54	4.95
50th-Percentile Queue Length [ft/ln]	103.1	789.7	761.4	138.2	293.5	32.73	77.59	187.4	299.4	193.5	138.4	123.7
95th-Percentile Queue Length [veh/ln]	7.43	42.54	41.24	9.49	17.36	2.36	5.59	11.99	17.65	12.31	9.40	8.60
95th-Percentile Queue Length [ft/ln]	185.7	1063.	1031.	237.3	434.0	58.92	139.6	299.7	441.3	307.6	234.9	215.0

Movement, Approach, & Intersection Results

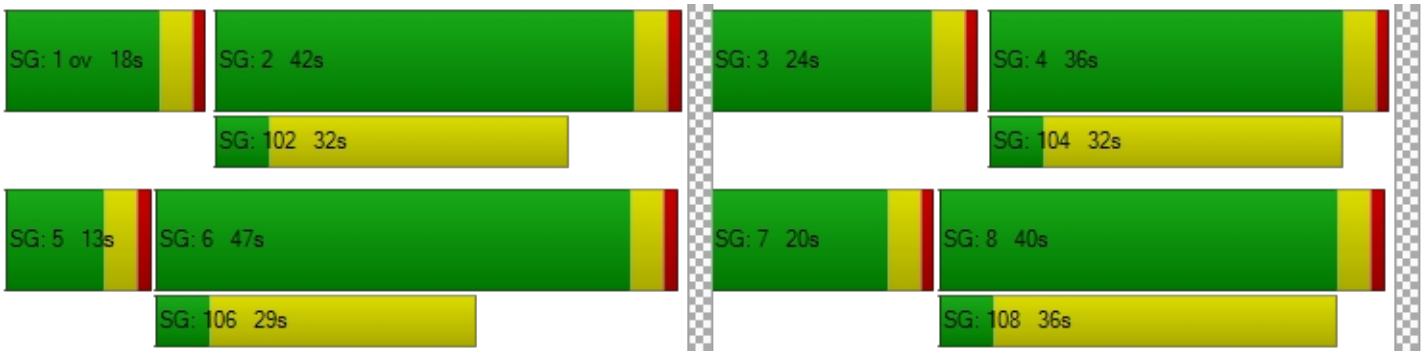
d_M, Delay for Movement [s/veh]	53.46	69.33	80.35	101.5	29.09	20.20	58.44	50.51	47.87	70.33	41.08	41.19
Movement LOS	D	F	F	F	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	70.83			34.35			50.99			56.46		
Approach LOS	E			C			D			E		
d_I, Intersection Delay [s/veh]	55.89											
Intersection LOS	E											
Intersection V/C	0.929											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.420	3.201	2.950	2.923
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	633	600	533
d_b, Bicycle Delay [s]	24.70	28.02	29.40	32.27
l_b,int, Bicycle LOS Score for Intersection	3.861	2.498	2.465	2.253
Bicycle LOS	D	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.485

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	15	5	4	23	3	46	4	21	43	157	1081	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	2	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	5	4	24	3	49	4	22	46	166	1168	16
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	4	1	1	6	1	13	1	6	12	44	307	4
Total Analysis Volume [veh/h]	17	5	4	25	3	52	4	23	48	175	1229	17
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	Permi
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	69	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	89	83	83
g / C, Green / Cycle	0.07	0.07	0.74	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.03	0.05	0.25	0.35	0.35
s, saturation flow rate [veh/h]	1670	1513	875	1800	1791
c, Capacity [veh/h]	148	148	664	1251	1245
d1, Uniform Delay [s]	54.18	55.44	5.31	8.54	8.55
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.38	3.22	1.36	1.42	1.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.55	0.34	0.50	0.50
d, Delay for Lane Group [s/veh]	55.56	58.66	6.68	9.96	9.98
Lane Group LOS	E	E	A	A	A
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.54	2.58	1.71	7.43	7.41
50th-Percentile Queue Length [ft/ln]	38.62	64.55	42.66	185.73	185.26
95th-Percentile Queue Length [veh/ln]	2.78	4.65	3.07	11.90	11.87
95th-Percentile Queue Length [ft/ln]	69.51	116.19	76.79	297.48	296.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.56	55.56	55.56	55.56	58.66	58.66	58.66	58.66	6.68	6.68	9.97	9.98
Movement LOS	E	E	E	E	E	E	E	E	A	A	A	A
d_A, Approach Delay [s/veh]	55.56				58.66				9.47			
Approach LOS	E				E				A			
d_I, Intersection Delay [s/veh]	15.06											
Intersection LOS	B											
Intersection V/C	0.485											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.774	0.000	2.849
Crosswalk LOS	A	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1083
d_b, Bicycle Delay [s]	45.94	45.94	12.60
l_b,int, Bicycle LOS Score for Intersection	1.603	1.609	2.627
Bicycle LOS	A	A	B

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	10	487	53	23	5	6	94	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	1	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	37	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	554	56	24	5	6	100	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	146	15	6	1	2	26	1
Total Analysis Volume [veh/h]	12	583	59	25	5	6	105	2
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	69	0	0	0	23	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	78	78	78	11
g / C, Green / Cycle	0.01	0.65	0.65	0.65	0.09
(v / s)_i Volume / Saturation Flow Rate	0.01	0.13	0.19	0.05	0.08
s, saturation flow rate [veh/h]	1714	1800	1800	1530	1549
c, Capacity [veh/h]	25	1174	1174	998	143
d1, Uniform Delay [s]	58.67	8.34	9.01	7.68	53.50
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.51	0.38	0.65	0.17	11.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.20	0.30	0.08	0.82
d, Delay for Lane Group [s/veh]	72.18	8.72	9.66	7.84	64.68
Lane Group LOS	E	A	A	A	E
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.46	2.45	3.99	0.82	3.94
50th-Percentile Queue Length [ft/ln]	11.41	61.30	99.73	20.47	98.59
95th-Percentile Queue Length [veh/ln]	0.82	4.41	7.18	1.47	7.10
95th-Percentile Queue Length [ft/ln]	20.53	110.34	179.51	36.85	177.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.18	9.28	9.66	7.84	64.68	64.68	64.68	64.68
Movement LOS	E	A	A	A	E	E	E	E
d_A, Approach Delay [s/veh]	10.22				64.68			
Approach LOS	B				E			
d_I, Intersection Delay [s/veh]	15.06							
Intersection LOS	B							
Intersection V/C	0.485							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.179
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1083	317
d_b, Bicycle Delay [s]	12.60	42.50
l_b,int, Bicycle LOS Score for Intersection	2.099	1.751
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	293.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.235

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	4	2	18	74	0	20	117	1003	7	7	509	125
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	2	0	0	1	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	20	0	0	37	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	2	19	78	0	21	124	1085	7	7	578	133
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	1	5	21	0	6	33	286	2	2	152	35
Total Analysis Volume [veh/h]	4	2	20	82	0	22	131	1142	7	7	608	140
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

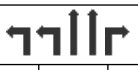
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.05	0.04	1.24	0.00	0.03	0.15	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	83.01	100.4	17.74	293.7	321.5	10.93	9.87	0.00	0.00	10.92	0.00	0.00
Movement LOS	F	F	C	F	F	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.61	0.61	0.61	6.61	6.61	0.11	0.53	0.00	0.00	0.03	0.00	0.00
95th-Percentile Queue Length [ft/ln]	15.22	15.22	15.22	165.1	165.1	2.71	13.22	0.00	0.00	0.86	0.00	0.00
d_A, Approach Delay [s/veh]	34.14			233.92			1.01			0.10		
Approach LOS	D			F			A			A		
d_I, Intersection Delay [s/veh]	12.28											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	46.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.759

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	553	970	285	96	540	41	70	663	405	158	753	183
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	34	0	0	50	0	0	2	0	0	1	3
Site-Generated Trips [veh/h]	37	12	0	0	12	0	0	0	20	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	623	1074	302	102	634	43	74	705	449	167	799	197
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	164	283	79	27	167	11	19	186	118	44	210	52
Total Analysis Volume [veh/h]	656	1131	318	107	667	45	78	742	473	176	841	207
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	30	51	0	12	33	0	9	46	0	11	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	49	49	8	32	32	5	40	40	7	42	42
g / C, Green / Cycle	0.21	0.41	0.41	0.07	0.27	0.27	0.04	0.33	0.33	0.06	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.20	0.33	0.21	0.06	0.20	0.20	0.02	0.22	0.31	0.05	0.30	0.30
s, saturation flow rate [veh/h]	3329	3427	1530	1714	1800	1760	3329	3427	1530	3329	1800	1679
c, Capacity [veh/h]	707	1409	629	114	478	467	130	1133	506	194	630	588
d1, Uniform Delay [s]	46.37	31.06	26.27	55.75	40.46	40.47	56.75	34.31	38.91	56.17	36.24	36.31
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.38	0.11	0.33	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.01	4.93	2.89	26.15	10.50	10.74	4.42	0.65	22.03	14.43	9.84	10.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.80	0.51	0.94	0.75	0.75	0.60	0.65	0.94	0.91	0.86	0.86
d, Delay for Lane Group [s/veh]	52.38	35.99	29.16	81.89	50.96	51.21	61.16	34.96	60.94	70.60	46.09	47.12
Lane Group LOS	D	D	C	F	D	D	E	C	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.14	15.09	7.22	4.05	11.10	10.89	1.24	9.31	16.41	3.04	16.26	15.41
50th-Percentile Queue Length [ft/ln]	253.5	377.1	180.5	101.2	277.4	272.2	31.10	232.7	410.2	75.94	406.5	385.2
95th-Percentile Queue Length [veh/ln]	15.36	21.46	11.63	7.29	16.56	16.30	2.24	14.31	23.05	5.47	22.87	21.85
95th-Percentile Queue Length [ft/ln]	384.0	536.3	290.7	182.3	414.0	407.6	55.98	357.8	576.3	136.6	571.8	546.2

Movement, Approach, & Intersection Results

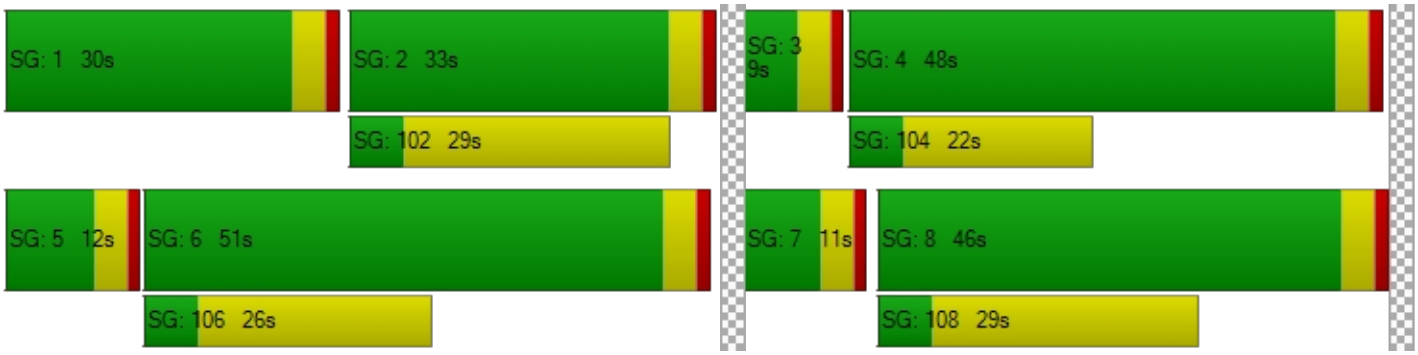
d_M, Delay for Movement [s/veh]	52.38	35.99	29.16	81.89	51.08	51.21	61.16	34.96	60.94	70.60	46.46	47.12
Movement LOS	D	D	C	F	D	D	E	C	E	E	D	D
d_A, Approach Delay [s/veh]	40.07			55.11			46.05			50.04		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	46.00											
Intersection LOS	D											
Intersection V/C	0.759											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.086	2.751	3.004	3.032
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	483	700	733
d_b, Bicycle Delay [s]	22.20	34.50	25.35	24.07
l_b,int, Bicycle LOS Score for Intersection	3.296	2.235	2.626	2.569
Bicycle LOS	C	B	B	B

Sequence

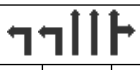
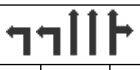
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	52.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.898

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	236	1176	727	154	1201	87	267	863	219	633	638	106
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	4	15	0	5	18	0	0	0	2	0	0	8
Site-Generated Trips [veh/h]	0	28	0	12	21	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	254	1290	771	180	1312	92	283	915	234	671	676	132
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	67	339	203	47	345	24	74	241	62	177	178	35
Total Analysis Volume [veh/h]	267	1358	812	189	1381	97	298	963	246	706	712	139
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	14	40	40	10	36	0	34	43	0	27	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	10	43	70	6	39	39	13	32	32	23	42	52
g / C, Green / Cycle	0.08	0.36	0.58	0.05	0.32	0.32	0.11	0.27	0.27	0.19	0.35	0.43
(v / s)_i Volume / Saturation Flow Rate	0.08	0.28	0.53	0.06	0.29	0.29	0.09	0.24	0.24	0.21	0.21	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1740	3329	3427	1619	3329	3427	2708
c, Capacity [veh/h]	277	1745	889	166	1106	561	372	922	436	638	1196	1171
d1, Uniform Delay [s]	54.81	34.42	22.45	57.00	38.56	38.57	52.00	42.16	42.16	48.50	32.09	20.38
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.27	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.59	3.49	15.35	76.54	10.53	18.47	4.04	3.22	13.93	53.56	0.48	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.78	0.91	1.14	0.89	0.89	0.80	0.89	0.89	1.11	0.60	0.12
d, Delay for Lane Group [s/veh]	72.41	37.92	37.80	133.5	49.09	57.03	56.04	45.37	56.09	102.0	32.57	20.42
Lane Group LOS	E	D	D	F	D	E	E	D	E	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.69	12.20	22.96	4.29	15.13	16.62	4.59	12.01	12.64	14.24	8.52	1.18
50th-Percentile Queue Length [ft/ln]	117.3	304.9	574.1	107.2	378.3	415.4	114.6	300.2	316.1	356.0	213.1	29.52
95th-Percentile Queue Length [veh/ln]	8.25	17.93	30.82	7.72	21.51	23.30	8.10	17.69	18.48	21.50	13.31	2.13
95th-Percentile Queue Length [ft/ln]	206.1	448.1	770.5	193.1	537.8	582.5	202.4	442.3	461.9	537.5	332.8	53.13

Movement, Approach, & Intersection Results

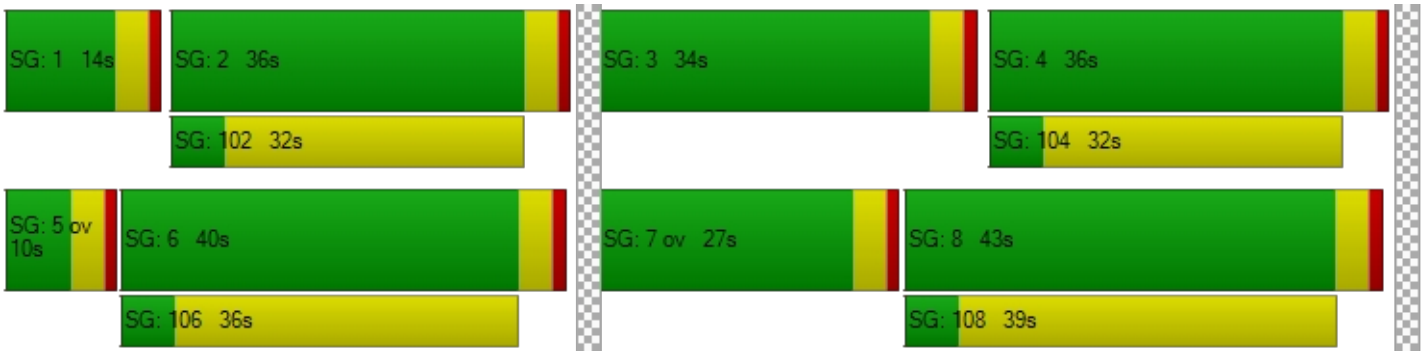
d_M, Delay for Movement [s/veh]	72.41	37.92	37.80	133.5	51.40	57.03	56.04	46.95	56.09	102.0	32.57	20.42
Movement LOS	E	D	D	F	D	E	E	D	E	F	C	C
d_A, Approach Delay [s/veh]	41.66			61.04			50.24			62.99		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	52.60											
Intersection LOS	D											
Intersection V/C	0.898											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.447	3.163	3.055	3.246
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	533	650	533
d_b, Bicycle Delay [s]	29.40	32.27	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.900	2.476	2.388	2.844
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	986	622	0	1033	422	0	0	0	347	0	432
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.060	1.000	1.000	1.000	1.060	1.000	1.060
In-Process Volume [veh/h]	0	16	0	0	5	6	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	0	12	85	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1072	622	0	1112	538	0	0	0	368	0	458
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	282	164	0	293	142	0	0	0	97	0	121
Total Analysis Volume [veh/h]	0	1128	655	0	1171	566	0	0	0	387	0	482
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	72	0	0	72	0	0	0	0	48	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	86	86		26	26	26
g / C, Green / Cycle	0.72	0.72		0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.33	0.24		0.17	0.18	0.19
s, saturation flow rate [veh/h]	3427	4903		1714	1583	1530
c, Capacity [veh/h]	2458	3517		370	342	331
d1, Uniform Delay [s]	7.15	6.30		44.61	45.07	45.27
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.62	0.26		4.08	5.60	6.48
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.33		0.80	0.84	0.86
d, Delay for Lane Group [s/veh]	7.77	6.56		48.68	50.66	51.74
Lane Group LOS	A	A		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.69	3.42		8.79	8.72	8.70
50th-Percentile Queue Length [ft/ln]	142.20	85.59		219.7	218.0	217.6
95th-Percentile Queue Length [veh/ln]	9.60	6.16		13.65	13.56	13.54
95th-Percentile Queue Length [ft/ln]	239.98	154.06		341.3	339.1	338.5

Movement, Approach, & Intersection Results

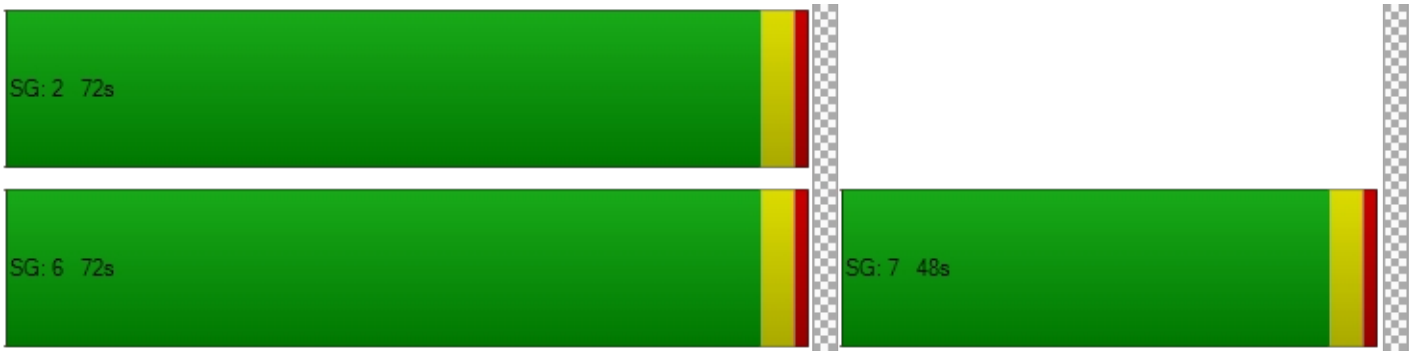
d_M, Delay for Movement [s/veh]	0.00	7.77	0.00	0.00	6.56	0.00	0.00	0.00	0.00	49.17	0.00	51.31
Movement LOS		A			A					D		D
d_A, Approach Delay [s/veh]	7.77			6.56			0.00			50.34		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	19.00											
Intersection LOS	B											
Intersection V/C	0.515											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1133	1133	0	733
d_b, Bicycle Delay [s]	11.27	11.27	60.00	24.07
l_b,int, Bicycle LOS Score for Intersection	2.490	2.204	4.132	2.993
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	47.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.936

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1339	389	0	1805	0	0	0	0	518	0	492
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.060	1.000	1.060	1.060	1.060	1.060	1.060	1.060	1.000	1.060
In-Process Volume [veh/h]	0	47	0	0	150	0	0	0	0	0	0	82
Site-Generated Trips [veh/h]	0	311	0	0	176	85	0	0	0	0	0	202
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1777	412	0	2239	85	0	0	0	549	0	806
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	0.950	0.950	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	468	108	0	589	22	0	0	0	144	0	212
Total Analysis Volume [veh/h]	0	1871	434	0	2357	89	0	0	0	578	0	848
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	50	0	0	50	0	0	0	0	70	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	46	46		66	66
g / C, Green / Cycle	0.38	0.38		0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.38	0.36		0.17	0.55
s, saturation flow rate [veh/h]	4903	6538		3329	1530
c, Capacity [veh/h]	1880	2506		1831	842
d1, Uniform Delay [s]	36.90	35.68		14.70	27.00
k, delay calibration	0.50	0.50		0.11	0.48
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	19.71	8.60		0.10	32.39
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.94		0.32	1.01
d, Delay for Lane Group [s/veh]	56.61	44.28		14.80	59.39
Lane Group LOS	E	D		B	F
Critical Lane Group	Yes	No		No	Yes
50th-Percentile Queue Length [veh/ln]	21.25	17.78		4.26	30.23
50th-Percentile Queue Length [ft/ln]	531.30	444.49		106.55	755.71
95th-Percentile Queue Length [veh/ln]	28.81	24.69		7.65	39.50
95th-Percentile Queue Length [ft/ln]	720.31	617.37		191.19	987.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	56.61	0.00	0.00	44.28	0.00	0.00	0.00	0.00	14.80	0.00	59.39
Movement LOS		E			D					B		F
d_A, Approach Delay [s/veh]	56.61			44.28			0.00			41.32		
Approach LOS	E			D			A			D		
d_I, Intersection Delay [s/veh]	47.61											
Intersection LOS	D											
Intersection V/C	0.936											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	767	0	1100
d_b, Bicycle Delay [s]	22.82	22.82	60.00	12.15
l_b,int, Bicycle LOS Score for Intersection	2.589	2.532	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.545

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1075	256	0	892	474	0	0	0	240	0	498
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.060	1.000	1.060
In-Process Volume [veh/h]	0	8	0	0	50	0	0	0	0	0	0	26
Site-Generated Trips [veh/h]	0	12	0	0	32	0	0	0	0	0	0	37
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1160	256	0	1028	474	0	0	0	254	0	591
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	305	67	0	271	125	0	0	0	67	0	156
Total Analysis Volume [veh/h]	0	1221	269	0	1082	499	0	0	0	267	0	622
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	57	0	0	57	0	0	0	0	63	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	81	81		31	31
g / C, Green / Cycle	0.67	0.67		0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.25	0.32		0.16	0.23
s, saturation flow rate [veh/h]	4903	3427		1714	2708
c, Capacity [veh/h]	3297	2305		447	706
d1, Uniform Delay [s]	8.57	9.40		38.83	42.56
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.32	0.69		1.28	3.79
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.47		0.60	0.88
d, Delay for Lane Group [s/veh]	8.89	10.09		40.11	46.35
Lane Group LOS	A	B		D	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	4.44	6.55		7.05	9.17
50th-Percentile Queue Length [ft/ln]	110.92	163.75		176.19	229.14
95th-Percentile Queue Length [veh/ln]	7.89	10.75		11.40	14.13
95th-Percentile Queue Length [ft/ln]	197.28	268.68		285.03	353.27

Movement, Approach, & Intersection Results

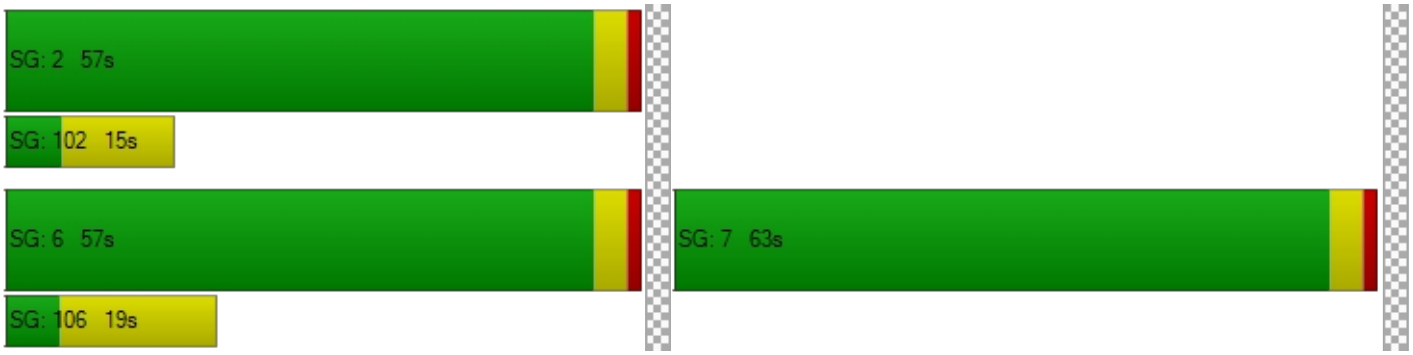
d_M, Delay for Movement [s/veh]	0.00	8.89	0.00	0.00	10.09	0.00	0.00	0.00	0.00	40.11	0.00	46.35
Movement LOS		A			B					D		D
d_A, Approach Delay [s/veh]	8.89			10.09			0.00			44.47		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	19.21											
Intersection LOS	B											
Intersection V/C	0.545											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.363
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	883	883	0	983
d_b, Bicycle Delay [s]	18.70	18.70	60.00	15.50
l_b,int, Bicycle LOS Score for Intersection	2.231	2.452	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1287	562	0	969	394	298	0	392	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.060	1.000	1.000	1.060	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	8	0	0	5	0	8	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	0	12	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1383	562	0	1044	394	306	0	392	0	0	0
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	1.000	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	364	148	0	275	104	81	0	103	0	0	0
Total Analysis Volume [veh/h]	0	1456	592	0	1099	415	322	0	413	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	34	0	0	34	0	86	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	76	76	36	36	
g / C, Green / Cycle	0.64	0.64	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.30	0.32	0.10	0.27	
s, saturation flow rate [veh/h]	4903	3427	3329	1530	
c, Capacity [veh/h]	3120	2181	989	454	
d1, Uniform Delay [s]	11.29	11.68	32.83	40.61	
k, delay calibration	0.50	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.50	0.84	0.19	7.25	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.47	0.50	0.33	0.91	
d, Delay for Lane Group [s/veh]	11.79	12.52	33.02	47.86	
Lane Group LOS	B	B	C	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	6.50	7.70	3.69	12.55	
50th-Percentile Queue Length [ft/ln]	162.61	192.59	92.34	313.87	
95th-Percentile Queue Length [veh/ln]	10.69	12.26	6.65	18.37	
95th-Percentile Queue Length [ft/ln]	267.17	306.39	166.21	459.15	

Movement, Approach, & Intersection Results

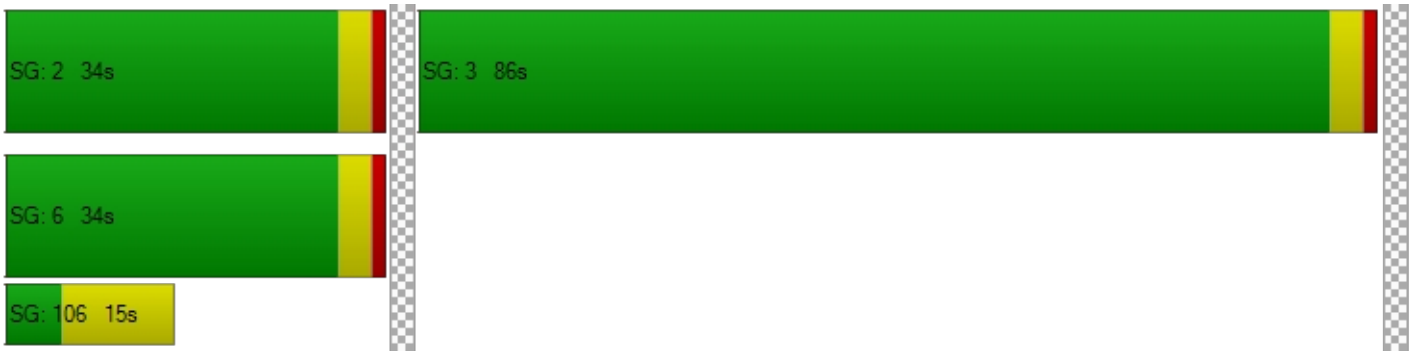
d_M, Delay for Movement [s/veh]	0.00	11.79	0.00	0.00	12.52	0.00	33.02	0.00	47.86	0.00	0.00	0.00
Movement LOS		B			B		C		D			
d_A, Approach Delay [s/veh]	11.79			12.52			41.36			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	18.64											
Intersection LOS	B											
Intersection V/C	0.591											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	500	1367	0
d_b, Bicycle Delay [s]	33.75	33.75	6.02	60.00
l_b,int, Bicycle LOS Score for Intersection	2.360	2.466	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	48.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1236	419	513	1182	0	509	43	548	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	39	0	123	28	0	7	0	0	0	0	0
Site-Generated Trips [veh/h]	0	60	0	119	57	0	233	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1409	444	786	1338	0	780	46	581	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	371	117	207	352	0	205	12	153	0	0	0
Total Analysis Volume [veh/h]	0	1483	467	827	1408	0	821	48	612	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	41	0	35	76	0	0	44	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	37	37	31	72	40	40	40	
g / C, Green / Cycle	0.31	0.31	0.26	0.60	0.33	0.33	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.30	0.31	0.25	0.29	0.29	0.29	0.32	
s, saturation flow rate [veh/h]	4903	1530	3329	4903	1714	1674	1530	
c, Capacity [veh/h]	1512	472	860	2942	571	558	510	
d1, Uniform Delay [s]	41.15	41.31	43.91	13.47	37.45	37.82	39.37	
k, delay calibration	0.50	0.50	0.11	0.50	0.36	0.38	0.44	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	19.03	39.02	7.80	0.56	12.06	14.58	30.22	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.98	0.99	0.96	0.48	0.86	0.88	0.97	
d, Delay for Lane Group [s/veh]	60.18	80.34	51.71	14.03	49.52	52.40	69.59	
Lane Group LOS	E	F	D	B	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	16.96	18.67	12.95	7.03	15.32	15.80	18.38	
50th-Percentile Queue Length [ft/ln]	423.98	466.81	323.66	175.81	383.0	394.9	459.4	
95th-Percentile Queue Length [veh/ln]	23.71	25.76	18.85	11.38	21.74	22.32	25.41	
95th-Percentile Queue Length [ft/ln]	592.83	643.97	471.18	284.53	543.5	557.9	635.1	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	60.18	80.34	51.71	14.03	0.00	50.67	52.40	66.27	0.00	0.00	0.00
Movement LOS		E	F	D	B		D	D	E			
d_A, Approach Delay [s/veh]	65.01			27.97			57.17			0.00		
Approach LOS	E			C			E			A		
d_I, Intersection Delay [s/veh]	48.35											
Intersection LOS	D											
Intersection V/C	0.876											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.507	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	1200	667	0
d_b, Bicycle Delay [s]	28.70	9.60	26.67	60.00
I_b,int, Bicycle LOS Score for Intersection	2.632	2.789	4.003	4.132
Bicycle LOS	B	C	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.718

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	893	509	501	647	0	451	7	212	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.060	1.000	1.000	1.000
In-Process Volume [veh/h]	0	8	0	45	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	20	12	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	967	540	596	703	0	478	7	225	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	254	142	157	185	0	126	2	59	0	0	0
Total Analysis Volume [veh/h]	0	1018	568	627	740	0	503	7	237	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	48	0	43	91	0	0	29	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	61	61	26	90	22	22	
g / C, Green / Cycle	0.51	0.51	0.21	0.75	0.18	0.18	
(v / s)_i Volume / Saturation Flow Rate	0.30	0.37	0.19	0.22	0.15	0.16	
s, saturation flow rate [veh/h]	3427	1530	3329	3427	3329	1537	
c, Capacity [veh/h]	1729	772	715	2579	602	278	
d1, Uniform Delay [s]	20.95	23.43	45.60	4.69	47.43	47.86	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.18	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.48	6.17	3.66	0.28	3.15	13.65	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.59	0.74	0.88	0.29	0.84	0.88	
d, Delay for Lane Group [s/veh]	22.43	29.60	49.25	4.97	50.57	61.51	
Lane Group LOS	C	C	D	A	D	E	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	10.21	13.61	9.37	2.63	7.50	8.14	
50th-Percentile Queue Length [ft/ln]	255.15	340.36	234.20	65.74	187.50	203.49	
95th-Percentile Queue Length [veh/ln]	15.45	19.67	14.39	4.73	11.99	12.82	
95th-Percentile Queue Length [ft/ln]	386.14	491.64	359.69	118.33	299.78	320.46	

Movement, Approach, & Intersection Results

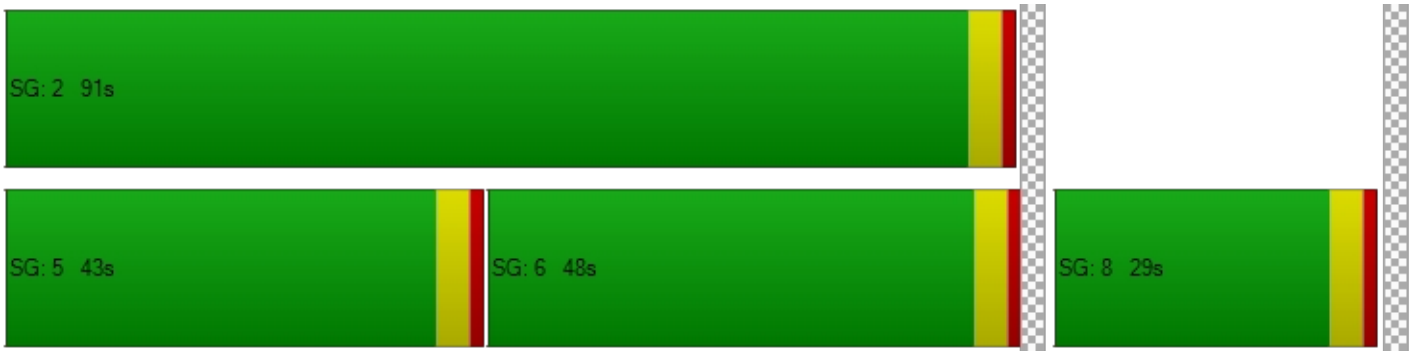
d_M, Delay for Movement [s/veh]	0.00	22.43	29.60	49.25	4.97	0.00	50.57	61.51	61.51	0.00	0.00	0.00
Movement LOS		C	C	D	A		D	E	E			
d_A, Approach Delay [s/veh]	25.00			25.28			54.14			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	30.99											
Intersection LOS	C											
Intersection V/C	0.718											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	1450	417	0
d_b, Bicycle Delay [s]	24.07	4.54	37.60	60.00
l_b,int, Bicycle LOS Score for Intersection	2.432	2.687	2.792	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	54.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.035

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	512	1223	467	480	861	796	914	0	457	463	0	566
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.000	1.060	1.060	1.000	1.060
In-Process Volume [veh/h]	0	8	0	16	5	0	0	0	0	0	0	11
Site-Generated Trips [veh/h]	0	12	0	9	12	0	0	0	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	543	1316	495	534	930	844	969	0	484	491	0	627
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	1.000	0.950	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	143	346	130	141	245	222	255	0	127	129	0	165
Total Analysis Volume [veh/h]	572	1385	521	562	979	888	1020	0	509	517	0	660
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	85	0	0	85	0	35	0	0	35	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	81	81	81	81	31	31
g / C, Green / Cycle	0.68	0.68	0.68	0.68	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.50	0.28	0.73	0.20	0.31	0.16
s, saturation flow rate [veh/h]	1134	4903	771	4903	3329	3329
c, Capacity [veh/h]	716	3310	470	3310	860	860
d1, Uniform Delay [s]	21.53	8.83	32.13	7.92	44.50	39.07
k, delay calibration	0.50	0.50	0.50	0.50	0.15	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.10	0.39	106.89	0.23	87.60	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.42	1.19	0.30	1.19	0.60
d, Delay for Lane Group [s/veh]	30.63	9.22	139.02	8.15	132.10	39.75
Lane Group LOS	C	A	F	A	F	D
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.35	5.23	14.14	3.31	23.13	6.76
50th-Percentile Queue Length [ft/ln]	183.82	130.86	353.62	82.78	578.13	169.10
95th-Percentile Queue Length [veh/ln]	11.80	8.99	23.02	5.96	34.12	11.03
95th-Percentile Queue Length [ft/ln]	294.99	224.66	575.52	149.00	852.92	275.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.63	9.22	0.00	139.0	8.15	0.00	132.1	0.00	0.00	39.75	0.00	0.00
Movement LOS	C	A		F	A		F			D		
d_A, Approach Delay [s/veh]	15.48			55.88			132.10			39.75		
Approach LOS	B			E			F			D		
d_I, Intersection Delay [s/veh]	53.96											
Intersection LOS	D											
Intersection V/C	1.035											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.439	3.325
Crosswalk LOS	F	F	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1350	1350	517	517
d_b, Bicycle Delay [s]	6.34	6.34	33.00	33.00
l_b,int, Bicycle LOS Score for Intersection	2.636	2.407	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	40.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.766

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	174	1468	329	62	520	118	237	979	186	107	541	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	8	8	0	0	0	8	0	5	5	5
Site-Generated Trips [veh/h]	0	0	12	12	0	0	0	12	0	12	12	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	184	1556	369	86	551	125	251	1058	197	130	590	125
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	48	409	97	23	145	33	66	278	52	34	155	33
Total Analysis Volume [veh/h]	194	1638	388	91	580	132	264	1114	207	137	621	132
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	36	46	0	9	19	0	38	50	0	15	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	46	46	5	41	41	21	42	42	11	33	33
g / C, Green / Cycle	0.08	0.38	0.38	0.04	0.35	0.35	0.17	0.35	0.35	0.09	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.06	0.33	0.25	0.03	0.12	0.09	0.15	0.33	0.14	0.08	0.18	0.09
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	262	1874	585	138	1691	528	295	1204	538	157	929	415
d1, Uniform Delay [s]	54.07	34.40	30.69	56.67	29.21	28.18	48.63	37.40	29.19	53.80	38.93	34.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	6.04	5.85	5.25	0.55	1.13	10.22	3.60	0.45	13.62	0.84	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.87	0.66	0.66	0.34	0.25	0.90	0.93	0.39	0.87	0.67	0.32
d, Delay for Lane Group [s/veh]	58.16	40.43	36.54	61.92	29.76	29.32	58.86	41.00	29.64	67.42	39.77	35.32
Lane Group LOS	E	D	D	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.02	15.57	10.16	1.46	4.24	2.90	8.55	16.06	4.55	4.67	8.23	3.14
50th-Percentile Queue Length [ft/ln]	75.41	389.2	253.9	36.51	105.9	72.55	213.7	401.6	113.8	116.8	205.6	78.57
95th-Percentile Queue Length [veh/ln]	5.43	22.04	15.38	2.63	7.62	5.22	13.35	22.64	8.05	8.22	12.93	5.66
95th-Percentile Queue Length [ft/ln]	135.7	551.0	384.5	65.72	190.3	130.5	333.6	565.9	201.3	205.4	323.2	141.4

Movement, Approach, & Intersection Results

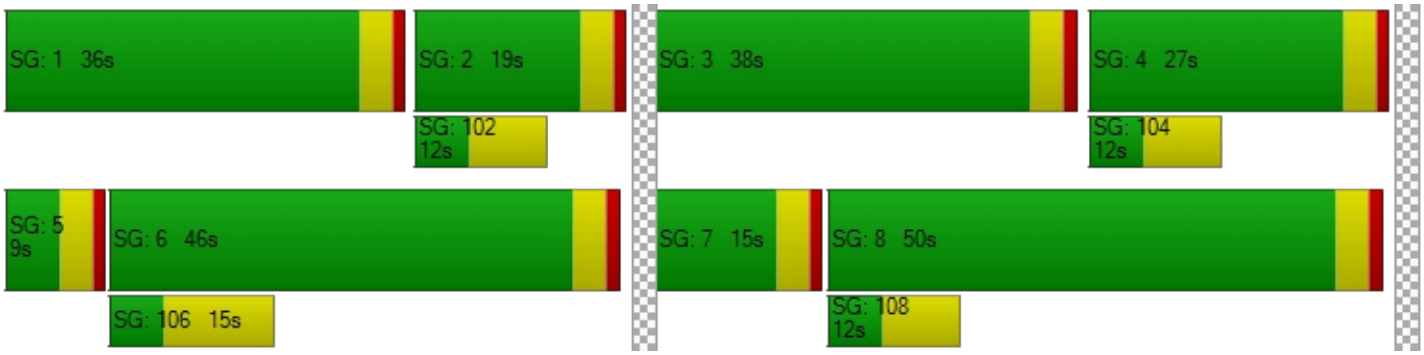
d_M, Delay for Movement [s/veh]	58.16	40.43	36.54	61.92	29.76	29.32	58.86	41.00	29.64	67.42	39.77	35.32
Movement LOS	E	D	D	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	41.30			33.33			42.49			43.36		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	40.81											
Intersection LOS	D											
Intersection V/C	0.766											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.205	3.172	2.880	2.872
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	250	767	383
d_b, Bicycle Delay [s]	25.35	45.94	22.82	39.20
l_b,int, Bicycle LOS Score for Intersection	2.781	2.001	2.867	2.294
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	39.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	55	791	257	87	219	179	347	879	21	68	490	173
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	0	0	0	0	0	0	24	0	0	15	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	36	0	0	36	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	838	272	92	232	190	368	992	22	72	570	183
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	221	72	24	61	50	97	261	6	19	150	48
Total Analysis Volume [veh/h]	61	882	286	97	244	200	387	1044	23	76	600	193
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	22	36	0	12	26	26	42	63	0	9	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	42	42	8	45	78	30	49	49	5	24	36
g / C, Green / Cycle	0.05	0.35	0.35	0.07	0.37	0.65	0.25	0.41	0.41	0.04	0.20	0.30
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.19	0.06	0.07	0.13	0.23	0.30	0.30	0.02	0.18	0.13
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1786	3329	3427	1530
c, Capacity [veh/h]	80	1210	540	114	1277	998	423	736	730	128	687	460
d1, Uniform Delay [s]	56.52	33.83	30.90	55.40	25.42	8.33	44.00	29.85	29.88	56.78	46.48	33.59
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.25	0.17	0.17	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.54	3.88	3.69	15.55	0.33	0.45	16.08	2.20	2.24	4.35	3.65	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.73	0.53	0.85	0.19	0.20	0.92	0.73	0.73	0.59	0.87	0.42
d, Delay for Lane Group [s/veh]	70.06	37.71	34.59	70.95	25.75	8.79	60.08	32.05	32.12	61.13	50.13	34.20
Lane Group LOS	E	D	C	E	C	A	E	C	C	E	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.13	11.75	7.12	3.40	2.42	2.12	13.00	13.26	13.20	1.21	8.99	4.59
50th-Percentile Queue Length [ft/ln]	53.27	293.6	178.1	84.89	60.58	53.03	325.0	331.5	330.0	30.29	224.7	114.7
95th-Percentile Queue Length [veh/ln]	3.84	17.37	11.50	6.11	4.36	3.82	18.92	19.23	19.16	2.18	13.91	8.10
95th-Percentile Queue Length [ft/ln]	95.89	434.1	287.5	152.8	109.0	95.46	472.8	480.8	479.0	54.52	347.6	202.5

Movement, Approach, & Intersection Results

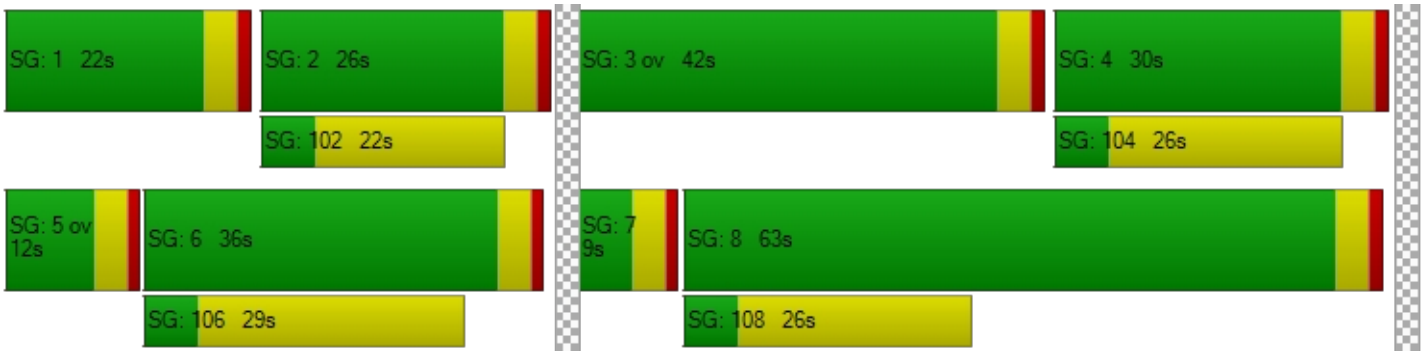
d_M, Delay for Movement [s/veh]	70.06	37.71	34.59	70.95	25.75	8.79	60.08	32.09	32.12	61.13	50.13	34.20
Movement LOS	E	D	C	E	C	A	E	C	C	E	D	C
d_A, Approach Delay [s/veh]	38.59			27.58			39.54			47.55		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.37											
Intersection LOS	D											
Intersection V/C	0.715											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.724	2.794	2.767	2.929
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	367	983	433
d_b, Bicycle Delay [s]	32.27	40.02	15.50	36.82
l_b,int, Bicycle LOS Score for Intersection	2.574	2.006	2.759	2.277
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	36.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	35	857	66	377	983	405	440	672	84	60	177	364
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	31	0	0	23	5	8	0	0	0	0	0
Site-Generated Trips [veh/h]	0	48	0	0	45	12	12	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	987	70	400	1110	446	486	712	89	64	188	386
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	260	18	105	292	117	128	187	23	17	49	102
Total Analysis Volume [veh/h]	39	1039	74	421	1168	469	512	749	94	67	198	406
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	9	33	0	20	44	44	24	58	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	4	52	52	16	64	88	20	32	32	4	16	36
g / C, Green / Cycle	0.03	0.43	0.43	0.13	0.53	0.73	0.17	0.27	0.27	0.04	0.14	0.30
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.22	0.13	0.24	0.31	0.15	0.24	0.24	0.02	0.06	0.27
s, saturation flow rate [veh/h]	1714	3427	1739	3329	4903	1530	3329	1800	1731	3329	3427	1530
c, Capacity [veh/h]	53	1473	748	444	2611	1121	555	479	461	124	469	464
d1, Uniform Delay [s]	57.69	24.85	24.86	51.59	17.21	6.19	49.24	42.41	42.49	56.74	47.45	39.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.32
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.36	1.22	2.40	10.95	0.56	1.15	6.97	6.33	6.99	3.59	0.61	14.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.50	0.50	0.95	0.45	0.42	0.92	0.89	0.90	0.54	0.42	0.87
d, Delay for Lane Group [s/veh]	76.05	26.07	27.26	62.54	17.77	7.34	56.21	48.74	49.48	60.34	48.06	53.68
Lane Group LOS	E	C	C	E	B	A	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.44	7.82	8.20	6.94	6.61	4.42	8.07	12.99	12.67	1.06	2.76	13.06
50th-Percentile Queue Length [ft/ln]	36.07	195.4	204.9	173.5	165.2	110.4	201.7	324.7	316.6	26.51	69.05	326.5
95th-Percentile Queue Length [veh/ln]	2.60	12.40	12.89	11.26	10.83	7.87	12.73	18.90	18.50	1.91	4.97	18.99
95th-Percentile Queue Length [ft/ln]	64.92	310.1	322.2	281.5	270.6	196.6	318.1	472.4	462.5	47.73	124.2	474.7

Movement, Approach, & Intersection Results

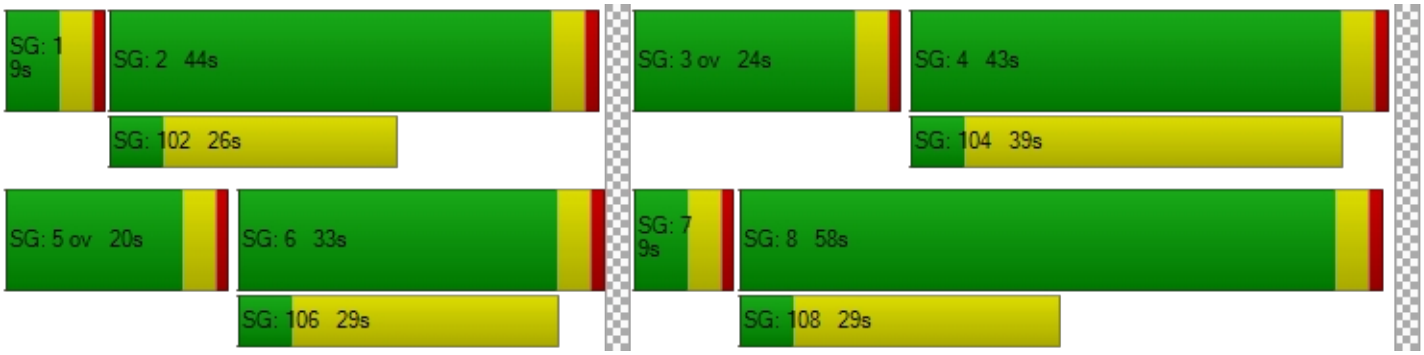
d_M, Delay for Movement [s/veh]	76.05	26.42	27.26	62.54	17.77	7.34	56.21	49.06	49.48	60.34	48.06	53.68
Movement LOS	E	C	C	E	B	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	28.15			24.55			51.79			52.69		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.00											
Intersection LOS	D											
Intersection V/C	0.666											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.043	3.373	2.803	2.876
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	667	900	650
d_b, Bicycle Delay [s]	34.50	26.67	18.15	27.34
l_b,int, Bicycle LOS Score for Intersection	2.193	2.692	2.677	2.113
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	550.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	33.585

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	8	601	29	67	890	130	243	49	30	13	21	83
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060	1.060
In-Process Volume [veh/h]	0	8	0	13	5	5	8	0	0	0	0	15
Site-Generated Trips [veh/h]	0	12	0	21	12	12	12	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	657	31	105	960	155	278	52	32	14	22	127
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	173	8	28	253	41	73	14	8	4	6	33
Total Analysis Volume [veh/h]	8	692	33	111	1011	163	293	55	34	15	23	134
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	12	12	5	16	16	91	91	91	91
g / C, Green / Cycle	0.01	0.10	0.10	0.04	0.13	0.13	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.00	0.14	0.14	0.06	0.23	0.23	33.35	0.02	0.61	0.09
s, saturation flow rate [veh/h]	1714	3427	1759	1714	3427	1675	10	1530	62	1530
c, Capacity [veh/h]	17	347	178	71	456	223	63	1159	89	1159
d1, Uniform Delay [s]	59.11	53.93	53.93	57.50	52.02	52.02	51.91	3.62	35.73	3.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.33	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.69	187.9	205.1	263.7	337.0	346.8	2063.67	0.01	9.68	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	1.38	1.39	1.55	1.73	1.73	5.51	0.03	0.43	0.12
d, Delay for Lane Group [s/veh]	78.80	241.9	259.1	321.2	389.0	398.8	2115.58	3.63	45.41	3.92
Lane Group LOS	E	F	F	F	F	F	F	A	D	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.33	14.27	15.50	7.40	28.19	28.17	38.13	0.18	1.17	0.78
50th-Percentile Queue Length [ft/ln]	8.34	356.8	387.4	184.9	704.8	704.1	953.22	4.59	29.17	19.41
95th-Percentile Queue Length [veh/ln]	0.60	22.87	24.60	13.03	44.40	44.37	68.63	0.33	2.10	1.40
95th-Percentile Queue Length [ft/ln]	15.01	571.8	615.0	325.8	1110.	1109.	1715.80	8.27	52.50	34.94

Movement, Approach, & Intersection Results

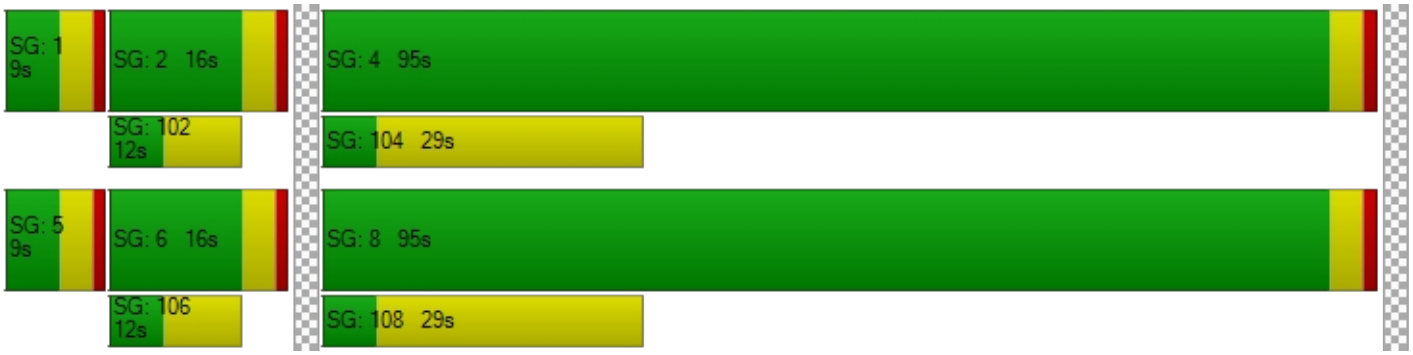
d_M, Delay for Movement [s/veh]	78.80	247.2	259.1	321.2	391.2	398.8	2115.	2115.	3.63	45.41	45.41	3.92
Movement LOS	E	F	F	F	F	F	F	F	A	D	D	A
d_A, Approach Delay [s/veh]	245.92			386.15			1927.60			13.09		
Approach LOS	F			F			F			B		
d_I, Intersection Delay [s/veh]	550.18											
Intersection LOS	F											
Intersection V/C	33.585											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.880	3.361	2.143	2.076
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	1.963	2.266	2.190	1.843
Bicycle LOS	A	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	41.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.793

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	523	49	0	0	56	627	534	0	409	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	523	49	0	0	56	627	534	0	409	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	131	12	0	0	14	157	134	0	102	0	0	0
Total Analysis Volume [veh/h]	523	49	0	0	56	627	534	0	409	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	55	69	0	9	23	23	0	33	0	0	9	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	39	80	80	0	40	73	24	24	24	0	0
g / C, Green / Cycle	0.33	0.66	0.66	0.00	0.34	0.61	0.20	0.20	0.20	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.31	0.01	0.01	0.00	0.02	0.42	0.16	0.16	0.15	0.00	0.00
s, saturation flow rate [veh/h]	1687	3373	1772	1687	3373	1506	1687	1687	2665	1687	1772
c, Capacity [veh/h]	554	2236	1174	1	1131	911	342	342	539	1	1
d1, Uniform Delay [s]	39.23	6.88	6.88	0.00	26.96	16.04	45.34	45.34	45.09	0.00	0.00
k, delay calibration	0.27	0.50	0.50	0.11	0.50	0.50	0.13	0.13	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.32	0.01	0.02	0.00	0.08	4.23	4.73	4.73	2.21	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.01	0.01	0.00	0.05	0.69	0.78	0.78	0.76	0.00	0.00
d, Delay for Lane Group [s/veh]	56.55	6.89	6.90	0.00	27.04	20.27	50.08	50.08	47.30	0.00	0.00
Lane Group LOS	E	A	A	A	C	C	D	D	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	17.45	0.14	0.15	0.00	0.56	12.12	7.97	7.97	5.89	0.00	0.00
50th-Percentile Queue Length [ft/ln]	436.2	3.47	3.73	0.00	14.04	302.9	199.1	199.1	147.2	0.00	0.00
95th-Percentile Queue Length [veh/ln]	24.30	0.25	0.27	0.00	1.01	17.83	12.60	12.60	9.87	0.00	0.00
95th-Percentile Queue Length [ft/ln]	607.5	6.24	6.71	0.00	25.27	445.6	314.9	314.9	246.8	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.55	6.90	6.90	0.00	27.04	20.27	50.08	50.08	47.30	0.00	0.00	0.00
Movement LOS	E	A	A	A	C	C	D	D	D	A	A	A
d_A, Approach Delay [s/veh]	52.29			20.83			48.87			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	41.05											
Intersection LOS	D											
Intersection V/C	0.793											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.754	0.000	2.808	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1083	317	483	83
d_b, Bicycle Delay [s]	12.60	42.50	34.50	55.10
I_b,int, Bicycle LOS Score for Intersection	1.874	2.123	3.116	1.560
Bicycle LOS	A	B	C	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-4

INTERSECTION ANALYSIS
WORKSHEETS –
OPENING YEAR 2027

Speedway Commerce Center

Vistro File: K:\...\Speedway CC AM.vistro
Report File: K:\...\5 OY 2027 CUM AM.pdf

Scenario 5 OY 2027 CUM AM
1/13/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.606	30.6	C
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.620	26.7	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.510	19.9	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.606	24.3	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.755	31.7	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.523	18.0	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.452	32.1	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.668	38.1	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.632	33.1	C
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.831	61.2	E
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.496	21.7	C
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.555	28.0	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.766	39.9	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.521	39.9	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	EB Left	0.922	55.3	E
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	EB Left	0.613	34.2	C
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.652	49.8	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	EB Right	1.012	44.1	D
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.700	27.7	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	NB Left	0.813	47.9	D
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.713	41.5	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	2.716	1,315.7	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.811	51.5	D
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	NB Left	0.733	43.5	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.784	43.7	D
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.784	45.5	D
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.525	26.9	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.784	49.0	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.625	38.0	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.682	25.8	C
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.813	42.0	D
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.434	43.5	E
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.483	19.9	B
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.600	24.9	C
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	WB Thru	0.926	37.4	E
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.573	30.4	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	NB Left	0.619	40.4	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.489	21.2	C
			HCM 6th				

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.648	35.7	D
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	WB Thru	1.133	85.3	F
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	WB Thru	0.867	30.1	D
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.594	34.2	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	NB Left	0.592	29.5	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Left	0.819	48.3	D
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	SB Right	0.712	61.4	E
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.564	34.5	C
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	EB Left	0.542	35.7	D
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.298	14.3	B
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.650	36.3	D
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	EB Left	0.532	32.8	C
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	SWB Thru	0.344	32.4	C
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.682	40.5	D
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	NB Left	0.708	31.5	C
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	WB Thru	0.348	10.2	B
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.488	27.4	C
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	SB Left	0.473	29.8	C
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.777	49.5	D
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.553	28.7	C
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Thru	0.022	91.8	F
			HCM 6th				

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Right	0.871	58.4	E
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	SB Left	0.770	36.4	D
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.542	23.9	C
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	SB Thru	0.907	40.4	D
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.592	21.5	C
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.816	30.8	C
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	EB Right	0.861	38.9	D
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.776	35.6	D
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	SB Left	0.768	28.5	C
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	EB Left	0.737	39.5	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	NB Left	0.731	37.5	D
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	EB Left	0.726	36.8	D
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	40.580	713.9	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition		0.000	0.0	A
998543	New Intersection	Unknown	?		?	?	?
998552	New Intersection	Unknown	?		?	?	?
998555	New Intersection	Unknown	?		?	?	?

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	30.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.606

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	166	303	0	0	712	200	0	0	0	360	4	252
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	14	6	0	0	4	0	0	0	0	17	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	200	345	0	0	801	224	0	0	0	420	4	282
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	53	91	0	0	211	59	0	0	0	111	1	74
Total Analysis Volume [veh/h]	211	363	0	0	843	236	0	0	0	442	4	297
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	24	53	0	0	29	0	0	0	0	0	67	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	17	78	57	57		34	34
g / C, Green / Cycle	0.14	0.65	0.48	0.48		0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.12	0.11	0.21	0.22		0.26	0.19
s, saturation flow rate [veh/h]	1714	3427	3427	1613		1715	1530
c, Capacity [veh/h]	239	2219	1628	766		490	437
d1, Uniform Delay [s]	50.70	8.33	20.92	21.27		41.37	37.98
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	10.40	0.16	0.87	2.06		6.87	1.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.16	0.44	0.47		0.91	0.68
d, Delay for Lane Group [s/veh]	61.11	8.49	21.79	23.33		48.24	39.84
Lane Group LOS	E	A	C	C		D	D
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	6.90	1.84	6.84	7.19		13.56	7.94
50th-Percentile Queue Length [ft/ln]	172.54	46.10	170.91	179.73		338.97	198.62
95th-Percentile Queue Length [veh/ln]	11.21	3.32	11.12	11.59		19.60	12.57
95th-Percentile Queue Length [ft/ln]	280.25	82.98	278.11	289.66		489.94	314.18

Movement, Approach, & Intersection Results

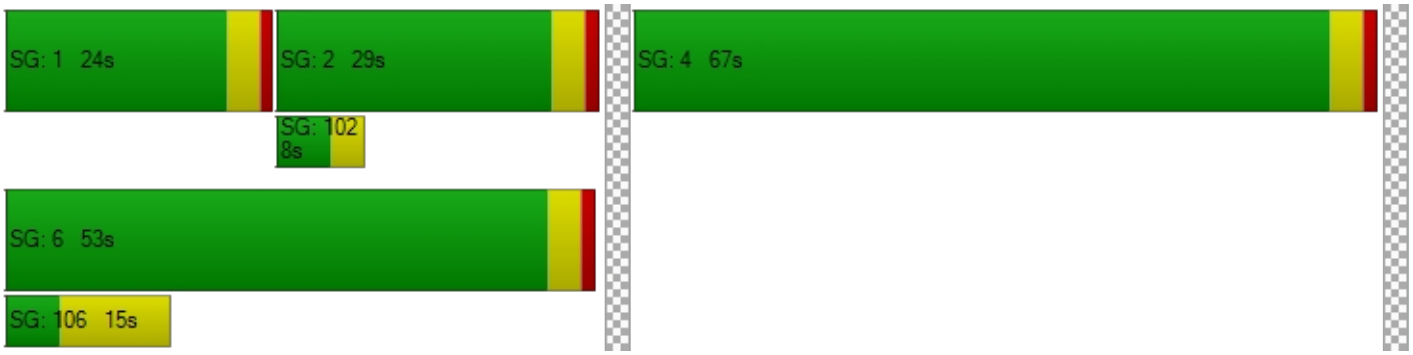
d_M, Delay for Movement [s/veh]	61.11	8.49	0.00	0.00	22.02	23.33	0.00	0.00	0.00	48.24	48.24	39.84
Movement LOS	E	A			C	C				D	D	D
d_A, Approach Delay [s/veh]	27.83			22.31			0.00			44.88		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	30.63											
Intersection LOS	C											
Intersection V/C	0.606											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.878	2.197
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	417	0	1050
d_b, Bicycle Delay [s]	21.00	37.60	60.00	13.54
l_b,int, Bicycle LOS Score for Intersection	2.033	2.153	4.132	2.786
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	26.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.620

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	302	906	0	0	822	355	0	0	0	421	1	309
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	0	6	0	0	4	0	0	0	0	5	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	338	1021	0	0	925	398	0	0	0	477	1	346
Peak Hour Factor	0.964	0.964	1.000	1.000	0.964	0.964	1.000	1.000	1.000	0.964	0.964	0.964
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	88	265	0	0	240	103	0	0	0	124	0	90
Total Analysis Volume [veh/h]	351	1059	0	0	960	413	0	0	0	495	1	359
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	20	61	0	0	41	0	0	0	0	0	59	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	15	81	62	62		31	31	31
g / C, Green / Cycle	0.12	0.67	0.52	0.52		0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.11	0.31	0.28	0.27		0.14	0.14	0.23
s, saturation flow rate [veh/h]	3329	3427	3427	1530		1714	1715	1530
c, Capacity [veh/h]	406	2298	1765	788		451	451	402
d1, Uniform Delay [s]	51.71	9.43	19.59	19.32		38.11	38.11	42.59
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	5.60	0.67	1.21	2.49		1.05	1.05	7.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.46	0.54	0.52		0.55	0.55	0.89
d, Delay for Lane Group [s/veh]	57.31	10.10	20.80	21.81		39.16	39.16	49.60
Lane Group LOS	E	B	C	C		D	D	D
Critical Lane Group	Yes	No	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.49	6.40	9.13	8.04		6.43	6.43	10.97
50th-Percentile Queue Length [ft/ln]	137.31	160.12	228.31	201.03		160.6	160.6	274.1
95th-Percentile Queue Length [veh/ln]	9.34	10.56	14.09	12.69		10.58	10.58	16.40
95th-Percentile Queue Length [ft/ln]	233.40	263.88	352.22	317.29		264.5	264.5	409.9

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.31	10.10	0.00	0.00	20.80	21.81	0.00	0.00	0.00	39.16	39.16	49.60
Movement LOS	E	B			C	C				D	D	D
d_A, Approach Delay [s/veh]	21.85			21.10			0.00			43.54		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	26.67											
Intersection LOS	C											
Intersection V/C	0.620											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.103	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	617	0	917
d_b, Bicycle Delay [s]	16.54	28.70	60.00	17.60
l_b,int, Bicycle LOS Score for Intersection	2.723	2.692	4.132	2.970
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.510

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	792	0	0	1079	0	0	0	0	510	0	291
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	0	6	0	0	4	0	0	0	0	2	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	893	0	0	1212	0	0	0	0	573	0	326
Peak Hour Factor	1.000	0.869	1.000	1.000	0.869	1.000	1.000	1.000	1.000	0.869	0.869	0.869
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	257	0	0	349	0	0	0	0	165	0	94
Total Analysis Volume [veh/h]	0	1028	0	0	1395	0	0	0	0	659	0	375
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	58	0	0	58	0	0	0	0	0	62	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	81	81		31	31	31
g / C, Green / Cycle	0.68	0.68		0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.21	0.28		0.20	0.20	0.23
s, saturation flow rate [veh/h]	4903	4903		1714	1696	1530
c, Capacity [veh/h]	3312	3312		442	437	394
d1, Uniform Delay [s]	7.99	8.83		41.37	41.48	42.66
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.24	0.39		3.02	3.20	6.16
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.42		0.78	0.79	0.87
d, Delay for Lane Group [s/veh]	8.24	9.22		44.39	44.68	48.82
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.50	5.26		9.81	9.85	10.41
50th-Percentile Queue Length [ft/ln]	87.55	131.46		245.2	246.3	260.2
95th-Percentile Queue Length [veh/ln]	6.30	9.02		14.95	15.00	15.70
95th-Percentile Queue Length [ft/ln]	157.59	225.47		373.7	375.0	392.5

Movement, Approach, & Intersection Results

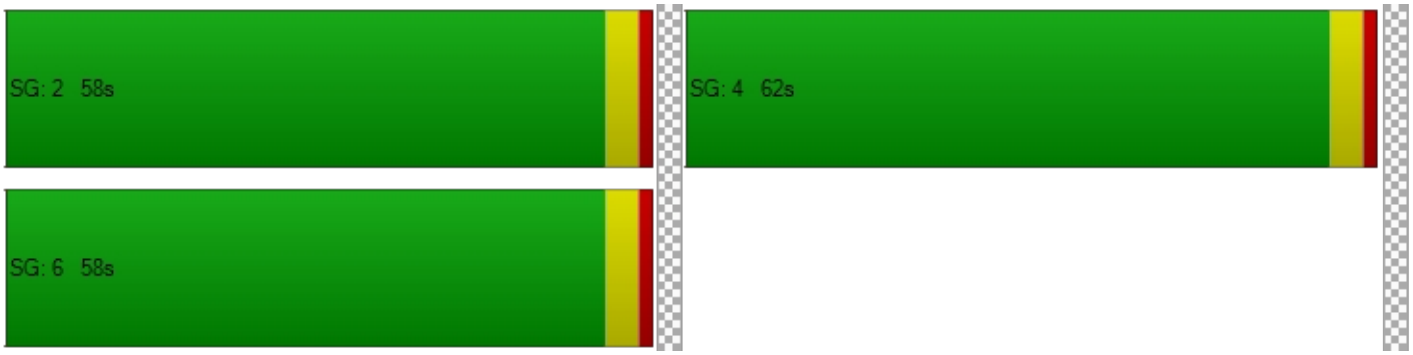
d_M, Delay for Movement [s/veh]	0.00	8.24	0.00	0.00	9.22	0.00	0.00	0.00	0.00	44.53	44.68	48.48
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	8.24			9.22			0.00			45.96		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	19.92											
Intersection LOS	B											
Intersection V/C	0.510											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	900	0	967
d_b, Bicycle Delay [s]	18.15	18.15	60.00	16.02
l_b,int, Bicycle LOS Score for Intersection	2.125	2.327	4.132	3.266
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.606

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	427	319	160	805	0	153	5	296	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	20	22	0	21	0	0	0	12	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	498	379	179	923	0	171	6	344	0	0	0
Peak Hour Factor	1.000	0.952	0.952	0.952	0.952	1.000	0.952	0.952	0.952	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	131	100	47	242	0	45	2	90	0	0	0
Total Analysis Volume [veh/h]	0	523	398	188	970	0	180	6	361	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	38	0	19	57	0	0	63	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	62	62	15	81	31	31	
g / C, Green / Cycle	0.52	0.52	0.12	0.67	0.26	0.26	
(v / s)_i Volume / Saturation Flow Rate	0.15	0.26	0.11	0.28	0.11	0.24	
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1717	1530	
c, Capacity [veh/h]	1770	790	213	2310	445	397	
d1, Uniform Delay [s]	16.56	18.97	51.68	8.89	36.91	43.08	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.43	2.29	11.26	0.56	0.63	8.22	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.30	0.50	0.88	0.42	0.42	0.91	
d, Delay for Lane Group [s/veh]	16.99	21.26	62.94	9.46	37.54	51.30	
Lane Group LOS	B	C	E	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	4.18	7.61	6.22	5.56	4.63	11.22	
50th-Percentile Queue Length [ft/ln]	104.55	190.25	155.53	139.09	115.77	280.50	
95th-Percentile Queue Length [veh/ln]	7.53	12.13	10.31	9.43	8.16	16.71	
95th-Percentile Queue Length [ft/ln]	188.19	303.36	257.79	235.80	204.00	417.83	

Movement, Approach, & Intersection Results

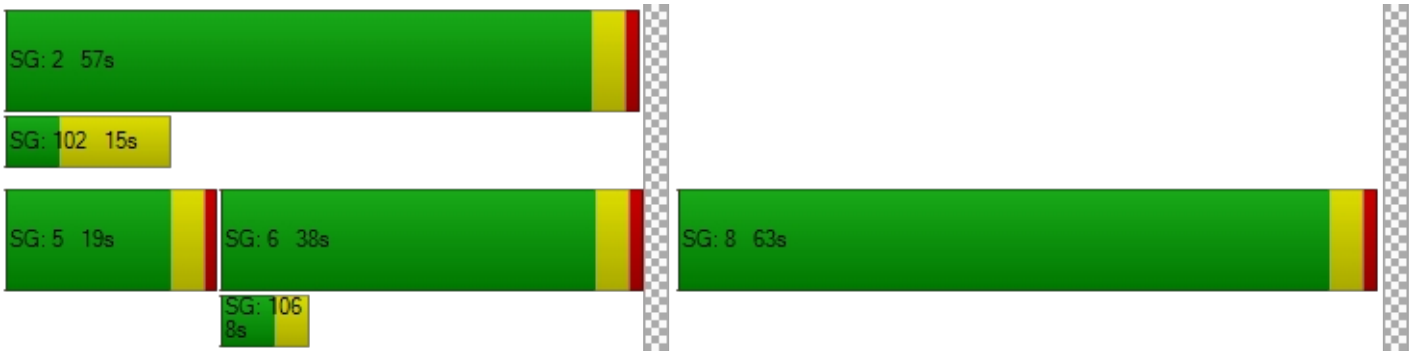
d_M, Delay for Movement [s/veh]	0.00	16.99	21.26	62.94	9.46	0.00	37.54	37.54	51.30	0.00	0.00	0.00
Movement LOS		B	C	E	A		D	D	D			
d_A, Approach Delay [s/veh]	18.84			18.14			46.62			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	24.32											
Intersection LOS	C											
Intersection V/C	0.606											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.133	2.016
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	883	983	0
d_b, Bicycle Delay [s]	30.82	18.70	15.50	60.00
l_b,int, Bicycle LOS Score for Intersection	2.066	2.515	2.462	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	817	408	302	931	0	411	3	402	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	6	7	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	921	464	338	1052	0	460	3	450	0	0	0
Peak Hour Factor	1.000	0.966	0.966	0.966	0.966	1.000	0.966	0.966	0.966	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	238	120	87	272	0	119	1	116	0	0	0
Total Analysis Volume [veh/h]	0	953	480	350	1089	0	476	3	466	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	64	0	19	83	0	0	37	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	66	66	14	84	28	28	28	
g / C, Green / Cycle	0.55	0.55	0.12	0.70	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.40	0.45	0.11	0.32	0.19	0.19	0.20	
s, saturation flow rate [veh/h]	1800	1610	3329	3427	1714	1620	1530	
c, Capacity [veh/h]	988	883	402	2409	395	373	353	
d1, Uniform Delay [s]	20.30	22.02	51.83	7.77	43.60	44.11	44.66	
k, delay calibration	0.50	0.50	0.11	0.50	0.21	0.24	0.27	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.64	8.00	5.90	0.62	7.31	10.77	16.15	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.73	0.81	0.87	0.45	0.80	0.84	0.89	
d, Delay for Lane Group [s/veh]	24.94	30.02	57.73	8.38	50.90	54.88	60.81	
Lane Group LOS	C	C	E	A	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	15.72	17.63	5.50	5.79	9.67	10.03	10.54	
50th-Percentile Queue Length [ft/ln]	392.91	440.78	137.43	144.81	241.7	250.7	263.5	
95th-Percentile Queue Length [veh/ln]	22.22	24.52	9.34	9.74	14.77	15.22	15.87	
95th-Percentile Queue Length [ft/ln]	555.45	612.94	233.56	243.48	369.2	380.5	396.6	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	26.20	30.02	57.73	8.38	0.00	52.24	54.88	58.88	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	E			
d_A, Approach Delay [s/veh]	27.48			20.38			55.51			0.00		
Approach LOS	C			C			E			A		
d_I, Intersection Delay [s/veh]	31.74											
Intersection LOS	C											
Intersection V/C	0.755											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.377	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	1317	550	0
d_b, Bicycle Delay [s]	15.00	7.00	31.54	60.00
l_b,int, Bicycle LOS Score for Intersection	2.742	2.747	3.119	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.523

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	946	463	0	1265	26	160	0	553	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.000	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	6	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1066	519	0	1423	26	179	0	619	0	0	0
Peak Hour Factor	1.000	0.942	0.942	1.000	0.942	1.000	0.942	0.942	0.942	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	283	138	0	378	7	48	0	164	0	0	0
Total Analysis Volume [veh/h]	0	1132	551	0	1511	26	190	0	657	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	63	0	0	63	0	0	57	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	83	83	29	29	29	
g / C, Green / Cycle	0.69	0.69	0.24	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.23	0.31	0.11	0.21	0.21	
s, saturation flow rate [veh/h]	4903	4903	1714	1530	1530	
c, Capacity [veh/h]	3376	3376	420	375	375	
d1, Uniform Delay [s]	7.57	8.41	38.48	43.58	43.58	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.27	0.43	0.76	6.62	6.62	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.34	0.45	0.45	0.88	0.88	
d, Delay for Lane Group [s/veh]	7.84	8.84	39.25	50.19	50.19	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	3.75	5.57	4.86	10.02	10.02	
50th-Percentile Queue Length [ft/ln]	93.73	139.35	121.4	250.5	250.5	
95th-Percentile Queue Length [veh/ln]	6.75	9.45	8.47	15.22	15.22	
95th-Percentile Queue Length [ft/ln]	168.72	236.15	211.8	380.3	380.3	

Movement, Approach, & Intersection Results

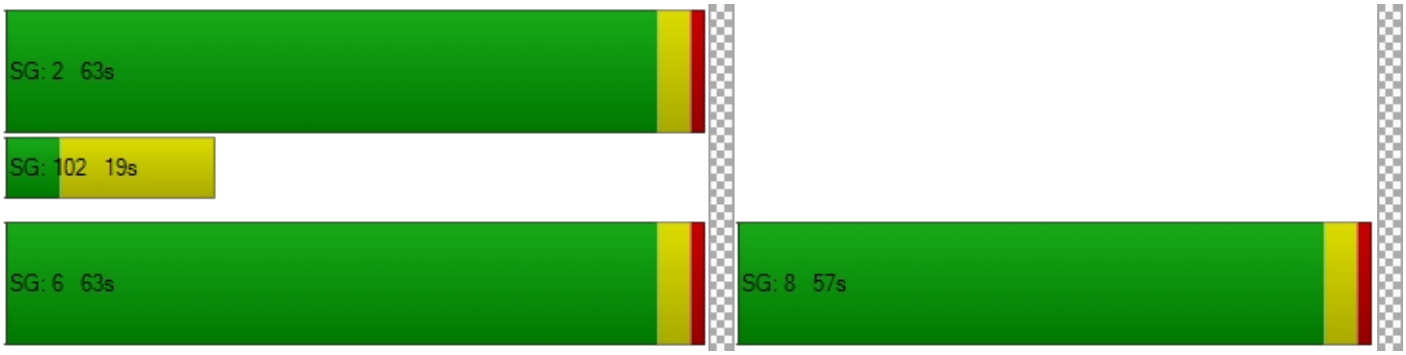
d_M, Delay for Movement [s/veh]	0.00	7.84	0.00	0.00	8.84	0.00	39.25	50.19	50.19	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	7.84			8.84			47.74			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	17.96											
Intersection LOS	B											
Intersection V/C	0.523											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.353	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	983	883	0
d_b, Bicycle Delay [s]	15.50	15.50	18.70	60.00
I_b,int, Bicycle LOS Score for Intersection	2.182	2.391	2.957	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	37	570	67	55	502	93	117	199	75	90	208	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	638	75	62	562	104	131	223	84	101	233	68
Peak Hour Factor	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	12	179	21	17	158	29	37	63	24	28	65	19
Total Analysis Volume [veh/h]	46	716	84	70	631	117	147	250	94	113	262	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	30	0	14	32	0	48	61	0	15	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	71	71	6	73	73	12	17	17	10	14	14
g / C, Green / Cycle	0.03	0.59	0.59	0.05	0.61	0.61	0.10	0.14	0.14	0.08	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.23	0.23	0.04	0.21	0.21	0.09	0.10	0.10	0.07	0.10	0.10
s, saturation flow rate [veh/h]	1714	1800	1735	1714	1800	1703	1714	1800	1636	1714	1800	1664
c, Capacity [veh/h]	59	1064	1026	89	1096	1037	178	258	235	137	216	199
d1, Uniform Delay [s]	57.50	12.96	12.96	56.23	11.67	11.67	52.72	48.84	48.97	54.37	51.45	51.58
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.90	1.04	1.08	14.08	0.88	0.94	9.31	3.27	3.85	11.62	6.94	8.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.38	0.38	0.79	0.35	0.35	0.83	0.69	0.71	0.82	0.81	0.82
d, Delay for Lane Group [s/veh]	77.40	14.00	14.04	70.31	12.55	12.61	62.02	52.11	52.82	65.99	58.40	59.84
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.71	5.95	5.75	2.44	5.21	4.96	4.80	5.32	4.99	3.80	5.51	5.28
50th-Percentile Queue Length [ft/ln]	42.75	148.7	143.7	61.10	130.3	123.8	120.0	132.9	124.7	95.09	137.6	131.9
95th-Percentile Queue Length [veh/ln]	3.08	9.95	9.68	4.40	8.96	8.61	8.40	9.10	8.65	6.85	9.35	9.05
95th-Percentile Queue Length [ft/ln]	76.95	248.7	241.9	109.9	223.9	215.1	209.9	227.4	216.2	171.1	233.8	226.1

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	77.40	14.02	14.04	70.31	12.57	12.61	62.02	52.32	52.82	65.99	58.88	59.84
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	17.47			17.52			55.32			60.83		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	32.12											
Intersection LOS	C											
Intersection V/C	0.452											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.643	2.658	2.494	2.607
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	467	950	400
d_b, Bicycle Delay [s]	36.82	35.27	16.54	38.40
l_b,int, Bicycle LOS Score for Intersection	2.258	2.234	1.965	1.932
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	38.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	75	725	72	337	942	150	215	192	53	91	197	246
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	13	0	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	825	81	377	1064	168	241	215	59	102	221	276
Peak Hour Factor	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	23	225	22	103	290	46	66	59	16	28	60	75
Total Analysis Volume [veh/h]	92	899	88	411	1159	183	263	234	64	111	241	301
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	40	0	21	49	0	15	37	0	22	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	50	50	17	59	59	11	28	28	10	26	26
g / C, Green / Cycle	0.07	0.42	0.42	0.14	0.49	0.49	0.09	0.23	0.23	0.08	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.06	0.12	0.34	0.12	0.08	0.07	0.04	0.06	0.13	0.20
s, saturation flow rate [veh/h]	1714	3427	1530	3329	3427	1530	3329	3427	1530	1714	1800	1530
c, Capacity [veh/h]	114	1429	638	462	1676	748	305	789	352	139	395	336
d1, Uniform Delay [s]	55.26	27.66	21.65	50.79	23.66	17.79	53.75	38.16	37.11	54.19	42.20	45.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.59	2.11	0.45	6.10	2.37	0.78	7.13	0.21	0.24	10.08	1.53	11.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.63	0.14	0.89	0.69	0.24	0.86	0.30	0.18	0.80	0.61	0.90
d, Delay for Lane Group [s/veh]	67.86	29.77	22.10	56.89	26.03	18.56	60.88	38.37	37.35	64.27	43.73	57.12
Lane Group LOS	E	C	C	E	C	B	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.14	10.49	1.62	6.45	12.92	3.10	4.21	2.88	1.54	3.69	6.61	9.76
50th-Percentile Queue Length [ft/ln]	78.58	262.3	40.59	161.1	322.9	77.44	105.3	72.04	38.62	92.13	165.2	243.9
95th-Percentile Queue Length [veh/ln]	5.66	15.81	2.92	10.61	18.81	5.58	7.58	5.19	2.78	6.63	10.83	14.88
95th-Percentile Queue Length [ft/ln]	141.4	395.1	73.07	265.2	470.3	139.4	189.5	129.6	69.51	165.8	270.6	372.0

Movement, Approach, & Intersection Results

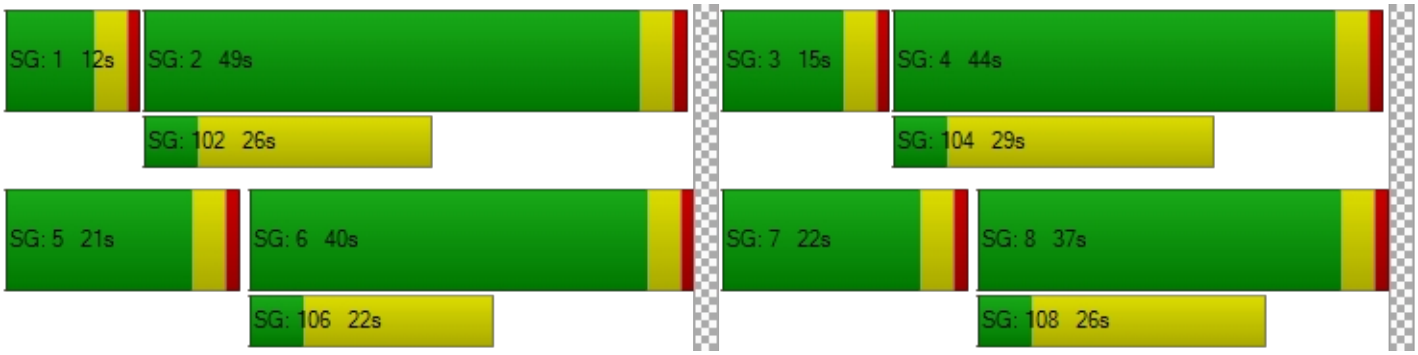
d_M, Delay for Movement [s/veh]	67.86	29.77	22.10	56.89	26.03	18.56	60.88	38.37	37.35	64.27	43.73	57.12
Movement LOS	E	C	C	E	C	B	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	32.39			32.48			48.81			53.39		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.10											
Intersection LOS	D											
Intersection V/C	0.668											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.860	3.057	2.759	2.693
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	750	550	667
d_b, Bicycle Delay [s]	29.40	23.44	31.54	26.67
l_b,int, Bicycle LOS Score for Intersection	2.450	3.006	2.022	2.637
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	33.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.632

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	160	919	38	219	1191	403	291	252	173	16	252	199
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	9	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	1038	43	245	1340	451	326	282	194	18	282	223
Peak Hour Factor	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	48	277	11	65	357	120	87	75	52	5	75	59
Total Analysis Volume [veh/h]	191	1107	46	261	1429	481	348	301	207	19	301	238
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	34	0	23	45	0	20	54	0	9	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	56	56	12	60	60	15	34	34	2	21	21
g / C, Green / Cycle	0.07	0.47	0.47	0.10	0.50	0.50	0.12	0.28	0.28	0.02	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.23	0.03	0.08	0.29	0.31	0.10	0.09	0.14	0.01	0.09	0.16
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	222	2299	717	325	2451	765	403	960	429	66	614	274
d1, Uniform Delay [s]	55.45	21.86	17.45	53.00	21.18	21.88	51.77	34.08	35.95	57.97	44.33	47.89
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.41	0.72	0.17	4.61	1.02	3.90	5.60	0.18	0.84	2.34	0.61	8.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.48	0.06	0.80	0.58	0.63	0.86	0.31	0.48	0.29	0.49	0.87
d, Delay for Lane Group [s/veh]	64.85	22.59	17.62	57.61	22.20	25.78	57.37	34.27	36.80	60.31	44.94	56.14
Lane Group LOS	E	C	B	E	C	C	E	C	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.15	7.21	0.74	4.06	9.49	10.49	5.45	3.51	5.16	0.31	4.09	7.53
50th-Percentile Queue Length [ft/ln]	78.74	180.1	18.40	101.5	237.2	262.2	136.1	87.73	128.9	7.66	102.3	188.2
95th-Percentile Queue Length [veh/ln]	5.67	11.61	1.32	7.31	14.54	15.80	9.27	6.32	8.88	0.55	7.37	12.03
95th-Percentile Queue Length [ft/ln]	141.7	290.2	33.12	182.7	363.5	394.9	231.8	157.9	222.0	13.78	184.2	300.8

Movement, Approach, & Intersection Results

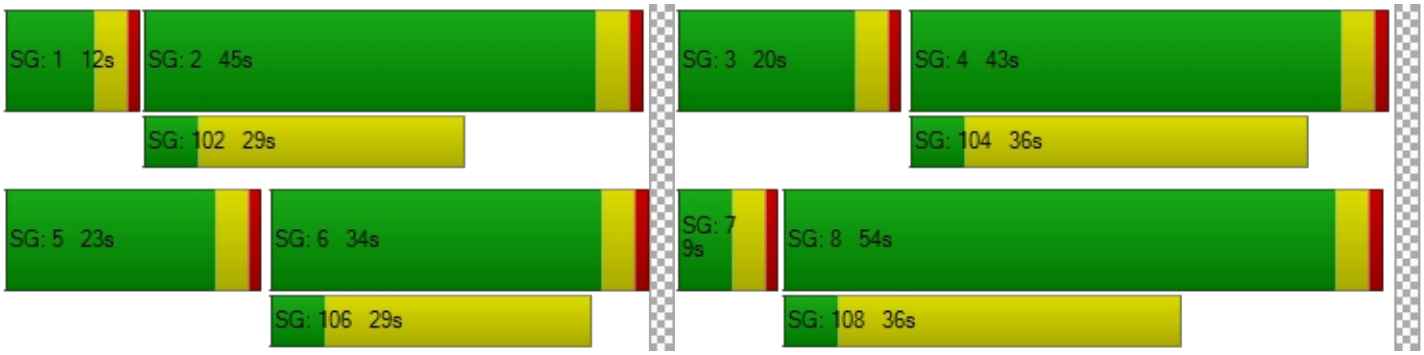
d_M, Delay for Movement [s/veh]	64.85	22.59	17.62	57.61	22.20	25.78	57.37	34.27	36.80	60.31	44.94	56.14
Movement LOS	E	C	B	E	C	C	E	C	D	E	D	E
d_A, Approach Delay [s/veh]	28.42			27.25			44.27			50.24		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.13											
Intersection LOS	C											
Intersection V/C	0.632											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.189	3.283	2.864	2.772
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	683	833	650
d_b, Bicycle Delay [s]	33.75	26.00	20.42	27.34
l_b,int, Bicycle LOS Score for Intersection	2.299	2.754	2.266	2.020
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	61.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.831

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	268	102	147	286	257	107	507	78	172	1112	236
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	6	6	0	0	4	0	0	0	4	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	306	114	165	324	288	120	568	91	193	1245	264
Peak Hour Factor	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	36	82	30	44	87	77	32	152	24	52	333	71
Total Analysis Volume [veh/h]	142	327	122	176	346	308	128	607	97	206	1330	282
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	36	36	15	40	0	12	52	0	17	57	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	32	46	11	36	36	8	51	51	10	53	53
g / C, Green / Cycle	0.06	0.27	0.38	0.09	0.30	0.30	0.07	0.43	0.43	0.08	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.04	0.18	0.08	0.10	0.19	0.20	0.07	0.14	0.14	0.06	0.45	0.47
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1530	1714	3427	1677	3329	1800	1695
c, Capacity [veh/h]	194	480	584	157	540	459	114	1463	716	271	795	748
d1, Uniform Delay [s]	55.60	39.43	24.94	54.50	36.37	36.79	56.00	22.85	22.90	53.95	33.50	33.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.49	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.31	7.61	0.81	71.46	5.73	7.59	76.44	0.13	0.26	4.34	37.07	52.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.68	0.21	1.12	0.64	0.67	1.12	0.32	0.33	0.76	1.02	1.07
d, Delay for Lane Group [s/veh]	60.90	47.04	25.75	125.9	42.10	44.38	132.4	22.98	23.16	58.30	70.57	86.33
Lane Group LOS	E	D	C	F	D	D	F	C	C	E	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.26	9.63	2.49	7.86	9.62	8.85	5.88	4.44	4.44	3.21	30.58	32.06
50th-Percentile Queue Length [ft/ln]	56.43	240.7	62.14	196.4	240.3	221.2	147.0	111.1	111.0	80.28	764.5	801.6
95th-Percentile Queue Length [veh/ln]	4.06	14.72	4.47	12.97	14.70	13.73	10.21	7.90	7.90	5.78	40.31	43.48
95th-Percentile Queue Length [ft/ln]	101.5	367.9	111.8	324.2	367.5	343.2	255.1	197.5	197.4	144.5	1007.	1086.

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.90	47.04	25.75	125.9	42.10	44.38	132.4	23.02	23.16	58.30	76.71	86.33
Movement LOS	E	D	C	F	D	D	F	C	C	E	E	F
d_A, Approach Delay [s/veh]	45.98			60.73			39.87			76.11		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	61.19											
Intersection LOS	E											
Intersection V/C	0.831											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.670	2.621	2.893	3.073
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	800	883
d_b, Bicycle Delay [s]	32.27	29.40	21.60	18.70
l_b,int, Bicycle LOS Score for Intersection	2.535	2.244	2.017	3.059
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.496

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	367	0	567	0	537	236	0	946	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.000	1.120	1.120	1.000	1.120	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	411	0	635	0	601	264	0	1060	0
Peak Hour Factor	1.000	1.000	1.000	0.908	1.000	0.908	1.000	0.908	0.908	1.000	0.908	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	113	0	175	0	165	73	0	292	0
Total Analysis Volume [veh/h]	0	0	0	453	0	699	0	662	291	0	1167	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Split	Permi	Split	Permi	Permi	Unsig	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	79	0	0	0	41	0	0	41	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		35	35	77	77
g / C, Green / Cycle		0.30	0.30	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate		0.14	0.26	0.14	0.24
s, saturation flow rate [veh/h]		3329	2708	4903	4903
c, Capacity [veh/h]		986	802	3124	3124
d1, Uniform Delay [s]		34.40	40.06	9.13	10.37
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.33	3.12	0.15	0.34
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.46	0.87	0.21	0.37
d, Delay for Lane Group [s/veh]		34.74	43.18	9.29	10.71
Lane Group LOS		C	D	A	B
Critical Lane Group		No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		5.45	10.05	2.39	4.79
50th-Percentile Queue Length [ft/ln]		136.19	251.35	59.69	119.68
95th-Percentile Queue Length [veh/ln]		9.28	15.25	4.30	8.38
95th-Percentile Queue Length [ft/ln]		231.89	381.36	107.44	209.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	34.74	0.00	43.18	0.00	9.29	0.00	0.00	10.71	0.00
Movement LOS				C		D		A			B	
d_A, Approach Delay [s/veh]	0.00			39.86			9.29			10.71		
Approach LOS	A			D			A			B		
d_I, Intersection Delay [s/veh]	21.66											
Intersection LOS	C											
Intersection V/C	0.496											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.540	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1250	617	617
d_b, Bicycle Delay [s]	60.00	8.44	28.70	28.70
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	1.924	2.201
Bicycle LOS	D	A	A	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	28.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.555

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	278	2	306	0	0	0	354	565	0	0	1595	179
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	2	343	0	0	0	396	633	0	0	1786	200
Peak Hour Factor	0.952	0.952	0.952	1.000	1.000	1.000	0.952	0.952	1.000	1.000	0.952	0.952
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	82	1	90	0	0	0	104	166	0	0	469	53
Total Analysis Volume [veh/h]	327	2	360	0	0	0	416	665	0	0	1876	210
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Unsig
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	9	0	0	0	0	41	111	0	0	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	36	36	36		18	76	55
g / C, Green / Cycle	0.30	0.30	0.30		0.15	0.64	0.45
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.14		0.12	0.14	0.29
s, saturation flow rate [veh/h]	1714	1596	1530		3329	4903	6538
c, Capacity [veh/h]	508	473	453		496	3123	2972
d1, Uniform Delay [s]	34.58	34.65	34.68		49.65	9.15	25.03
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	3.17	3.48	3.67		3.86	0.03	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.48	0.48		0.84	0.21	0.63
d, Delay for Lane Group [s/veh]	37.75	38.12	38.35		53.51	9.18	25.26
Lane Group LOS	D	D	D		D	A	C
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.23	5.92	5.74		6.33	2.38	10.10
50th-Percentile Queue Length [ft/ln]	155.8	147.9	143.3		158.19	59.39	252.49
95th-Percentile Queue Length [veh/ln]	10.33	9.91	9.66		10.45	4.28	15.31
95th-Percentile Queue Length [ft/ln]	258.1	247.6	241.5		261.33	106.89	382.79

Movement, Approach, & Intersection Results

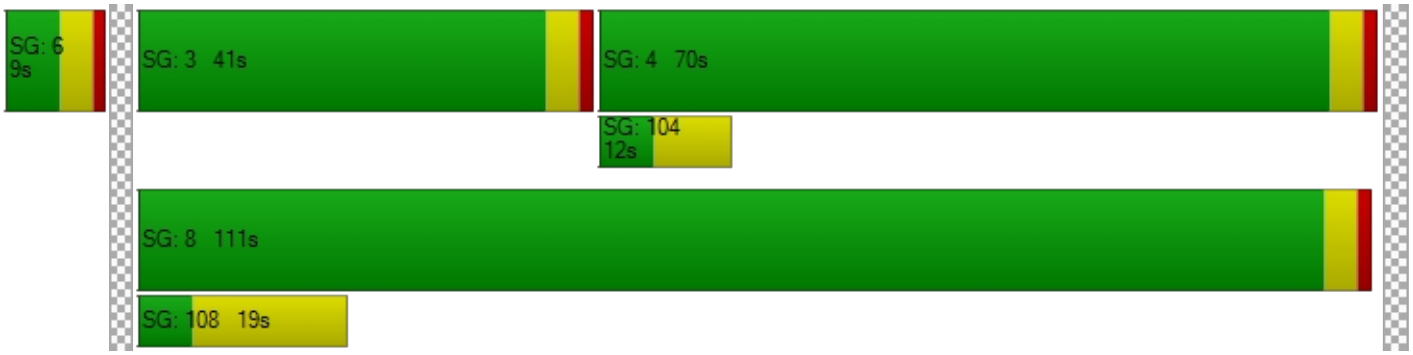
d_M, Delay for Movement [s/veh]	37.86	38.12	38.27	0.00	0.00	0.00	53.51	9.18	0.00	0.00	25.26	0.00
Movement LOS	D	D	D				D	A			C	
d_A, Approach Delay [s/veh]	38.07			0.00			26.24			25.26		
Approach LOS	D			A			C			C		
d_I, Intersection Delay [s/veh]	27.97											
Intersection LOS	C											
Intersection V/C	0.555											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.314	1.934	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	0	1783	1100
d_b, Bicycle Delay [s]	55.10	60.00	0.70	12.15
l_b,int, Bicycle LOS Score for Intersection	2.696	4.132	2.154	2.333
Bicycle LOS	B	D	B	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.766

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	63	529	155	69	828	410	232	502	139	414	1336	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	42	45	0	32	0	0	0	0	33	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	634	219	77	959	459	260	562	156	497	1496	74
Peak Hour Factor	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	172	60	21	261	125	71	153	42	135	407	20
Total Analysis Volume [veh/h]	77	689	238	84	1042	499	283	611	170	540	1626	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	44	0	10	45	0	16	40	0	26	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	43	43	5	43	43	12	35	35	21	44	44
g / C, Green / Cycle	0.04	0.36	0.36	0.04	0.36	0.36	0.10	0.29	0.29	0.18	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.02	0.14	0.16	0.03	0.21	0.33	0.09	0.12	0.11	0.16	0.33	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	129	1765	551	133	1770	552	333	1418	442	592	1799	561
d1, Uniform Delay [s]	56.76	28.60	29.11	56.75	31.10	36.35	53.12	34.63	34.10	48.42	35.98	25.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.39	0.65	2.46	4.93	1.44	20.64	6.08	0.21	0.55	5.96	1.94	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.39	0.43	0.63	0.59	0.90	0.85	0.43	0.38	0.91	0.90	0.14
d, Delay for Lane Group [s/veh]	61.15	29.25	31.57	61.68	32.55	56.99	59.19	34.84	34.65	54.39	37.92	25.49
Lane Group LOS	E	C	C	E	C	E	E	C	C	D	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.23	5.03	5.57	1.35	8.35	16.79	4.47	4.87	4.05	8.39	15.10	1.56
50th-Percentile Queue Length [ft/ln]	30.70	125.8	139.3	33.65	208.8	419.8	111.8	121.7	101.1	209.8	377.5	38.91
95th-Percentile Queue Length [veh/ln]	2.21	8.71	9.44	2.42	13.09	23.52	7.94	8.49	7.29	13.15	21.48	2.80
95th-Percentile Queue Length [ft/ln]	55.25	217.7	236.0	60.57	327.3	587.8	198.5	212.2	182.1	328.6	536.9	70.04

Movement, Approach, & Intersection Results

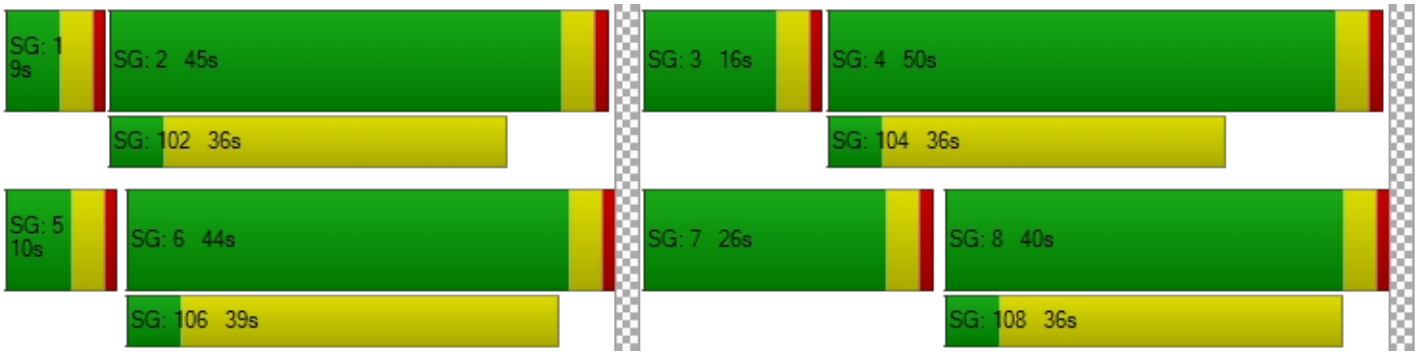
d_M, Delay for Movement [s/veh]	61.15	29.25	31.57	61.68	32.55	56.99	59.19	34.84	34.65	54.39	37.92	25.49
Movement LOS	E	C	C	E	C	E	E	C	C	D	D	C
d_A, Approach Delay [s/veh]	32.25			41.56			41.28			41.44		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	39.89											
Intersection LOS	D											
Intersection V/C	0.766											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.163	3.154	3.383	3.292
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	683	600	767
d_b, Bicycle Delay [s]	26.67	26.00	29.40	22.82
l_b,int, Bicycle LOS Score for Intersection	2.112	2.453	2.145	2.795
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.521

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	239	13	94	239	197	132	419	37	45	589	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	38	0	0	27	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	268	15	105	268	221	148	507	41	50	687	92
Peak Hour Factor	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	22	81	5	32	81	67	45	153	12	15	207	28
Total Analysis Volume [veh/h]	88	324	18	127	324	267	179	612	50	60	830	111
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	36	0	16	40	0	26	44	0	24	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	53	53	11	56	56	15	35	35	6	26	26
g / C, Green / Cycle	0.06	0.44	0.44	0.09	0.47	0.47	0.12	0.29	0.29	0.05	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.01	0.07	0.18	0.18	0.10	0.12	0.03	0.04	0.18	0.18
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1772	1511	1714	4903	1506	1687	3427	1694
c, Capacity [veh/h]	109	1518	677	152	828	707	208	1414	434	79	734	363
d1, Uniform Delay [s]	55.44	20.57	18.85	53.82	20.72	20.76	51.74	34.72	31.43	56.51	45.39	45.45
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.80	0.32	0.07	11.30	1.34	1.60	10.03	0.21	0.12	13.69	3.03	6.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.21	0.03	0.84	0.38	0.39	0.86	0.43	0.12	0.76	0.86	0.86
d, Delay for Lane Group [s/veh]	68.24	20.90	18.92	65.12	22.06	22.36	61.77	34.93	31.55	70.20	48.42	51.54
Lane Group LOS	E	C	B	E	C	C	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.02	2.87	0.30	4.25	6.05	5.27	5.86	4.88	1.09	2.10	9.28	9.55
50th-Percentile Queue Length [ft/ln]	75.41	71.79	7.48	106.2	151.2	131.8	146.4	122.0	27.28	52.49	232.1	238.7
95th-Percentile Queue Length [veh/ln]	5.43	5.17	0.54	7.63	10.08	9.04	9.83	8.51	1.96	3.78	14.28	14.62
95th-Percentile Queue Length [ft/ln]	135.7	129.2	13.46	190.7	252.1	225.9	245.7	212.6	49.10	94.48	357.0	365.4

Movement, Approach, & Intersection Results

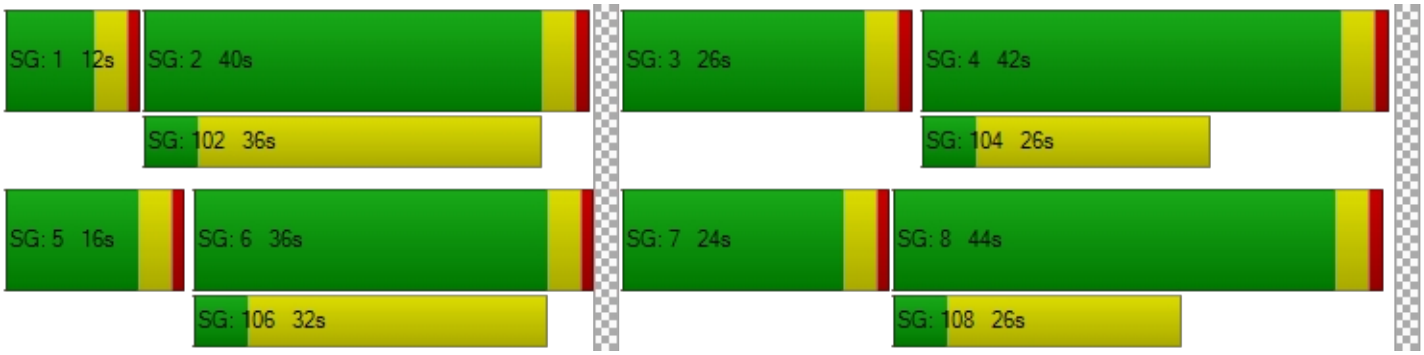
d_M, Delay for Movement [s/veh]	68.24	20.90	18.92	65.12	22.07	22.36	61.77	34.93	31.55	70.20	49.18	51.54
Movement LOS	E	C	B	E	C	C	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	30.50			29.79			40.44			50.70		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.89											
Intersection LOS	D											
Intersection V/C	0.521											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.609	2.685	3.084	2.955
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	667	633
d_b, Bicycle Delay [s]	32.27	29.40	26.67	28.02
l_b,int, Bicycle LOS Score for Intersection	1.914	2.152	2.022	2.110
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	55.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.922

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	120	571	733	124	771	237	274	346	109	156	659	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	2	2	0	0	9	11	21	0	2	14	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	642	823	139	864	274	318	409	122	177	752	114
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	36	170	218	37	229	73	84	109	32	47	200	30
Total Analysis Volume [veh/h]	142	682	874	148	917	291	338	434	130	188	798	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	18	61	0	14	57	0	15	26	0	19	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	12	61	61	10	59	59	11	25	25	9	22	36
g / C, Green / Cycle	0.10	0.50	0.50	0.08	0.49	0.49	0.09	0.20	0.20	0.07	0.19	0.30
(v / s)_i Volume / Saturation Flow Rate	0.08	0.38	0.57	0.09	0.27	0.19	0.10	0.09	0.08	0.06	0.16	0.08
s, saturation flow rate [veh/h]	1714	1800	1530	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	168	907	771	143	1677	749	305	1000	312	250	920	466
d1, Uniform Delay [s]	53.21	23.76	29.76	55.00	21.37	19.33	54.50	41.70	41.54	54.39	47.30	31.54
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.84	5.71	75.68	44.63	1.29	1.52	59.15	0.30	0.89	4.50	2.65	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.75	1.13	1.04	0.55	0.39	1.11	0.43	0.42	0.75	0.87	0.26
d, Delay for Lane Group [s/veh]	64.04	29.47	105.4	99.63	22.66	20.85	113.6	42.00	42.43	58.89	49.95	31.83
Lane Group LOS	E	C	F	F	C	C	F	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.72	16.42	37.42	6.08	9.14	5.39	7.11	3.78	3.43	2.94	7.92	2.71
50th-Percentile Queue Length [ft/ln]	117.8	410.3	935.6	152.0	228.5	134.8	177.7	94.47	85.86	73.56	197.8	67.68
95th-Percentile Queue Length [veh/ln]	8.28	23.06	52.18	10.25	14.10	9.20	11.90	6.80	6.18	5.30	12.53	4.87
95th-Percentile Queue Length [ft/ln]	206.9	576.5	1304.	256.3	352.5	230.0	297.5	170.0	154.5	132.4	313.2	121.8

Movement, Approach, & Intersection Results

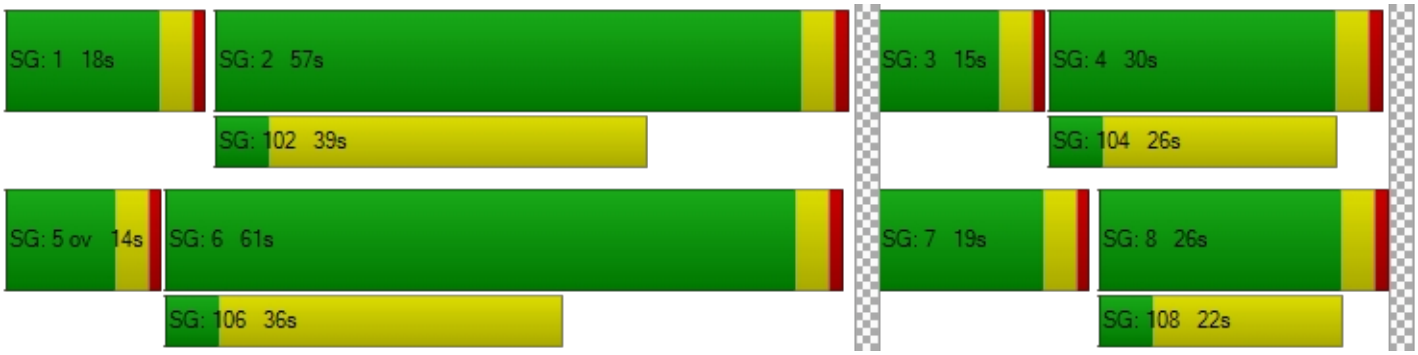
d_M, Delay for Movement [s/veh]	64.04	29.47	105.4	99.63	22.66	20.85	113.6	42.00	42.43	58.89	49.95	31.83
Movement LOS	E	C	F	F	C	C	F	D	D	E	D	C
d_A, Approach Delay [s/veh]	71.46			30.67			68.91			49.49		
Approach LOS	E			C			E			D		
d_I, Intersection Delay [s/veh]	55.28											
Intersection LOS	E											
Intersection V/C	0.922											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.887	2.874	3.096	3.232
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	883	367	433
d_b, Bicycle Delay [s]	16.54	18.70	40.02	36.82
l_b,int, Bicycle LOS Score for Intersection	2.960	2.678	2.056	2.168
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.613

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	157	629	56	220	1054	104	94	405	109	90	492	139
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	5	0	0	4	6	10	6	0	0	4	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	709	63	246	1184	122	115	460	122	101	555	156
Peak Hour Factor	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	49	199	18	69	332	34	32	129	34	28	156	44
Total Analysis Volume [veh/h]	198	796	71	276	1329	137	129	516	137	113	623	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	40	0	23	50	0	10	47	0	10	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	67	67	12	70	70	6	19	19	6	19	19
g / C, Green / Cycle	0.08	0.56	0.56	0.10	0.58	0.58	0.05	0.16	0.16	0.05	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.05	0.08	0.39	0.09	0.04	0.11	0.09	0.03	0.13	0.11
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	250	2725	850	339	1997	892	166	784	245	163	779	243
d1, Uniform Delay [s]	54.58	14.13	12.41	52.77	17.06	11.47	56.33	47.32	46.50	56.18	48.62	47.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.63	0.27	0.19	4.73	1.77	0.37	7.49	0.95	2.00	5.21	1.95	3.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.29	0.08	0.81	0.67	0.15	0.77	0.66	0.56	0.69	0.80	0.72
d, Delay for Lane Group [s/veh]	60.21	14.40	12.61	57.50	18.83	11.84	63.82	48.26	48.50	61.39	50.57	51.91
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.14	3.84	0.93	4.29	12.45	1.75	2.10	4.90	3.92	1.80	6.13	5.24
50th-Percentile Queue Length [ft/ln]	78.43	96.01	23.30	107.3	311.1	43.70	52.61	122.4	97.92	45.08	153.1	131.0
95th-Percentile Queue Length [veh/ln]	5.65	6.91	1.68	7.69	18.23	3.15	3.79	8.53	7.05	3.25	10.19	9.00
95th-Percentile Queue Length [ft/ln]	141.1	172.8	41.94	192.3	455.8	78.66	94.70	213.2	176.2	81.15	254.6	224.8

Movement, Approach, & Intersection Results

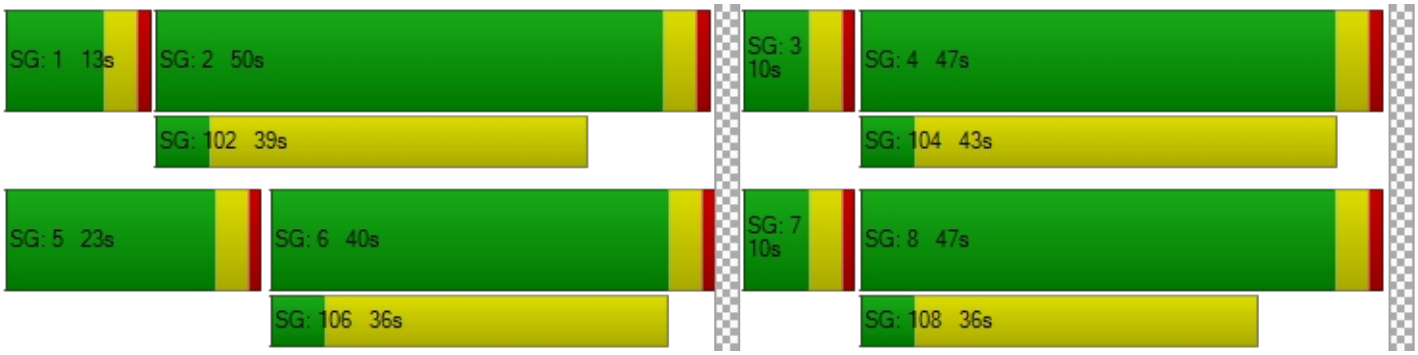
d_M, Delay for Movement [s/veh]	60.21	14.40	12.61	57.50	18.83	11.84	63.82	48.26	48.50	61.39	50.57	51.91
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	22.80			24.41			50.87			52.17		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.25											
Intersection LOS	C											
Intersection V/C	0.613											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.151	3.345	3.151	3.057
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	767	717	717
d_b, Bicycle Delay [s]	29.40	22.82	24.70	24.70
l_b,int, Bicycle LOS Score for Intersection	2.145	2.997	1.990	2.061
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	49.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	141	239	145	76	282	121	87	249	108	94	464	69
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	12	1	0	8	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	280	163	85	324	136	97	279	121	105	520	77
Peak Hour Factor	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	47	83	48	25	96	40	29	83	36	31	154	23
Total Analysis Volume [veh/h]	187	332	193	101	384	161	115	331	144	125	617	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	19	30	0	12	23	23	0	30	0	0	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	39	39	8	32	32	24	24	33	33
g / C, Green / Cycle	0.12	0.32	0.32	0.07	0.27	0.27	0.20	0.20	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.11	0.15	0.16	0.06	0.11	0.11	0.18	0.18	0.25	0.25
s, saturation flow rate [veh/h]	1714	1800	1582	1714	3427	1530	1768	1498	1775	1573
c, Capacity [veh/h]	212	579	509	114	907	405	361	306	487	431
d1, Uniform Delay [s]	51.70	32.64	32.70	55.54	36.54	36.26	46.34	46.45	42.08	42.08
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.15	0.16	0.22	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.22	2.84	3.28	18.98	1.45	2.90	9.53	12.03	12.50	13.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.48	0.48	0.88	0.42	0.40	0.88	0.89	0.91	0.91
d, Delay for Lane Group [s/veh]	62.93	35.48	35.98	74.52	37.99	39.16	55.87	58.49	54.58	55.93
Lane Group LOS	E	D	D	E	D	D	E	E	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.19	6.94	6.22	3.63	4.85	4.21	10.12	8.89	14.23	12.78
50th-Percentile Queue Length [ft/ln]	154.6	173.5	155.5	90.80	121.3	105.3	252.93	222.16	355.70	319.54
95th-Percentile Queue Length [veh/ln]	10.27	11.26	10.31	6.54	8.47	7.58	15.33	13.78	20.41	18.65
95th-Percentile Queue Length [ft/ln]	256.6	281.5	257.7	163.4	211.6	189.4	383.35	344.38	510.36	466.13

Movement, Approach, & Intersection Results

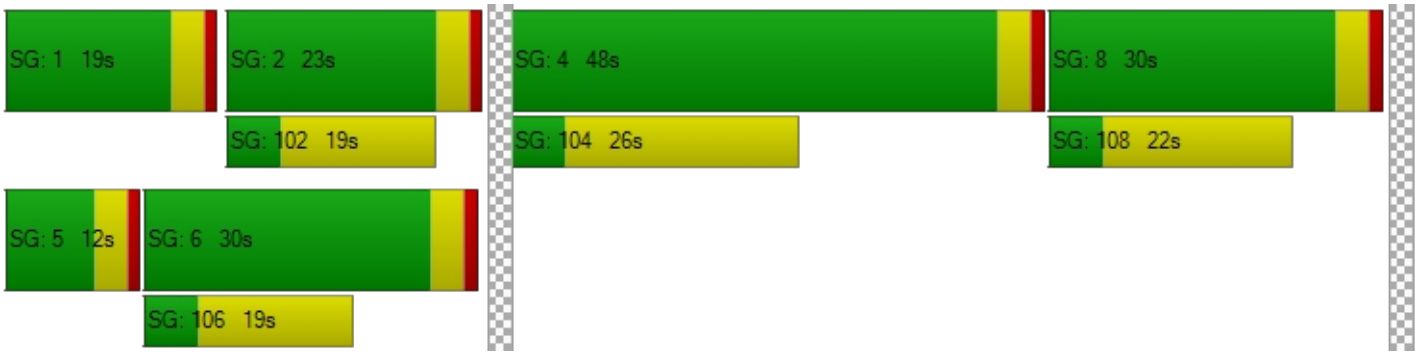
d_M, Delay for Movement [s/veh]	62.93	35.56	35.98	74.52	37.99	39.16	55.87	56.88	58.49	54.58	55.24	55.93
Movement LOS	E	D	D	E	D	D	E	E	E	D	E	E
d_A, Approach Delay [s/veh]	42.86			43.99			57.08			55.21		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	49.84											
Intersection LOS	D											
Intersection V/C	0.652											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.581	2.661	2.525	2.502
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	317	433	733
d_b, Bicycle Delay [s]	36.82	42.50	36.82	24.07
l_b,int, Bicycle LOS Score for Intersection	2.147	2.093	2.046	2.247
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	44.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.012

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	150	0	849	0	520	798	0	1435	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.000	1.120	1.120	1.000	1.120	1.000
In-Process Volume [veh/h]	0	0	0	26	0	0	0	12	0	0	16	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	194	0	951	0	594	894	0	1623	0
Peak Hour Factor	1.000	1.000	1.000	0.945	1.000	0.945	1.000	0.945	0.945	1.000	0.945	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	51	0	252	0	157	237	0	429	0
Total Analysis Volume [veh/h]	0	0	0	205	0	1006	0	629	946	0	1717	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	48	0	0	0	72	0	0	72	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		44	44	44	68	68	68
g / C, Green / Cycle		0.37	0.37	0.37	0.57	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate		0.12	0.39	0.26	0.13	0.62	0.35
s, saturation flow rate [veh/h]		1714	1530	1530	4903	1530	4903
c, Capacity [veh/h]		629	561	561	2778	867	2778
d1, Uniform Delay [s]		27.34	38.00	32.69	12.92	26.00	17.34
k, delay calibration		0.11	0.50	0.26	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.30	59.30	4.08	0.19	58.45	1.04
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.33	1.07	0.72	0.23	1.09	0.62
d, Delay for Lane Group [s/veh]		27.63	97.30	36.77	13.11	84.45	18.38
Lane Group LOS		C	F	D	B	F	B
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		4.30	25.39	10.63	2.83	37.20	10.45
50th-Percentile Queue Length [ft/ln]		107.4	634.6	265.7	70.73	930.12	261.24
95th-Percentile Queue Length [veh/ln]		7.70	35.34	15.98	5.09	50.68	15.75
95th-Percentile Queue Length [ft/ln]		192.3	883.4	399.4	127.32	1267.01	393.78

Movement, Approach, & Intersection Results

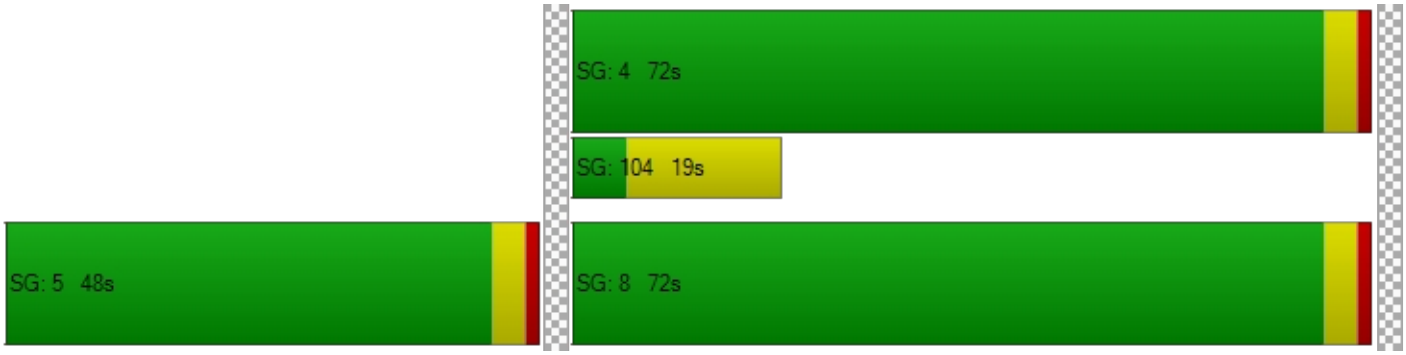
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	27.63	0.00	73.01	0.00	13.11	84.45	0.00	18.38	0.00
Movement LOS				C		E		B	F		B	
d_A, Approach Delay [s/veh]	0.00			65.33			55.96			18.38		
Approach LOS	A			E			E			B		
d_I, Intersection Delay [s/veh]	44.15											
Intersection LOS	D											
Intersection V/C	1.012											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.442	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	733	1133	1133
d_b, Bicycle Delay [s]	60.00	24.07	11.27	11.27
l_b,int, Bicycle LOS Score for Intersection	4.132	3.558	2.426	2.504
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	873	0	494	0	0	0	0	441	0	0	1219	197
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	38	0	0	16	36
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	978	0	553	0	0	0	0	532	0	0	1381	257
Peak Hour Factor	0.879	1.000	0.879	1.000	1.000	1.000	1.000	0.879	1.000	1.000	0.879	0.879
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	278	0	157	0	0	0	0	151	0	0	393	73
Total Analysis Volume [veh/h]	1113	0	629	0	0	0	0	605	0	0	1571	292
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	66	0	0	0	0	0	0	54	0	0	54	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	50	50	50		62	62	62
g / C, Green / Cycle	0.42	0.42	0.42		0.52	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.34	0.34	0.38		0.12	0.32	0.19
s, saturation flow rate [veh/h]	1714	1697	1530		4903	4903	1530
c, Capacity [veh/h]	716	709	639		2528	2528	789
d1, Uniform Delay [s]	30.75	30.91	32.77		16.07	20.73	17.41
k, delay calibration	0.21	0.22	0.27		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	4.38	4.75	11.86		0.22	1.16	1.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.82	0.91		0.24	0.62	0.37
d, Delay for Lane Group [s/veh]	35.13	35.65	44.64		16.29	21.89	18.74
Lane Group LOS	D	D	D		B	C	B
Critical Lane Group	No	No	Yes		No	Yes	No
50th-Percentile Queue Length [veh/ln]	15.40	15.54	17.59		3.10	10.47	5.07
50th-Percentile Queue Length [ft/ln]	385.0	388.5	439.8		77.45	261.83	126.75
95th-Percentile Queue Length [veh/ln]	21.84	22.01	24.47		5.58	15.78	8.76
95th-Percentile Queue Length [ft/ln]	545.9	550.1	611.8		139.41	394.51	219.07

Movement, Approach, & Intersection Results

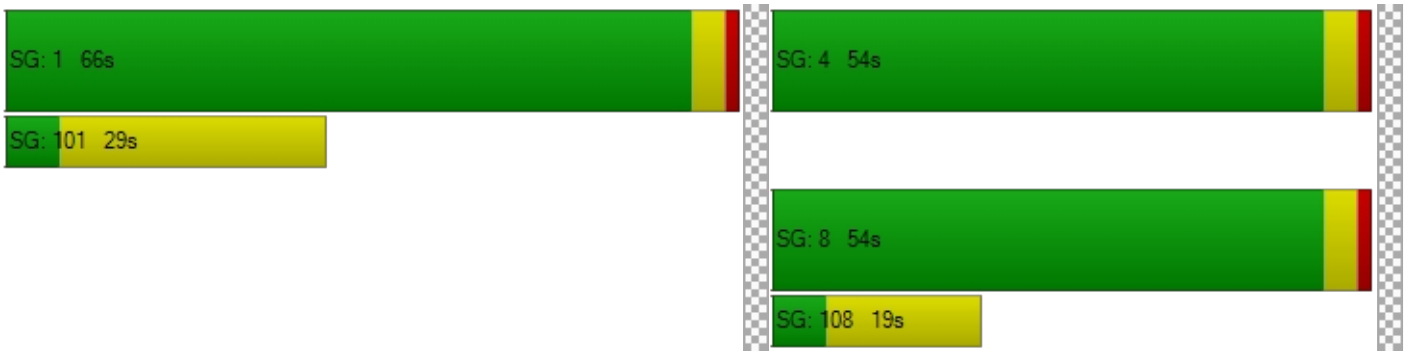
d_M, Delay for Movement [s/veh]	35.38	0.00	43.95	0.00	0.00	0.00	0.00	16.29	0.00	0.00	21.89	18.74
Movement LOS	D		D					B			C	B
d_A, Approach Delay [s/veh]	38.47			0.00			16.29			21.39		
Approach LOS	D			A			B			C		
d_I, Intersection Delay [s/veh]	27.73											
Intersection LOS	C											
Intersection V/C	0.700											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.571	0.000	0.000	3.041
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	0	833	833
d_b, Bicycle Delay [s]	14.02	60.00	20.42	20.42
l_b,int, Bicycle LOS Score for Intersection	4.434	4.132	1.892	2.584
Bicycle LOS	E	D	A	B

Sequence

Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	47.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.813

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	153	199	67	50	341	230	100	448	210	342	1200	115
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	52	13	1	0	8	0	0	0	38	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	236	76	56	390	258	112	502	273	383	1344	129
Peak Hour Factor	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	61	64	21	15	106	70	30	136	74	104	365	35
Total Analysis Volume [veh/h]	242	256	83	61	423	280	122	545	296	416	1459	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	46	0	11	36	0	9	40	40	23	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	43	43	6	32	32	5	38	59	17	50	50
g / C, Green / Cycle	0.14	0.36	0.36	0.05	0.27	0.27	0.04	0.32	0.49	0.14	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.05	0.04	0.21	0.21	0.04	0.16	0.19	0.12	0.43	0.09
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1564	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	243	651	553	80	480	417	139	1080	750	477	1428	638
d1, Uniform Delay [s]	51.47	28.50	25.85	56.55	40.76	40.83	57.20	33.48	19.35	50.32	35.00	22.47
k, delay calibration	0.13	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.28	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.73	1.78	0.57	13.86	11.95	13.86	15.84	0.37	0.89	5.10	17.09	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.39	0.15	0.76	0.78	0.79	0.88	0.50	0.39	0.87	1.02	0.22
d, Delay for Lane Group [s/veh]	80.20	30.28	26.42	70.40	52.71	54.69	73.04	33.84	20.24	55.42	52.09	22.64
Lane Group LOS	F	C	C	E	D	D	E	C	C	E	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.19	5.80	1.70	2.14	11.81	10.55	2.15	6.51	5.36	6.45	23.66	2.58
50th-Percentile Queue Length [ft/ln]	229.6	145.0	42.50	53.42	295.2	263.8	53.63	162.7	133.9	161.1	591.5	64.56
95th-Percentile Queue Length [veh/ln]	14.16	9.75	3.06	3.85	17.44	15.88	3.86	10.70	9.15	10.61	32.15	4.65
95th-Percentile Queue Length [ft/ln]	353.9	243.8	76.50	96.16	436.1	396.9	96.54	267.3	228.7	265.2	803.6	116.2

Movement, Approach, & Intersection Results

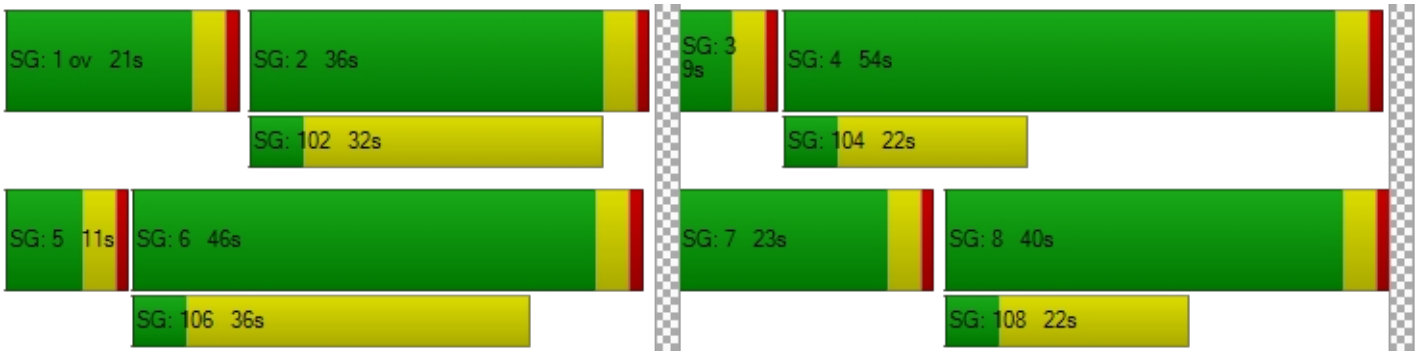
d_M, Delay for Movement [s/veh]	80.20	30.28	26.42	70.40	52.94	54.69	73.04	33.84	20.24	55.42	52.09	22.64
Movement LOS	F	C	C	E	D	D	E	C	C	E	F	C
d_A, Approach Delay [s/veh]	50.52			54.97			34.63			50.73		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	47.87											
Intersection LOS	D											
Intersection V/C	0.813											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.650	2.565	3.099	3.157
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	533	600	833
d_b, Bicycle Delay [s]	25.35	32.27	29.40	20.42
l_b,int, Bicycle LOS Score for Intersection	2.518	2.190	2.354	3.222
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	41.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.713

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	214	404	115	164	793	203	183	414	153	284	1138	98
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	91	29	0	72	0	1	0	0	19	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	240	543	158	184	960	227	206	464	171	337	1275	110
Peak Hour Factor	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	65	147	43	50	260	62	56	126	46	91	346	30
Total Analysis Volume [veh/h]	260	589	171	200	1041	246	223	503	185	366	1383	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	24	44	0	20	40	40	13	36	0	20	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	20	42	42	16	38	51	9	31	31	15	37	57
g / C, Green / Cycle	0.17	0.35	0.35	0.13	0.32	0.42	0.08	0.26	0.26	0.13	0.31	0.47
(v / s)_i Volume / Saturation Flow Rate	0.15	0.12	0.11	0.12	0.21	0.16	0.07	0.10	0.12	0.11	0.28	0.08
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	284	1714	535	226	1546	648	250	1270	396	421	1523	727
d1, Uniform Delay [s]	49.21	28.85	28.58	51.23	35.72	23.75	55.02	36.70	37.47	51.44	39.73	17.90
k, delay calibration	0.16	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.57	0.55	1.57	11.08	2.36	1.69	10.66	0.20	0.86	5.61	2.39	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.34	0.32	0.89	0.67	0.38	0.89	0.40	0.47	0.87	0.91	0.16
d, Delay for Lane Group [s/veh]	64.78	29.40	30.15	62.31	38.08	25.44	65.68	36.91	38.33	57.05	42.12	18.01
Lane Group LOS	E	C	C	E	D	C	E	D	D	E	D	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.87	4.28	3.85	6.60	9.11	5.08	3.71	4.10	4.69	5.72	13.26	1.91
50th-Percentile Queue Length [ft/ln]	221.6	106.9	96.21	164.9	227.8	127.1	92.74	102.5	117.1	143.1	331.3	47.70
95th-Percentile Queue Length [veh/ln]	13.75	7.67	6.93	10.81	14.06	8.78	6.68	7.38	8.24	9.65	19.23	3.43
95th-Percentile Queue Length [ft/ln]	343.7	191.7	173.1	270.2	351.6	219.5	166.9	184.5	205.9	241.2	480.6	85.86

Movement, Approach, & Intersection Results

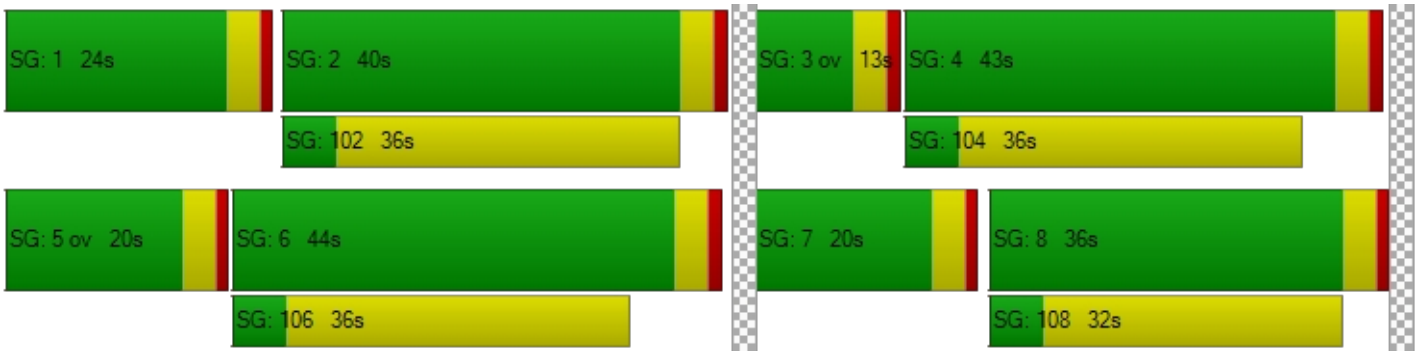
d_M, Delay for Movement [s/veh]	64.78	29.40	30.15	62.31	38.08	25.44	65.68	36.91	38.33	57.05	42.12	18.01
Movement LOS	E	C	C	E	D	C	E	D	D	E	D	B
d_A, Approach Delay [s/veh]	38.54			39.25			44.24			43.51		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.48											
Intersection LOS	D											
Intersection V/C	0.713											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.059	3.126	3.168	3.162
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	600	533	650
d_b, Bicycle Delay [s]	26.67	29.40	32.27	27.34
l_b,int, Bicycle LOS Score for Intersection	2.121	2.377	2.061	2.587
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	1,315.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.716

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	21	0	102	0	0	0	0	621	36	198	1526	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	1	0	0	0	0	29	0	2	19	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	0	115	0	0	0	0	725	40	224	1728	0
Peak Hour Factor	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	0	35	0	0	0	0	220	12	68	525	0
Total Analysis Volume [veh/h]	29	0	140	0	0	0	0	881	49	272	2100	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	2.72	0.00	0.25	0.00	0.00	0.00	0.00	0.01	0.00	0.37	0.02	0.00
d_M, Delay for Movement [s/veh]	1315.	1938.	985.1	1297.	1002.	20.85	18.55	0.00	0.00	12.60	0.00	0.00
Movement LOS	F	F	F	F	F	C	C	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	17.61	17.61	17.61	0.00	0.00	0.00	0.00	0.00	0.00	1.68	0.00	0.00
95th-Percentile Queue Length [ft/ln]	440.2	440.2	440.2	0.00	0.00	0.00	0.00	0.00	0.00	42.04	0.00	0.00
d_A, Approach Delay [s/veh]	1041.87			773.30			0.00			1.45		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	51.72											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	51.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.811

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	143	515	78	132	724	162	149	428	114	235	797	78
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	0	0	2	0	0	23	0	0	15	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	581	87	148	813	181	167	502	128	263	908	87
Peak Hour Factor	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	44	159	24	40	222	50	46	137	35	72	248	24
Total Analysis Volume [veh/h]	175	636	95	162	889	198	183	549	140	288	993	95
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	44	0	17	44	0	18	33	0	26	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	40	40	13	40	40	14	29	29	22	37	37
g / C, Green / Cycle	0.11	0.34	0.34	0.11	0.34	0.34	0.12	0.24	0.24	0.18	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.10	0.21	0.21	0.09	0.31	0.31	0.11	0.16	0.09	0.17	0.29	0.06
s, saturation flow rate [veh/h]	1714	1800	1719	1714	1800	1688	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	186	606	579	186	606	569	200	820	366	312	1044	466
d1, Uniform Delay [s]	53.13	33.30	33.30	52.68	38.28	38.37	52.41	41.35	38.22	48.23	40.83	30.92
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.21	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.52	4.65	4.86	11.86	21.78	23.50	15.03	0.96	0.66	18.69	5.71	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.62	0.62	0.87	0.92	0.93	0.92	0.67	0.38	0.92	0.95	0.20
d, Delay for Lane Group [s/veh]	72.65	37.94	38.16	64.54	60.06	61.87	67.44	42.31	38.88	66.92	46.55	31.14
Lane Group LOS	E	D	D	E	E	E	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.24	9.84	9.44	5.41	19.26	18.45	6.28	7.46	3.53	10.06	15.02	2.08
50th-Percentile Queue Length [ft/ln]	155.9	246.1	236.0	135.3	481.6	461.1	156.9	186.4	88.29	251.5	375.5	52.10
95th-Percentile Queue Length [veh/ln]	10.33	14.99	14.48	9.23	26.46	25.49	10.38	11.94	6.36	15.26	21.38	3.75
95th-Percentile Queue Length [ft/ln]	258.3	374.7	361.9	230.7	661.5	637.2	259.6	298.4	158.9	381.5	534.4	93.79

Movement, Approach, & Intersection Results

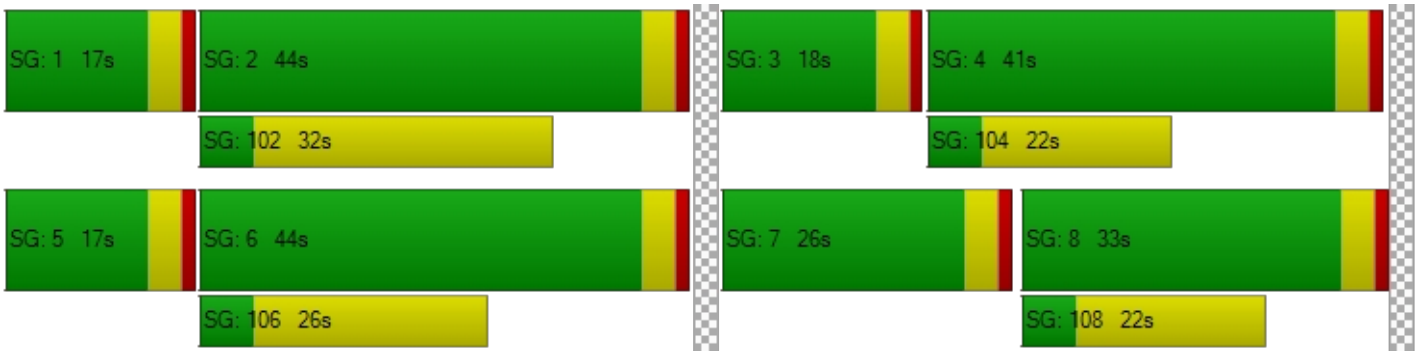
d_M, Delay for Movement [s/veh]	72.65	38.03	38.16	64.54	60.73	61.87	67.44	42.31	38.88	66.92	46.55	31.14
Movement LOS	E	D	D	E	E	E	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	44.73			61.41			47.03			49.75		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	51.48											
Intersection LOS	D											
Intersection V/C	0.811											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.749	2.737	2.832	2.823
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	667	483	617
d_b, Bicycle Delay [s]	26.67	26.67	34.50	28.70
l_b,int, Bicycle LOS Score for Intersection	2.307	2.590	2.279	2.695
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	43.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	79	436	79	192	814	126	211	375	100	151	611	125
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	9	2	0	8	2	3	14	0	3	9	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	497	90	215	920	143	239	434	112	172	693	140
Peak Hour Factor	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	138	25	60	255	40	66	120	31	48	192	39
Total Analysis Volume [veh/h]	98	551	100	238	1020	159	265	481	124	191	768	155
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	31	0	24	43	0	29	41	0	24	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	35	35	18	46	46	21	35	35	15	30	30
g / C, Green / Cycle	0.07	0.29	0.29	0.15	0.38	0.38	0.17	0.29	0.29	0.13	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.07	0.14	0.30	0.10	0.15	0.14	0.08	0.11	0.22	0.10
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	114	1000	447	264	1301	581	294	1000	446	221	853	381
d1, Uniform Delay [s]	55.44	35.84	32.19	49.84	32.89	25.78	48.69	35.02	32.76	51.25	43.64	37.68
k, delay calibration	0.11	0.50	0.50	0.12	0.50	0.50	0.17	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.32	2.18	1.16	12.02	4.79	1.16	14.28	0.36	0.33	9.73	3.81	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.55	0.22	0.90	0.78	0.27	0.90	0.48	0.28	0.87	0.90	0.41
d, Delay for Lane Group [s/veh]	71.76	38.03	33.34	61.86	37.68	26.94	62.97	35.38	33.09	60.98	47.45	38.38
Lane Group LOS	E	D	C	E	D	C	E	D	C	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.45	7.10	2.36	7.88	13.78	3.34	8.92	5.85	2.84	6.22	11.42	3.89
50th-Percentile Queue Length [ft/ln]	86.30	177.3	58.94	196.9	344.4	83.57	223.1	146.1	70.93	155.6	285.3	97.37
95th-Percentile Queue Length [veh/ln]	6.21	11.46	4.24	12.48	19.86	6.02	13.82	9.81	5.11	10.32	16.96	7.01
95th-Percentile Queue Length [ft/ln]	155.3	286.6	106.0	312.0	496.5	150.4	345.6	245.2	127.6	257.9	423.9	175.2

Movement, Approach, & Intersection Results

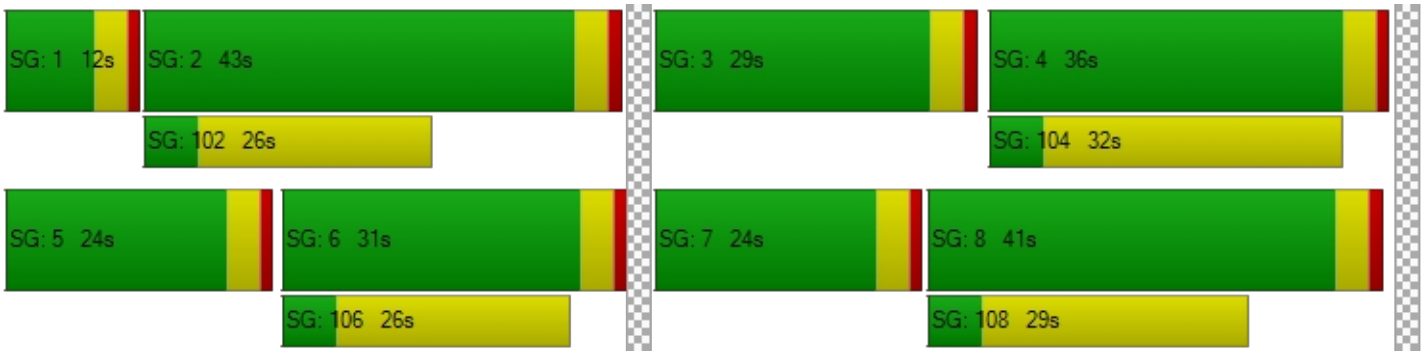
d_M, Delay for Movement [s/veh]	71.76	38.03	33.34	61.86	37.68	26.94	62.97	35.38	33.09	60.98	47.45	38.38
Movement LOS	E	D	C	E	D	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	41.81			40.54			43.46			48.51		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.52											
Intersection LOS	D											
Intersection V/C	0.733											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.899	3.032	2.776	2.782
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	450	650	617	533
d_b, Bicycle Delay [s]	36.04	27.34	28.70	32.27
l_b,int, Bicycle LOS Score for Intersection	2.178	2.729	2.277	2.479
Bicycle LOS	B	B	B	B

Sequence

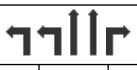
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	43.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	325	161	36	120	324	392	93	245	148	141	699	133
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	18	66	0	0	46	0	0	0	12	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	382	246	40	134	409	439	104	274	178	158	783	149
Peak Hour Factor	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	110	71	12	39	118	127	30	79	51	46	226	43
Total Analysis Volume [veh/h]	442	284	46	155	473	508	120	317	206	183	905	172
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	23	35	35	18	30	30	11	51	51	16	56	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	44	57	13	39	50	7	38	60	9	40	40
g / C, Green / Cycle	0.15	0.37	0.47	0.11	0.32	0.41	0.06	0.32	0.50	0.07	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.13	0.08	0.03	0.09	0.14	0.33	0.04	0.18	0.13	0.05	0.31	0.31
s, saturation flow rate [veh/h]	3329	3427	1530	1714	3427	1530	3329	1800	1530	3329	1800	1702
c, Capacity [veh/h]	500	1258	725	181	1106	634	194	577	771	245	604	571
d1, Uniform Delay [s]	49.97	26.22	17.12	52.74	31.94	30.81	55.19	33.64	17.07	54.49	38.22	38.30
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.25	0.25
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	0.42	0.17	10.81	1.21	10.28	3.18	0.82	0.19	4.51	12.14	13.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.23	0.06	0.85	0.43	0.80	0.62	0.55	0.27	0.75	0.91	0.92
d, Delay for Lane Group [s/veh]	55.37	26.63	17.29	63.55	33.15	41.09	58.37	34.46	17.26	59.01	50.36	51.56
Lane Group LOS	E	C	B	E	C	D	E	C	B	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.86	2.89	0.73	5.13	5.58	14.45	1.86	7.74	3.29	2.87	17.40	16.73
50th-Percentile Queue Length [ft/ln]	171.5	72.24	18.22	128.3	139.5	361.1	46.50	193.3	82.28	71.67	435.0	418.1
95th-Percentile Queue Length [veh/ln]	11.16	5.20	1.31	8.85	9.46	20.68	3.35	12.30	5.92	5.16	24.24	23.43
95th-Percentile Queue Length [ft/ln]	278.8	130.0	32.80	221.2	236.4	517.0	83.70	307.4	148.1	129.0	606.0	585.8

Movement, Approach, & Intersection Results

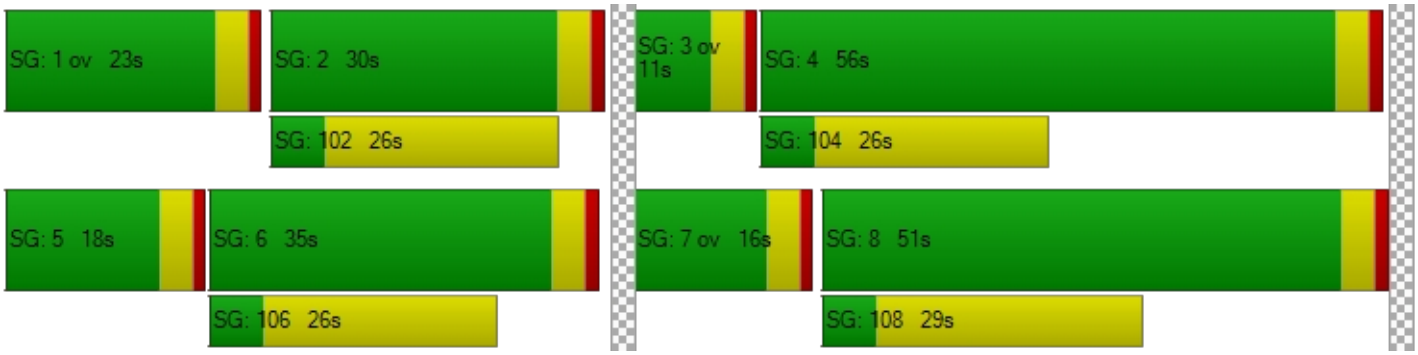
d_M, Delay for Movement [s/veh]	55.37	26.63	17.29	63.55	33.15	41.09	58.37	34.46	17.26	59.01	50.83	51.56
Movement LOS	E	C	B	E	C	D	E	C	B	E	D	D
d_A, Approach Delay [s/veh]	42.53			40.85			33.41			52.11		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	43.66											
Intersection LOS	D											
Intersection V/C	0.784											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.837	2.746	2.957	2.757
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	433	783	867
d_b, Bicycle Delay [s]	33.00	36.82	22.20	19.27
l_b,int, Bicycle LOS Score for Intersection	2.197	2.497	2.621	2.599
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	45.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	103	671	122	53	1008	95	70	390	93	154	601	59
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	121	20	0	91	0	0	0	0	13	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	873	157	59	1220	106	78	437	104	185	673	66
Peak Hour Factor	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	30	230	41	16	322	28	21	115	27	49	177	17
Total Analysis Volume [veh/h]	121	921	166	62	1287	112	82	461	110	195	710	70
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	38	0	10	35	0	10	36	0	36	62	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	43	43	6	39	39	6	40	40	16	50	50
g / C, Green / Cycle	0.08	0.36	0.36	0.05	0.33	0.33	0.05	0.33	0.33	0.13	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.07	0.21	0.21	0.04	0.27	0.27	0.05	0.26	0.07	0.11	0.39	0.05
s, saturation flow rate [veh/h]	1714	3427	1663	1714	3427	1727	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	129	1226	595	79	1126	568	86	596	506	226	743	632
d1, Uniform Delay [s]	55.24	31.46	31.48	56.67	37.12	37.12	56.87	36.10	28.93	51.00	34.14	21.66
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.20	0.11	0.11	0.33	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.92	2.14	4.39	15.79	6.96	12.92	35.51	3.94	0.21	9.29	18.13	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.60	0.60	0.79	0.83	0.83	0.96	0.77	0.22	0.86	0.95	0.11
d, Delay for Lane Group [s/veh]	80.15	33.61	35.87	72.46	44.08	50.04	92.38	40.04	29.15	60.30	52.26	21.74
Lane Group LOS	F	C	D	E	D	D	F	D	C	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.53	8.98	9.11	2.21	13.53	14.58	3.32	12.67	2.33	6.32	23.30	1.24
50th-Percentile Queue Length [ft/ln]	113.2	224.4	227.6	55.13	338.3	364.5	83.10	316.8	58.23	157.9	582.5	30.93
95th-Percentile Queue Length [veh/ln]	8.02	13.89	14.06	3.97	19.57	20.84	5.98	18.51	4.19	10.44	31.22	2.23
95th-Percentile Queue Length [ft/ln]	200.4	347.2	351.3	99.24	489.2	521.0	149.5	462.7	104.8	261.0	780.4	55.67

Movement, Approach, & Intersection Results

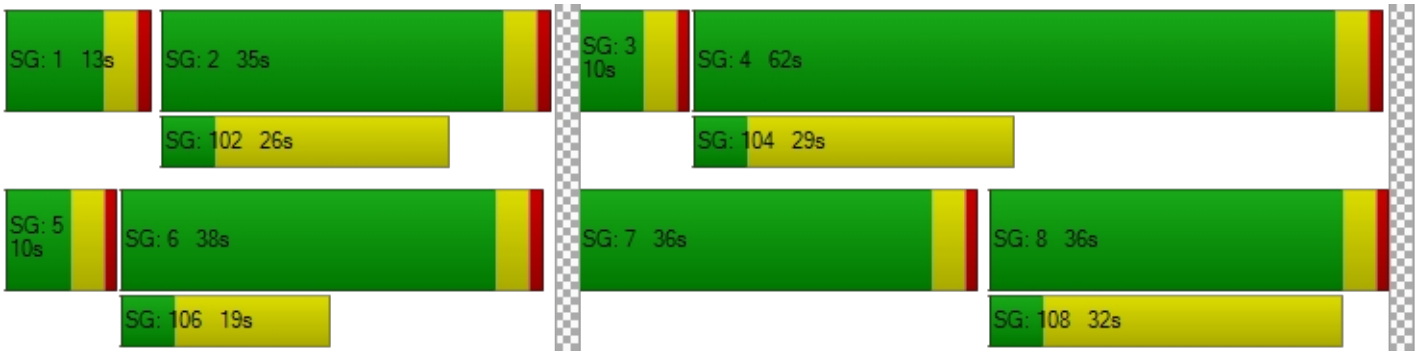
d_M, Delay for Movement [s/veh]	80.15	34.08	35.87	72.46	45.74	50.04	92.38	40.04	29.15	60.30	52.26	21.74
Movement LOS	F	C	D	E	D	D	F	D	C	E	D	C
d_A, Approach Delay [s/veh]	38.94			47.20			44.77			51.68		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.52											
Intersection LOS	D											
Intersection V/C	0.784											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.082	2.962	2.727	2.552
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	517	533	967
d_b, Bicycle Delay [s]	30.82	33.00	32.27	16.02
l_b,int, Bicycle LOS Score for Intersection	2.224	2.363	2.637	3.168
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.525

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	83	127	114	14	154	84	41	337	58	140	598	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	1	3	0	2	0	0	20	0	2	13	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	143	131	16	174	94	46	397	65	159	683	25
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	39	36	4	48	26	13	109	18	44	188	7
Total Analysis Volume [veh/h]	103	158	144	18	192	104	51	438	72	175	753	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	26	0	0	26	0	0	94	0	0	94	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	54	54	54	54	54	54	58	58	58	58	58	58
g / C, Green / Cycle	0.45	0.45	0.45	0.45	0.45	0.45	0.48	0.48	0.48	0.48	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.09	0.02	0.11	0.07	0.07	0.24	0.05	0.19	0.42	0.02
s, saturation flow rate [veh/h]	1100	1800	1530	1094	1800	1530	703	1800	1530	904	1800	1530
c, Capacity [veh/h]	463	818	695	475	818	695	130	862	733	334	862	733
d1, Uniform Delay [s]	26.58	19.59	19.73	23.51	20.01	19.18	52.44	21.52	17.08	36.16	27.99	16.58
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.14	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.11	0.53	0.68	0.15	0.67	0.46	1.92	0.46	0.06	1.28	3.87	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.19	0.21	0.04	0.23	0.15	0.39	0.51	0.10	0.52	0.87	0.04
d, Delay for Lane Group [s/veh]	27.68	20.12	20.40	23.66	20.68	19.63	54.36	21.98	17.14	37.43	31.86	16.60
Lane Group LOS	C	C	C	C	C	B	D	C	B	D	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.22	2.77	2.57	0.35	3.45	1.80	1.56	8.49	1.11	4.53	19.66	0.42
50th-Percentile Queue Length [ft/ln]	55.40	69.31	64.13	8.64	86.13	44.93	39.01	212.1	27.63	113.3	491.4	10.43
95th-Percentile Queue Length [veh/ln]	3.99	4.99	4.62	0.62	6.20	3.23	2.81	13.27	1.99	8.02	26.93	0.75
95th-Percentile Queue Length [ft/ln]	99.72	124.7	115.4	15.56	155.0	80.87	70.22	331.6	49.73	200.6	673.2	18.77

Movement, Approach, & Intersection Results

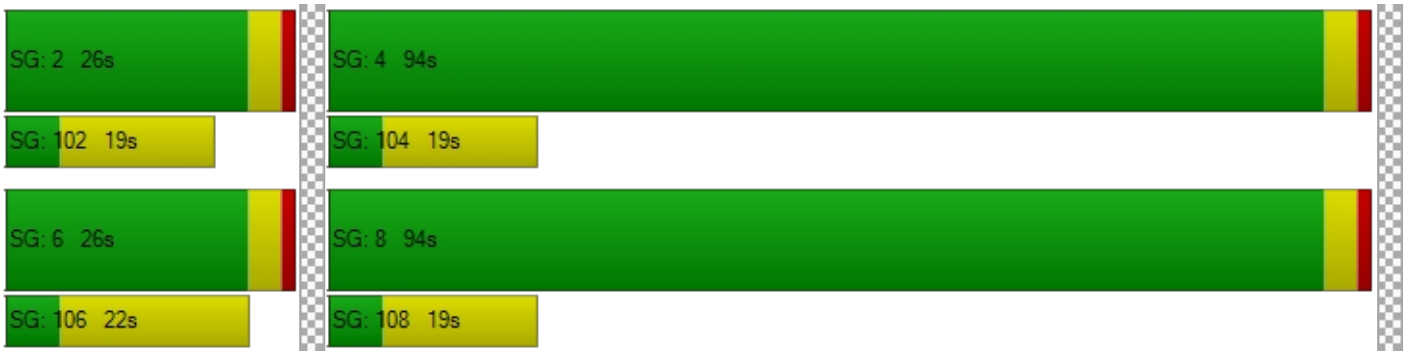
d_M, Delay for Movement [s/veh]	27.68	20.12	20.40	23.66	20.68	19.63	54.36	21.98	17.14	37.43	31.86	16.60
Movement LOS	C	C	C	C	C	B	D	C	B	D	C	B
d_A, Approach Delay [s/veh]	22.14			20.50			24.30			32.43		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.85											
Intersection LOS	C											
Intersection V/C	0.525											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.601	2.353	2.664	2.644
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	367	1500	1500
d_b, Bicycle Delay [s]	40.02	40.02	3.75	3.75
l_b,int, Bicycle LOS Score for Intersection	2.228	2.078	2.485	3.137
Bicycle LOS	B	B	B	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	49.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	208	617	205	96	791	141	73	255	105	226	437	131
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	3	0	2	0	0	11	0	2	7	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	233	695	233	108	888	158	82	297	118	255	496	147
Peak Hour Factor	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	60	180	60	28	230	41	21	77	31	66	128	38
Total Analysis Volume [veh/h]	241	719	241	112	919	164	85	307	122	264	513	152
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	52	0	13	43	0	11	26	0	29	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	52	52	9	43	43	7	23	23	20	36	36
g / C, Green / Cycle	0.15	0.43	0.43	0.08	0.36	0.36	0.06	0.19	0.19	0.17	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.14	0.28	0.28	0.07	0.31	0.31	0.05	0.09	0.08	0.15	0.29	0.10
s, saturation flow rate [veh/h]	1714	1800	1648	1714	1800	1706	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	257	776	710	129	641	607	100	650	290	293	544	463
d1, Uniform Delay [s]	50.44	26.91	26.96	54.93	36.00	36.04	55.98	43.27	42.81	48.72	40.83	32.41
k, delay calibration	0.13	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.17	0.35	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.91	4.11	4.54	16.02	14.69	15.58	17.50	0.53	0.97	14.15	21.09	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.64	0.65	0.87	0.87	0.87	0.85	0.47	0.42	0.90	0.94	0.33
d, Delay for Lane Group [s/veh]	67.35	31.02	31.50	70.95	50.69	51.62	73.48	43.81	43.78	62.87	61.91	32.82
Lane Group LOS	E	C	C	E	D	D	E	D	D	E	E	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.34	12.02	11.15	3.92	17.53	16.82	3.04	4.11	3.27	8.88	17.81	3.49
50th-Percentile Queue Length [ft/ln]	208.6	300.5	278.8	98.03	438.2	420.6	75.89	102.8	81.87	222.0	445.1	87.28
95th-Percentile Queue Length [veh/ln]	13.08	17.71	16.63	7.06	24.40	23.55	5.46	7.40	5.89	13.77	24.73	6.28
95th-Percentile Queue Length [ft/ln]	327.0	442.6	415.7	176.4	609.9	588.7	136.5	185.1	147.3	344.2	618.2	157.1

Movement, Approach, & Intersection Results

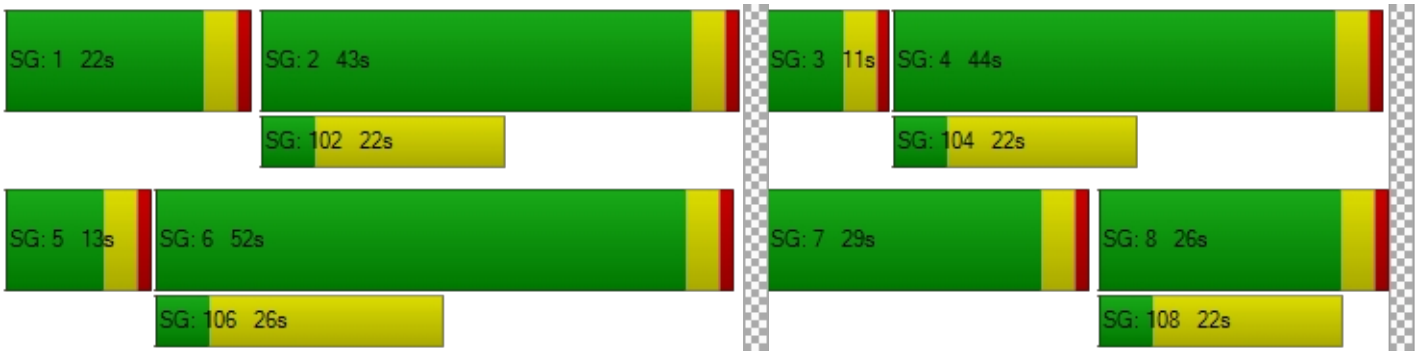
d_M, Delay for Movement [s/veh]	67.35	31.17	31.50	70.95	51.06	51.62	73.48	43.81	43.78	62.87	61.91	32.82
Movement LOS	E	C	C	E	D	D	E	D	D	E	E	C
d_A, Approach Delay [s/veh]	38.50			53.00			48.71			57.43		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	48.96											
Intersection LOS	D											
Intersection V/C	0.784											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.804	2.735	2.594	2.726
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	650	367	667
d_b, Bicycle Delay [s]	21.60	27.34	40.02	26.67
l_b,int, Bicycle LOS Score for Intersection	2.550	2.545	1.984	3.092
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.625

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	87	511	35	58	717	69	67	402	82	69	527	55
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	11	3	0	11	0	0	3	0	2	2	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	583	42	65	814	77	75	453	92	79	592	62
Peak Hour Factor	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	170	12	19	237	22	22	132	27	23	172	18
Total Analysis Volume [veh/h]	113	679	49	76	949	90	87	528	107	92	690	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	44	0	12	43	0	11	52	0	12	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	61	61	7	59	59	7	28	28	8	29	29
g / C, Green / Cycle	0.08	0.51	0.51	0.06	0.49	0.49	0.06	0.23	0.23	0.07	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.07	0.20	0.20	0.04	0.29	0.29	0.05	0.18	0.18	0.05	0.22	0.22
s, saturation flow rate [veh/h]	1714	1800	1758	1714	1800	1746	1714	1800	1696	1714	1800	1741
c, Capacity [veh/h]	129	920	899	96	886	859	100	420	395	114	434	420
d1, Uniform Delay [s]	54.96	18.02	18.03	55.95	21.88	21.89	56.05	43.10	43.14	55.26	44.02	44.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.78	1.30	1.33	13.46	2.94	3.03	19.52	3.14	3.38	12.59	6.79	7.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.40	0.40	0.79	0.60	0.60	0.87	0.78	0.78	0.81	0.89	0.89
d, Delay for Lane Group [s/veh]	71.74	19.32	19.36	69.41	24.82	24.92	75.56	46.24	46.52	67.86	50.82	51.06
Lane Group LOS	E	B	B	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.98	6.53	6.39	2.63	11.18	10.87	3.15	9.41	8.94	3.14	11.89	11.53
50th-Percentile Queue Length [ft/ln]	99.51	163.1	159.6	65.81	279.4	271.8	78.87	235.3	223.4	78.58	297.2	288.3
95th-Percentile Queue Length [veh/ln]	7.16	10.72	10.53	4.74	16.66	16.28	5.68	14.45	13.84	5.66	17.54	17.10
95th-Percentile Queue Length [ft/ln]	179.1	267.9	263.2	118.4	416.5	407.0	141.9	361.1	346.0	141.4	438.5	427.5

Movement, Approach, & Intersection Results

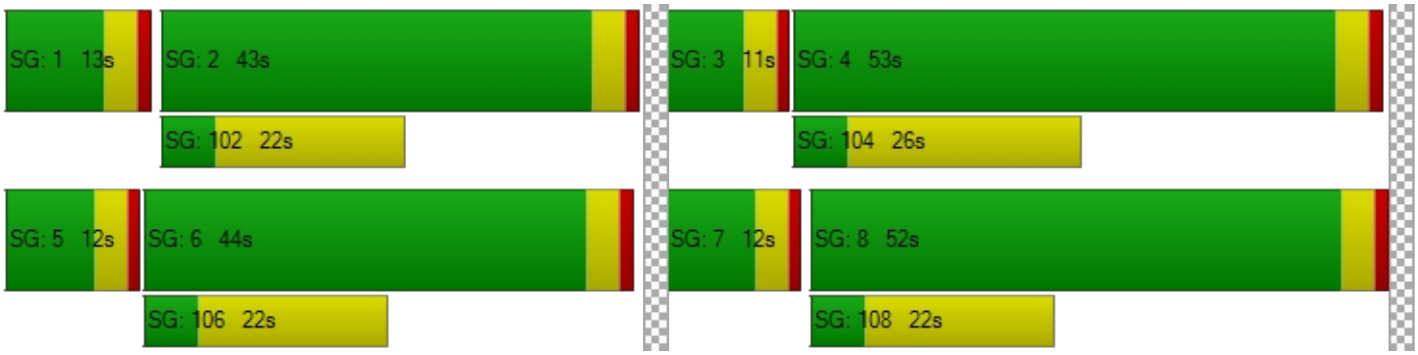
d_M, Delay for Movement [s/veh]	71.74	19.34	19.36	69.41	24.87	24.92	75.56	46.35	46.52	67.86	50.92	51.06
Movement LOS	E	B	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.38			27.91			49.90			52.76		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.05											
Intersection LOS	D											
Intersection V/C	0.625											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.703	2.785	2.630	2.609
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	650	800	817
d_b, Bicycle Delay [s]	26.67	27.34	21.60	21.00
l_b,int, Bicycle LOS Score for Intersection	2.253	2.479	2.155	2.264
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	25.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.682

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	418	151	65	572	0	0	0	0	234	0	137
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	84	0	0	58	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	552	169	73	699	0	0	0	0	262	0	153
Peak Hour Factor	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	161	49	21	204	0	0	0	0	76	0	45
Total Analysis Volume [veh/h]	0	644	197	85	816	0	0	0	0	306	0	179
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	63	0	21	75	0	0	36	0	0	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	71	71	8	78	78	29	29	29	29
g / C, Green / Cycle	0.00	0.59	0.59	0.06	0.65	0.65	0.25	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.00	0.36	0.13	0.05	0.45	0.00	0.00	0.00	0.23	0.12
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1530	1703	1530	1336	1530
c, Capacity [veh/h]	1	1066	906	108	1179	1002	447	375	387	375
d1, Uniform Delay [s]	0.00	15.53	11.45	55.45	13.08	0.00	0.00	0.00	45.50	38.75
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.35	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	2.54	0.55	12.00	3.35	0.00	0.00	0.00	10.98	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.60	0.22	0.79	0.69	0.00	0.00	0.00	0.79	0.48
d, Delay for Lane Group [s/veh]	0.00	18.07	12.00	67.44	16.43	0.00	0.00	0.00	56.47	39.69
Lane Group LOS	A	B	B	E	B	A	A	A	E	D
Critical Lane Group	No	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	11.51	2.56	2.90	14.00	0.00	0.00	0.00	10.06	4.61
50th-Percentile Queue Length [ft/ln]	0.00	287.6	64.10	72.39	350.0	0.00	0.00	0.00	251.46	115.27
95th-Percentile Queue Length [veh/ln]	0.00	17.07	4.62	5.21	20.14	0.00	0.00	0.00	15.26	8.13
95th-Percentile Queue Length [ft/ln]	0.00	426.7	115.3	130.3	503.4	0.00	0.00	0.00	381.49	203.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	18.07	12.00	67.44	16.43	0.00	0.00	0.00	0.00	56.47	56.47	39.69
Movement LOS	A	B	B	E	B	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	16.65			21.25			0.00			50.28		
Approach LOS	B			C			A			D		
d_I, Intersection Delay [s/veh]	25.83											
Intersection LOS	C											
Intersection V/C	0.682											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.133	0.000	1.955	2.205
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	1183	533	533
d_b, Bicycle Delay [s]	15.50	10.00	32.27	32.27
l_b,int, Bicycle LOS Score for Intersection	2.947	3.046	1.560	2.360
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	42.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.813

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	186	806	132	35	1068	89	30	30	200	150	136	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	140	0	0	104	0	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	1043	148	39	1300	100	34	34	224	169	152	76
Peak Hour Factor	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	57	284	40	11	354	27	9	9	61	46	41	21
Total Analysis Volume [veh/h]	227	1137	161	43	1418	109	37	37	244	184	166	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	67	0	9	55	0	11	26	0	18	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	65	65	4	52	52	4	21	21	14	31
g / C, Green / Cycle	0.14	0.54	0.54	0.03	0.43	0.43	0.03	0.17	0.17	0.12	0.26
(v / s)_i Volume / Saturation Flow Rate	0.13	0.37	0.37	0.03	0.41	0.07	0.02	0.02	0.16	0.11	0.15
s, saturation flow rate [veh/h]	1714	1800	1723	1714	3427	1530	1714	1800	1530	1714	1700
c, Capacity [veh/h]	243	979	937	55	1488	664	52	314	267	200	443
d1, Uniform Delay [s]	50.95	19.70	19.86	57.66	32.78	20.69	57.65	41.77	48.67	52.45	38.44
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.18	0.11	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.13	3.69	4.01	21.01	14.58	0.53	16.19	0.17	18.20	15.60	1.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.67	0.68	0.78	0.95	0.16	0.71	0.12	0.91	0.92	0.56
d, Delay for Lane Group [s/veh]	66.08	23.40	23.88	78.68	47.36	21.22	73.84	41.93	66.87	68.05	39.67
Lane Group LOS	E	C	C	E	D	C	E	D	E	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	7.75	13.80	13.57	1.62	22.34	1.97	1.35	0.95	8.50	6.34	6.50
50th-Percentile Queue Length [ft/ln]	193.8	345.0	339.1	40.42	558.4	49.33	33.71	23.63	212.5	158.54	162.42
95th-Percentile Queue Length [veh/ln]	12.32	19.89	19.61	2.91	30.09	3.55	2.43	1.70	13.28	10.47	10.68
95th-Percentile Queue Length [ft/ln]	307.9	497.3	490.2	72.75	752.1	88.80	60.67	42.54	332.0	261.78	266.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.08	23.60	23.88	78.68	47.36	21.22	73.84	41.93	66.87	68.05	39.67	39.67
Movement LOS	E	C	C	E	D	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	29.95			46.40			64.78			51.73		
Approach LOS	C			D			E			D		
d_I, Intersection Delay [s/veh]	42.00											
Intersection LOS	D											
Intersection V/C	0.813											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.016	3.003	2.346	2.174
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	850	367	483
d_b, Bicycle Delay [s]	13.54	19.84	40.02	34.50
l_b,int, Bicycle LOS Score for Intersection	2.818	2.855	2.084	2.274
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	43.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.434

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	134	290	0	0	261	111	57	0	66	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.120	1.000	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	0	3	1	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	329	0	0	295	125	64	0	74	0	0	0
Peak Hour Factor	0.913	0.913	1.000	1.000	0.913	0.913	0.913	1.000	0.913	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	41	90	0	0	81	34	18	0	20	0	0	0
Total Analysis Volume [veh/h]	164	360	0	0	323	137	70	0	81	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.12	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.80	0.00	0.00	0.00	0.00	0.00	43.47	0.00	11.20	0.00	0.00	0.00
Movement LOS	A	A			A	A	E		B			
95th-Percentile Queue Length [veh/ln]	0.52	0.52	0.00	0.00	0.00	0.00	1.96	0.00	0.42	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.92	12.92	0.00	0.00	0.00	0.00	49.12	0.00	10.40	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	2.75			0.00			26.16			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	4.75											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.483

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	1	551	201	49	753	1	0	0	2	174	0	40
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	73	58	0	0	0	0	0	9	0	84
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	617	298	113	843	1	0	0	2	204	0	129
Peak Hour Factor	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	163	79	30	223	0	0	0	1	54	0	34
Total Analysis Volume [veh/h]	1	652	315	119	891	1	0	0	2	216	0	136
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	24	9	0	48	33	0	0	9	0	0	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	76	76	10	86	86	0	0	18	18
g / C, Green / Cycle	0.00	0.63	0.63	0.09	0.71	0.71	0.00	0.00	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.00	0.28	0.28	0.07	0.25	0.25	0.00	0.00	0.13	0.09
s, saturation flow rate [veh/h]	1714	1800	1604	1714	1800	1799	1800	1392	1687	1530
c, Capacity [veh/h]	3	1132	1009	147	1283	1282	5	4	252	228
d1, Uniform Delay [s]	59.79	11.56	11.56	53.87	6.59	6.59	59.66	59.75	49.81	47.67
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	40.84	1.30	1.46	9.94	0.75	0.75	0.00	75.25	8.27	2.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.45	0.45	0.81	0.35	0.35	0.00	0.51	0.86	0.60
d, Delay for Lane Group [s/veh]	100.6	12.86	13.02	63.81	7.33	7.33	59.66	135.00	58.07	50.15
Lane Group LOS	F	B	B	E	A	A	E	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.07	7.18	6.44	3.94	4.23	4.22	0.00	0.14	6.89	3.96
50th-Percentile Queue Length [ft/ln]	1.74	179.4	161.0	98.39	105.6	105.6	0.00	3.59	172.25	99.02
95th-Percentile Queue Length [veh/ln]	0.13	11.57	10.60	7.08	7.60	7.59	0.00	0.26	11.20	7.13
95th-Percentile Queue Length [ft/ln]	3.13	289.2	265.0	177.1	189.9	189.8	0.00	6.45	279.88	178.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	100.6	12.89	13.02	63.81	7.33	7.33	59.66	59.66	135.0	58.07	58.07	50.15
Movement LOS	F	B	B	E	A	A	E	E	F	E	E	D
d_A, Approach Delay [s/veh]	13.02			13.98			135.00			55.01		
Approach LOS	B			B			F			E		
d_I, Intersection Delay [s/veh]	19.88											
Intersection LOS	B											
Intersection V/C	0.483											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	483	83	833
d_b, Bicycle Delay [s]	55.10	34.50	55.10	20.42
l_b,int, Bicycle LOS Score for Intersection	2.358	2.394	1.561	2.140
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.600

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	3	813	117	130	1237	0	0	0	0	145	0	253
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	813	117	146	1237	0	0	0	0	145	0	283
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	223	32	40	339	0	0	0	0	40	0	77
Total Analysis Volume [veh/h]	3	890	128	160	1355	0	0	0	0	159	0	310
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	46	0	19	56	0	9	30	0	25	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	64	64	13	77	77	0	14	13	27
g / C, Green / Cycle	0.00	0.54	0.54	0.11	0.64	0.64	0.00	0.11	0.11	0.22
(v / s)_i Volume / Saturation Flow Rate	0.00	0.26	0.08	0.09	0.40	0.00	0.00	0.00	0.09	0.20
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1714	1530
c, Capacity [veh/h]	8	1836	820	186	2192	979	1	203	188	339
d1, Uniform Delay [s]	59.56	17.47	14.12	52.59	12.88	0.00	0.00	0.00	52.46	45.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.21	0.92	0.41	10.91	1.32	0.00	0.00	0.00	10.07	9.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.48	0.16	0.86	0.62	0.00	0.00	0.00	0.85	0.91
d, Delay for Lane Group [s/veh]	87.77	18.39	14.52	63.49	14.20	0.00	0.00	0.00	62.53	55.28
Lane Group LOS	F	B	B	E	B	A	A	A	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.15	7.79	1.85	5.30	10.60	0.00	0.00	0.00	5.22	9.88
50th-Percentile Queue Length [ft/ln]	3.81	194.8	46.22	132.4	264.9	0.00	0.00	0.00	130.59	247.04
95th-Percentile Queue Length [veh/ln]	0.27	12.37	3.33	9.07	15.93	0.00	0.00	0.00	8.97	15.04
95th-Percentile Queue Length [ft/ln]	6.85	309.2	83.19	226.8	398.3	0.00	0.00	0.00	224.30	375.92

Movement, Approach, & Intersection Results

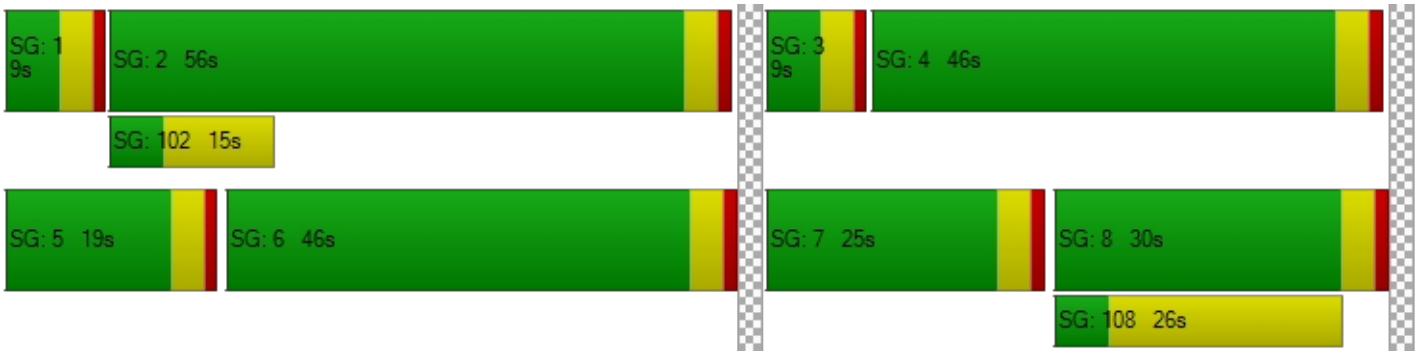
d_M, Delay for Movement [s/veh]	87.77	18.39	14.52	63.49	14.20	0.00	0.00	0.00	0.00	62.53	55.28	55.28
Movement LOS	F	B	B	E	B	A	A	A	A	E	E	E
d_A, Approach Delay [s/veh]	18.11			19.41			0.00			57.74		
Approach LOS	B			B			A			E		
d_I, Intersection Delay [s/veh]	24.95											
Intersection LOS	C											
Intersection V/C	0.600											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.962	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	867	433	700
d_b, Bicycle Delay [s]	25.35	19.27	36.82	25.35
I_b,int, Bicycle LOS Score for Intersection	2.402	2.809	1.560	2.333
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	37.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.926

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	51	162	58	56	145	76	103	129	56	67	230	153
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	0	0	3	0	0	11	0	0	7	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	185	65	63	165	85	115	155	63	75	265	171
Peak Hour Factor	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	52	18	18	47	24	32	44	18	21	75	48
Total Analysis Volume [veh/h]	64	209	73	71	186	96	130	175	71	85	299	193
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	395	436	416	396	441	415	459
Degree of Utilization, x	0.69	0.17	0.85	0.77	0.16	0.93	0.42

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.04	0.60	8.22	6.44	0.57	10.23	2.05
95th-Percentile Queue Length [ft]	125.95	14.90	205.46	160.98	14.19	255.77	51.21
Approach Delay [s/veh]	26.19		44.37	31.96		43.39	
Approach LOS	D		E	D		E	
Intersection Delay [s/veh]	37.39						
Intersection LOS	E						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.573

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	51	676	27	61	902	92	147	156	48	43	206	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	7	1	0	4	0	0	11	0	1	7	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	764	31	68	1014	103	165	186	54	49	238	115
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	199	8	18	264	27	43	48	14	13	62	30
Total Analysis Volume [veh/h]	59	796	32	71	1056	107	172	194	56	51	248	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	48	0	10	49	0	36	39	0	23	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	68	68	6	69	69	14	25	25	5	16	16
g / C, Green / Cycle	0.04	0.57	0.57	0.05	0.58	0.58	0.12	0.21	0.21	0.04	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.23	0.23	0.04	0.33	0.33	0.10	0.06	0.04	0.03	0.11	0.11
s, saturation flow rate [veh/h]	1714	1800	1776	1714	1800	1743	1714	3427	1530	1714	1800	1608
c, Capacity [veh/h]	71	1020	1006	86	1035	1002	203	721	322	68	237	211
d1, Uniform Delay [s]	57.07	14.66	14.67	56.49	16.13	16.15	51.81	39.66	38.83	57.03	50.64	50.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.49	1.21	1.23	17.79	2.28	2.37	9.26	0.20	0.25	15.07	6.44	8.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.41	0.41	0.83	0.57	0.57	0.85	0.27	0.17	0.75	0.81	0.84
d, Delay for Lane Group [s/veh]	77.55	15.88	15.90	74.28	18.41	18.52	61.06	39.86	39.09	72.10	57.08	59.34
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.18	6.60	6.52	2.56	10.54	10.26	5.59	2.43	1.39	1.82	6.00	5.68
50th-Percentile Queue Length [ft/ln]	54.55	165.0	162.9	63.89	263.5	256.5	139.8	60.74	34.63	45.43	149.9	141.9
95th-Percentile Queue Length [veh/ln]	3.93	10.81	10.70	4.60	15.87	15.52	9.47	4.37	2.49	3.27	10.02	9.59
95th-Percentile Queue Length [ft/ln]	98.20	270.3	267.5	115.0	396.6	387.9	236.7	109.3	62.33	81.78	250.4	239.6

Movement, Approach, & Intersection Results

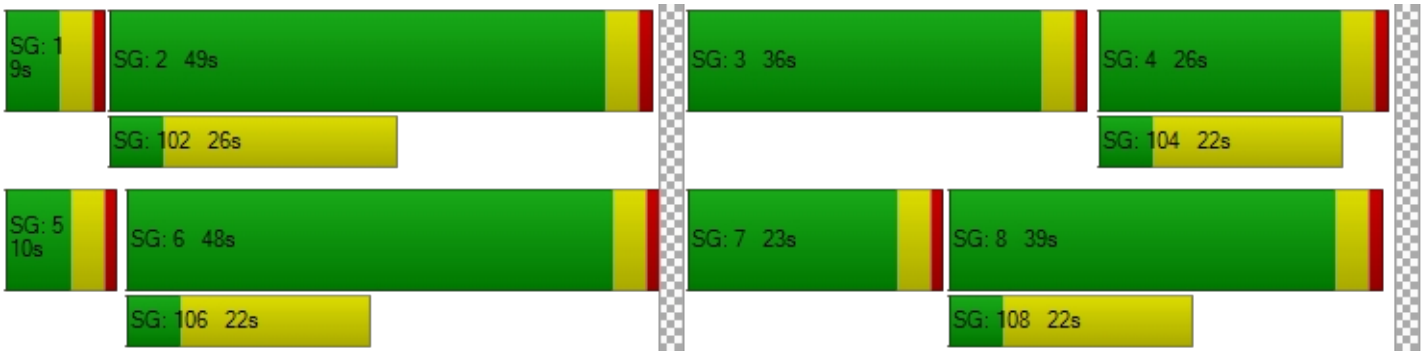
d_M, Delay for Movement [s/veh]	77.55	15.89	15.90	74.28	18.46	18.52	61.06	39.86	39.09	72.10	57.60	59.34
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	19.99			21.67			48.40			59.86		
Approach LOS	B			C			D			E		
d_I, Intersection Delay [s/veh]	30.38											
Intersection LOS	C											
Intersection V/C	0.573											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.715	2.845	2.604	2.584
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	750	583	367
d_b, Bicycle Delay [s]	24.07	23.44	30.10	40.02
l_b,int, Bicycle LOS Score for Intersection	2.291	2.578	1.908	1.905
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	40.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.619

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	57	568	91	33	877	42	50	340	93	134	370	43
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	1	5	0	0	5	12	15	6	2	0	4	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	641	102	37	987	59	71	387	106	150	418	48
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	177	28	10	272	16	20	107	29	41	115	13
Total Analysis Volume [veh/h]	72	707	112	41	1088	65	78	427	117	165	461	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	63	0	10	63	0	12	30	0	17	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	44	44	4	42	42	7	43	43	13	49	49
g / C, Green / Cycle	0.05	0.37	0.37	0.03	0.35	0.35	0.06	0.36	0.36	0.11	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.04	0.23	0.23	0.02	0.32	0.32	0.05	0.16	0.16	0.10	0.15	0.15
s, saturation flow rate [veh/h]	1714	1800	1715	1714	1800	1765	1714	1800	1669	1714	1800	1736
c, Capacity [veh/h]	86	666	635	55	634	622	99	641	594	186	732	706
d1, Uniform Delay [s]	56.52	31.04	31.04	57.57	37.19	37.21	55.83	29.49	29.54	52.78	24.70	24.71
k, delay calibration	0.11	0.11	0.11	0.11	0.21	0.22	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.87	0.99	1.04	17.59	10.56	10.84	13.03	2.17	2.38	13.21	1.36	1.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.63	0.63	0.74	0.92	0.92	0.79	0.44	0.44	0.89	0.36	0.36
d, Delay for Lane Group [s/veh]	75.40	32.02	32.08	75.16	47.76	48.06	68.86	31.66	31.92	65.99	26.06	26.13
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.61	10.08	9.62	1.50	17.96	17.68	2.69	6.57	6.19	5.58	5.43	5.27
50th-Percentile Queue Length [ft/ln]	65.31	252.0	240.5	37.62	449.0	442.0	67.24	164.2	154.7	139.5	135.7	131.6
95th-Percentile Queue Length [veh/ln]	4.70	15.29	14.71	2.71	24.91	24.58	4.84	10.77	10.27	9.46	9.25	9.03
95th-Percentile Queue Length [ft/ln]	117.5	382.2	367.6	67.71	622.8	614.3	121.0	269.2	256.7	236.3	231.2	225.7

Movement, Approach, & Intersection Results

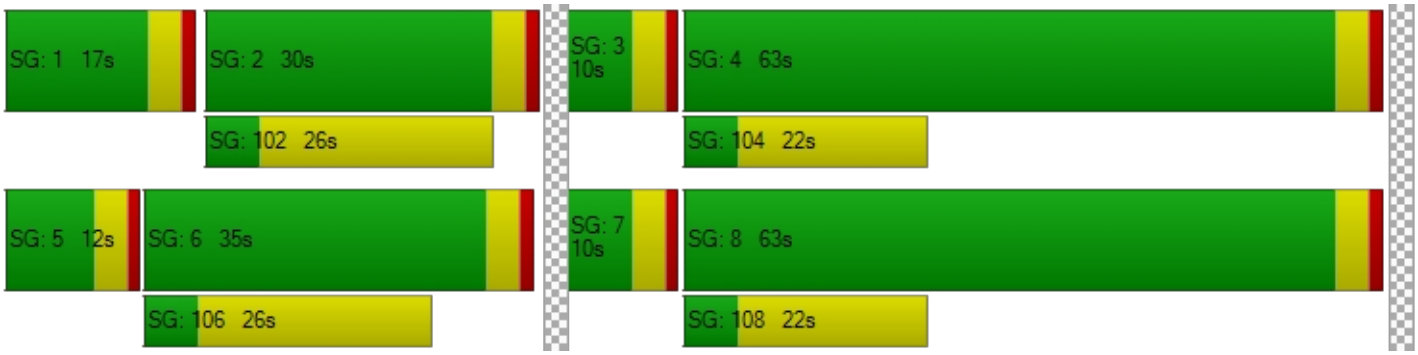
d_M, Delay for Movement [s/veh]	75.40	32.04	32.08	75.16	47.90	48.06	68.86	31.75	31.92	65.99	26.09	26.13
Movement LOS	E	C	C	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	35.55			48.84			36.44			35.79		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.45											
Intersection LOS	D											
Intersection V/C	0.619											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.836	2.798	2.553	2.561
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	983	433	517
d_b, Bicycle Delay [s]	15.50	15.50	36.82	33.00
l_b,int, Bicycle LOS Score for Intersection	2.295	2.545	2.073	2.120
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.489

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	20	645	75	23	871	122	103	90	11	74	78	31
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	2	0	0	3	2	6	12	0	5	5	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	724	84	26	979	139	121	113	12	88	92	35
Peak Hour Factor	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	6	196	23	7	265	38	33	31	3	24	25	9
Total Analysis Volume [veh/h]	24	783	91	28	1058	150	131	122	13	95	99	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	47	0	9	47	0	38	26	0	38	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	81	81	3	81	81	11	11	11	8	9	9
g / C, Green / Cycle	0.02	0.68	0.68	0.03	0.68	0.68	0.09	0.10	0.10	0.07	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.01	0.25	0.25	0.02	0.34	0.34	0.08	0.07	0.01	0.06	0.06	0.02
s, saturation flow rate [veh/h]	1714	1800	1735	1714	1800	1723	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	40	1215	1171	44	1219	1167	160	172	146	121	131	112
d1, Uniform Delay [s]	58.07	8.43	8.43	57.94	9.51	9.53	53.38	52.64	49.49	54.85	54.57	52.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.02	0.85	0.89	14.72	1.50	1.58	9.70	5.28	0.26	10.44	8.45	1.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	0.37	0.37	0.64	0.51	0.51	0.82	0.71	0.09	0.78	0.75	0.34
d, Delay for Lane Group [s/veh]	72.09	9.28	9.31	72.65	11.01	11.10	63.09	57.92	49.75	65.29	63.01	54.67
Lane Group LOS	E	A	A	E	B	B	E	E	D	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.88	4.97	4.81	1.02	7.86	7.59	4.31	3.82	0.37	3.18	3.24	1.15
50th-Percentile Queue Length [ft/ln]	21.92	124.3	120.1	25.52	196.6	189.6	107.7	95.52	9.20	79.48	81.11	28.69
95th-Percentile Queue Length [veh/ln]	1.58	8.63	8.40	1.84	12.46	12.10	7.72	6.88	0.66	5.72	5.84	2.07
95th-Percentile Queue Length [ft/ln]	39.45	215.8	210.0	45.94	311.6	302.5	192.9	171.9	16.56	143.0	145.9	51.64

Movement, Approach, & Intersection Results

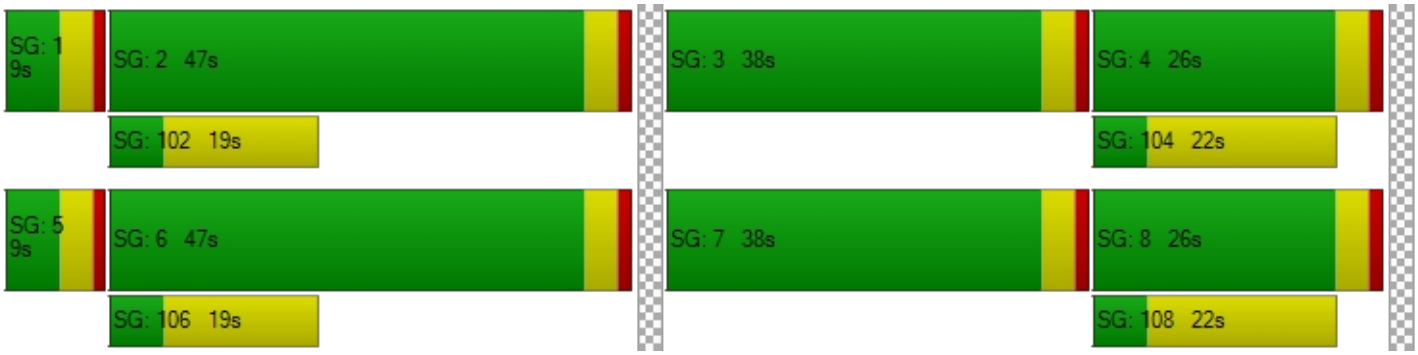
d_M, Delay for Movement [s/veh]	72.09	9.30	9.31	72.65	11.05	11.10	63.09	57.92	49.75	65.29	63.01	54.67
Movement LOS	E	A	A	E	B	B	E	E	D	E	E	D
d_A, Approach Delay [s/veh]	10.98			12.45			60.07			62.58		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	21.18											
Intersection LOS	C											
Intersection V/C	0.489											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.718	2.742	2.278	2.262
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	717	367	367
d_b, Bicycle Delay [s]	24.70	24.70	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	2.300	2.579	1.999	1.942
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	10	838	104	156	1207	9	0	1	0	214	0	109
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.120	1.120	1.120	1.000
In-Process Volume [veh/h]	117	0	0	0	0	0	0	123	96	0	97	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	838	116	156	1207	9	0	124	96	240	97	109
Peak Hour Factor	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	35	229	32	43	330	2	0	34	26	66	27	30
Total Analysis Volume [veh/h]	140	916	127	170	1319	10	0	136	105	262	106	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	38	0	22	45	0	12	33	0	27	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	51	51	14	53	53	0	19	20	40
g / C, Green / Cycle	0.09	0.42	0.42	0.11	0.44	0.44	0.00	0.16	0.17	0.33
(v / s)_i Volume / Saturation Flow Rate	0.08	0.20	0.20	0.10	0.27	0.01	0.00	0.14	0.15	0.14
s, saturation flow rate [veh/h]	1714	3427	1690	1714	4903	1530	1714	1671	1714	1646
c, Capacity [veh/h]	157	1443	712	197	2180	680	2	271	289	542
d1, Uniform Delay [s]	53.91	25.25	25.26	52.15	25.32	18.63	0.00	49.22	48.98	31.25
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.12	0.17	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.39	1.16	2.36	10.49	1.26	0.04	0.00	10.42	14.92	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.48	0.48	0.86	0.61	0.01	0.00	0.89	0.91	0.41
d, Delay for Lane Group [s/veh]	69.29	26.41	27.62	62.64	26.58	18.67	0.00	59.64	63.90	31.76
Lane Group LOS	E	C	C	E	C	B	A	E	E	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.85	7.42	7.57	5.60	9.65	0.16	0.00	7.84	8.88	5.15
50th-Percentile Queue Length [ft/ln]	121.2	185.4	189.3	139.9	241.2	4.12	0.00	195.98	221.95	128.71
95th-Percentile Queue Length [veh/ln]	8.46	11.89	12.09	9.48	14.74	0.30	0.00	12.43	13.76	8.87
95th-Percentile Queue Length [ft/ln]	211.4	297.1	302.1	236.9	368.5	7.41	0.00	310.78	344.11	221.74

Movement, Approach, & Intersection Results

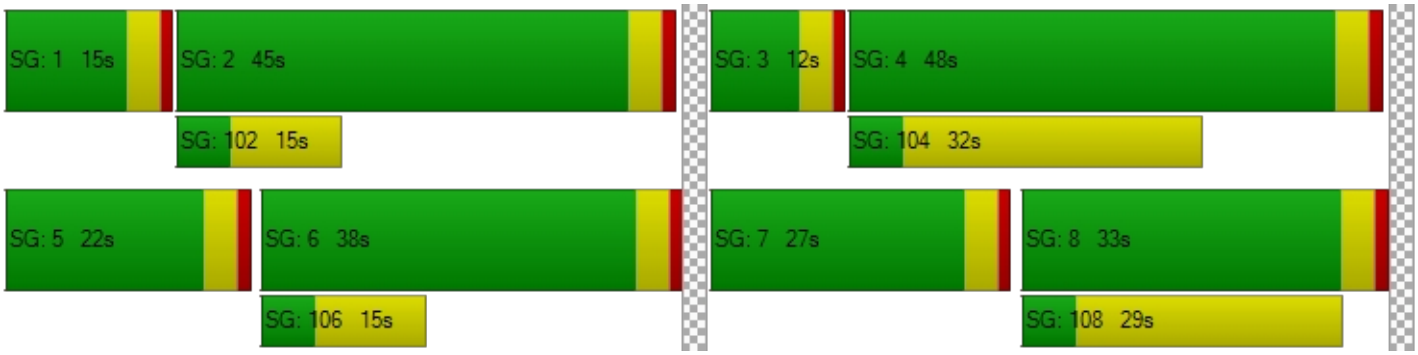
d_M, Delay for Movement [s/veh]	69.29	26.70	27.62	62.64	26.58	18.67	0.00	59.64	59.64	63.90	31.76	31.76
Movement LOS	E	C	C	E	C	B	A	E	E	E	C	C
d_A, Approach Delay [s/veh]	31.84			30.62			59.64			49.05		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	35.73											
Intersection LOS	D											
Intersection V/C	0.648											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.009	3.229	2.117	2.254
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	683	483	733
d_b, Bicycle Delay [s]	30.82	26.00	34.50	24.07
l_b,int, Bicycle LOS Score for Intersection	2.210	2.384	1.957	2.363
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	85.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.133

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	17	193	42	6	194	82	55	115	18	31	173	39
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	4	0	0	0	0	3	4	129	8	0	102	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	216	47	7	217	95	66	258	28	35	296	44
Peak Hour Factor	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	64	14	2	65	28	20	77	8	10	88	13
Total Analysis Volume [veh/h]	27	257	56	8	258	113	79	307	33	42	352	52
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	384	396	419	446
Degree of Utilization, x	0.88	0.96	1.07	1.13

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.86	10.91	14.35	16.61
95th-Percentile Queue Length [ft]	221.52	272.71	358.64	415.29
Approach Delay [s/veh]	52.82	65.77	96.06	116.62
Approach LOS	F	F	F	F
Intersection Delay [s/veh]	85.32			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	30.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.867

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	4	43	60	69	61	1	41	86	14	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	48	67	77	68	1	46	96	16	10
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	13	18	20	18	0	12	25	4	3
Total Analysis Volume [veh/h]	4	50	70	81	71	1	48	101	17	11
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	453	423
Degree of Utilization, x	0.61	0.42

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.96	2.05
95th-Percentile Queue Length [ft]	99.04	51.18
Approach Delay [s/veh]	22.54	17.59
Approach LOS	C	C
Intersection Delay [s/veh]	30.07	
Intersection LOS	D	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	46	6	95	57	0	27	55	146	14	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	17	105	0	0	0	0	89	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	24	211	64	0	30	62	253	16	4
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	6	55	17	0	8	16	66	4	1
Total Analysis Volume [veh/h]	55	25	222	67	0	32	65	266	17	4
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	444	443
Degree of Utilization, x	0.83	0.87

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.96	8.87
95th-Percentile Queue Length [ft]	199.11	221.69
Approach Delay [s/veh]	39.93	44.95
Approach LOS	E	E
Intersection Delay [s/veh]	30.07	
Intersection LOS	D	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	2	13	66	23	1	13	45	123	26	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	7	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	15	74	26	1	15	50	138	36	7
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	19	7	0	4	13	36	9	2
Total Analysis Volume [veh/h]	2	16	78	27	1	16	53	145	38	7
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	430	427	477
Degree of Utilization, x	0.29	0.50	0.09

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.18	2.74	0.31
95th-Percentile Queue Length [ft]	29.52	68.44	7.78
Approach Delay [s/veh]	14.74	17.89	
Approach LOS	B	C	
Intersection Delay [s/veh]	30.07		
Intersection LOS	D		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.594

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	591	196	103	849	50	80	110	135	123	108	67
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	39	0	0	0	0	8	2	60	42	0	42	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	662	220	115	951	64	92	183	193	138	163	75
Peak Hour Factor	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	167	55	29	240	16	23	46	49	35	41	19
Total Analysis Volume [veh/h]	167	667	222	116	959	65	93	184	195	139	164	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	27	45	0	22	40	0	27	37	0	16	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	65	65	10	61	61	8	18	18	11	21	21
g / C, Green / Cycle	0.11	0.54	0.54	0.08	0.51	0.51	0.07	0.15	0.15	0.10	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.10	0.26	0.26	0.07	0.29	0.29	0.05	0.05	0.13	0.08	0.09	0.05
s, saturation flow rate [veh/h]	1714	1800	1648	1714	1800	1760	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	196	970	889	143	914	894	119	510	227	164	315	268
d1, Uniform Delay [s]	52.13	17.17	17.17	54.09	20.39	20.40	54.94	45.95	49.84	53.40	44.94	42.98
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.89	1.69	1.84	10.55	2.54	2.60	10.56	0.43	9.00	11.32	1.33	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.48	0.48	0.81	0.57	0.57	0.78	0.36	0.86	0.85	0.52	0.28
d, Delay for Lane Group [s/veh]	62.02	18.86	19.02	64.65	22.93	23.00	65.51	46.38	58.84	64.72	46.27	43.55
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.47	8.24	7.59	3.86	10.45	10.24	3.12	2.51	6.27	4.64	4.56	2.01
50th-Percentile Queue Length [ft/ln]	136.7	205.9	189.6	96.58	261.1	255.9	77.96	62.76	156.7	115.9	113.9	50.27
95th-Percentile Queue Length [veh/ln]	9.30	12.94	12.10	6.95	15.75	15.49	5.61	4.52	10.38	8.17	8.06	3.62
95th-Percentile Queue Length [ft/ln]	232.6	323.6	302.5	173.8	393.6	387.1	140.3	112.9	259.3	204.2	201.4	90.49

Movement, Approach, & Intersection Results

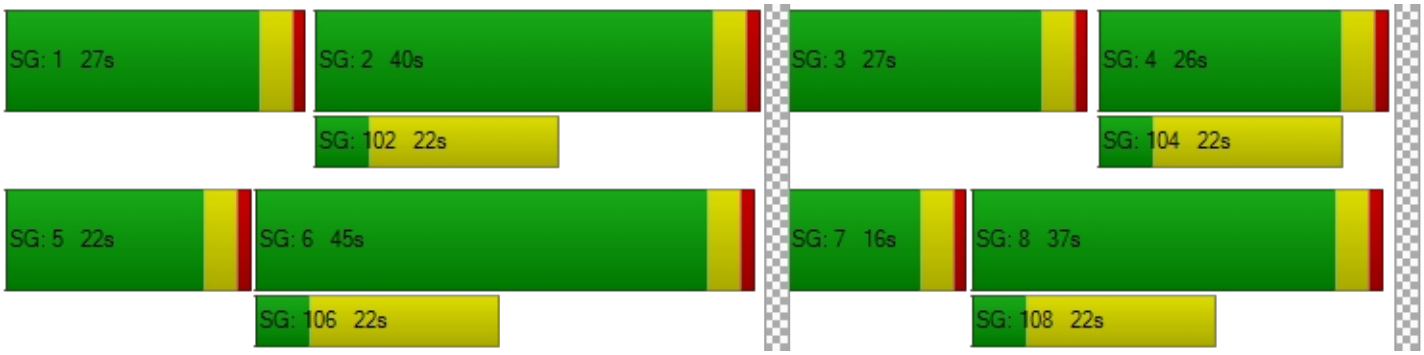
d_M, Delay for Movement [s/veh]	62.02	18.91	19.02	64.65	22.96	23.00	65.51	46.38	58.84	64.72	46.27	43.55
Movement LOS	E	B	B	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	25.75			27.20			55.30			52.49		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	34.20											
Intersection LOS	C											
Intersection V/C	0.594											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.773	2.700	2.484	2.615
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	600	550	367
d_b, Bicycle Delay [s]	26.00	29.40	31.54	40.02
l_b,int, Bicycle LOS Score for Intersection	2.431	2.500	1.949	2.185
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	31	725	49	22	1043	36	57	200	93	134	203	50
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	20	0	0	0	0	8	9	6	32	0	4	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	812	55	25	1168	48	73	230	136	150	231	56
Peak Hour Factor	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	211	14	6	303	12	19	60	35	39	60	15
Total Analysis Volume [veh/h]	57	842	57	26	1212	50	76	239	141	156	240	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	54	0	9	54	0	19	34	0	23	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	72	72	3	70	70	7	16	16	13	22	22
g / C, Green / Cycle	0.04	0.60	0.60	0.02	0.58	0.58	0.06	0.14	0.14	0.11	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.03	0.25	0.25	0.02	0.35	0.35	0.04	0.11	0.11	0.09	0.08	0.09
s, saturation flow rate [veh/h]	1714	1800	1760	1714	1800	1775	1714	1800	1583	1714	1800	1682
c, Capacity [veh/h]	71	1078	1054	42	1047	1032	98	245	216	184	336	314
d1, Uniform Delay [s]	57.00	12.93	12.93	57.98	16.24	16.25	55.83	50.32	50.54	52.61	43.38	43.46
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.96	1.21	1.24	14.06	2.61	2.66	12.42	6.32	8.44	10.29	0.96	1.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.42	0.42	0.62	0.61	0.61	0.78	0.81	0.84	0.85	0.45	0.46
d, Delay for Lane Group [s/veh]	74.96	14.14	14.17	72.04	18.85	18.91	68.26	56.64	58.98	62.90	44.34	44.52
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.07	6.73	6.59	0.95	11.60	11.47	2.61	6.23	5.81	5.14	4.13	3.95
50th-Percentile Queue Length [ft/ln]	51.74	168.1	164.6	23.65	289.8	286.7	65.22	155.7	145.1	128.4	103.3	98.72
95th-Percentile Queue Length [veh/ln]	3.73	10.98	10.80	1.70	17.18	17.03	4.70	10.32	9.76	8.86	7.44	7.11
95th-Percentile Queue Length [ft/ln]	93.14	274.5	269.8	42.57	429.4	425.6	117.3	258.0	243.9	221.4	185.9	177.6

Movement, Approach, & Intersection Results

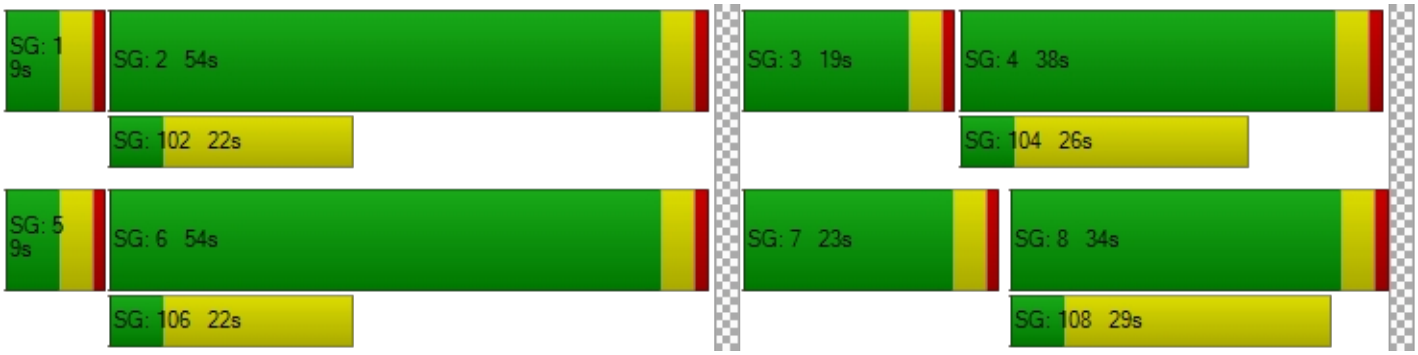
d_M, Delay for Movement [s/veh]	74.96	14.15	14.17	72.04	18.88	18.91	68.26	57.04	58.98	62.90	44.41	44.52
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	17.78			19.96			59.51			50.78		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	29.45											
Intersection LOS	C											
Intersection V/C	0.592											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.952	2.836	2.472	2.466
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	833	500	567
d_b, Bicycle Delay [s]	20.42	20.42	33.75	30.82
l_b,int, Bicycle LOS Score for Intersection	2.348	2.622	1.936	1.934
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	48.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.819

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	86	48	77	136	246	885	267	400	59	134	1190	220
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	4	0	0	6	47
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	54	86	152	276	991	299	452	66	150	1339	293
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	15	24	42	76	273	82	125	18	41	369	81
Total Analysis Volume [veh/h]	106	60	95	168	304	1093	330	498	73	165	1476	323
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	12	0	49	49	0	17	48	0	11	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	39	39	14	45	45	45	13	44	44	7	38	38
g / C, Green / Cycle	0.07	0.33	0.33	0.12	0.38	0.38	0.38	0.11	0.37	0.37	0.06	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.02	0.06	0.10	0.17	0.36	0.36	0.10	0.10	0.05	0.05	0.30	0.21
s, saturation flow rate [veh/h]	1714	3427	1530	171	180	153	153	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	114	1119	500	199	677	576	576	361	1792	559	194	1547	483
d1, Uniform Delay [s]	55.71	27.70	29.02	51.9	28.1	36.3	36.3	52.95	26.88	25.36	55.98	40.22	35.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.21
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.75	0.09	0.84	9.22	2.15	26.9	26.9	9.33	0.08	0.10	9.87	4.32	3.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.05	0.19	0.84	0.45	0.95	0.95	0.91	0.28	0.13	0.85	0.95	0.67
d, Delay for Lane Group [s/veh]	80.46	27.79	29.86	61.1	30.2	63.2	63.2	62.28	26.97	25.47	65.85	44.54	38.77
Lane Group LOS	F	C	C	E	C	E	E	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.98	0.61	2.10	5.46	6.96	19.5	19.5	5.38	3.39	1.42	2.74	14.65	8.58
50th-Percentile Queue Length [ft/ln]	99.38	15.28	52.43	136.	173.	488.	488.	134.5	84.72	35.41	68.52	366.2	214.5
95th-Percentile Queue Length [veh/ln]	7.16	1.10	3.78	9.30	11.2	26.7	26.7	9.19	6.10	2.55	4.93	20.93	13.39
95th-Percentile Queue Length [ft/ln]	178.8	27.50	94.38	232.	282.	669.	669.	229.7	152.4	63.74	123.3	523.1	334.6

Movement, Approach, & Intersection Results

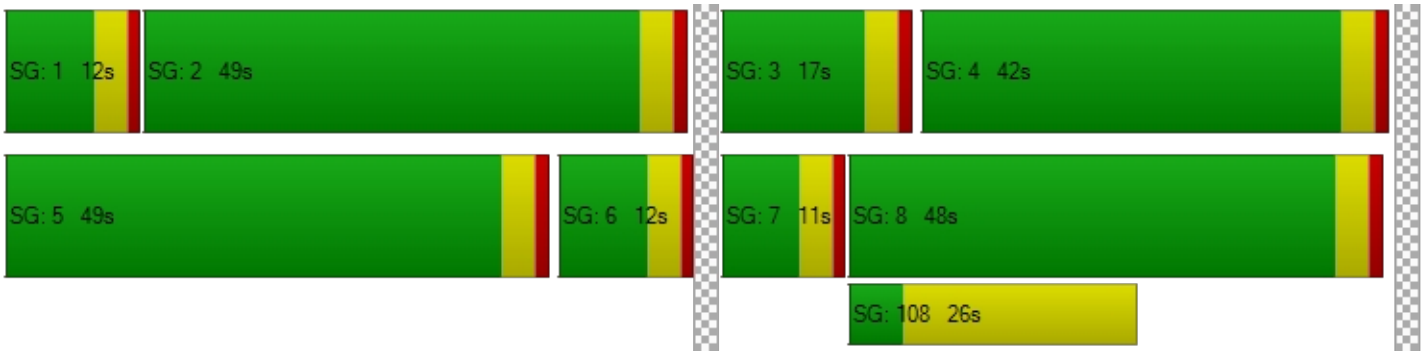
d_M, Delay for Movement [s/veh]	80.46	27.79	29.86	61.16	30.24	63.26	62.28	26.97	25.47	65.85	44.54	38.77
Movement LOS	F	C	C	E	C	E	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	49.94			56.62			39.78			45.38		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	48.31											
Intersection LOS	D											
Intersection V/C	0.819											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.599	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	133	750	733	633
d_b, Bicycle Delay [s]	52.27	23.44	24.07	28.02
l_b,int, Bicycle LOS Score for Intersection	1.775	2.851	2.055	2.640
Bicycle LOS	A	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	61.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	44	25	34	338	49	955	255	331	25	30	552	95
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	45	0	0	0	4	0	0	53	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	28	38	424	55	1070	286	375	28	34	671	106
Peak Hour Factor	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	8	10	114	15	287	77	101	8	9	180	28
Total Analysis Volume [veh/h]	53	30	41	455	59	1148	307	402	30	36	720	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	48	0	9	23	0	16	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	6	44	44	44	13	51	51	4	41	41
g / C, Green / Cycle	0.05	0.05	0.05	0.37	0.37	0.37	0.11	0.42	0.42	0.03	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.03	0.15	0.15	0.42	0.09	0.08	0.02	0.02	0.16	0.16
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1733	2708	3329	4903	1530	1714	3427	1678
c, Capacity [veh/h]	83	87	74	629	636	993	372	2070	646	50	1164	570
d1, Uniform Delay [s]	56.04	55.23	55.81	28.31	28.26	38.00	52.15	21.82	20.43	57.75	31.25	31.32
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.15	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.80	2.30	6.24	0.43	0.41	74.07	4.65	0.21	0.14	17.35	1.41	2.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.34	0.55	0.41	0.40	1.16	0.83	0.19	0.05	0.72	0.48	0.48
d, Delay for Lane Group [s/veh]	63.85	57.54	62.05	28.74	28.67	112.0	56.80	22.03	20.57	75.11	32.66	34.25
Lane Group LOS	E	E	E	C	C	F	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.76	0.94	1.34	5.59	5.57	24.50	4.76	2.43	0.53	1.33	6.61	6.79
50th-Percentile Queue Length [ft/ln]	43.94	23.39	33.59	139.6	139.3	612.5	118.8	60.74	13.13	33.14	165.1	169.8
95th-Percentile Queue Length [veh/ln]	3.16	1.68	2.42	9.46	9.44	35.81	8.33	4.37	0.95	2.39	10.82	11.07
95th-Percentile Queue Length [ft/ln]	79.09	42.11	60.47	236.5	236.1	895.2	208.2	109.3	23.64	59.66	270.5	276.7

Movement, Approach, & Intersection Results

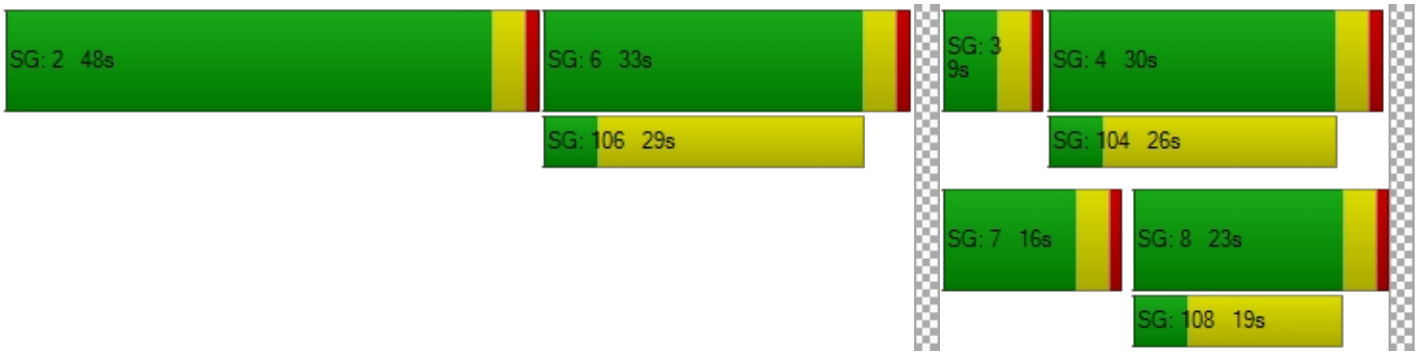
d_M, Delay for Movement [s/veh]	63.85	57.54	62.05	28.71	28.67	112.0	56.80	22.03	20.57	75.11	33.02	34.25
Movement LOS	E	E	E	C	C	F	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	61.73			86.28			36.42			34.92		
Approach LOS	E			F			D			C		
d_I, Intersection Delay [s/veh]	61.37											
Intersection LOS	E											
Intersection V/C	0.712											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.207	2.811	0.000	2.855
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	733	317	433
d_b, Bicycle Delay [s]	34.50	24.07	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.662	4.302	1.966	2.038
Bicycle LOS	A	E	A	B

Sequence

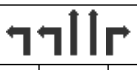
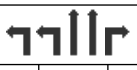
Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	34.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	228	643	85	59	766	139	149	155	92	143	309	42
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	7	2	0	1	2	27	22	0	12	51	35
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	255	727	97	66	859	158	194	196	103	172	397	82
Peak Hour Factor	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	69	196	26	18	232	43	52	53	28	46	107	22
Total Analysis Volume [veh/h]	275	784	105	71	927	170	209	211	111	186	428	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Unsig	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	47	0	9	36	0	14	36	0	28	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	70	5	62	62	9	21	21	9	21	21
g / C, Green / Cycle	0.10	0.58	0.04	0.52	0.52	0.08	0.17	0.17	0.08	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.08	0.23	0.02	0.27	0.11	0.06	0.06	0.07	0.06	0.15	0.15
s, saturation flow rate [veh/h]	3329	3427	3329	3427	1530	3329	3427	1530	3329	1800	1695
c, Capacity [veh/h]	335	1983	126	1768	789	262	597	267	253	309	291
d1, Uniform Delay [s]	52.91	13.82	56.76	19.29	15.83	54.34	43.60	44.11	54.25	48.28	48.32
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.02	0.59	3.92	1.12	0.63	5.53	0.36	1.04	4.10	6.87	7.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.40	0.56	0.52	0.22	0.80	0.35	0.42	0.73	0.86	0.86
d, Delay for Lane Group [s/veh]	57.93	14.41	60.67	20.40	16.45	59.88	43.95	45.15	58.35	55.15	55.77
Lane Group LOS	E	B	E	C	B	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.30	5.83	1.13	8.68	2.67	3.30	2.80	3.03	2.90	8.29	7.89
50th-Percentile Queue Length [ft/ln]	107.39	145.67	28.18	217.0	66.69	82.60	69.98	75.64	72.40	207.1	197.2
95th-Percentile Queue Length [veh/ln]	7.69	9.79	2.03	13.51	4.80	5.95	5.04	5.45	5.21	13.01	12.49
95th-Percentile Queue Length [ft/ln]	192.36	244.64	50.73	337.8	120.0	148.6	125.9	136.1	130.3	325.1	312.3

Movement, Approach, & Intersection Results

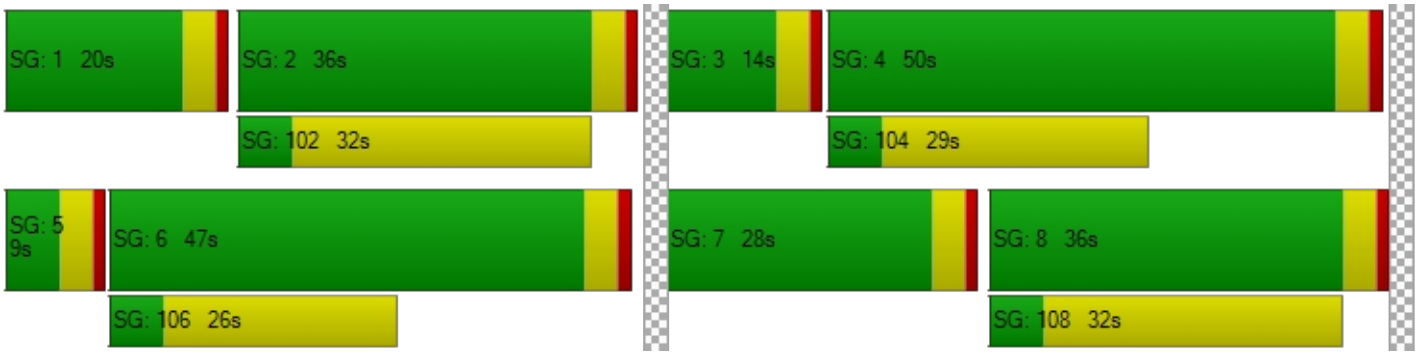
d_M, Delay for Movement [s/veh]	57.93	14.41	0.00	60.67	20.40	16.45	59.88	43.95	45.15	58.35	55.38	55.77
Movement LOS	E	B		E	C	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	25.71			22.28			50.47			56.22		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	34.54											
Intersection LOS	C											
Intersection V/C	0.564											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.019	2.922	2.912	2.628
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	533	533	767
d_b, Bicycle Delay [s]	24.70	32.27	32.27	22.82
l_b,int, Bicycle LOS Score for Intersection	2.433	2.523	1.998	2.139
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.542

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	46	3	220	4	8	0	1	182	33	263	473	2
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	35	0	39	0	0	0	0	24	0	86	62	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	3	285	4	9	0	1	228	37	381	592	2
Peak Hour Factor	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	1	80	1	3	0	0	64	10	106	165	1
Total Analysis Volume [veh/h]	97	3	318	4	10	0	1	255	41	426	661	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	33	0	9	33	0	47	26	0	52	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	34	34	27	34	0	42	42	32	74	74
g / C, Green / Cycle	0.29	0.29	0.22	0.29	0.00	0.35	0.35	0.27	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.21	0.01	0.00	0.07	0.03	0.25	0.18	0.18
s, saturation flow rate [veh/h]	1427	1365	1530	1438	1714	3427	1530	1714	1800	1798
c, Capacity [veh/h]	383	507	344	462	4	1189	531	458	1102	1101
d1, Uniform Delay [s]	32.22	32.25	45.50	30.90	59.79	27.65	26.30	42.85	11.06	11.06
k, delay calibration	0.12	0.28	0.31	0.11	0.11	0.50	0.50	0.15	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	0.25	23.61	0.03	38.70	0.41	0.28	11.47	0.70	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.11	0.92	0.03	0.28	0.21	0.08	0.93	0.30	0.30
d, Delay for Lane Group [s/veh]	32.37	32.50	69.11	30.92	98.49	28.06	26.58	54.32	11.76	11.76
Lane Group LOS	C	C	E	C	F	C	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.96	1.29	11.47	0.30	0.07	2.67	0.84	13.67	4.29	4.29
50th-Percentile Queue Length [ft/ln]	24.10	32.27	286.7	7.47	1.71	66.73	20.93	341.7	107.2	107.1
95th-Percentile Queue Length [veh/ln]	1.74	2.32	17.02	0.54	0.12	4.80	1.51	19.73	7.69	7.68
95th-Percentile Queue Length [ft/ln]	43.38	58.08	425.6	13.44	3.08	120.1	37.68	493.3	192.1	192.0

Movement, Approach, & Intersection Results

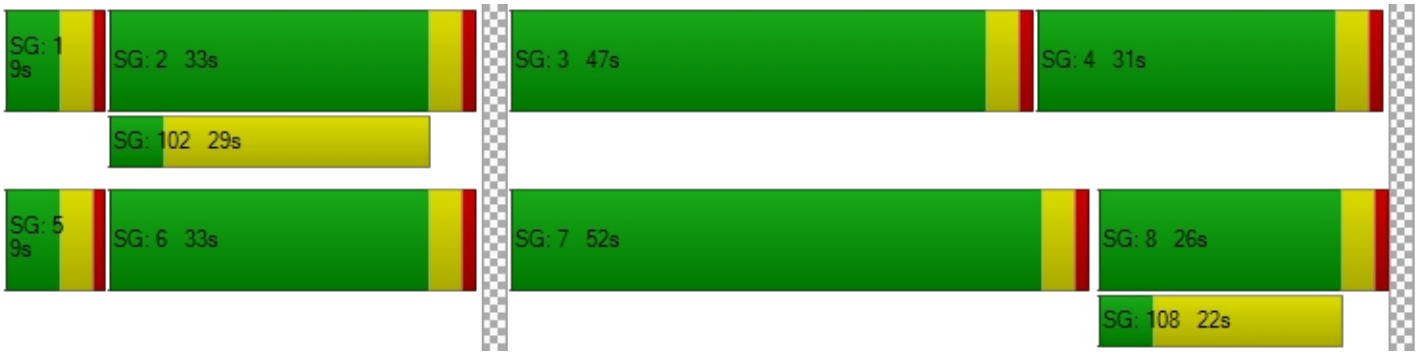
d_M, Delay for Movement [s/veh]	32.37	32.50	69.11	30.92	30.92	30.92	98.49	28.06	26.58	54.32	11.76	11.76
Movement LOS	C	C	E	C	C	C	F	C	C	D	B	B
d_A, Approach Delay [s/veh]	60.34			30.92			28.10			28.41		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	35.72											
Intersection LOS	D											
Intersection V/C	0.542											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.490	0.000	2.898	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	633	367	450
d_b, Bicycle Delay [s]	28.02	28.02	40.02	36.04
l_b,int, Bicycle LOS Score for Intersection	2.249	1.583	1.805	2.458
Bicycle LOS	B	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	14.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.298

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	3	0	397	746	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.0000	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	146	0	60	3	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	149	0	505	839	1
Peak Hour Factor	0.9060	0.9060	1.0000	0.9060	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	41	0	139	232	0
Total Analysis Volume [veh/h]	0	164	0	557	926	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.30	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	27.83	14.28	9.91	0.00	0.00	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.24	1.24	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	31.01	31.01	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	14.28		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.42					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.650

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	111	854	95	88	904	383	181	80	118	143	332	79
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	88	0	12	131	3	60	0	0	0	0	10
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	1044	106	111	1143	432	263	90	132	160	372	98
Peak Hour Factor	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	34	285	29	30	312	118	72	25	36	44	102	27
Total Analysis Volume [veh/h]	136	1141	116	121	1249	472	287	98	144	175	407	107
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	38	0	14	37	37	32	40	0	28	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	51	51	10	50	77	23	29	14	20	20
g / C, Green / Cycle	0.09	0.42	0.42	0.08	0.41	0.64	0.19	0.24	0.12	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.08	0.24	0.24	0.07	0.25	0.31	0.17	0.03	0.10	0.15	0.15
s, saturation flow rate [veh/h]	1714	3427	1716	1714	4903	1530	1714	3427	1714	1800	1673
c, Capacity [veh/h]	157	1442	722	143	2023	975	328	835	204	308	286
d1, Uniform Delay [s]	53.77	26.63	26.63	54.25	27.79	11.40	47.09	35.34	51.87	48.39	48.44
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.21	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.09	1.71	3.39	12.72	1.42	1.72	12.87	0.06	10.00	7.17	7.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.58	0.58	0.85	0.62	0.48	0.87	0.12	0.86	0.86	0.87
d, Delay for Lane Group [s/veh]	66.86	28.35	30.03	66.97	29.21	13.12	59.97	35.40	61.87	55.56	56.39
Lane Group LOS	E	C	C	E	C	B	E	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.62	9.43	9.79	4.11	9.58	6.74	9.47	1.13	5.73	8.33	7.85
50th-Percentile Queue Length [ft/ln]	115.4	235.8	244.6	102.6	239.6	168.5	236.86	28.36	143.2	208.1	196.3
95th-Percentile Queue Length [veh/ln]	8.14	14.47	14.92	7.39	14.66	11.00	14.52	2.04	9.65	13.06	12.45
95th-Percentile Queue Length [ft/ln]	203.5	361.7	372.9	184.8	366.5	275.0	363.06	51.04	241.3	326.5	311.1

Movement, Approach, & Intersection Results

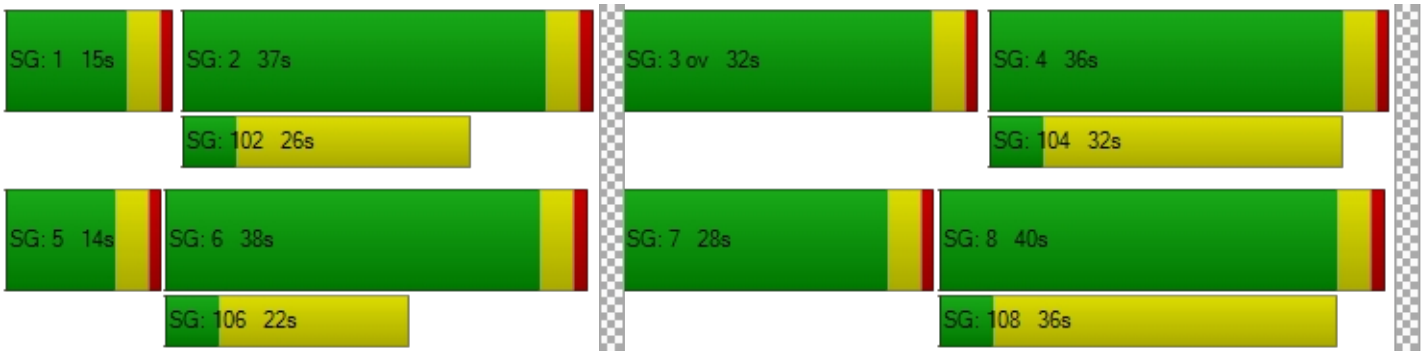
d_M, Delay for Movement [s/veh]	66.86	28.79	30.03	66.97	29.21	13.12	59.97	35.40	0.00	61.87	55.85	56.39
Movement LOS	E	C	C	E	C	B	E	D		E	E	E
d_A, Approach Delay [s/veh]	32.61			27.57			53.71			57.46		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	36.31											
Intersection LOS	D											
Intersection V/C	0.650											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.170	3.152	2.696	2.515
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	550	600	533
d_b, Bicycle Delay [s]	30.82	31.54	29.40	32.27
l_b,int, Bicycle LOS Score for Intersection	2.326	2.573	1.877	2.128
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	32.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.532

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	29	126	6	43	129	75	30	216	16	7	341	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	2	0	0	0	6	0	0	6	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	141	7	50	144	84	34	248	18	8	388	74
Peak Hour Factor	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	46	2	16	47	27	11	81	6	3	126	24
Total Analysis Volume [veh/h]	42	184	9	65	188	109	44	323	23	10	505	96
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	26	0	9	85	0	9	85	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	68	68	4	39	1	36	36
g / C, Green / Cycle	0.57	0.57	0.03	0.32	0.01	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.15	0.23	0.03	0.19	0.01	0.28	0.06
s, saturation flow rate [veh/h]	1595	1607	1714	1779	1714	1800	1530
c, Capacity [veh/h]	936	943	56	574	22	545	463
d1, Uniform Delay [s]	13.08	14.40	57.62	34.19	58.82	40.57	31.14
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.64	1.18	20.86	1.02	14.20	7.43	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.38	0.79	0.60	0.46	0.93	0.21
d, Delay for Lane Group [s/veh]	13.73	15.59	78.48	35.22	73.02	48.01	31.36
Lane Group LOS	B	B	E	D	E	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.30	5.63	1.65	8.63	0.39	15.44	2.12
50th-Percentile Queue Length [ft/ln]	82.61	140.67	41.27	215.76	9.71	385.8	52.91
95th-Percentile Queue Length [veh/ln]	5.95	9.52	2.97	13.45	0.70	21.88	3.81
95th-Percentile Queue Length [ft/ln]	148.70	237.92	74.28	336.21	17.48	546.9	95.25

Movement, Approach, & Intersection Results

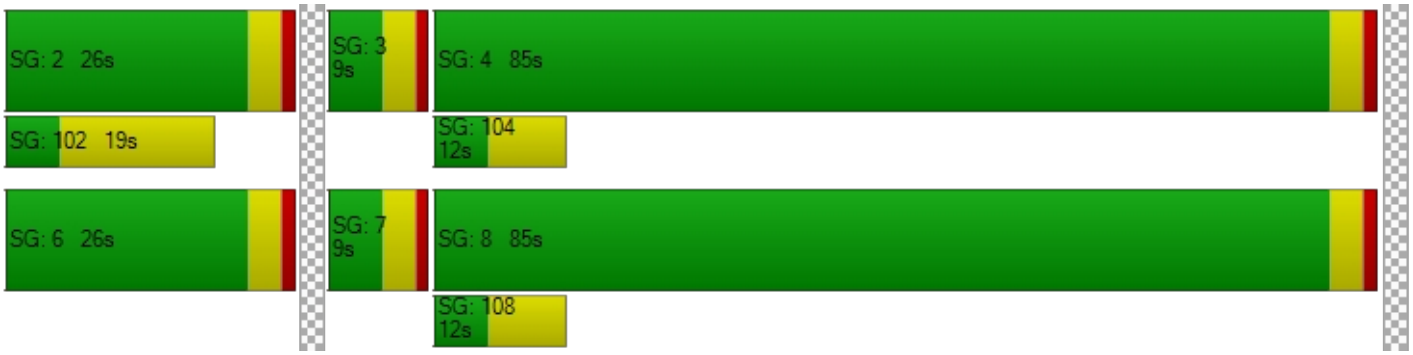
d_M, Delay for Movement [s/veh]	13.73	13.73	13.73	15.59	15.59	15.59	78.48	35.22	35.22	73.02	48.01	31.36
Movement LOS	B	B	B	B	B	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	13.73			15.59			40.10			45.80		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	32.85											
Intersection LOS	C											
Intersection V/C	0.532											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	1.952	2.065	2.461	0.000
Crosswalk LOS	A	B	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	367	1350	1350
d_b, Bicycle Delay [s]	40.02	40.02	6.34	6.34
l_b,int, Bicycle LOS Score for Intersection	1.947	2.157	2.203	2.568
Bicycle LOS	A	B	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	32.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.344

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	1	21	14	9	8	0	42	34	21	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	6	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	30	16	10	9	0	47	38	24	17
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	10	5	3	3	0	15	12	8	5
Total Analysis Volume [veh/h]	1	38	20	13	11	0	60	48	31	22
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	34	0	0	0	0	34	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	14	14
g / C, Green / Cycle	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.06	0.10
s, saturation flow rate [veh/h]	1355	1595
c, Capacity [veh/h]	204	230
d1, Uniform Delay [s]	49.36	51.74
k, delay calibration	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	1.30	3.87
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.70
d, Delay for Lane Group [s/veh]	50.66	55.61
Lane Group LOS	D	E
Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	2.41	4.99
50th-Percentile Queue Length [ft/ln]	60.31	124.80
95th-Percentile Queue Length [veh/ln]	4.34	8.66
95th-Percentile Queue Length [ft/ln]	108.56	216.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.66	50.66	50.66	50.66	50.66	55.61	55.61	55.61	55.61	55.61
Movement LOS	D	D	D	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	50.66					55.61				
Approach LOS	D					E				
d_I, Intersection Delay [s/veh]	32.43									
Intersection LOS	C									
Intersection V/C	0.344									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.863	1.924
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	500
d_b, Bicycle Delay [s]	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	1.616	1.690
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	9	42	159	11	5	1	9	169	11	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	1	7	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	47	179	19	6	1	10	189	12	7
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	15	57	6	2	0	3	60	4	2
Total Analysis Volume [veh/h]	13	60	228	24	8	1	13	241	15	9
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	46	0	0	9	0	46	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	81	75	81	72	72
g / C, Green / Cycle	0.67	0.62	0.67	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.06	0.15	0.01	0.13	0.02
s, saturation flow rate [veh/h]	1180	1762	1166	1800	1530
c, Capacity [veh/h]	783	1095	765	1079	918
d1, Uniform Delay [s]	7.25	10.09	7.06	11.10	9.77
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.24	0.51	0.01	0.48	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.24	0.02	0.22	0.03
d, Delay for Lane Group [s/veh]	7.49	10.60	7.07	11.58	9.82
Lane Group LOS	A	B	A	B	A
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.67	3.12	0.12	3.05	0.27
50th-Percentile Queue Length [ft/ln]	16.66	77.92	2.90	76.26	6.70
95th-Percentile Queue Length [veh/ln]	1.20	5.61	0.21	5.49	0.48
95th-Percentile Queue Length [ft/ln]	29.99	140.25	5.21	137.26	12.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.49	7.49	10.60	10.60	10.60	7.07	7.07	11.58	9.82	9.82
Movement LOS	A	A	B	B	B	A	A	B	A	A
d_A, Approach Delay [s/veh]	9.92					11.20				
Approach LOS	A					B				
d_I, Intersection Delay [s/veh]	32.43									
Intersection LOS	C									
Intersection V/C	0.344									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.273	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	700
d_b, Bicycle Delay [s]	25.35	25.35
l_b,int, Bicycle LOS Score for Intersection	1.997	1.984
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	10	36	12	1	3	14	94	78	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	11	40	13	1	3	16	105	87	2
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	13	4	0	1	5	33	28	1
Total Analysis Volume [veh/h]	0	14	51	17	1	4	20	134	111	3
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	31	0	0	0	0	31	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13
g / C, Green / Cycle	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.08	0.09	0.07
s, saturation flow rate [veh/h]	1001	1712	1530
c, Capacity [veh/h]	146	224	169
d1, Uniform Delay [s]	49.97	52.17	51.27
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	3.46	4.03	4.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.71	0.67
d, Delay for Lane Group [s/veh]	53.43	56.21	55.86
Lane Group LOS	D	E	E
Critical Lane Group	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.47	4.91	3.51
50th-Percentile Queue Length [ft/ln]	61.80	122.64	87.76
95th-Percentile Queue Length [veh/ln]	4.45	8.54	6.32
95th-Percentile Queue Length [ft/ln]	111.23	213.45	157.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.43	53.43	53.43	53.43	53.43	56.21	56.21	56.21	55.86	55.86
Movement LOS	D	D	D	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	53.43					56.06				
Approach LOS	D					E				
d_I, Intersection Delay [s/veh]	32.43									
Intersection LOS	C									
Intersection V/C	0.344									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.930	2.236
Crosswalk LOS	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	450	450
d_b, Bicycle Delay [s]	36.04	36.04
l_b,int, Bicycle LOS Score for Intersection	1.645	1.997
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.682

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	116	589	159	100	785	63	135	118	67	107	130	261
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	31	0	10	32	0	0	1	0	0	0	8
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	130	691	178	122	911	71	151	133	75	120	146	300
Peak Hour Factor	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	35	185	48	33	244	19	41	36	20	32	39	80
Total Analysis Volume [veh/h]	139	741	191	131	977	76	162	143	80	129	157	322
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	44	0	15	44	0	17	38	0	23	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	52	52	11	52	52	13	30	30	11	28	28
g / C, Green / Cycle	0.09	0.44	0.44	0.09	0.44	0.44	0.11	0.25	0.25	0.09	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.08	0.27	0.27	0.08	0.30	0.30	0.09	0.06	0.07	0.08	0.09	0.21
s, saturation flow rate [veh/h]	1714	1800	1674	1714	1800	1755	1714	1800	1590	1714	1800	1530
c, Capacity [veh/h]	157	785	730	156	783	764	186	446	394	158	417	354
d1, Uniform Delay [s]	53.87	26.08	26.08	53.71	27.20	27.21	52.68	36.28	36.39	53.49	38.82	44.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.76	3.59	3.86	11.47	4.74	4.87	11.86	0.31	0.37	9.87	0.56	14.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.61	0.62	0.84	0.68	0.68	0.87	0.26	0.27	0.82	0.38	0.91
d, Delay for Lane Group [s/veh]	68.64	29.66	29.94	65.18	31.93	32.08	64.54	36.59	36.76	63.36	39.38	59.01
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.79	11.27	10.55	4.39	13.09	12.81	5.41	2.79	2.58	4.26	3.98	10.67
50th-Percentile Queue Length [ft/ln]	119.7	281.7	263.6	109.6	327.2	320.2	135.3	69.68	64.62	106.3	99.44	266.6
95th-Percentile Queue Length [veh/ln]	8.38	16.77	15.87	7.82	19.02	18.68	9.23	5.02	4.65	7.64	7.16	16.02
95th-Percentile Queue Length [ft/ln]	209.4	419.3	396.8	195.5	475.5	466.9	230.7	125.4	116.3	190.9	178.9	400.6

Movement, Approach, & Intersection Results

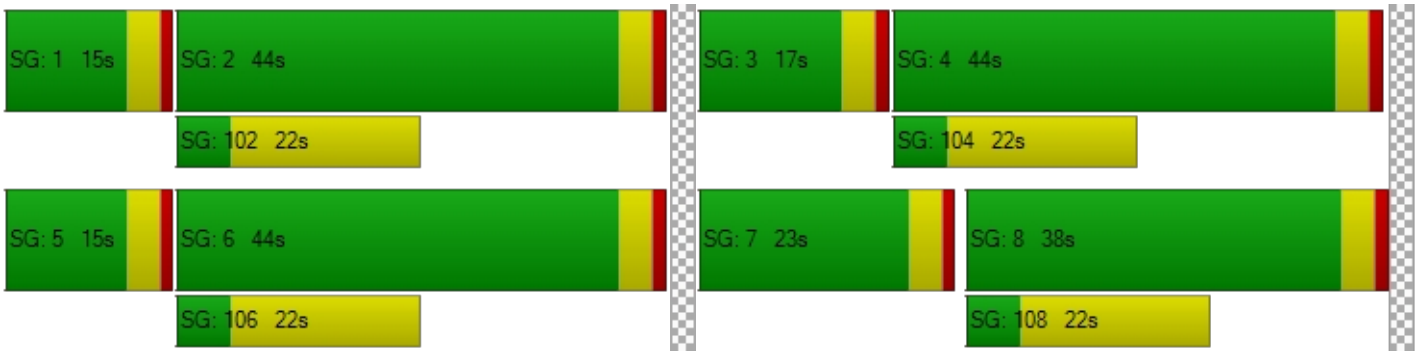
d_M, Delay for Movement [s/veh]	68.64	29.76	29.94	65.18	32.00	32.08	64.54	36.62	36.76	63.36	39.38	59.01
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	34.84			35.68			48.40			54.87		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	40.50											
Intersection LOS	D											
Intersection V/C	0.682											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.755	2.785	2.463	2.642
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	667	567	667
d_b, Bicycle Delay [s]	26.67	26.67	30.82	26.67
l_b,int, Bicycle LOS Score for Intersection	2.443	2.536	1.877	2.061
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	31.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	731	162	10	1158	67	27	177	83	258	306	38
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	1	13	0	4	22	0	0	2	2	0	1	3
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	832	181	15	1319	75	30	200	95	289	344	46
Peak Hour Factor	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	218	47	4	346	20	8	52	25	76	90	12
Total Analysis Volume [veh/h]	59	873	190	16	1384	79	31	210	100	303	361	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	26	0	9	26	0	32	36	0	49	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	65	65	2	62	62	3	14	14	23	34	34
g / C, Green / Cycle	0.04	0.54	0.54	0.02	0.52	0.52	0.03	0.11	0.11	0.20	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.03	0.25	0.12	0.01	0.40	0.05	0.02	0.09	0.09	0.18	0.12	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1610	1714	1800	1727
c, Capacity [veh/h]	71	1849	826	30	1766	788	49	206	184	335	506	486
d1, Uniform Delay [s]	57.07	17.07	14.52	58.47	23.64	14.86	57.68	51.67	51.91	47.18	35.06	35.07
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.49	0.87	0.65	14.10	3.56	0.25	12.89	6.27	8.46	9.06	0.54	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.47	0.23	0.54	0.78	0.10	0.64	0.78	0.82	0.90	0.41	0.41
d, Delay for Lane Group [s/veh]	77.55	17.93	15.17	72.57	27.20	15.11	70.57	57.94	60.37	56.24	35.60	35.64
Lane Group LOS	E	B	B	E	C	B	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.18	7.51	2.85	0.60	16.26	1.16	1.11	5.04	4.84	9.65	5.04	4.86
50th-Percentile Queue Length [ft/ln]	54.55	187.7	71.22	14.98	406.4	29.00	27.67	126.0	120.9	241.3	126.0	121.4
95th-Percentile Queue Length [veh/ln]	3.93	12.01	5.13	1.08	22.87	2.09	1.99	8.72	8.44	14.75	8.72	8.47
95th-Percentile Queue Length [ft/ln]	98.20	300.1	128.2	26.97	571.8	52.19	49.81	218.1	211.1	368.7	218.0	211.7

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	77.55	17.93	15.17	72.57	27.20	15.11	70.57	58.52	60.37	56.24	35.61	35.64
Movement LOS	E	B	B	E	C	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	20.60			27.05			60.16			44.39		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	31.54											
Intersection LOS	C											
Intersection V/C	0.708											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.095	2.863	2.479	2.535
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	367	533	817
d_b, Bicycle Delay [s]	40.02	40.02	32.27	21.00
l_b,int, Bicycle LOS Score for Intersection	2.485	2.780	1.841	2.147
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.348

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	6	102	8	8	123	45	21	43	2	21	147	7
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	114	9	9	138	50	24	48	2	24	165	8
Peak Hour Factor	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	33	3	3	40	15	7	14	1	7	48	2
Total Analysis Volume [veh/h]	8	133	11	11	162	59	28	56	2	28	193	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	707	739	663	635	736
Degree of Utilization, x	0.22	0.31	0.13	0.35	0.01

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.81	1.35	0.44	1.55	0.04
95th-Percentile Queue Length [ft]	20.31	33.63	11.12	38.84	0.93
Approach Delay [s/veh]	9.48	10.09	9.24	11.21	
Approach LOS	A	B	A	B	
Intersection Delay [s/veh]	10.22				
Intersection LOS	B				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	27.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.488

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	292	941	78	41	857	43	25	45	128	165	161	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	9	0	0	13	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	327	1063	87	46	973	48	28	50	143	185	180	76
Peak Hour Factor	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	90	292	24	13	267	13	8	14	39	51	49	21
Total Analysis Volume [veh/h]	359	1167	95	50	1068	53	31	55	157	203	198	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	27	60	0	13	46	0	14	31	0	16	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	76	76	4	65	65	3	15	15	9	21	21
g / C, Green / Cycle	0.13	0.63	0.63	0.04	0.54	0.54	0.03	0.12	0.12	0.08	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.11	0.24	0.24	0.03	0.22	0.22	0.02	0.02	0.10	0.06	0.06	0.05
s, saturation flow rate [veh/h]	3329	3427	1731	1714	3427	1757	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	427	2158	1090	64	1847	947	48	416	186	259	588	263
d1, Uniform Delay [s]	51.09	10.89	10.90	57.24	16.28	16.28	57.76	47.06	51.60	54.33	43.69	43.53
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.50	0.53	1.05	17.73	0.65	1.27	14.08	0.14	9.95	5.13	0.33	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.39	0.39	0.78	0.40	0.40	0.65	0.13	0.84	0.78	0.34	0.32
d, Delay for Lane Group [s/veh]	55.59	11.42	11.94	74.98	16.93	17.55	71.85	47.20	61.56	59.46	44.03	44.21
Lane Group LOS	E	B	B	E	B	B	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.53	5.39	5.61	1.82	6.06	6.38	1.12	0.75	5.14	3.20	2.63	2.22
50th-Percentile Queue Length [ft/ln]	138.3	134.8	140.2	45.54	151.3	159.4	27.96	18.66	128.3	79.89	65.64	55.50
95th-Percentile Queue Length [veh/ln]	9.39	9.20	9.49	3.28	10.09	10.52	2.01	1.34	8.85	5.75	4.73	4.00
95th-Percentile Queue Length [ft/ln]	234.8	230.0	237.3	81.98	252.2	262.9	50.33	33.59	221.2	143.8	118.1	99.91

Movement, Approach, & Intersection Results

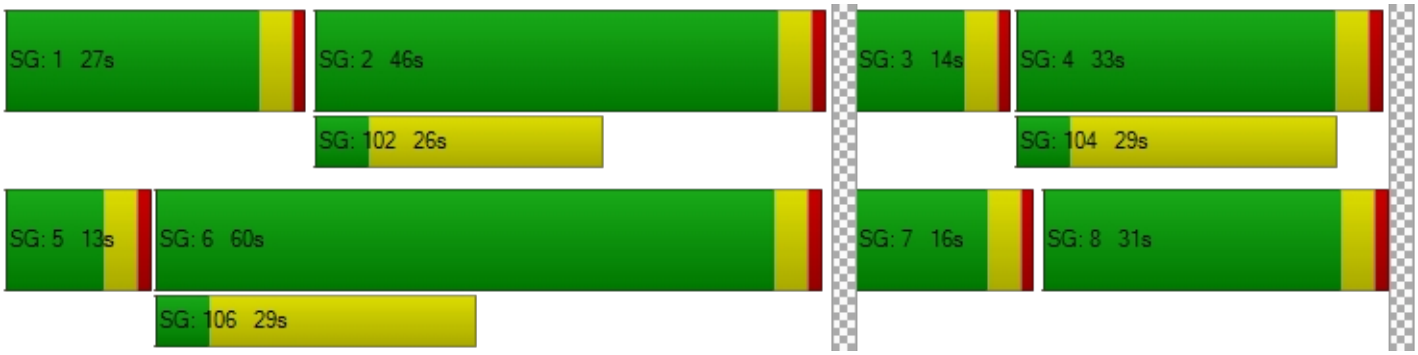
d_M, Delay for Movement [s/veh]	55.59	11.57	11.94	74.98	17.12	17.55	71.85	47.20	61.56	59.46	44.03	44.21
Movement LOS	E	B	B	E	B	B	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	21.34			19.61			59.62			50.53		
Approach LOS	C			B			E			D		
d_I, Intersection Delay [s/veh]	27.42											
Intersection LOS	C											
Intersection V/C	0.488											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.951	2.607	2.704
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	700	450	483
d_b, Bicycle Delay [s]	17.07	25.35	36.04	34.50
l_b,int, Bicycle LOS Score for Intersection	2.451	2.204	1.760	1.959
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	29.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	56	215	398	8	307	42	18	107	21	394	320	30
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	74	0	0	86	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	315	446	9	430	47	20	120	24	441	358	34
Peak Hour Factor	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	80	114	2	110	12	5	31	6	112	91	9
Total Analysis Volume [veh/h]	64	321	455	9	438	48	20	122	24	450	365	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	56	0	9	56	0	9	9	0	46	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	77	77	1	74	74	2	6	6	19	23	23
g / C, Green / Cycle	0.04	0.64	0.64	0.01	0.62	0.62	0.02	0.05	0.05	0.16	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.02	0.18	0.30	0.01	0.14	0.14	0.01	0.04	0.02	0.14	0.11	0.02
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1739	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	123	1156	983	19	1110	1072	35	182	81	533	660	294
d1, Uniform Delay [s]	56.76	9.34	10.93	58.96	10.21	10.22	58.23	55.80	54.67	48.94	43.79	40.04
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.42	0.60	1.57	16.39	0.46	0.48	13.44	4.26	2.00	3.76	0.73	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.28	0.46	0.47	0.22	0.22	0.57	0.67	0.30	0.84	0.55	0.12
d, Delay for Lane Group [s/veh]	60.17	9.94	12.49	75.35	10.67	10.70	71.67	60.06	56.67	52.70	44.52	40.22
Lane Group LOS	E	A	B	E	B	B	E	E	E	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.01	3.71	6.27	0.36	2.96	2.89	0.73	1.92	0.74	6.82	4.98	0.88
50th-Percentile Queue Length [ft/ln]	25.29	92.85	156.6	9.00	73.96	72.25	18.36	48.03	18.61	170.4	124.4	21.89
95th-Percentile Queue Length [veh/ln]	1.82	6.69	10.37	0.65	5.33	5.20	1.32	3.46	1.34	11.10	8.64	1.58
95th-Percentile Queue Length [ft/ln]	45.52	167.1	259.3	16.21	133.1	130.0	33.04	86.46	33.50	277.4	215.9	39.41

Movement, Approach, & Intersection Results

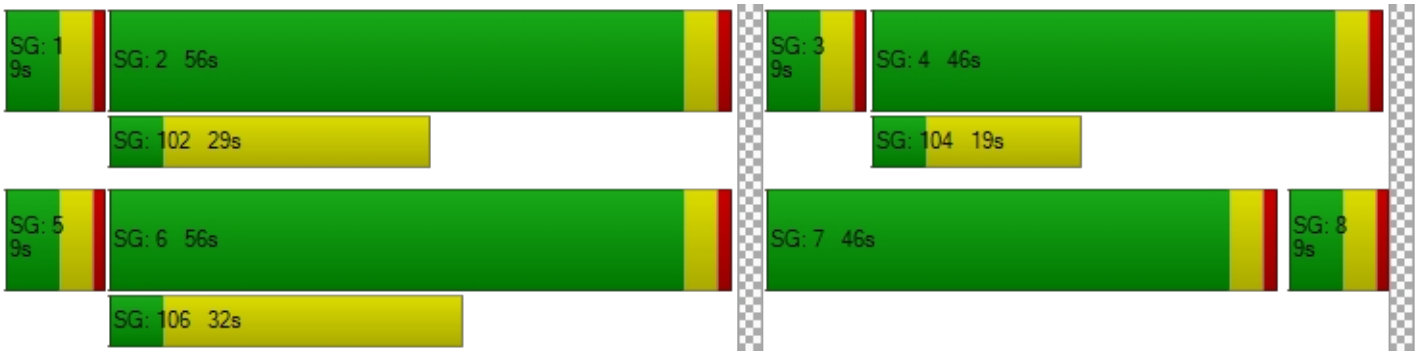
d_M, Delay for Movement [s/veh]	60.17	9.94	12.49	75.35	10.68	10.70	71.67	60.06	56.67	52.70	44.52	40.22
Movement LOS	E	A	B	E	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	15.15			11.86			60.97			48.67		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	29.81											
Intersection LOS	C											
Intersection V/C	0.473											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.359	2.699	2.916
Crosswalk LOS	F	B	B	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	83	700
d_b, Bicycle Delay [s]	19.27	19.27	55.10	25.35
l_b,int, Bicycle LOS Score for Intersection	2.946	1.968	1.697	2.261
Bicycle LOS	C	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	49.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	466	1012	370	91	1138	69	86	116	267	506	305	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	88	0	1	130	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	522	1221	414	103	1405	77	96	130	299	567	342	80
Peak Hour Factor	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	137	321	109	27	369	20	25	34	79	149	90	21
Total Analysis Volume [veh/h]	549	1284	435	108	1477	81	101	137	314	596	360	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	44	0	13	36	0	13	40	40	23	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	64	64	9	56	56	5	12	33	19	25	25
g / C, Green / Cycle	0.14	0.53	0.53	0.08	0.47	0.47	0.05	0.10	0.27	0.16	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.16	0.37	0.28	0.06	0.30	0.05	0.03	0.04	0.21	0.18	0.13	0.13
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1684
c, Capacity [veh/h]	472	1833	818	129	2295	716	154	338	418	527	379	355
d1, Uniform Delay [s]	51.50	20.76	18.14	54.79	24.29	17.92	56.29	50.79	39.84	50.50	42.85	42.85
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.32	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	79.27	2.26	2.47	13.39	1.40	0.32	4.69	0.78	7.73	64.62	1.56	1.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.16	0.70	0.53	0.84	0.64	0.11	0.66	0.41	0.75	1.13	0.60	0.61
d, Delay for Lane Group [s/veh]	130.7	23.02	20.61	68.18	25.69	18.24	60.98	51.58	47.57	115.1	44.40	44.51
Lane Group LOS	F	C	C	E	C	B	E	D	D	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.26	13.53	8.23	3.70	10.76	1.33	1.61	1.97	9.33	12.61	6.32	5.92
50th-Percentile Queue Length [ft/ln]	306.5	338.3	205.8	92.49	268.9	33.34	40.16	49.37	233.1	315.3	157.9	148.0
95th-Percentile Queue Length [veh/ln]	19.22	19.57	12.94	6.66	16.14	2.40	2.89	3.55	14.33	19.50	10.44	9.91
95th-Percentile Queue Length [ft/ln]	480.4	489.2	323.4	166.4	403.4	60.00	72.29	88.87	358.3	487.6	261.0	247.8

Movement, Approach, & Intersection Results

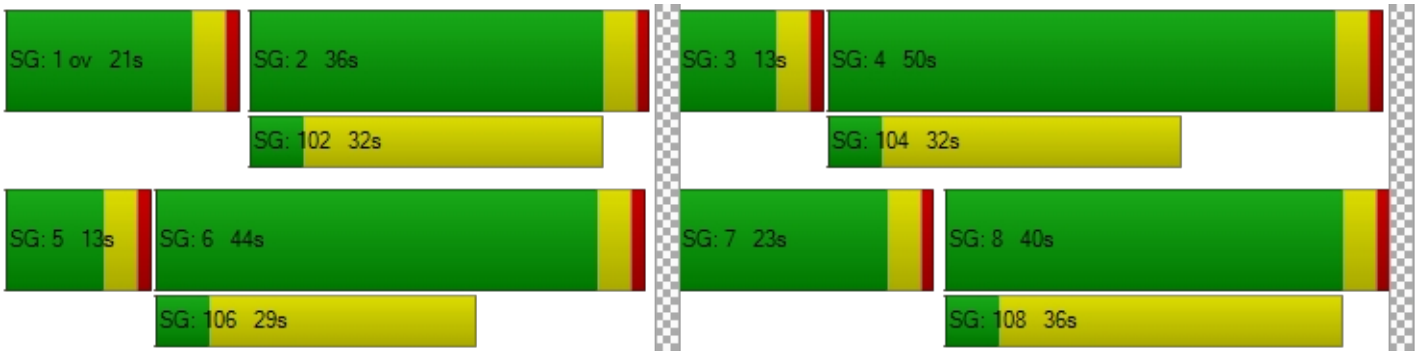
d_M, Delay for Movement [s/veh]	130.7	23.02	20.61	68.18	25.69	18.24	60.98	51.58	47.57	115.1	44.44	44.51
Movement LOS	F	C	C	E	C	B	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	48.64			28.08			51.02			84.95		
Approach LOS	D			C			D			F		
d_I, Intersection Delay [s/veh]	49.51											
Intersection LOS	D											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.369	3.123	2.929	2.849
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	533	600	767
d_b, Bicycle Delay [s]	26.67	32.27	29.40	22.82
l_b,int, Bicycle LOS Score for Intersection	3.431	2.476	2.015	2.418
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	28.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.553

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	8	9	4	23	1	73	5	50	26	56	314	11
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	1	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	10	4	26	1	82	6	56	29	63	353	12
Peak Hour Factor	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	3	3	1	7	0	23	2	16	8	18	101	3
Total Analysis Volume [veh/h]	10	11	5	30	1	94	7	64	33	72	403	14
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	Permi
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	43	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	70	63	63
g / C, Green / Cycle	0.12	0.12	0.58	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.03	0.11	0.13	0.12	0.12
s, saturation flow rate [veh/h]	1641	1466	804	1800	1779
c, Capacity [veh/h]	240	230	442	946	934
d1, Uniform Delay [s]	47.58	51.73	13.09	15.30	15.31
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	4.21	1.26	0.54	0.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.72	0.24	0.22	0.22
d, Delay for Lane Group [s/veh]	48.07	55.94	14.35	15.84	15.86
Lane Group LOS	D	E	B	B	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.56	5.19	1.40	3.20	3.18
50th-Percentile Queue Length [ft/ln]	38.93	129.69	34.92	80.12	79.44
95th-Percentile Queue Length [veh/ln]	2.80	8.92	2.51	5.77	5.72
95th-Percentile Queue Length [ft/ln]	70.08	223.07	62.86	144.21	143.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.07	48.07	48.07	48.07	55.94	55.94	55.94	55.94	14.35	14.35	15.85	15.86
Movement LOS	D	D	D	D	E	E	E	E	B	B	B	B
d_A, Approach Delay [s/veh]	48.07				55.94				15.55			
Approach LOS	D				E				B			
d_I, Intersection Delay [s/veh]	28.72											
Intersection LOS	C											
Intersection V/C	0.553											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.783	0.000	2.732
Crosswalk LOS	A	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	650
d_b, Bicycle Delay [s]	45.94	45.94	27.34
l_b,int, Bicycle LOS Score for Intersection	1.603	1.678	1.931
Bicycle LOS	A	A	A

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	16	545	49	18	10	9	194	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	610	55	20	11	10	217	1
Peak Hour Factor	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	174	16	6	3	3	62	0
Total Analysis Volume [veh/h]	21	696	63	23	13	11	247	1
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	10	44	0	0	0	48	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	61	61	61	23
g / C, Green / Cycle	0.02	0.51	0.51	0.51	0.19
(v / s)_i Volume / Saturation Flow Rate	0.01	0.15	0.23	0.06	0.18
s, saturation flow rate [veh/h]	1714	1800	1800	1530	1547
c, Capacity [veh/h]	37	909	909	773	302
d1, Uniform Delay [s]	58.17	17.34	19.21	15.58	47.18
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.22	0.85	1.70	0.29	9.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.30	0.46	0.11	0.90
d, Delay for Lane Group [s/veh]	71.39	18.20	20.91	15.87	56.87
Lane Group LOS	E	B	C	B	E
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.77	4.61	7.93	1.30	8.72
50th-Percentile Queue Length [ft/ln]	19.18	115.29	198.21	32.55	218.01
95th-Percentile Queue Length [veh/ln]	1.38	8.13	12.55	2.34	13.56
95th-Percentile Queue Length [ft/ln]	34.53	203.34	313.65	58.59	339.08

Movement, Approach, & Intersection Results

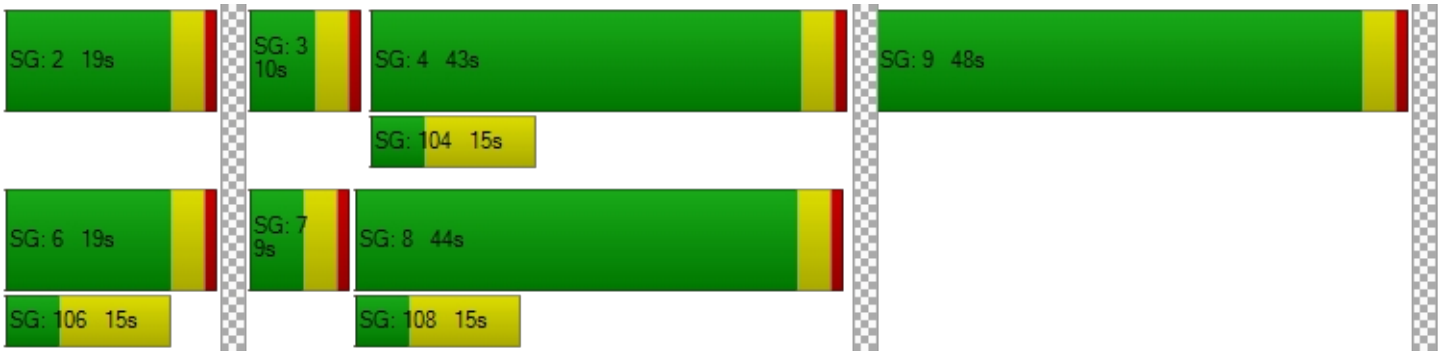
d_M, Delay for Movement [s/veh]	71.39	19.84	20.91	15.87	56.87	56.87	56.87	56.87
Movement LOS	E	B	C	B	E	E	E	E
d_A, Approach Delay [s/veh]	20.76				56.87			
Approach LOS	C				E			
d_I, Intersection Delay [s/veh]	28.72							
Intersection LOS	C							
Intersection V/C	0.553							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.125
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	733
d_b, Bicycle Delay [s]	26.67	24.07
l_b,int, Bicycle LOS Score for Intersection	2.203	2.007
Bicycle LOS	B	B

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	91.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	6	1	21	92	3	29	14	399	8	14	605	72
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	1	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	1	24	103	3	32	16	448	9	16	678	81
Peak Hour Factor	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	0	7	29	1	9	5	127	3	5	192	23
Total Analysis Volume [veh/h]	8	1	27	116	3	36	18	506	10	18	766	92
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

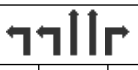
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.01	0.04	0.79	0.02	0.06	0.02	0.01	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	24.84	33.81	10.63	89.69	91.77	11.62	9.65	0.00	0.00	8.45	0.00	0.00
Movement LOS	C	D	B	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.28	0.28	0.28	5.14	5.14	0.20	0.07	0.00	0.00	0.05	0.00	0.00
95th-Percentile Queue Length [ft/ln]	7.03	7.03	7.03	128.4	128.4	4.95	1.74	0.00	0.00	1.29	0.00	0.00
d_A, Approach Delay [s/veh]	14.43			71.60			0.33			0.17		
Approach LOS	B			F			A			A		
d_I, Intersection Delay [s/veh]	7.46											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	58.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.871

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	439	581	136	84	759	31	35	281	464	265	376	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	30	0	0	32	0	0	1	0	0	0	1
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	492	681	152	94	882	35	39	316	520	297	421	93
Peak Hour Factor	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	129	178	40	25	230	9	10	83	136	78	110	24
Total Analysis Volume [veh/h]	514	712	159	98	922	37	41	330	543	310	440	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	46	0	13	36	0	11	46	0	15	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	43	43	8	32	32	4	42	42	11	49	49
g / C, Green / Cycle	0.16	0.35	0.35	0.07	0.27	0.27	0.03	0.35	0.35	0.09	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.15	0.21	0.10	0.06	0.27	0.27	0.01	0.10	0.35	0.09	0.15	0.15
s, saturation flow rate [veh/h]	3329	3427	1530	1714	1800	1776	3329	3427	1530	3329	1800	1689
c, Capacity [veh/h]	527	1215	543	121	480	474	106	1200	536	305	738	692
d1, Uniform Delay [s]	50.26	31.55	27.89	54.99	44.00	44.00	56.93	28.05	39.00	54.50	24.70	24.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.47	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.25	2.07	1.37	12.18	42.50	42.81	2.28	0.12	41.45	27.96	0.32	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.59	0.29	0.81	1.01	1.01	0.39	0.28	1.01	1.02	0.38	0.38
d, Delay for Lane Group [s/veh]	63.51	33.62	29.26	67.17	86.50	86.81	59.22	28.17	80.45	82.46	25.02	25.05
Lane Group LOS	E	C	C	E	F	F	E	C	F	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.62	8.72	3.51	3.33	19.78	19.55	0.64	3.45	21.64	5.79	5.55	5.22
50th-Percentile Queue Length [ft/ln]	215.5	218.0	87.79	83.24	494.4	488.8	16.10	86.25	540.9	144.6	138.8	130.5
95th-Percentile Queue Length [veh/ln]	13.43	13.56	6.32	5.99	27.17	26.90	1.16	6.21	29.55	9.79	9.42	8.97
95th-Percentile Queue Length [ft/ln]	335.8	339.0	158.0	149.8	679.2	672.5	28.98	155.2	738.8	244.6	235.5	224.2

Movement, Approach, & Intersection Results

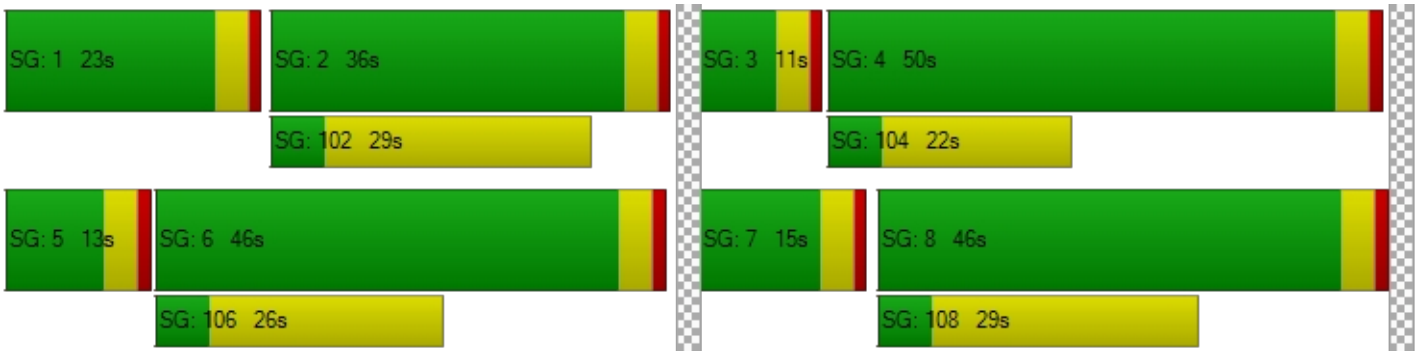
d_M, Delay for Movement [s/veh]	63.51	33.62	29.26	67.17	86.65	86.81	59.22	28.17	80.45	82.46	25.03	25.05
Movement LOS	E	C	C	E	F	F	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	44.21			84.85			60.62			46.05		
Approach LOS	D			F			E			D		
d_I, Intersection Delay [s/veh]	58.37											
Intersection LOS	E											
Intersection V/C	0.871											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.049	2.687	2.874	2.915
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	533	700	767
d_b, Bicycle Delay [s]	25.35	32.27	25.35	22.82
l_b,int, Bicycle LOS Score for Intersection	2.702	2.432	2.314	2.258
Bicycle LOS	B	B	B	B

Sequence

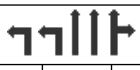
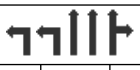
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	36.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	180	1217	675	109	1386	98	170	259	151	546	419	94
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	1	10	0	6	18	0	0	0	1	0	0	4
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	203	1373	756	128	1570	110	190	290	170	612	469	109
Peak Hour Factor	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	54	367	202	34	419	29	51	77	45	163	125	29
Total Analysis Volume [veh/h]	217	1467	808	137	1677	118	203	310	182	654	501	116
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	40	40	9	36	0	35	43	0	28	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	58	86	5	54	54	10	17	17	24	31	40
g / C, Green / Cycle	0.08	0.48	0.72	0.04	0.45	0.45	0.08	0.14	0.14	0.20	0.26	0.34
(v / s)_i Volume / Saturation Flow Rate	0.07	0.30	0.53	0.04	0.35	0.35	0.06	0.09	0.12	0.20	0.15	0.04
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1740	3329	3427	1530	3329	3427	2708
c, Capacity [veh/h]	250	2367	1095	139	1540	782	271	488	218	666	894	910
d1, Uniform Delay [s]	54.92	22.91	10.26	57.47	27.86	27.91	53.91	48.52	50.09	47.79	38.39	27.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.97	1.23	4.45	32.63	3.82	7.38	4.11	1.38	8.18	12.56	0.55	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.62	0.74	0.99	0.77	0.77	0.75	0.64	0.84	0.98	0.56	0.13
d, Delay for Lane Group [s/veh]	63.89	24.15	14.71	90.10	31.68	35.30	58.02	49.90	58.28	60.35	38.95	27.71
Lane Group LOS	E	C	B	F	C	D	E	D	E	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.56	10.28	12.61	2.70	14.89	15.98	3.15	4.48	5.81	10.84	6.45	1.17
50th-Percentile Queue Length [ft/ln]	88.88	257.0	315.2	67.62	372.3	399.4	78.86	111.8	145.1	270.9	161.2	29.36
95th-Percentile Queue Length [veh/ln]	6.40	15.54	18.43	4.87	21.22	22.53	5.68	7.95	9.76	16.24	10.61	2.11
95th-Percentile Queue Length [ft/ln]	159.9	388.5	460.7	121.7	530.5	563.2	141.9	198.6	243.9	405.9	265.3	52.84

Movement, Approach, & Intersection Results

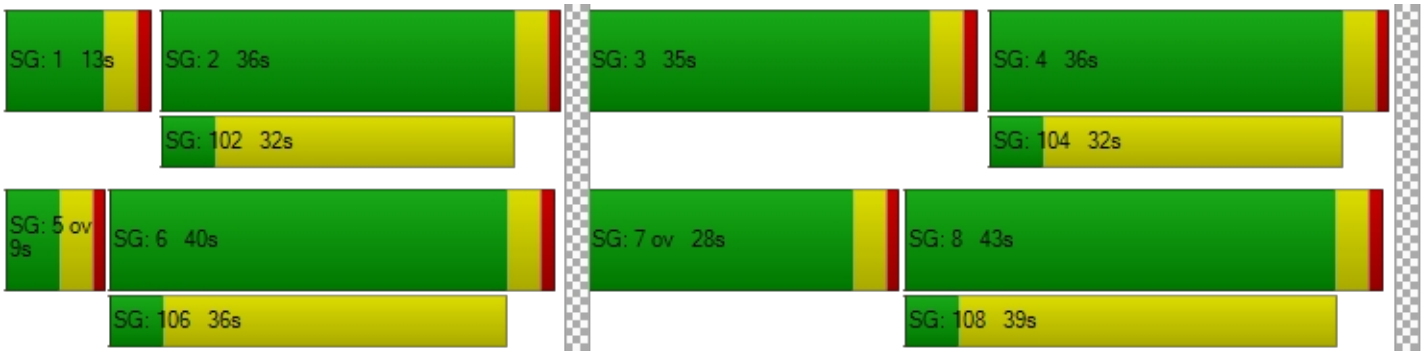
d_M, Delay for Movement [s/veh]	63.89	24.15	14.71	90.10	32.73	35.30	58.02	49.90	58.28	60.35	38.95	27.71
Movement LOS	E	C	B	F	C	D	E	D	E	E	D	C
d_A, Approach Delay [s/veh]	24.55			36.96			54.47			48.93		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	36.40											
Intersection LOS	D											
Intersection V/C	0.770											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.470	3.194	2.927	3.138
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	533	650	533
d_b, Bicycle Delay [s]	29.40	32.27	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.930	2.622	1.942	2.608
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.542

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	762	445	0	774	408	0	0	0	490	0	531
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.000	1.120
In-Process Volume [veh/h]	0	9	0	0	6	7	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	862	445	0	873	464	0	0	0	549	0	595
Peak Hour Factor	1.000	0.924	1.000	1.000	0.924	0.924	1.000	1.000	1.000	0.924	1.000	0.924
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	233	111	0	236	126	0	0	0	149	0	161
Total Analysis Volume [veh/h]	0	933	445	0	945	502	0	0	0	594	0	644
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	33	0	0	33	0	0	0	0	87	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	75	75		37	37	37
g / C, Green / Cycle	0.63	0.63		0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.27	0.19		0.24	0.26	0.27
s, saturation flow rate [veh/h]	3427	4903		1714	1606	1530
c, Capacity [veh/h]	2151	3077		524	491	468
d1, Uniform Delay [s]	11.44	10.31		38.08	38.91	39.59
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.64	0.26		2.67	3.95	5.61
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.31		0.79	0.84	0.88
d, Delay for Lane Group [s/veh]	12.08	10.57		40.75	42.86	45.20
Lane Group LOS	B	B		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.28	3.78		11.41	11.80	12.19
50th-Percentile Queue Length [ft/ln]	157.10	94.57		285.3	295.0	304.7
95th-Percentile Queue Length [veh/ln]	10.40	6.81		16.95	17.44	17.92
95th-Percentile Queue Length [ft/ln]	259.88	170.22		423.8	435.9	447.9

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.08	0.00	0.00	10.57	0.00	0.00	0.00	0.00	41.39	0.00	44.36
Movement LOS		B			B					D		D
d_A, Approach Delay [s/veh]	12.08			10.57			0.00			42.94		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	23.88											
Intersection LOS	C											
Intersection V/C	0.542											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	483	0	1383
d_b, Bicycle Delay [s]	34.50	34.50	60.00	5.70
l_b,int, Bicycle LOS Score for Intersection	2.329	2.079	4.132	3.602
Bicycle LOS	B	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	40.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.907

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	993	543	0	1748	0	0	0	0	738	0	637
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.120	1.000	1.120	1.120	1.120	1.120	1.120	1.120	1.000	1.120
In-Process Volume [veh/h]	0	26	0	0	124	0	0	0	0	0	0	62
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1138	608	0	2082	0	0	0	0	827	0	775
Peak Hour Factor	1.000	0.910	0.910	1.000	0.910	0.910	0.910	0.910	0.910	0.910	1.000	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	313	167	0	572	0	0	0	0	227	0	213
Total Analysis Volume [veh/h]	0	1251	668	0	2288	0	0	0	0	909	0	852
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	46	0	0	46	0	0	0	0	74	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	43	43		69	69
g / C, Green / Cycle	0.36	0.36		0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.26	0.35		0.27	0.56
s, saturation flow rate [veh/h]	4903	6538		3329	1530
c, Capacity [veh/h]	1768	2357		1907	876
d1, Uniform Delay [s]	32.94	37.75		15.06	24.71
k, delay calibration	0.50	0.50		0.11	0.44
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	2.42	12.83		0.19	22.66
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.97		0.48	0.97
d, Delay for Lane Group [s/veh]	35.36	50.58		15.25	47.37
Lane Group LOS	D	D		B	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	10.71	18.31		7.16	27.37
50th-Percentile Queue Length [ft/ln]	267.73	457.77		178.88	684.20
95th-Percentile Queue Length [veh/ln]	16.08	25.33		11.54	35.95
95th-Percentile Queue Length [ft/ln]	401.90	633.21		288.55	898.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	35.36	0.00	0.00	50.58	0.00	0.00	0.00	0.00	15.25	0.00	47.37
Movement LOS		D			D					B		D
d_A, Approach Delay [s/veh]	35.36			50.58			0.00			30.79		
Approach LOS	D			D			A			C		
d_I, Intersection Delay [s/veh]	40.41											
Intersection LOS	D											
Intersection V/C	0.907											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	700	0	1167
d_b, Bicycle Delay [s]	25.35	25.35	60.00	10.42
l_b,int, Bicycle LOS Score for Intersection	2.248	2.503	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	654	272	0	983	466	0	0	0	363	0	448
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.000	1.120
In-Process Volume [veh/h]	0	4	0	0	32	0	0	0	0	0	0	26
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	736	272	0	1133	466	0	0	0	407	0	528
Peak Hour Factor	1.000	0.960	0.868	1.000	0.960	1.000	1.000	1.000	1.000	0.960	1.000	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	192	78	0	295	117	0	0	0	106	0	138
Total Analysis Volume [veh/h]	0	767	313	0	1180	466	0	0	0	424	0	550
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	48	0	0	48	0	0	0	0	72	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	79	79		33	33
g / C, Green / Cycle	0.66	0.66		0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.16	0.34		0.25	0.20
s, saturation flow rate [veh/h]	4903	3427		1714	2708
c, Capacity [veh/h]	3208	2242		478	756
d1, Uniform Delay [s]	8.50	10.93		41.44	39.14
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.18	0.89		5.71	1.36
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.53		0.89	0.73
d, Delay for Lane Group [s/veh]	8.68	11.82		47.15	40.50
Lane Group LOS	A	B		D	D
Critical Lane Group	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	2.66	8.02		12.69	7.45
50th-Percentile Queue Length [ft/ln]	66.55	200.62		317.20	186.26
95th-Percentile Queue Length [veh/ln]	4.79	12.67		18.53	11.93
95th-Percentile Queue Length [ft/ln]	119.80	316.76		463.24	298.17

Movement, Approach, & Intersection Results

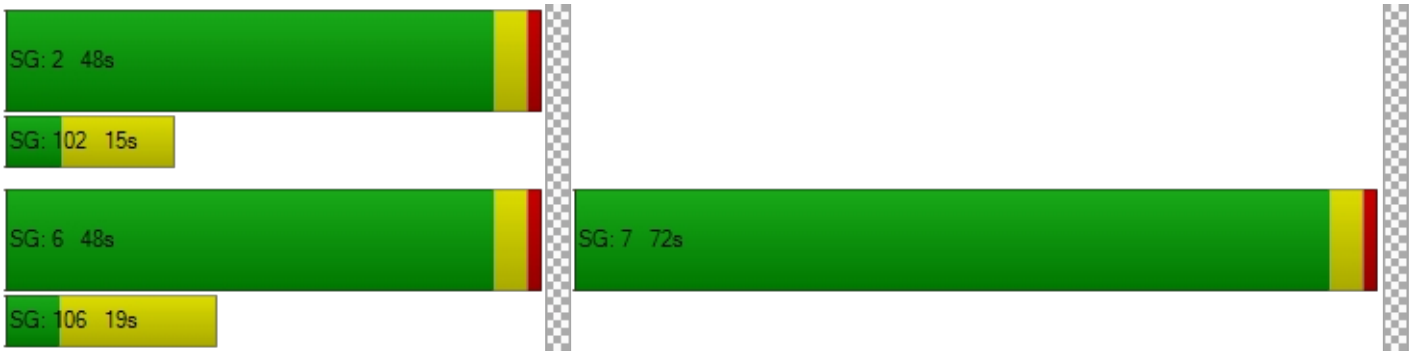
d_M, Delay for Movement [s/veh]	0.00	8.68	0.00	0.00	11.82	0.00	0.00	0.00	0.00	47.15	0.00	40.50
Movement LOS		A			B					D		D
d_A, Approach Delay [s/veh]	8.68			11.82			0.00			43.39		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	21.52											
Intersection LOS	C											
Intersection V/C	0.592											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.384
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	733	0	1133
d_b, Bicycle Delay [s]	24.07	24.07	60.00	11.27
l_b,int, Bicycle LOS Score for Intersection	1.981	2.533	4.132	1.560
Bicycle LOS	A	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1074	381	0	966	238	308	0	671	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1207	381	0	1088	238	308	0	671	0	0	0
Peak Hour Factor	1.000	0.927	1.000	1.000	0.927	1.000	0.927	1.000	0.927	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	326	95	0	293	60	83	0	181	0	0	0
Total Analysis Volume [veh/h]	0	1302	381	0	1174	238	332	0	724	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	19	0	0	19	0	101	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	52	52	60	60	
g / C, Green / Cycle	0.43	0.43	0.50	0.50	
(v / s)_i Volume / Saturation Flow Rate	0.27	0.34	0.10	0.47	
s, saturation flow rate [veh/h]	4903	3427	3329	1530	
c, Capacity [veh/h]	2129	1488	1662	764	
d1, Uniform Delay [s]	26.16	29.22	16.72	28.57	
k, delay calibration	0.50	0.50	0.11	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.32	4.33	0.06	9.98	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.61	0.79	0.20	0.95	
d, Delay for Lane Group [s/veh]	27.48	33.55	16.78	38.55	
Lane Group LOS	C	C	B	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.69	15.14	2.56	21.13	
50th-Percentile Queue Length [ft/ln]	242.15	378.40	64.12	528.33	
95th-Percentile Queue Length [veh/ln]	14.79	21.52	4.62	28.67	
95th-Percentile Queue Length [ft/ln]	369.75	537.91	115.41	716.81	

Movement, Approach, & Intersection Results

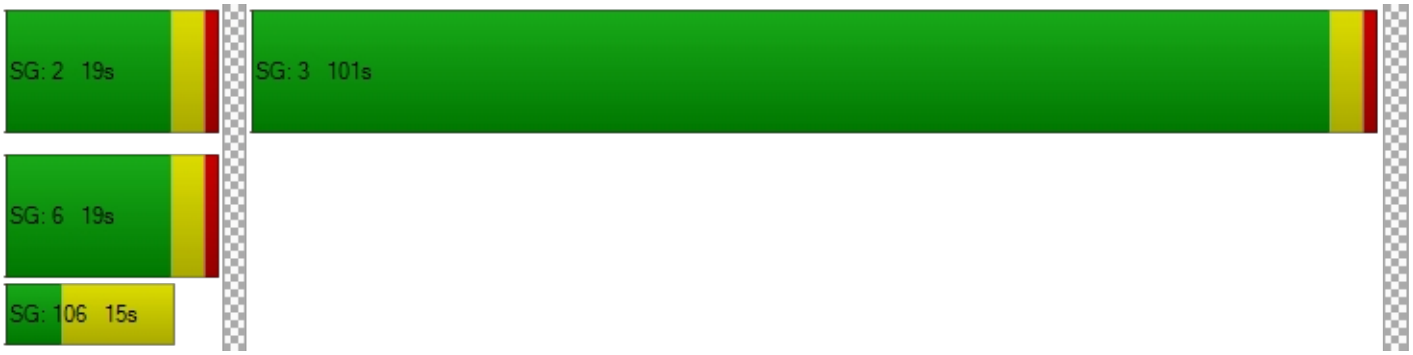
d_M, Delay for Movement [s/veh]	0.00	27.48	0.00	0.00	33.55	0.00	16.78	0.00	38.55	0.00	0.00	0.00
Movement LOS		C			C		B		D			
d_A, Approach Delay [s/veh]	27.48			33.55			31.70			0.00		
Approach LOS	C			C			C			A		
d_I, Intersection Delay [s/veh]	30.76											
Intersection LOS	C											
Intersection V/C	0.816											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1617	0
d_b, Bicycle Delay [s]	45.94	45.94	2.20	60.00
l_b,int, Bicycle LOS Score for Intersection	2.276	2.528	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	38.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.861

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1234	483	460	1488	0	401	6	617	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	21	0	92	32	0	5	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1403	541	607	1699	0	454	7	691	0	0	0
Peak Hour Factor	1.000	0.914	0.914	0.914	0.914	1.000	0.914	0.914	0.914	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	384	148	166	465	0	124	2	189	0	0	0
Total Analysis Volume [veh/h]	0	1535	592	664	1859	0	497	8	756	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	52	0	29	81	0	0	39	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	48	48	25	77	35	35	35	
g / C, Green / Cycle	0.40	0.40	0.21	0.64	0.29	0.29	0.29	
(v / s)_i Volume / Saturation Flow Rate	0.31	0.39	0.20	0.38	0.25	0.27	0.27	
s, saturation flow rate [veh/h]	4903	1530	3329	4903	1714	1565	1530	
c, Capacity [veh/h]	1972	615	694	3157	496	453	443	
d1, Uniform Delay [s]	31.21	34.97	46.97	12.25	40.14	41.42	41.77	
k, delay calibration	0.50	0.50	0.11	0.50	0.34	0.40	0.41	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.11	28.02	8.67	0.81	11.68	23.63	28.22	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.78	0.96	0.96	0.59	0.85	0.93	0.95	
d, Delay for Lane Group [s/veh]	34.31	62.98	55.64	13.06	51.82	65.05	69.99	
Lane Group LOS	C	E	E	B	D	E	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	13.25	21.24	10.58	9.20	13.20	14.93	15.53	
50th-Percentile Queue Length [ft/ln]	331.32	530.89	264.58	229.90	329.9	373.3	388.3	
95th-Percentile Queue Length [veh/ln]	19.22	28.79	15.92	14.17	19.16	21.27	22.00	
95th-Percentile Queue Length [ft/ln]	480.58	719.83	397.96	354.23	478.9	531.7	549.8	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	34.31	62.98	55.64	13.06	0.00	53.86	65.05	67.80	0.00	0.00	0.00
Movement LOS		C	E	E	B		D	E	E			
d_A, Approach Delay [s/veh]	42.29			24.27			62.29			0.00		
Approach LOS	D			C			E			A		
d_I, Intersection Delay [s/veh]	38.87											
Intersection LOS	D											
Intersection V/C	0.861											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.454	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	1283	583	0
d_b, Bicycle Delay [s]	21.60	7.70	30.10	60.00
l_b,int, Bicycle LOS Score for Intersection	2.729	2.947	3.640	4.132
Bicycle LOS	B	C	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	35.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	651	332	534	851	0	304	8	427	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	26	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	733	372	624	959	0	340	9	478	0	0	0
Peak Hour Factor	1.000	0.964	0.964	0.964	0.964	1.000	0.964	0.964	0.964	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	190	96	162	249	0	88	2	124	0	0	0
Total Analysis Volume [veh/h]	0	760	386	647	995	0	353	9	496	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	20	0	31	51	0	0	69	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	40	40	25	69	43	43	
g / C, Green / Cycle	0.33	0.33	0.21	0.58	0.36	0.36	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.25	0.19	0.29	0.11	0.33	
s, saturation flow rate [veh/h]	3427	1530	3329	3427	3329	1534	
c, Capacity [veh/h]	1138	508	705	1979	1185	546	
d1, Uniform Delay [s]	34.38	35.79	46.27	15.10	27.83	37.09	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.18	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.11	10.22	5.36	0.92	0.14	10.91	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.76	0.92	0.50	0.30	0.92	
d, Delay for Lane Group [s/veh]	37.50	46.01	51.63	16.02	27.97	48.00	
Lane Group LOS	D	D	D	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.94	11.43	9.92	8.09	3.70	15.66	
50th-Percentile Queue Length [ft/ln]	248.50	285.80	247.98	202.32	92.39	391.47	
95th-Percentile Queue Length [veh/ln]	15.11	16.98	15.08	12.76	6.65	22.15	
95th-Percentile Queue Length [ft/ln]	377.76	424.42	377.11	318.96	166.30	553.71	

Movement, Approach, & Intersection Results

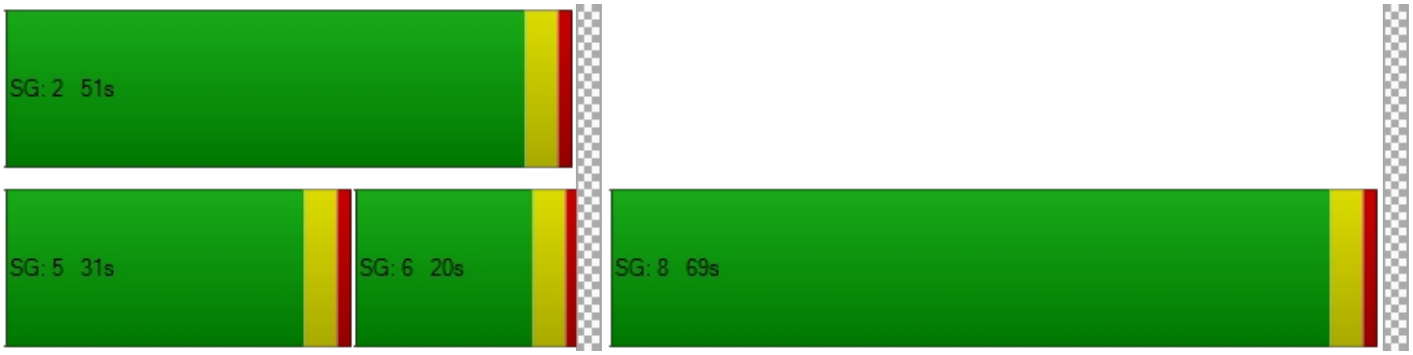
d_M, Delay for Movement [s/veh]	0.00	37.50	46.01	51.63	16.02	0.00	27.97	48.00	48.00	0.00	0.00	0.00
Movement LOS		D	D	D	B		C	D	D			
d_A, Approach Delay [s/veh]	40.36			30.05			39.76			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	35.58											
Intersection LOS	D											
Intersection V/C	0.776											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	267	783	1083	0
d_b, Bicycle Delay [s]	45.07	22.20	12.60	60.00
l_b,int, Bicycle LOS Score for Intersection	2.190	2.914	2.975	4.132
Bicycle LOS	B	C	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	420	718	357	500	741	821	855	0	501	428	0	550
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.000	1.120
In-Process Volume [veh/h]	0	4	0	13	6	0	0	0	0	0	0	7
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	470	808	400	573	836	920	958	0	561	479	0	623
Peak Hour Factor	0.955	0.955	0.955	0.955	0.955	0.955	0.955	1.000	0.955	0.955	1.000	0.955
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	123	212	105	150	219	241	251	0	147	125	0	163
Total Analysis Volume [veh/h]	492	846	419	600	875	963	1003	0	587	502	0	652
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	56	0	0	56	0	64	0	0	64	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	72	72	72	72	40	40
g / C, Green / Cycle	0.60	0.60	0.60	0.60	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.39	0.17	0.47	0.18	0.30	0.15
s, saturation flow rate [veh/h]	1250	4903	1284	4903	3329	3329
c, Capacity [veh/h]	653	2940	674	2940	1111	1111
d1, Uniform Delay [s]	27.37	11.62	30.71	11.70	38.13	31.37
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.89	0.25	16.34	0.26	3.04	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.29	0.89	0.30	0.90	0.45
d, Delay for Lane Group [s/veh]	35.26	11.87	47.05	11.96	41.17	31.66
Lane Group LOS	D	B	D	B	D	C
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.65	3.62	9.69	3.77	14.36	5.77
50th-Percentile Queue Length [ft/ln]	166.16	90.57	242.25	94.36	359.03	144.13
95th-Percentile Queue Length [veh/ln]	10.87	6.52	14.80	6.79	20.58	9.70
95th-Percentile Queue Length [ft/ln]	271.86	163.03	369.88	169.85	514.40	242.57

Movement, Approach, & Intersection Results

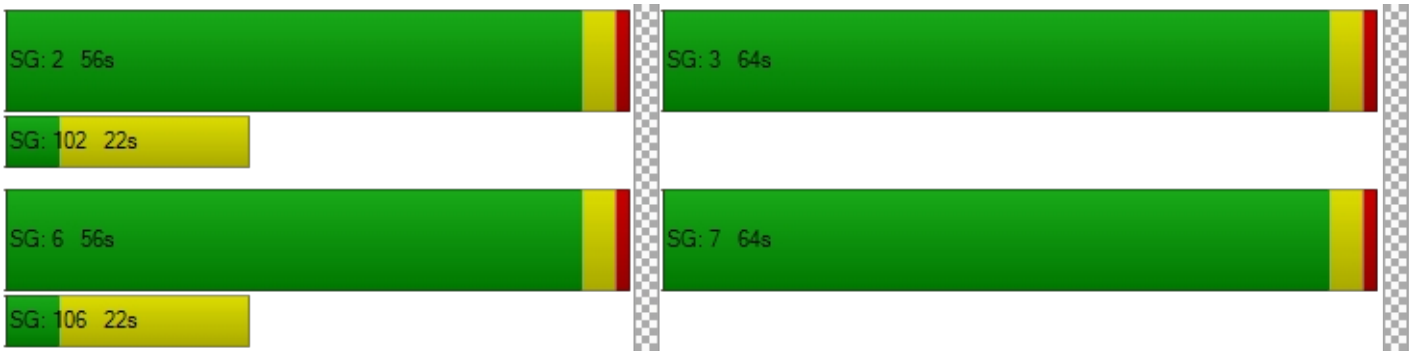
d_M, Delay for Movement [s/veh]	35.26	11.87	0.00	47.05	11.96	0.00	41.17	0.00	0.00	31.66	0.00	0.00
Movement LOS	D	B		D	B		D			C		
d_A, Approach Delay [s/veh]	20.47			26.23			41.17			31.66		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	28.55											
Intersection LOS	C											
Intersection V/C	0.768											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.306	3.383
Crosswalk LOS	F	F	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	1000	1000
d_b, Bicycle Delay [s]	19.27	19.27	15.00	15.00
l_b,int, Bicycle LOS Score for Intersection	2.296	2.371	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	39.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	176	333	80	108	705	218	77	409	118	156	1102	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	4	4	0	0	0	4	0	6	6	6
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	373	94	125	790	244	86	462	132	181	1240	121
Peak Hour Factor	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	57	109	27	36	230	71	25	135	38	53	361	35
Total Analysis Volume [veh/h]	230	435	110	146	921	284	100	538	154	211	1445	141
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	32	0	11	29	0	12	55	0	22	65	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	34	34	7	31	31	8	46	46	17	55	55
g / C, Green / Cycle	0.08	0.28	0.28	0.06	0.26	0.26	0.07	0.39	0.39	0.14	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.07	0.09	0.07	0.04	0.19	0.19	0.06	0.16	0.10	0.12	0.42	0.09
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	277	1384	432	194	1261	393	114	1327	592	238	1575	703
d1, Uniform Delay [s]	54.16	33.93	33.31	55.64	40.77	40.65	55.50	26.74	25.06	50.71	30.31	19.31
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.28	0.60	1.42	5.77	3.75	10.92	18.04	0.20	0.23	10.44	2.57	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.31	0.25	0.75	0.73	0.72	0.88	0.41	0.26	0.88	0.92	0.20
d, Delay for Lane Group [s/veh]	60.44	34.52	34.73	61.41	44.52	51.57	73.54	26.94	25.29	61.15	32.88	19.45
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.66	3.42	2.66	2.33	8.70	8.82	3.57	5.64	3.04	6.91	19.49	2.38
50th-Percentile Queue Length [ft/ln]	91.51	85.55	66.56	58.30	217.5	220.4	89.25	140.8	76.06	172.6	487.1	59.50
95th-Percentile Queue Length [veh/ln]	6.59	6.16	4.79	4.20	13.54	13.69	6.43	9.53	5.48	11.22	26.73	4.28
95th-Percentile Queue Length [ft/ln]	164.7	153.9	119.8	104.9	338.4	342.1	160.6	238.2	136.9	280.4	668.1	107.1

Movement, Approach, & Intersection Results

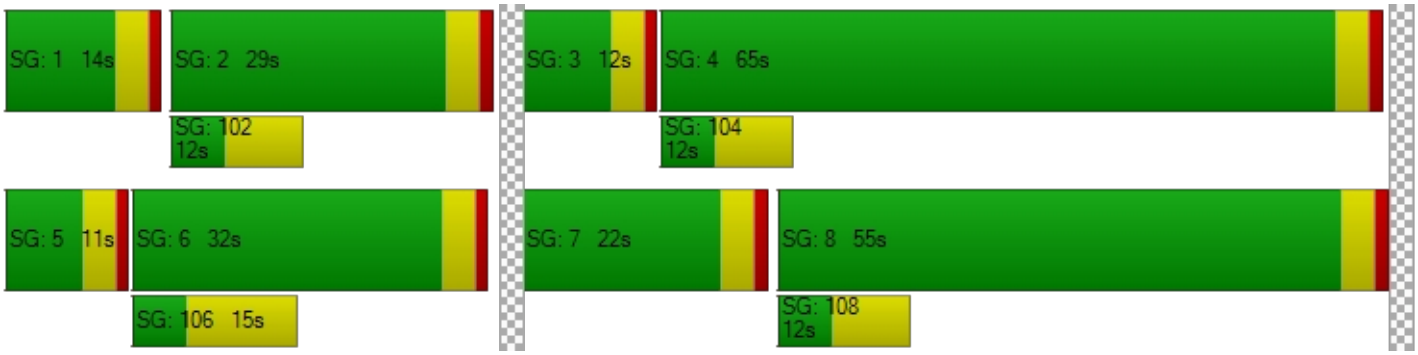
d_M, Delay for Movement [s/veh]	60.44	34.52	34.73	61.41	44.52	51.57	73.54	26.94	25.29	61.15	32.88	19.45
Movement LOS	E	C	C	E	D	D	E	C	C	E	C	B
d_A, Approach Delay [s/veh]	42.24			47.83			32.50			35.14		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	39.50											
Intersection LOS	D											
Intersection V/C	0.737											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.088	3.084	2.915	2.889
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	417	850	1017
d_b, Bicycle Delay [s]	35.27	37.60	19.84	14.50
l_b,int, Bicycle LOS Score for Intersection	1.986	2.303	2.213	3.042
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	37.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.731

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	170	66	105	390	270	118	333	69	166	1013	134
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	12	0	0	18	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	190	74	118	437	302	132	385	77	186	1153	150
Peak Hour Factor	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	56	22	35	129	89	39	114	23	55	340	44
Total Analysis Volume [veh/h]	65	224	87	139	515	356	156	454	91	219	1360	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	33	0	15	38	38	16	55	0	17	56	56
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	31	31	11	36	52	12	52	52	10	50	65
g / C, Green / Cycle	0.05	0.26	0.26	0.09	0.30	0.43	0.10	0.44	0.44	0.08	0.42	0.54
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.06	0.08	0.15	0.23	0.09	0.16	0.16	0.07	0.40	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1697	3329	3427	1530
c, Capacity [veh/h]	82	875	391	157	1025	661	171	784	739	279	1438	833
d1, Uniform Delay [s]	56.51	35.59	35.27	53.87	34.70	25.20	53.47	22.63	22.65	53.90	33.51	14.07
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.17	0.71	1.31	14.76	1.76	3.12	16.34	0.28	0.29	4.81	4.05	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.26	0.22	0.88	0.50	0.54	0.91	0.36	0.36	0.78	0.95	0.21
d, Delay for Lane Group [s/veh]	71.68	36.29	36.58	68.64	36.46	28.32	69.81	22.90	22.94	58.70	37.56	14.20
Lane Group LOS	E	D	D	E	D	C	E	C	C	E	D	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.30	2.71	2.17	4.79	6.46	8.01	5.43	5.33	5.06	3.43	19.37	2.49
50th-Percentile Queue Length [ft/ln]	57.41	67.85	54.14	119.7	161.3	200.3	135.7	133.3	126.4	85.75	484.3	62.28
95th-Percentile Queue Length [veh/ln]	4.13	4.88	3.90	8.38	10.62	12.65	9.25	9.12	8.75	6.17	26.59	4.48
95th-Percentile Queue Length [ft/ln]	103.3	122.1	97.46	209.4	265.5	316.3	231.3	228.0	218.6	154.3	664.7	112.1

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.68	36.29	36.58	68.64	36.46	28.32	69.81	22.92	22.94	58.70	37.56	14.20
Movement LOS	E	D	D	E	D	C	E	C	C	E	D	B
d_A, Approach Delay [s/veh]	42.48			38.02			33.36			37.84		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	37.52											
Intersection LOS	D											
Intersection V/C	0.731											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.663	2.723	2.799	2.948
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	567	850	867
d_b, Bicycle Delay [s]	34.50	30.82	19.84	19.27
l_b,int, Bicycle LOS Score for Intersection	1.870	2.393	2.138	3.008
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	28	937	55	409	1110	522	407	220	42	53	258	351
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	17	0	0	26	6	4	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	1066	62	458	1269	591	460	246	47	59	289	393
Peak Hour Factor	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	297	17	128	353	165	128	68	13	16	80	109
Total Analysis Volume [veh/h]	35	1187	69	510	1413	658	512	274	52	66	322	438
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	14	33	0	22	41	41	22	56	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	3	51	51	18	65	87	18	31	31	4	17	39
g / C, Green / Cycle	0.03	0.42	0.42	0.15	0.54	0.73	0.15	0.26	0.26	0.04	0.14	0.33
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.24	0.15	0.29	0.43	0.15	0.09	0.09	0.02	0.09	0.29
s, saturation flow rate [veh/h]	1714	3427	1750	3329	4903	1530	3329	1800	1701	3329	3427	1530
c, Capacity [veh/h]	51	1451	741	499	2666	1113	499	461	436	124	491	500
d1, Uniform Delay [s]	57.68	26.34	26.34	51.00	17.54	7.84	51.00	36.60	36.60	56.75	48.60	38.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.46	1.65	3.21	24.30	0.76	2.31	25.48	0.48	0.51	3.55	1.49	15.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.57	0.57	1.02	0.53	0.59	1.03	0.36	0.36	0.53	0.66	0.88
d, Delay for Lane Group [s/veh]	73.14	27.99	29.55	75.30	18.30	10.15	76.48	37.08	37.11	60.30	50.09	53.11
Lane Group LOS	E	C	C	F	B	B	F	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.27	9.30	9.82	9.16	8.33	7.87	9.24	4.11	3.89	1.04	4.66	14.09
50th-Percentile Queue Length [ft/ln]	31.77	232.4	245.5	229.0	208.2	196.7	231.0	102.6	97.27	26.11	116.5	352.1
95th-Percentile Queue Length [veh/ln]	2.29	14.30	14.96	14.26	13.06	12.47	14.39	7.39	7.00	1.88	8.21	20.24
95th-Percentile Queue Length [ft/ln]	57.18	357.5	374.0	356.5	326.6	311.7	359.8	184.8	175.0	47.00	205.1	506.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.14	28.46	29.55	75.30	18.30	10.15	76.48	37.09	37.11	60.30	50.09	53.11
Movement LOS	E	C	C	F	B	B	F	D	D	E	D	D
d_A, Approach Delay [s/veh]	29.73			27.49			61.16			52.51		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	36.84											
Intersection LOS	D											
Intersection V/C	0.726											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.085	3.442	2.769	2.843
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	617	867	650
d_b, Bicycle Delay [s]	34.50	28.70	19.27	27.34
l_b,int, Bicycle LOS Score for Intersection	2.270	2.979	2.251	2.241
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	713.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	40.580

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	36	762	11	114	720	331	245	39	80	9	21	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	0	14	6	6	4	0	0	0	0	9
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	857	12	142	812	377	278	44	90	10	24	83
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	235	3	39	222	103	76	12	25	3	7	23
Total Analysis Volume [veh/h]	44	939	13	156	889	413	304	48	99	11	26	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	12	12	5	13	13	91	91	91	91
g / C, Green / Cycle	0.03	0.10	0.10	0.04	0.11	0.11	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.03	0.18	0.18	0.09	0.26	0.27	40.28	0.06	0.39	0.06
s, saturation flow rate [veh/h]	1714	3427	1787	1714	3427	1530	9	1530	95	1530
c, Capacity [veh/h]	56	347	181	71	378	169	63	1158	111	1158
d1, Uniform Delay [s]	57.65	53.93	53.93	57.50	53.37	53.37	54.18	3.78	34.52	3.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.58	372.8	383.2	542.6	615.1	667.4	2117.83	0.03	1.75	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	1.80	1.80	2.18	2.35	2.44	5.63	0.09	0.33	0.08
d, Delay for Lane Group [s/veh]	79.23	426.7	437.1	600.1	668.4	720.8	2172.01	3.82	36.27	3.79
Lane Group LOS	E	F	F	F	F	F	F	A	D	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.66	23.19	24.71	12.93	38.03	36.42	38.69	0.56	0.94	0.51
50th-Percentile Queue Length [ft/ln]	41.49	579.7	617.7	323.3	950.8	910.3	967.16	13.99	23.50	12.79
95th-Percentile Queue Length [veh/ln]	2.99	36.96	39.12	21.61	59.71	57.52	69.64	1.01	1.69	0.92
95th-Percentile Queue Length [ft/ln]	74.68	923.9	978.0	540.1	1492.	1438.	1740.88	25.18	42.29	23.02

Movement, Approach, & Intersection Results

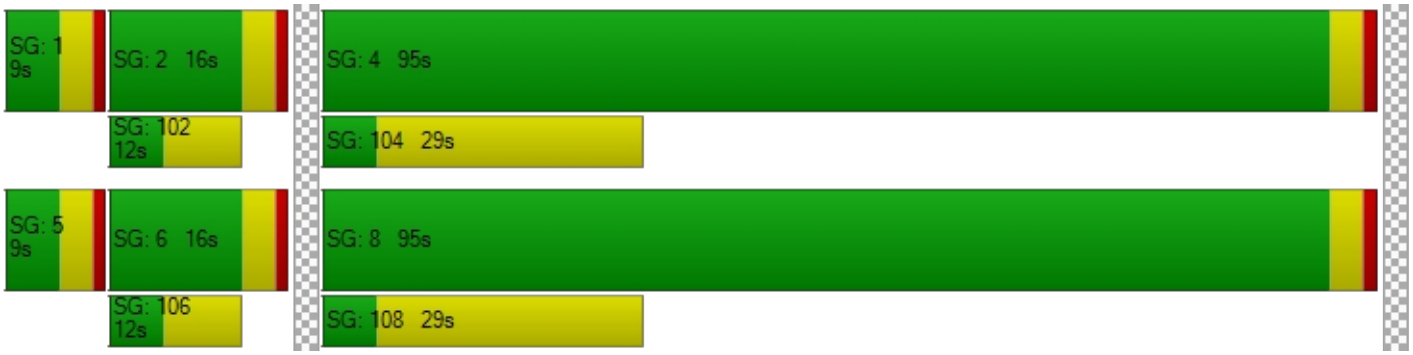
d_M, Delay for Movement [s/veh]	79.23	430.2	437.1	600.1	668.4	720.8	2172.	2172.	3.82	36.27	36.27	3.79
Movement LOS	E	F	F	F	F	F	F	F	A	D	D	A
d_A, Approach Delay [s/veh]	414.84			676.00			1696.07			13.18		
Approach LOS	F			F			F			B		
d_I, Intersection Delay [s/veh]	713.94											
Intersection LOS	F											
Intersection V/C	40.580											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.903	3.430	2.259	2.068
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	2.107	2.362	2.304	1.771
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	40	40	0	24	24	24	0	33	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	104	0	104	112	0	0	0	0	0
g / C, Green / Cycle	0.00	0.87	0.87	0.00	0.87	0.93	0.00	0.00	0.00	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1687	3373	1772	1687	3373	1506	1687	1772	2665	1687	1772
c, Capacity [veh/h]	1	2920	1533	1	2919	1405	1	1	1	1	1
d1, Uniform Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Group LOS	A	A	A	A	A	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	No	No	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement, Approach, & Intersection Results

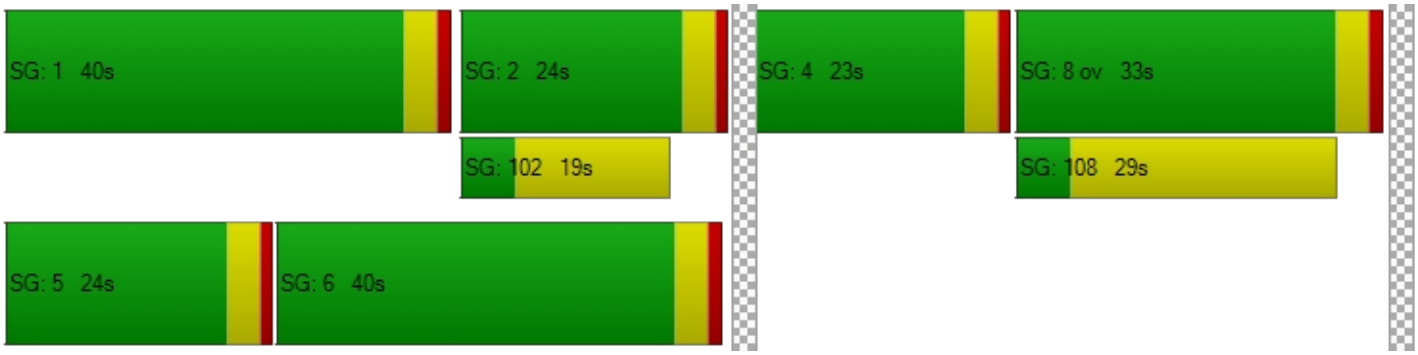
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											
Intersection V/C	0.000											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.609	0.000	2.468	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	333	483	317
d_b, Bicycle Delay [s]	29.40	41.67	34.50	42.50
l_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560	1.560
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 998543: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Level Of Service Report
Intersection 998552: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Crosswalk	Yes		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Level Of Service Report
Intersection 998555: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Left	Thru	Left	Thru	Right	Left	Thru	Right	Thru	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Speedway Commerce Center

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Report File: K:\...\5 OY 2027 CUM PM.pdf

Scenario 5 OY 2027 CUM PM
1/13/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Left	0.581	31.1	C
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.675	27.3	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.459	16.9	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.600	24.1	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.753	31.5	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.499	14.7	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.405	34.9	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.713	40.4	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	EB Left	0.868	55.1	E
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	SB Left	0.479	40.1	D
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.361	15.1	B
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.501	34.1	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.704	39.6	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.490	43.2	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.556	40.0	D
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.547	35.7	D
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.557	44.7	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.926	24.6	C
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.582	22.8	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.702	44.4	D
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.677	47.0	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	4.660	2,188.6	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.837	57.3	E
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	SB Left	0.761	44.2	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.728	40.5	D
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.870	62.1	E
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.596	23.9	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.744	45.0	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.588	37.2	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.796	28.8	C
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	WB Left	0.873	54.4	D
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.549	48.5	E
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.643	28.4	C
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.746	27.9	C
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	EB Thru	1.054	50.3	F
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.590	31.3	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	WB Left	0.649	43.1	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.491	23.6	C

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.673	33.9	C
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	EB Thru	0.915	32.9	D
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	WB Thru	0.865	34.8	D
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.516	28.1	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	SB Left	0.619	31.9	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Right	0.911	58.2	E
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	WB Left	0.638	35.6	D
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.561	37.3	D
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	EB Thru	0.858	62.0	E
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.209	10.9	B
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.814	48.4	D
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	WB Left	0.516	34.9	C
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	NB Thru	0.498	28.2	C
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.538	31.6	C
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	WB Left	0.761	42.4	D
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	EB Thru	0.362	10.2	B
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.624	35.6	D
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	NB Right	0.933	61.8	E
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.966	53.2	D
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.509	16.0	B
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Left	1.411	369.5	F

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.779	48.1	D
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	WB Left	0.910	60.3	E
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.542	19.3	B
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	WB Right	0.785	28.2	C
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Right	0.549	19.1	B
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.605	18.6	B
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	NB Right	0.828	39.6	D
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	EB Right	0.751	32.1	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	SB Left	1.130	69.7	E
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	WB Left	0.793	42.6	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	SB Left	0.744	40.5	D
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.702	37.8	D
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	33.040	573.5	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition		0.000	0.0	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	31.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	302	571	0	0	461	146	0	0	0	287	0	135
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	15	5	0	0	8	0	0	0	0	26	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	353	645	0	0	524	164	0	0	0	347	0	151
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	93	170	0	0	138	43	0	0	0	91	0	40
Total Analysis Volume [veh/h]	372	679	0	0	552	173	0	0	0	365	0	159
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	46	78	0	0	32	0	0	0	0	0	42	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	28	84	52	52		28	28
g / C, Green / Cycle	0.24	0.70	0.43	0.43		0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.22	0.20	0.14	0.15		0.21	0.10
s, saturation flow rate [veh/h]	1714	3427	3427	1598		1714	1530
c, Capacity [veh/h]	405	2397	1474	688		401	358
d1, Uniform Delay [s]	44.73	6.76	22.68	22.95		44.75	39.31
k, delay calibration	0.18	0.50	0.50	0.50		0.22	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	13.37	0.30	0.59	1.41		14.56	0.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.28	0.33	0.35		0.91	0.44
d, Delay for Lane Group [s/veh]	58.10	7.05	23.27	24.36		59.32	40.17
Lane Group LOS	E	A	C	C		E	D
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	12.24	3.11	4.65	4.85		12.13	4.11
50th-Percentile Queue Length [ft/ln]	305.99	77.83	116.15	121.21		303.34	102.71
95th-Percentile Queue Length [veh/ln]	17.98	5.60	8.18	8.46		17.85	7.39
95th-Percentile Queue Length [ft/ln]	449.42	140.09	204.53	211.49		446.15	184.87

Movement, Approach, & Intersection Results

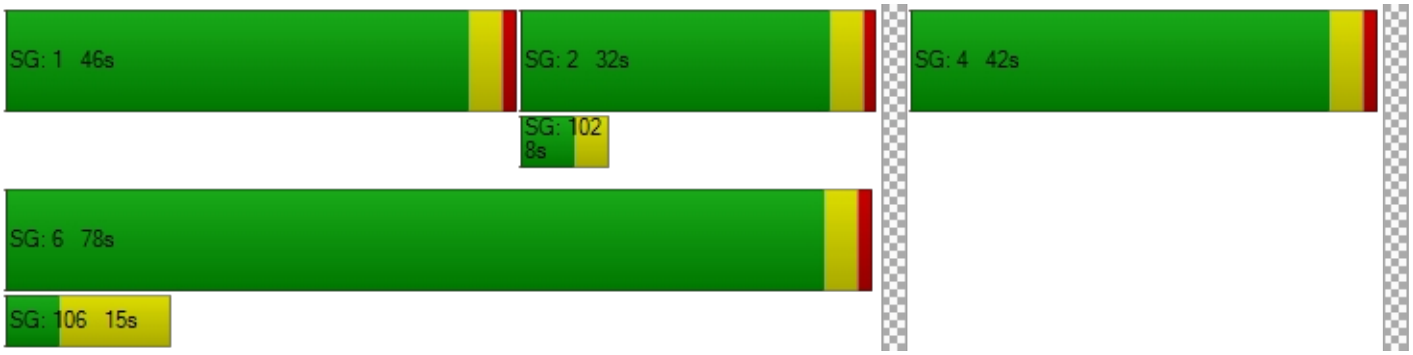
d_M, Delay for Movement [s/veh]	58.10	7.05	0.00	0.00	23.41	24.36	0.00	0.00	0.00	59.32	59.32	40.17
Movement LOS	E	A			C	C				E	E	D
d_A, Approach Delay [s/veh]	25.12			23.64			0.00			53.51		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	31.12											
Intersection LOS	C											
Intersection V/C	0.581											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.970	2.126
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1233	467	0	633
d_b, Bicycle Delay [s]	8.82	35.27	60.00	28.02
l_b,int, Bicycle LOS Score for Intersection	2.427	1.958	4.132	2.424
Bicycle LOS	B	A	D	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	27.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	323	1038	0	0	732	395	0	0	0	341	0	332
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	0	5	0	0	8	0	0	0	0	7	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	362	1168	0	0	828	442	0	0	0	389	0	372
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	95	307	0	0	218	116	0	0	0	102	0	98
Total Analysis Volume [veh/h]	381	1229	0	0	872	465	0	0	0	409	0	392
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	26	56	0	0	30	0	0	0	0	0	64	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	16	78	58	58		34	34	34
g / C, Green / Cycle	0.13	0.65	0.48	0.48		0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.11	0.36	0.25	0.30		0.12	0.12	0.26
s, saturation flow rate [veh/h]	3329	3427	3427	1530		1714	1714	1530
c, Capacity [veh/h]	447	2231	1656	739		484	484	432
d1, Uniform Delay [s]	50.77	11.39	21.48	23.01		35.09	35.09	41.55
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	4.67	0.98	1.20	4.03		0.59	0.59	7.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.55	0.53	0.63		0.42	0.42	0.91
d, Delay for Lane Group [s/veh]	55.44	12.38	22.68	27.04		35.68	35.68	49.04
Lane Group LOS	E	B	C	C		D	D	D
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.88	8.68	8.65	10.40		4.97	4.97	11.99
50th-Percentile Queue Length [ft/ln]	146.95	217.01	216.35	259.92		124.1	124.1	299.7
95th-Percentile Queue Length [veh/ln]	9.85	13.51	13.48	15.69		8.62	8.62	17.67
95th-Percentile Queue Length [ft/ln]	246.35	337.81	336.96	392.13		215.5	215.5	441.7

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.44	12.38	0.00	0.00	22.68	27.04	0.00	0.00	0.00	35.68	35.68	49.04
Movement LOS	E	B			C	C				D	D	D
d_A, Approach Delay [s/veh]	22.57			24.20			0.00			42.22		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	27.35											
Intersection LOS	C											
Intersection V/C	0.675											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.143	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	433	0	1000
d_b, Bicycle Delay [s]	19.27	36.82	60.00	15.00
l_b,int, Bicycle LOS Score for Intersection	2.888	2.663	4.132	2.881
Bicycle LOS	C	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.459

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1132	0	0	1172	0	0	0	0	297	0	400
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	0	5	0	0	8	0	0	0	0	4	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1273	0	0	1321	0	0	0	0	337	0	448
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	335	0	0	348	0	0	0	0	89	0	118
Total Analysis Volume [veh/h]	0	1340	0	0	1391	0	0	0	0	355	0	472
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	48	0	0	48	0	0	0	0	0	72	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	87	87		25	25	25
g / C, Green / Cycle	0.73	0.73		0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.27	0.28		0.17	0.17	0.18
s, saturation flow rate [veh/h]	4903	4903		1714	1573	1530
c, Capacity [veh/h]	3565	3565		354	325	316
d1, Uniform Delay [s]	6.15	6.24		45.35	45.72	45.85
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	0.32		4.39	5.84	6.42
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.39		0.81	0.84	0.85
d, Delay for Lane Group [s/veh]	6.46	6.57		49.74	51.56	52.27
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.90	4.11		8.52	8.31	8.25
50th-Percentile Queue Length [ft/ln]	97.60	102.81		212.9	207.8	206.3
95th-Percentile Queue Length [veh/ln]	7.03	7.40		13.30	13.04	12.97
95th-Percentile Queue Length [ft/ln]	175.68	185.05		332.5	326.0	324.1

Movement, Approach, & Intersection Results

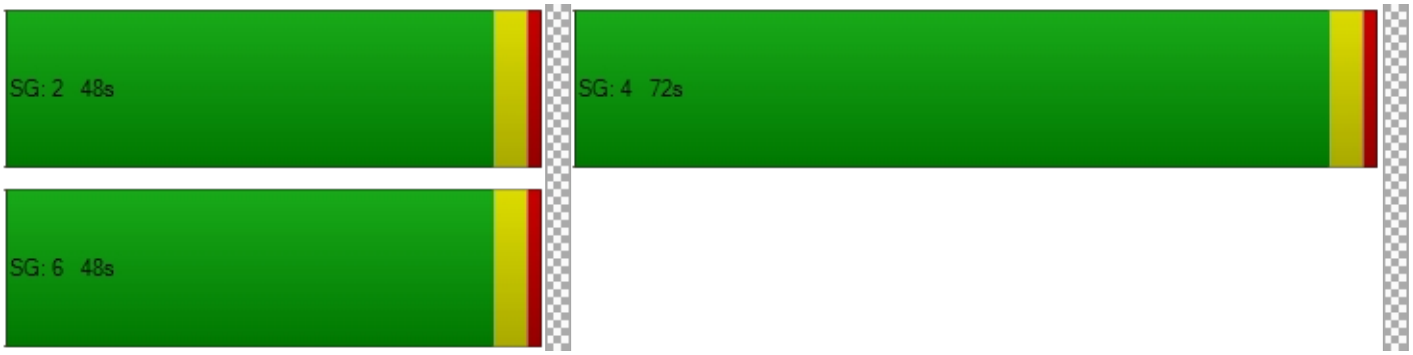
d_M, Delay for Movement [s/veh]	0.00	6.46	0.00	0.00	6.57	0.00	0.00	0.00	0.00	50.13	51.56	51.97
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	6.46			6.57			0.00			51.16		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	16.89											
Intersection LOS	B											
Intersection V/C	0.459											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	733	0	1133
d_b, Bicycle Delay [s]	24.07	24.07	60.00	11.27
l_b,int, Bicycle LOS Score for Intersection	2.297	2.325	4.132	2.924
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	24.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.600

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	687	307	72	673	0	193	2	359	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	20	22	0	34	0	0	0	16	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	789	366	81	788	0	216	2	418	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	208	96	21	207	0	57	1	110	0	0	0
Total Analysis Volume [veh/h]	0	831	385	85	829	0	227	2	440	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	12	0	12	24	0	0	96	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	63	63	7	75	37	37	
g / C, Green / Cycle	0.53	0.53	0.06	0.62	0.31	0.31	
(v / s)_i Volume / Saturation Flow Rate	0.24	0.26	0.05	0.24	0.13	0.29	
s, saturation flow rate [veh/h]	3427	1542	1714	3427	1715	1530	
c, Capacity [veh/h]	1803	811	106	2130	535	477	
d1, Uniform Delay [s]	17.64	18.27	55.56	11.34	32.79	39.88	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.81	2.19	12.91	0.54	0.54	7.88	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.45	0.50	0.80	0.39	0.43	0.92	
d, Delay for Lane Group [s/veh]	18.45	20.47	68.47	11.88	33.33	47.75	
Lane Group LOS	B	C	E	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	7.04	7.58	2.92	5.47	5.39	13.44	
50th-Percentile Queue Length [ft/ln]	176.05	189.45	72.98	136.69	134.68	336.11	
95th-Percentile Queue Length [veh/ln]	11.39	12.09	5.25	9.30	9.19	19.46	
95th-Percentile Queue Length [ft/ln]	284.86	302.32	131.37	232.55	229.84	486.45	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	18.50	20.47	68.47	11.88	0.00	33.33	33.33	47.75	0.00	0.00	0.00
Movement LOS		B	C	E	B		C	C	D			
d_A, Approach Delay [s/veh]	19.12			17.14			42.82			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	24.14											
Intersection LOS	C											
Intersection V/C	0.600											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.173	1.899
Crosswalk LOS	F	F	B	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	133	333	1533	0
d_b, Bicycle Delay [s]	52.27	41.67	3.27	60.00
l_b,int, Bicycle LOS Score for Intersection	2.228	2.314	2.663	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	31.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1043	269	204	682	0	496	3	344	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	5	7	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1173	308	228	779	0	556	3	385	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	309	81	60	205	0	146	1	101	0	0	0
Total Analysis Volume [veh/h]	0	1235	324	240	820	0	585	3	405	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	65	0	14	79	0	0	41	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	69	69	10	83	29	29	29	
g / C, Green / Cycle	0.57	0.57	0.08	0.69	0.24	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.43	0.46	0.07	0.24	0.19	0.20	0.22	
s, saturation flow rate [veh/h]	1800	1677	3329	3427	1714	1670	1530	
c, Capacity [veh/h]	1029	959	277	2360	420	409	375	
d1, Uniform Delay [s]	19.40	20.55	54.33	7.65	42.41	42.68	43.67	
k, delay calibration	0.50	0.50	0.11	0.50	0.18	0.19	0.24	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	5.21	7.48	7.95	0.41	5.51	6.74	13.77	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.76	0.81	0.87	0.35	0.79	0.81	0.88	
d, Delay for Lane Group [s/veh]	24.60	28.03	62.28	8.06	47.92	49.42	57.44	
Lane Group LOS	C	C	E	A	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	17.11	18.54	3.88	4.16	9.80	9.98	10.86	
50th-Percentile Queue Length [ft/ln]	427.69	463.49	97.12	103.99	244.9	249.4	271.4	
95th-Percentile Queue Length [veh/ln]	23.89	25.60	6.99	7.49	14.93	15.16	16.26	
95th-Percentile Queue Length [ft/ln]	597.27	640.02	174.82	187.18	373.2	378.9	406.5	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	25.87	28.03	62.28	8.06	0.00	48.57	49.42	55.97	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	E			
d_A, Approach Delay [s/veh]	26.32			20.33			51.59			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	31.51											
Intersection LOS	C											
Intersection V/C	0.753											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.388	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1250	617	0
d_b, Bicycle Delay [s]	14.50	8.44	28.70	60.00
I_b,int, Bicycle LOS Score for Intersection	2.846	2.434	3.198	4.132
Bicycle LOS	C	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.499

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1417	643	0	1189	41	193	0	409	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.000	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	5	0	0	12	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1592	720	0	1344	41	216	0	458	0	0	0
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	419	189	0	354	11	57	0	121	0	0	0
Total Analysis Volume [veh/h]	0	1676	758	0	1415	43	227	0	482	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	80	0	0	80	0	0	40	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	90	90	22	22	22	
g / C, Green / Cycle	0.75	0.75	0.18	0.18	0.18	
(v / s)_i Volume / Saturation Flow Rate	0.34	0.29	0.13	0.16	0.16	
s, saturation flow rate [veh/h]	4903	4903	1714	1530	1530	
c, Capacity [veh/h]	3668	3668	318	284	284	
d1, Uniform Delay [s]	5.79	5.36	45.90	47.26	47.26	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.41	0.31	2.99	7.03	7.03	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.46	0.39	0.71	0.85	0.85	
d, Delay for Lane Group [s/veh]	6.20	5.66	48.89	54.30	54.30	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	Yes	No	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	4.80	3.74	6.62	7.50	7.50	
50th-Percentile Queue Length [ft/ln]	120.00	93.61	165.5	187.6	187.6	
95th-Percentile Queue Length [veh/ln]	8.39	6.74	10.84	12.00	12.00	
95th-Percentile Queue Length [ft/ln]	209.83	168.50	271.0	299.9	299.9	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.20	0.00	0.00	5.66	0.00	48.89	54.30	54.30	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	6.20			5.66			52.57			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	14.65											
Intersection LOS	B											
Intersection V/C	0.499											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.319	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1267	1267	600	0
d_b, Bicycle Delay [s]	8.07	8.07	29.40	60.00
l_b,int, Bicycle LOS Score for Intersection	2.481	2.338	2.729	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.405

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	26	384	87	100	386	54	65	324	60	68	185	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	430	97	112	432	60	73	363	67	76	207	92
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	113	26	29	114	16	19	96	18	20	54	24
Total Analysis Volume [veh/h]	31	453	102	118	455	63	77	382	71	80	218	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	35	0	17	33	0	42	55	0	13	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	69	69	10	75	75	7	18	18	7	18	18
g / C, Green / Cycle	0.03	0.57	0.57	0.08	0.63	0.63	0.06	0.15	0.15	0.06	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.16	0.07	0.15	0.15	0.04	0.13	0.13	0.05	0.09	0.09
s, saturation flow rate [veh/h]	1714	1800	1687	1714	1800	1725	1714	1800	1704	1714	1800	1618
c, Capacity [veh/h]	47	1030	965	143	1130	1083	101	275	260	100	274	247
d1, Uniform Delay [s]	57.78	13.06	13.09	54.14	9.74	9.75	55.64	49.43	49.51	55.78	47.40	47.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.29	0.67	0.72	11.29	0.48	0.51	11.18	6.87	7.68	13.22	2.05	2.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.28	0.28	0.83	0.23	0.23	0.76	0.84	0.85	0.80	0.59	0.62
d, Delay for Lane Group [s/veh]	72.06	13.73	13.81	65.43	10.23	10.26	66.81	56.30	57.19	69.00	49.45	50.07
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.12	4.04	3.85	3.95	3.09	2.98	2.61	7.26	7.02	2.76	4.70	4.42
50th-Percentile Queue Length [ft/ln]	28.01	101.0	96.15	98.87	77.23	74.59	65.31	181.5	175.3	69.01	117.5	110.6
95th-Percentile Queue Length [veh/ln]	2.02	7.27	6.92	7.12	5.56	5.37	4.70	11.68	11.36	4.97	8.26	7.87
95th-Percentile Queue Length [ft/ln]	50.42	181.8	173.0	177.9	139.0	134.2	117.5	292.1	283.9	124.2	206.4	196.8

Movement, Approach, & Intersection Results

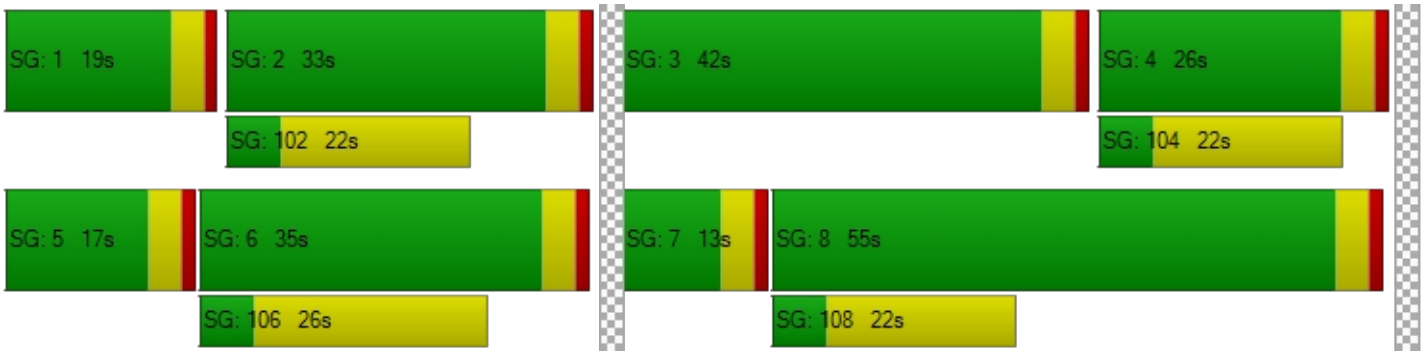
d_M, Delay for Movement [s/veh]	72.06	13.76	13.81	65.43	10.24	10.26	66.81	56.65	57.19	69.00	49.61	50.07
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	16.85			20.48			58.20			53.65		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	34.90											
Intersection LOS	C											
Intersection V/C	0.405											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.548	2.561	2.479	2.630
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	483	850	367
d_b, Bicycle Delay [s]	33.00	34.50	19.84	40.02
l_b,int, Bicycle LOS Score for Intersection	2.043	2.084	1.997	1.885
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	40.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.713

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	62	750	75	294	625	106	192	300	54	124	296	363
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	12	0	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	852	84	329	715	119	215	336	60	139	332	407
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	224	22	87	188	31	57	88	16	37	87	107
Total Analysis Volume [veh/h]	73	897	88	346	753	125	226	354	63	146	349	428
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	26	0	19	30	0	14	50	0	25	61	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	43	43	14	51	51	10	34	34	12	37	37
g / C, Green / Cycle	0.05	0.36	0.36	0.12	0.42	0.42	0.08	0.29	0.29	0.10	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.06	0.10	0.22	0.08	0.07	0.10	0.04	0.09	0.19	0.28
s, saturation flow rate [veh/h]	1714	3427	1530	3329	3427	1530	3329	3427	1530	1714	1800	1530
c, Capacity [veh/h]	94	1230	549	398	1453	648	277	978	437	176	548	466
d1, Uniform Delay [s]	55.99	33.39	26.16	51.89	25.53	21.69	54.09	34.16	31.95	52.83	35.98	40.27
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.78	3.82	0.62	5.87	1.33	0.66	5.76	0.23	0.15	9.63	1.23	10.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.73	0.16	0.87	0.52	0.19	0.81	0.36	0.14	0.83	0.64	0.92
d, Delay for Lane Group [s/veh]	68.77	37.21	26.78	57.77	26.85	22.35	59.85	34.39	32.10	62.46	37.22	51.12
Lane Group LOS	E	D	C	E	C	C	E	C	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.52	11.87	1.82	5.43	8.13	2.34	3.58	4.16	1.39	4.79	8.98	13.47
50th-Percentile Queue Length [ft/ln]	62.93	296.8	45.49	135.8	203.2	58.43	89.42	103.9	34.82	119.7	224.4	336.7
95th-Percentile Queue Length [veh/ln]	4.53	17.52	3.28	9.26	12.81	4.21	6.44	7.49	2.51	8.38	13.89	19.49
95th-Percentile Queue Length [ft/ln]	113.2	438.1	81.89	231.4	320.1	105.1	160.9	187.1	62.67	209.4	347.3	487.1

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.77	37.21	26.78	57.77	26.85	22.35	59.85	34.39	32.10	62.46	37.22	51.12
Movement LOS	E	D	C	E	C	C	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	38.52			35.13			43.11			47.65		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.40											
Intersection LOS	D											
Intersection V/C	0.713											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.796	2.996	2.775	2.746
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	433	767	950
d_b, Bicycle Delay [s]	40.02	36.82	22.82	16.54
l_b,int, Bicycle LOS Score for Intersection	2.432	2.569	2.090	3.083
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	55.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.868

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	59	1316	65	357	973	241	426	251	51	69	171	354
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	8	0	0	12	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	1482	73	400	1102	270	477	281	57	77	192	396
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	390	19	105	290	71	126	74	15	20	51	104
Total Analysis Volume [veh/h]	69	1560	77	421	1160	284	502	296	60	81	202	417
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	40	0	19	37	0	21	40	0	21	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	38	38	15	48	48	17	47	47	5	34	34
g / C, Green / Cycle	0.04	0.31	0.31	0.13	0.40	0.40	0.14	0.39	0.39	0.04	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.02	0.32	0.05	0.13	0.24	0.19	0.15	0.09	0.04	0.02	0.06	0.27
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	128	1533	478	416	1958	611	472	1334	596	132	985	440
d1, Uniform Delay [s]	56.66	41.24	29.84	52.50	28.36	26.58	51.50	24.49	23.29	56.71	32.39	41.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.39
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.52	27.44	0.72	23.42	1.33	2.53	39.08	0.08	0.07	4.55	0.10	27.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	1.02	0.16	1.01	0.59	0.46	1.06	0.22	0.10	0.61	0.21	0.95
d, Delay for Lane Group [s/veh]	60.18	68.68	30.56	75.92	29.68	29.11	90.58	24.58	23.36	61.27	32.49	69.07
Lane Group LOS	E	F	C	F	C	C	F	C	C	E	C	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.09	18.79	1.72	7.60	8.91	6.40	9.63	2.84	1.10	1.29	2.25	15.28
50th-Percentile Queue Length [ft/ln]	27.26	469.6	42.98	190.0	222.8	160.0	240.7	71.09	27.56	32.33	56.35	382.0
95th-Percentile Queue Length [veh/ln]	1.96	26.19	3.09	12.19	13.81	10.55	15.13	5.12	1.98	2.33	4.06	21.69
95th-Percentile Queue Length [ft/ln]	49.08	654.7	77.37	304.6	345.2	263.7	378.2	127.9	49.61	58.19	101.4	542.3

Movement, Approach, & Intersection Results

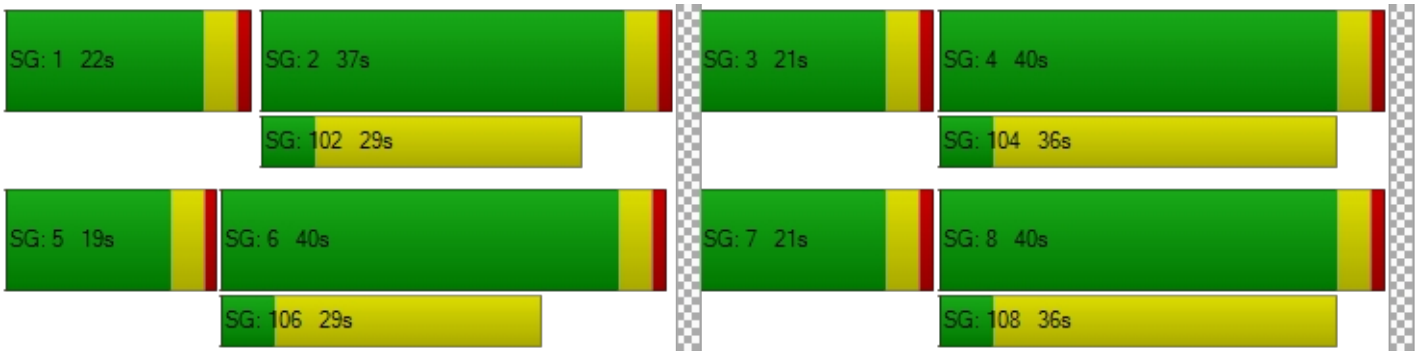
d_M, Delay for Movement [s/veh]	60.18	68.68	30.56	75.92	29.68	29.11	90.58	24.58	23.36	61.27	32.49	69.07
Movement LOS	E	F	C	F	C	C	F	C	C	E	C	E
d_A, Approach Delay [s/veh]	66.61			40.03			63.11			57.61		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	55.13											
Intersection LOS	E											
Intersection V/C	0.868											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.190	3.335	2.806	2.817
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	550	600	600
d_b, Bicycle Delay [s]	29.40	31.54	29.40	29.40
l_b,int, Bicycle LOS Score for Intersection	2.498	2.585	2.267	2.137
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.479

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	102	163	206	49	94	61	74	991	115	128	620	46
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	5	5	0	0	8	0	0	0	8	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	188	231	55	113	68	83	1110	137	143	694	52
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	31	49	61	14	30	18	22	292	36	38	183	14
Total Analysis Volume [veh/h]	125	198	243	58	119	72	87	1168	144	151	731	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	36	36	11	30	0	24	60	0	13	49	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	55	68	5	53	53	8	35	35	9	36	36
g / C, Green / Cycle	0.05	0.46	0.57	0.04	0.45	0.45	0.06	0.29	0.29	0.08	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.16	0.03	0.05	0.06	0.05	0.26	0.26	0.05	0.22	0.22
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1583	1714	3427	1701	3329	1800	1756
c, Capacity [veh/h]	182	822	864	74	801	705	112	1001	497	250	543	530
d1, Uniform Delay [s]	55.72	19.91	13.51	56.86	19.54	19.63	55.25	40.42	40.42	53.78	37.53	37.53
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.13	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.57	0.69	0.81	16.32	0.31	0.39	11.11	2.63	6.07	2.35	1.92	1.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.24	0.28	0.78	0.12	0.13	0.78	0.88	0.88	0.60	0.73	0.73
d, Delay for Lane Group [s/veh]	60.29	20.61	14.32	73.17	19.86	20.01	66.36	43.04	46.48	56.13	39.46	39.50
Lane Group LOS	E	C	B	E	B	C	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.98	3.55	3.55	2.08	1.69	1.61	2.94	12.57	12.95	2.29	10.69	10.44
50th-Percentile Queue Length [ft/ln]	49.38	88.63	88.75	51.93	42.31	40.27	73.45	314.3	323.8	57.30	267.3	261.0
95th-Percentile Queue Length [veh/ln]	3.56	6.38	6.39	3.74	3.05	2.90	5.29	18.39	18.86	4.13	16.06	15.74
95th-Percentile Queue Length [ft/ln]	88.88	159.5	159.7	93.47	76.15	72.49	132.2	459.7	471.4	103.1	401.4	393.4

Movement, Approach, & Intersection Results

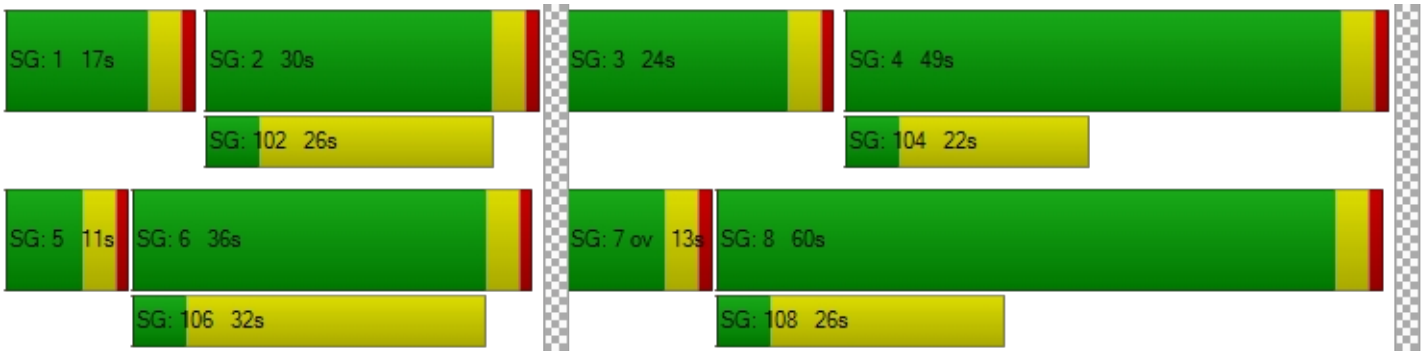
d_M, Delay for Movement [s/veh]	60.29	20.61	14.32	73.17	19.89	20.01	66.36	43.90	46.48	56.13	39.48	39.50
Movement LOS	E	C	B	E	B	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.67			32.33			45.56			42.16		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	40.11											
Intersection LOS	D											
Intersection V/C	0.479											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.627	2.430	2.846	3.034
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	433	933	750
d_b, Bicycle Delay [s]	32.27	36.82	17.07	23.44
l_b,int, Bicycle LOS Score for Intersection	2.494	1.765	2.329	2.333
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.361

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	258	0	250	0	1047	169	0	558	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.000	1.120	1.120	1.000	1.120	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	289	0	280	0	1173	189	0	625	0
Peak Hour Factor	1.000	1.000	1.000	0.950	1.000	0.950	1.000	0.950	0.950	1.000	0.950	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	76	0	74	0	309	50	0	164	0
Total Analysis Volume [veh/h]	0	0	0	304	0	295	0	1235	199	0	658	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Split	Permi	Split	Permi	Permi	Unsig	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	45	0	0	0	75	0	0	75	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		16	16	96	96
g / C, Green / Cycle		0.14	0.14	0.80	0.80
(v / s)_i Volume / Saturation Flow Rate		0.09	0.11	0.25	0.13
s, saturation flow rate [veh/h]		3329	2708	4903	4903
c, Capacity [veh/h]		458	373	3901	3901
d1, Uniform Delay [s]		49.10	50.07	3.35	2.89
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		1.65	3.80	0.21	0.09
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.66	0.79	0.32	0.17
d, Delay for Lane Group [s/veh]		50.75	53.87	3.56	2.99
Lane Group LOS		D	D	A	A
Critical Lane Group		No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		4.44	4.48	2.22	1.02
50th-Percentile Queue Length [ft/ln]		110.89	112.05	55.58	25.54
95th-Percentile Queue Length [veh/ln]		7.89	7.95	4.00	1.84
95th-Percentile Queue Length [ft/ln]		197.24	198.85	100.04	45.98

Movement, Approach, & Intersection Results

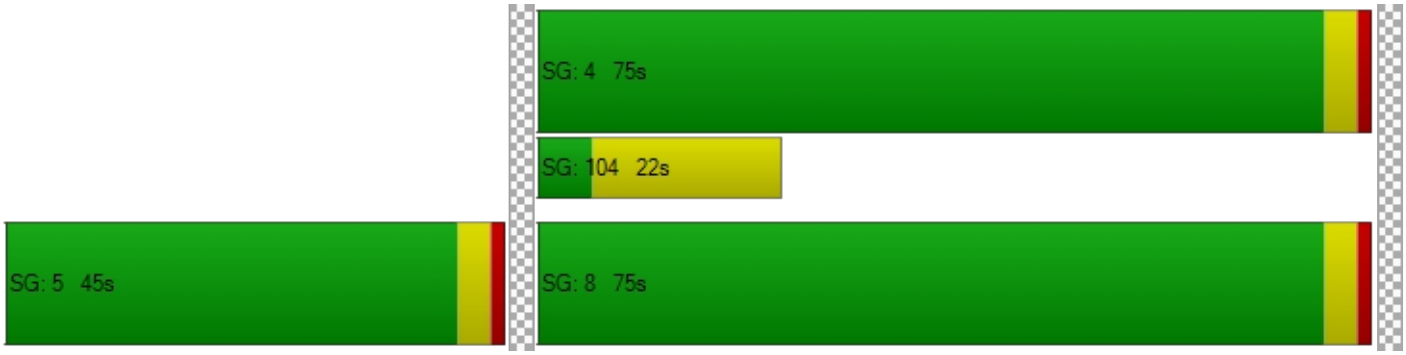
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	50.75	0.00	53.87	0.00	3.56	0.00	0.00	2.99	0.00
Movement LOS				D		D		A			A	
d_A, Approach Delay [s/veh]	0.00			52.29			3.56			2.99		
Approach LOS	A			D			A			A		
d_I, Intersection Delay [s/veh]	15.12											
Intersection LOS	B											
Intersection V/C	0.361											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.432	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	683	1183	1183
d_b, Bicycle Delay [s]	60.00	26.00	10.00	10.00
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.239	1.922
Bicycle LOS	D	A	B	A

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.501

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	276	0	514	0	0	0	439	912	0	0	798	162
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	309	0	576	0	0	0	492	1021	0	0	894	181
Peak Hour Factor	0.950	0.950	0.950	1.000	1.000	1.000	0.950	0.950	1.000	1.000	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	81	0	152	0	0	0	129	269	0	0	235	48
Total Analysis Volume [veh/h]	325	0	606	0	0	0	518	1075	0	0	941	191
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Unsig
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	30	0	0	0	0	62	90	0	0	28	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	65	65	65		22	47	22
g / C, Green / Cycle	0.54	0.54	0.54		0.18	0.40	0.18
(v / s)_i Volume / Saturation Flow Rate	0.18	0.20	0.20		0.16	0.22	0.14
s, saturation flow rate [veh/h]	1714	1536	1530		3329	4903	6538
c, Capacity [veh/h]	920	824	821		606	1944	1184
d1, Uniform Delay [s]	15.77	16.11	16.12		47.53	27.99	47.01
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	1.01	1.30	1.31		3.56	0.25	1.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.37	0.38		0.85	0.55	0.80
d, Delay for Lane Group [s/veh]	16.78	17.41	17.43		51.09	28.23	48.27
Lane Group LOS	B	B	B		D	C	D
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.08	5.13	5.13		7.79	7.97	6.81
50th-Percentile Queue Length [ft/ln]	127.1	128.2	128.3		194.64	199.14	170.31
95th-Percentile Queue Length [veh/ln]	8.78	8.85	8.85		12.36	12.59	11.09
95th-Percentile Queue Length [ft/ln]	219.5	221.1	221.2		309.04	314.85	277.33

Movement, Approach, & Intersection Results

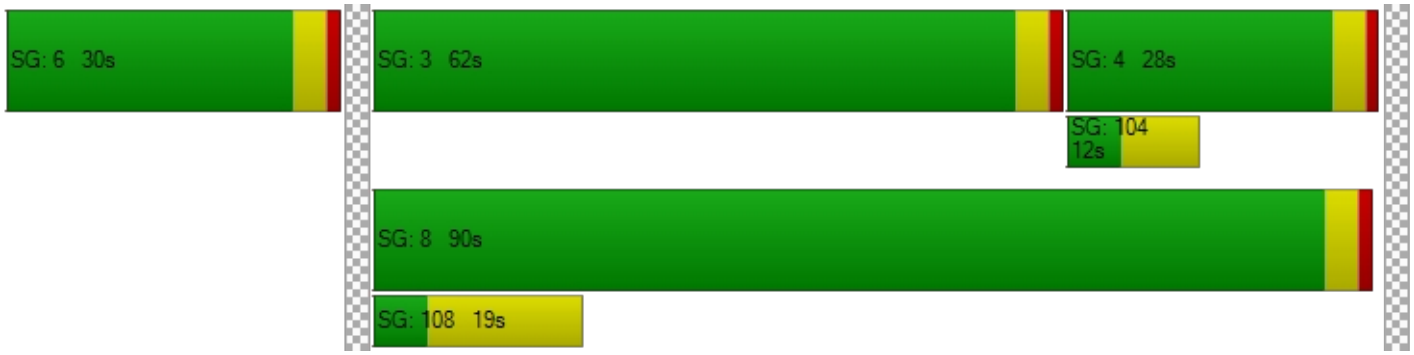
d_M, Delay for Movement [s/veh]	16.81	17.41	17.42	0.00	0.00	0.00	51.09	28.23	0.00	0.00	48.27	0.00
Movement LOS	B	B	B				D	C			D	
d_A, Approach Delay [s/veh]	17.20			0.00			35.66			48.27		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	34.13											
Intersection LOS	C											
Intersection V/C	0.501											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.373	1.983	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	0	1433	400
d_b, Bicycle Delay [s]	36.82	60.00	4.82	38.40
l_b,int, Bicycle LOS Score for Intersection	3.096	4.132	2.436	1.948
Bicycle LOS	C	D	B	A

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	154	926	338	107	435	86	305	1060	81	292	590	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	42	39	0	50	0	0	0	0	63	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	172	1079	418	120	537	96	342	1187	91	390	661	68
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	45	284	110	32	141	25	90	312	24	103	174	18
Total Analysis Volume [veh/h]	181	1136	440	126	565	101	360	1249	96	411	696	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	43	0	10	40	0	27	43	0	24	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	46	46	6	43	43	15	35	35	17	37	37
g / C, Green / Cycle	0.07	0.38	0.38	0.05	0.36	0.36	0.13	0.29	0.29	0.14	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.05	0.23	0.29	0.04	0.12	0.07	0.11	0.25	0.06	0.12	0.14	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	234	1875	585	166	1775	554	430	1434	448	472	1496	467
d1, Uniform Delay [s]	54.84	29.79	32.13	56.28	27.60	26.15	51.01	40.30	32.04	50.41	33.77	30.41
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.38	1.46	8.67	6.85	0.47	0.72	4.37	1.77	0.24	5.10	0.23	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.61	0.75	0.76	0.32	0.18	0.84	0.87	0.21	0.87	0.47	0.15
d, Delay for Lane Group [s/veh]	60.23	31.26	40.80	63.13	28.07	26.87	55.37	42.07	32.28	55.51	34.00	30.56
Lane Group LOS	E	C	D	E	C	C	E	D	C	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.87	8.98	12.34	2.04	3.99	2.10	5.54	11.80	2.15	6.37	5.51	1.55
50th-Percentile Queue Length [ft/ln]	71.63	224.4	308.4	51.07	99.72	52.45	138.5	294.9	53.73	159.1	137.7	38.77
95th-Percentile Queue Length [veh/ln]	5.16	13.89	18.10	3.68	7.18	3.78	9.40	17.43	3.87	10.50	9.36	2.79
95th-Percentile Queue Length [ft/ln]	128.9	347.2	452.5	91.93	179.4	94.42	235.0	435.7	96.72	262.6	234.0	69.79

Movement, Approach, & Intersection Results

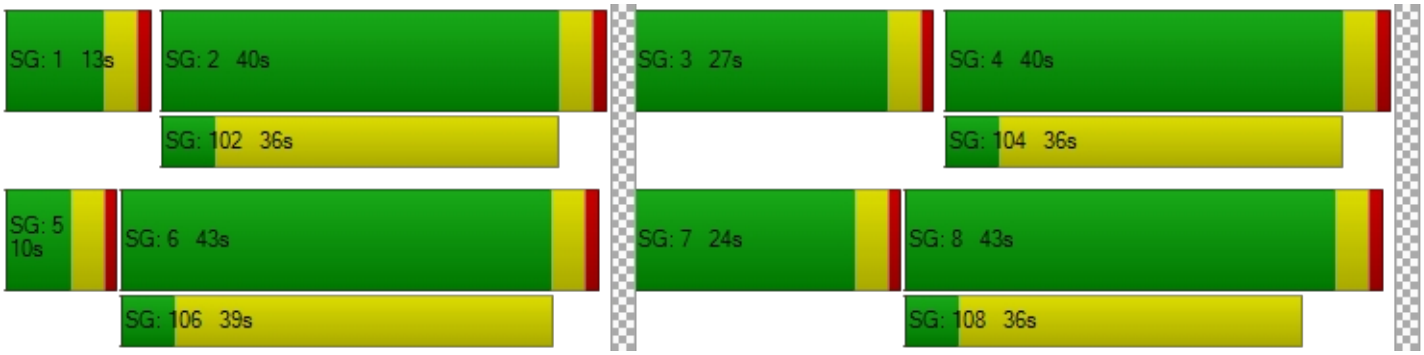
d_M, Delay for Movement [s/veh]	60.23	31.26	40.80	63.13	28.07	26.87	55.37	42.07	32.28	55.51	34.00	30.56
Movement LOS	E	C	D	E	C	C	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	36.63			33.50			44.33			41.29		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.60											
Intersection LOS	D											
Intersection V/C	0.704											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.171	3.120	3.331	3.274
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	600	650	600
d_b, Bicycle Delay [s]	27.34	29.40	27.34	29.40
l_b,int, Bicycle LOS Score for Intersection	2.526	1.995	2.497	2.208
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	43.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.490

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	94	250	24	131	191	90	211	979	73	65	552	121
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	33	0	0	54	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	280	27	147	214	101	236	1129	82	73	672	136
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	74	7	39	56	27	62	297	22	19	177	36
Total Analysis Volume [veh/h]	111	295	28	155	225	106	248	1188	86	77	707	143
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	36	0	17	40	0	37	56	0	11	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	48	48	13	52	52	20	36	36	7	24	24
g / C, Green / Cycle	0.08	0.40	0.40	0.11	0.43	0.43	0.16	0.30	0.30	0.06	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.02	0.09	0.10	0.10	0.14	0.24	0.06	0.05	0.17	0.17
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1772	1585	1714	4903	1506	1687	3427	1650
c, Capacity [veh/h]	129	1379	616	180	766	685	279	1481	455	96	673	324
d1, Uniform Delay [s]	54.89	23.45	21.83	52.82	21.40	21.47	49.16	38.57	30.99	55.90	46.52	46.62
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.30	0.35	0.14	11.25	0.68	0.79	9.34	1.05	0.20	14.00	3.13	6.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.21	0.05	0.86	0.23	0.23	0.89	0.80	0.19	0.80	0.85	0.86
d, Delay for Lane Group [s/veh]	70.19	23.80	21.97	64.07	22.09	22.26	58.50	39.62	31.19	69.91	49.65	53.26
Lane Group LOS	E	C	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.86	2.82	0.51	5.15	3.21	2.97	7.98	10.80	1.88	2.68	8.49	8.60
50th-Percentile Queue Length [ft/ln]	96.59	70.39	12.73	128.8	80.17	74.28	199.5	270.0	47.12	66.94	212.3	215.0
95th-Percentile Queue Length [veh/ln]	6.95	5.07	0.92	8.88	5.77	5.35	12.62	16.19	3.39	4.82	13.27	13.41
95th-Percentile Queue Length [ft/ln]	173.8	126.7	22.92	221.9	144.3	133.7	315.4	404.7	84.82	120.5	331.8	335.3

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.19	23.80	21.97	64.07	22.13	22.26	58.50	39.62	31.19	69.91	50.34	53.26
Movement LOS	E	C	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	35.55			35.53			42.22			52.41		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.20											
Intersection LOS	D											
Intersection V/C	0.490											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.602	2.659	3.129	3.021
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	867	433
d_b, Bicycle Delay [s]	32.27	29.40	19.27	36.82
l_b,int, Bicycle LOS Score for Intersection	1.918	1.961	2.397	2.069
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	40.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	95	607	69	127	443	106	299	720	115	160	526	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	2	2	0	0	15	10	18	0	1	30	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	682	79	142	496	134	345	824	129	180	619	65
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	179	21	37	131	35	91	217	34	47	163	17
Total Analysis Volume [veh/h]	112	718	83	149	522	141	363	867	136	189	652	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	18	40	0	21	43	0	29	46	0	13	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	10	57	57	12	59	59	16	26	26	9	19	36
g / C, Green / Cycle	0.08	0.47	0.47	0.10	0.50	0.50	0.13	0.22	0.22	0.07	0.16	0.30
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.23	0.09	0.15	0.09	0.11	0.18	0.09	0.06	0.13	0.04
s, saturation flow rate [veh/h]	1714	1800	1735	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	137	848	817	177	1694	756	434	1078	336	241	794	457
d1, Uniform Delay [s]	54.33	21.71	21.71	52.82	18.10	16.90	50.94	44.37	40.09	54.72	48.60	30.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.11	1.95	2.02	10.12	0.47	0.54	4.34	1.46	0.78	5.50	2.19	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.48	0.48	0.84	0.31	0.19	0.84	0.80	0.40	0.78	0.82	0.15
d, Delay for Lane Group [s/veh]	65.44	23.66	23.74	62.94	18.57	17.44	55.28	45.83	40.87	60.22	50.79	31.03
Lane Group LOS	E	C	C	E	B	B	E	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.75	8.23	7.95	4.91	4.41	2.28	5.58	8.27	3.53	2.99	6.44	1.48
50th-Percentile Queue Length [ft/ln]	93.83	205.6	198.7	122.6	110.1	57.02	139.5	206.7	88.18	74.82	161.0	36.95
95th-Percentile Queue Length [veh/ln]	6.76	12.93	12.57	8.54	7.85	4.11	9.46	12.99	6.35	5.39	10.60	2.66
95th-Percentile Queue Length [ft/ln]	168.9	323.2	314.2	213.4	196.2	102.6	236.4	324.6	158.7	134.6	265.0	66.50

Movement, Approach, & Intersection Results

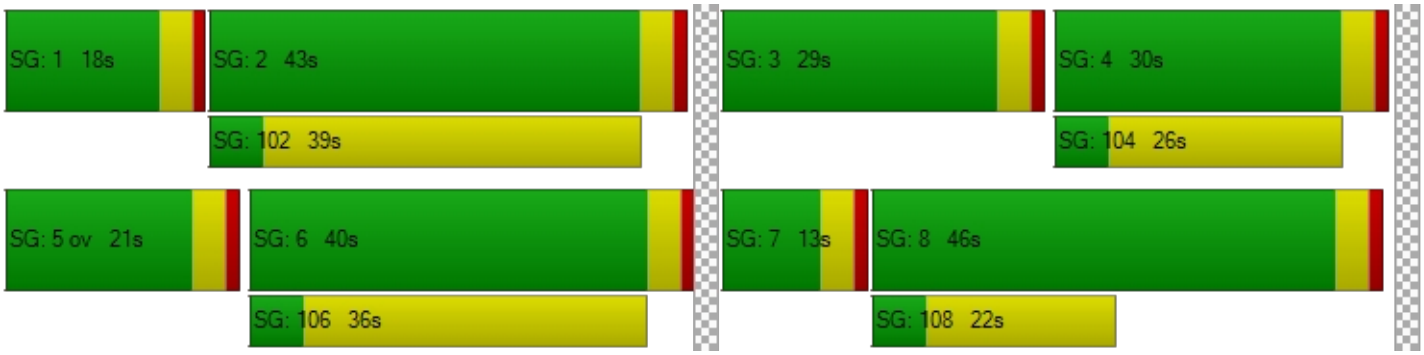
d_M, Delay for Movement [s/veh]	65.44	23.70	23.74	62.94	18.57	17.44	55.28	45.83	40.87	60.22	50.79	31.03
Movement LOS	E	C	C	E	B	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	28.82			26.51			47.85			51.27		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.95											
Intersection LOS	D											
Intersection V/C	0.556											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.658	2.787	3.110	3.177
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	650	700	433
d_b, Bicycle Delay [s]	29.40	27.34	25.35	36.82
l_b,int, Bicycle LOS Score for Intersection	2.313	2.230	2.311	2.060
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.547

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	104	974	61	226	510	55	136	597	90	92	640	235
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	0	0	6	14	9	5	0	0	8	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	1095	68	253	577	76	161	674	101	103	725	263
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	31	288	18	67	152	20	42	177	27	27	191	69
Total Analysis Volume [veh/h]	122	1153	72	266	607	80	169	709	106	108	763	277
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	40	0	17	43	0	12	54	0	9	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	58	58	12	64	64	8	29	29	5	26	26
g / C, Green / Cycle	0.05	0.49	0.49	0.10	0.53	0.53	0.07	0.24	0.24	0.04	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.05	0.08	0.18	0.05	0.05	0.14	0.07	0.03	0.16	0.18
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	176	2387	745	321	1818	811	221	1186	370	139	1064	332
d1, Uniform Delay [s]	55.87	20.65	16.58	53.25	16.08	13.97	55.10	40.32	37.06	56.95	43.55	44.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.81	0.70	0.26	5.51	0.50	0.24	5.45	0.49	0.42	9.04	0.92	5.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.48	0.10	0.83	0.33	0.10	0.76	0.60	0.29	0.78	0.72	0.83
d, Delay for Lane Group [s/veh]	60.68	21.36	16.84	58.76	16.58	14.21	60.54	40.81	37.48	65.99	44.47	50.39
Lane Group LOS	E	C	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.93	7.29	1.13	4.18	4.83	1.13	2.68	6.24	2.59	1.80	7.09	8.36
50th-Percentile Queue Length [ft/ln]	48.36	182.3	28.17	104.5	120.7	28.28	67.02	156.0	64.87	44.90	177.1	209.0
95th-Percentile Queue Length [veh/ln]	3.48	11.72	2.03	7.53	8.43	2.04	4.83	10.34	4.67	3.23	11.45	13.10
95th-Percentile Queue Length [ft/ln]	87.06	293.0	50.70	188.2	210.8	50.90	120.6	258.5	116.7	80.82	286.2	327.5

Movement, Approach, & Intersection Results

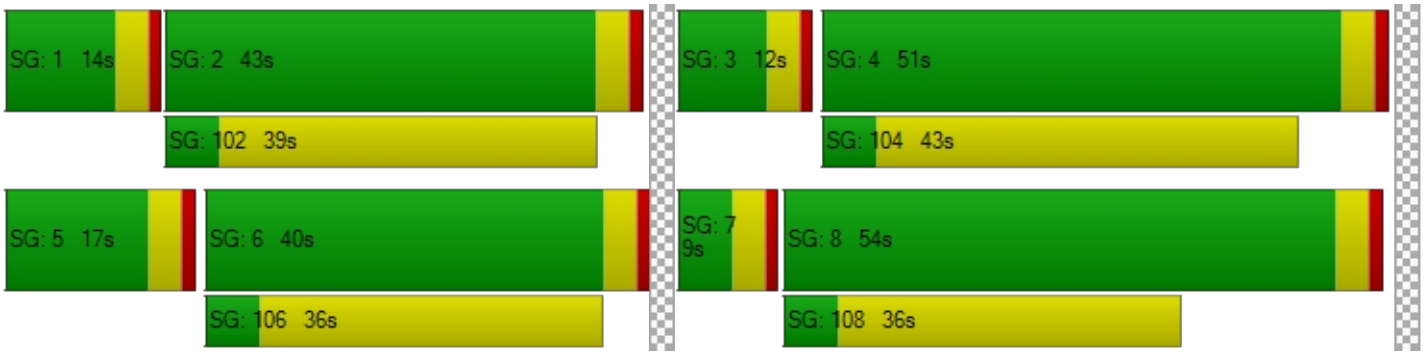
d_M, Delay for Movement [s/veh]	60.68	21.36	16.84	58.76	16.58	14.21	60.54	40.81	37.48	65.99	44.47	50.39
Movement LOS	E	C	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	24.68			28.15			43.84			47.92		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.70											
Intersection LOS	D											
Intersection V/C	0.547											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.099	3.320	3.172	3.102
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	650	833	783
d_b, Bicycle Delay [s]	29.40	27.34	20.42	22.20
l_b,int, Bicycle LOS Score for Intersection	2.300	2.346	2.101	2.191
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	44.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.557

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	133	256	98	23	224	93	137	439	167	42	256	30
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	10	0	0	16	0	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	297	110	26	267	104	153	492	187	48	287	34
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	39	78	29	7	70	27	40	129	49	13	76	9
Total Analysis Volume [veh/h]	157	313	116	27	281	109	161	518	197	51	302	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	17	26	0	14	23	23	0	50	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	49	49	3	40	40	35	35	16	16
g / C, Green / Cycle	0.11	0.41	0.41	0.03	0.33	0.33	0.29	0.29	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.09	0.12	0.13	0.02	0.08	0.07	0.27	0.27	0.12	0.12
s, saturation flow rate [veh/h]	1714	1800	1637	1714	3427	1530	1770	1508	1778	1583
c, Capacity [veh/h]	182	740	673	44	1133	506	519	442	243	216
d1, Uniform Delay [s]	52.76	23.74	23.79	57.87	29.29	28.95	40.89	40.90	50.57	50.62
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.27	1.05	1.17	13.10	0.52	0.97	8.87	10.21	7.84	9.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.30	0.31	0.61	0.25	0.22	0.91	0.91	0.84	0.85
d, Delay for Lane Group [s/veh]	64.03	24.79	24.97	70.97	29.81	29.92	49.76	51.11	58.41	59.69
Lane Group LOS	E	C	C	E	C	C	D	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.22	4.47	4.16	0.97	3.05	2.42	14.62	12.63	6.53	5.94
50th-Percentile Queue Length [ft/ln]	130.5	111.8	103.8	24.30	76.35	60.39	365.48	315.75	163.33	148.46
95th-Percentile Queue Length [veh/ln]	8.97	7.94	7.48	1.75	5.50	4.35	20.89	18.46	10.72	9.93
95th-Percentile Queue Length [ft/ln]	224.1	198.5	187.0	43.75	137.4	108.7	522.25	461.46	268.12	248.37

Movement, Approach, & Intersection Results

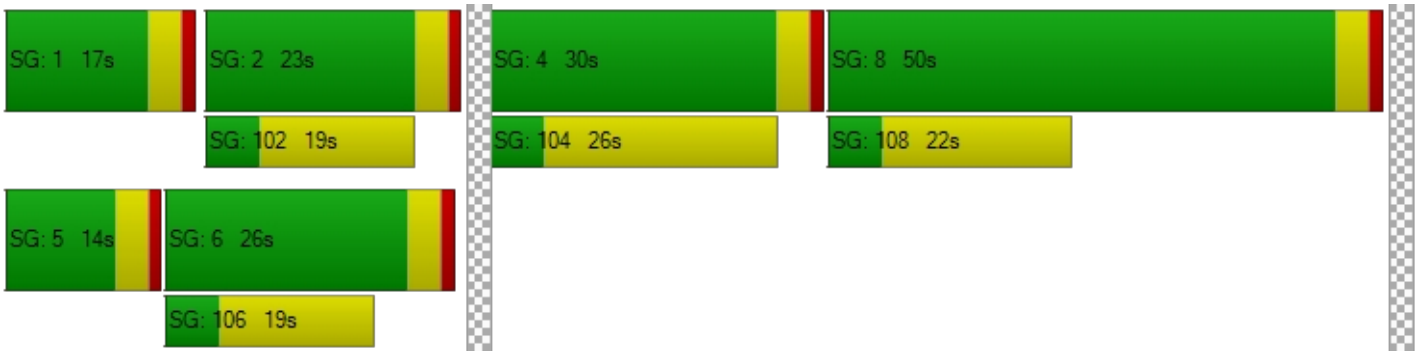
d_M, Delay for Movement [s/veh]	64.03	24.84	24.97	70.97	29.81	29.92	49.76	50.30	51.11	58.41	59.04	59.69
Movement LOS	E	C	C	E	C	C	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	35.36			32.51			50.38			59.02		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	44.70											
Intersection LOS	D											
Intersection V/C	0.557											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.533	2.619	2.498	2.402
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	317	767	433
d_b, Bicycle Delay [s]	40.02	42.50	22.82	36.82
l_b,int, Bicycle LOS Score for Intersection	2.043	1.904	2.282	1.881
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.926

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	167	0	536	0	1898	934	0	1348	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.000	1.120	1.120	1.000	1.120	1.000
In-Process Volume [veh/h]	0	0	0	42	0	0	0	16	0	0	16	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	229	0	600	0	2142	1046	0	1526	0
Peak Hour Factor	1.000	1.000	1.000	0.950	1.000	0.950	1.000	0.950	0.950	1.000	0.950	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	60	0	158	0	564	275	0	402	0
Total Analysis Volume [veh/h]	0	0	0	241	0	632	0	2255	1101	0	1606	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	29	0	0	0	91	0	0	91	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		25	25	25	87	87	87
g / C, Green / Cycle		0.21	0.21	0.21	0.73	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate		0.14	0.21	0.21	0.46	0.72	0.33
s, saturation flow rate [veh/h]		1714	1530	1530	4903	1530	4903
c, Capacity [veh/h]		357	319	319	3555	1109	3555
d1, Uniform Delay [s]		43.76	47.39	47.39	8.40	16.18	6.75
k, delay calibration		0.13	0.32	0.32	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.66	38.46	38.46	0.87	25.30	0.42
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.67	0.99	0.99	0.63	0.99	0.45
d, Delay for Lane Group [s/veh]		46.41	85.85	85.85	9.28	41.48	7.16
Lane Group LOS		D	F	F	A	D	A
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		6.85	12.77	12.77	9.03	32.46	5.14
50th-Percentile Queue Length [ft/ln]		171.3	319.1	319.1	225.78	811.62	128.46
95th-Percentile Queue Length [veh/ln]		11.15	18.63	18.63	13.96	41.81	8.86
95th-Percentile Queue Length [ft/ln]		278.7	465.6	465.6	348.99	1045.23	221.40

Movement, Approach, & Intersection Results

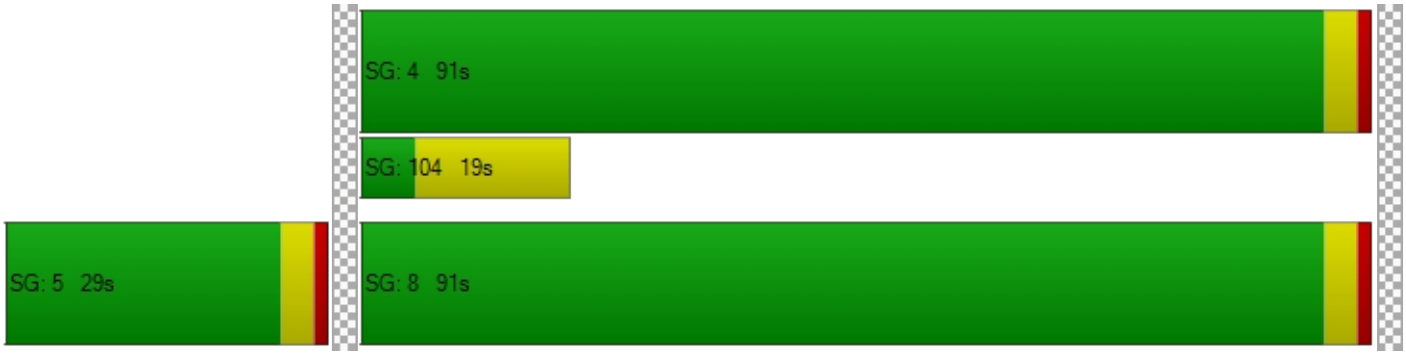
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	46.41	0.00	85.85	0.00	9.28	41.48	0.00	7.16	0.00
Movement LOS				D		F		A	D		A	
d_A, Approach Delay [s/veh]	0.00			74.97			19.84			7.16		
Approach LOS	A			E			B			A		
d_I, Intersection Delay [s/veh]	24.60											
Intersection LOS	C											
Intersection V/C	0.926											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.359	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	417	1450	1450
d_b, Bicycle Delay [s]	60.00	37.60	4.54	4.54
l_b,int, Bicycle LOS Score for Intersection	4.132	3.000	3.405	2.443
Bicycle LOS	D	C	C	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.582

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	731	0	465	0	0	0	0	1092	0	0	1114	292
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	58	0	0	16	35
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	819	0	521	0	0	0	0	1281	0	0	1264	362
Peak Hour Factor	0.950	1.000	0.950	1.000	1.000	1.000	1.000	0.950	1.000	1.000	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	216	0	137	0	0	0	0	337	0	0	333	95
Total Analysis Volume [veh/h]	862	0	548	0	0	0	0	1348	0	0	1331	381
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	67	0	0	0	0	0	0	53	0	0	53	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	41	41	41		71	71	71
g / C, Green / Cycle	0.34	0.34	0.34		0.59	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.27	0.28	0.31		0.27	0.27	0.25
s, saturation flow rate [veh/h]	1714	1681	1530		4903	4903	1530
c, Capacity [veh/h]	590	579	527		2888	2888	901
d1, Uniform Delay [s]	35.53	35.80	37.23		13.98	13.91	13.50
k, delay calibration	0.11	0.12	0.16		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.61	3.13	7.81		0.54	0.53	1.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.81	0.89		0.47	0.46	0.42
d, Delay for Lane Group [s/veh]	38.15	38.93	45.04		14.52	14.45	14.95
Lane Group LOS	D	D	D		B	B	B
Critical Lane Group	No	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.73	12.90	14.03		6.83	6.71	5.84
50th-Percentile Queue Length [ft/ln]	318.2	322.4	350.7		170.80	167.82	145.95
95th-Percentile Queue Length [veh/ln]	18.58	18.79	20.17		11.12	10.96	9.80
95th-Percentile Queue Length [ft/ln]	464.5	469.7	504.3		277.96	274.05	245.02

Movement, Approach, & Intersection Results

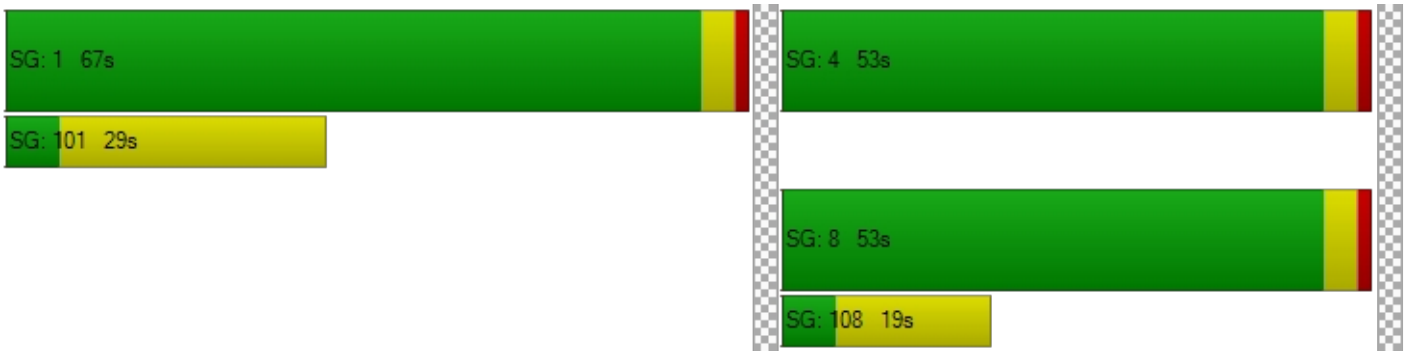
d_M, Delay for Movement [s/veh]	38.50	0.00	44.17	0.00	0.00	0.00	0.00	14.52	0.00	0.00	14.45	14.95
Movement LOS	D		D					B			B	B
d_A, Approach Delay [s/veh]	40.71			0.00			14.52			14.56		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	22.80											
Intersection LOS	C											
Intersection V/C	0.582											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.490	0.000	0.000	3.112
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	0	817	817
d_b, Bicycle Delay [s]	13.54	60.00	21.00	21.00
l_b,int, Bicycle LOS Score for Intersection	3.886	4.132	2.301	2.501
Bicycle LOS	D	D	B	B

Sequence

Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	44.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.702

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	260	348	189	62	209	155	236	931	176	104	748	47
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	51	10	0	0	17	0	0	0	58	1	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	342	400	212	69	251	174	264	1043	255	117	838	53
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	90	105	56	18	66	46	69	274	67	31	221	14
Total Analysis Volume [veh/h]	360	421	223	73	264	183	278	1098	268	123	882	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	31	56	0	11	36	0	15	44	44	9	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	53	53	6	32	32	11	40	71	5	34	34
g / C, Green / Cycle	0.22	0.44	0.44	0.05	0.27	0.27	0.09	0.33	0.59	0.04	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.21	0.23	0.15	0.04	0.13	0.14	0.08	0.32	0.18	0.04	0.26	0.04
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1561	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	384	788	670	94	483	419	305	1140	902	139	969	432
d1, Uniform Delay [s]	45.76	24.77	22.21	56.00	36.95	37.11	54.01	39.32	12.24	57.22	41.57	32.05
k, delay calibration	0.33	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.23	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	25.04	2.59	1.34	12.91	3.50	4.26	10.36	6.42	0.39	16.56	3.74	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.53	0.33	0.78	0.49	0.50	0.91	0.96	0.30	0.89	0.91	0.13
d, Delay for Lane Group [s/veh]	70.80	27.36	23.55	68.91	40.45	41.38	64.37	45.73	12.63	73.78	45.31	32.18
Lane Group LOS	E	C	C	E	D	D	E	D	B	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.15	9.27	4.38	2.52	6.31	5.74	4.59	16.66	3.61	2.17	12.99	1.24
50th-Percentile Queue Length [ft/ln]	328.6	231.7	109.5	63.01	157.7	143.3	114.8	416.4	90.14	54.37	324.7	30.96
95th-Percentile Queue Length [veh/ln]	19.09	14.26	7.82	4.54	10.43	9.66	8.11	23.35	6.49	3.91	18.90	2.23
95th-Percentile Queue Length [ft/ln]	477.3	356.6	195.4	113.4	260.7	241.5	202.7	583.7	162.2	97.87	472.5	55.73

Movement, Approach, & Intersection Results

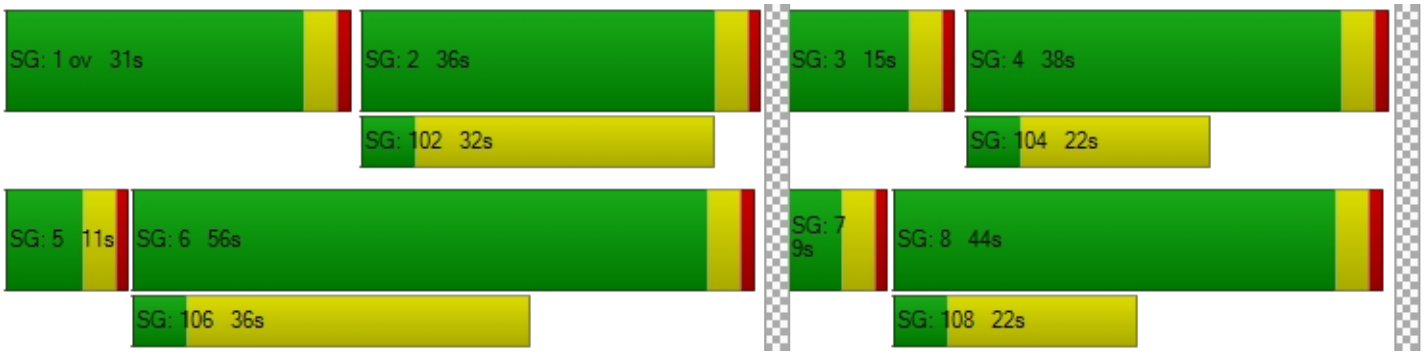
d_M, Delay for Movement [s/veh]	70.80	27.36	23.55	68.91	40.55	41.38	64.37	45.73	12.63	73.78	45.31	32.18
Movement LOS	E	C	C	E	D	D	E	D	B	E	D	C
d_A, Approach Delay [s/veh]	42.09			44.82			43.49			47.92		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.43											
Intersection LOS	D											
Intersection V/C	0.702											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.639	2.564	3.115	3.130
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	533	667	567
d_b, Bicycle Delay [s]	19.27	32.27	26.67	30.82
l_b,int, Bicycle LOS Score for Intersection	3.216	1.989	2.916	2.435
Bicycle LOS	C	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	47.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.677

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	276	828	230	281	634	195	247	860	100	135	567	123
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	87	26	0	120	1	0	0	0	36	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	309	1014	284	315	830	219	277	963	112	187	635	138
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	81	267	75	83	218	58	73	253	29	49	167	36
Total Analysis Volume [veh/h]	325	1067	299	332	874	231	292	1014	118	197	668	145
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	26	40	0	26	40	40	14	42	0	12	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	22	45	45	22	45	59	10	29	29	8	27	53
g / C, Green / Cycle	0.18	0.38	0.38	0.18	0.38	0.49	0.08	0.24	0.24	0.07	0.22	0.44
(v / s)_i Volume / Saturation Flow Rate	0.19	0.22	0.20	0.19	0.18	0.15	0.09	0.21	0.08	0.06	0.14	0.09
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	314	1837	573	314	1837	752	277	1187	370	222	1105	676
d1, Uniform Delay [s]	49.00	29.99	29.16	49.00	28.55	18.29	55.00	43.46	37.35	55.55	41.68	20.64
k, delay calibration	0.27	0.50	0.50	0.29	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	46.61	1.35	3.37	54.09	0.89	1.06	40.17	1.87	0.49	11.31	0.54	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.58	0.52	1.06	0.48	0.31	1.05	0.85	0.32	0.89	0.60	0.21
d, Delay for Lane Group [s/veh]	95.61	31.34	32.54	103.0	29.44	19.35	95.17	45.33	37.84	66.86	42.22	20.79
Lane Group LOS	F	C	C	F	C	B	F	D	D	E	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.44	8.39	7.21	14.09	6.51	4.05	5.74	9.75	2.91	3.30	5.97	2.55
50th-Percentile Queue Length [ft/ln]	335.8	209.7	180.1	352.2	162.8	101.1	143.3	243.7	72.85	82.60	149.2	63.72
95th-Percentile Queue Length [veh/ln]	19.79	13.14	11.61	20.82	10.70	7.28	9.83	14.87	5.24	5.95	9.98	4.59
95th-Percentile Queue Length [ft/ln]	494.7	328.4	290.2	520.6	267.4	182.0	245.8	371.7	131.1	148.6	249.4	114.6

Movement, Approach, & Intersection Results

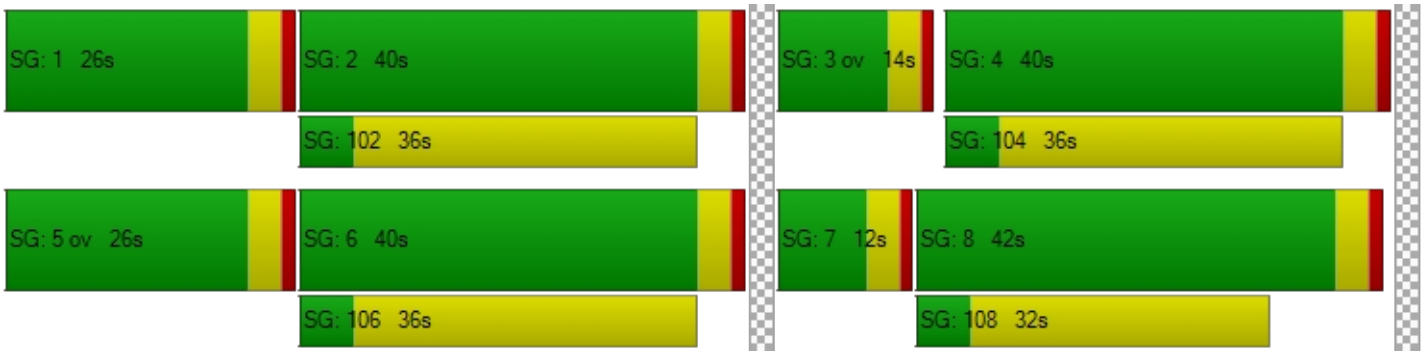
d_M, Delay for Movement [s/veh]	95.61	31.34	32.54	103.0	29.44	19.35	95.17	45.33	37.84	66.86	42.22	20.79
Movement LOS	F	C	C	F	C	B	F	D	D	E	D	C
d_A, Approach Delay [s/veh]	43.90			44.83			54.93			43.95		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	46.97											
Intersection LOS	D											
Intersection V/C	0.677											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.092	3.183	3.151	3.152
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	633	600
d_b, Bicycle Delay [s]	29.40	29.40	28.02	29.40
l_b,int, Bicycle LOS Score for Intersection	2.490	2.350	2.343	2.115
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	2,188.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.660

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	60	0	118	0	0	0	0	1326	54	104	760	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	1	0	0	0	0	26	0	1	36	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	0	133	0	0	0	0	1511	60	117	887	0
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	0	35	0	0	0	0	398	16	31	233	0
Total Analysis Volume [veh/h]	71	0	140	0	0	0	0	1591	63	123	934	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	4.66	0.00	0.44	0.00	0.00	0.00	0.00	0.02	0.00	0.31	0.01	0.00
d_M, Delay for Movement [s/veh]	2188.	2233.	1963.	228.8	299.4	11.57	9.86	0.00	0.00	18.17	0.00	0.00
Movement LOS	F	F	F	F	F	B	A	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	24.44	24.44	24.44	0.00	0.00	0.00	0.00	0.00	0.00	1.31	0.00	0.00
95th-Percentile Queue Length [ft/ln]	611.0	611.0	611.0	0.00	0.00	0.00	0.00	0.00	0.00	32.63	0.00	0.00
d_A, Approach Delay [s/veh]	2039.31			179.97			0.00			2.11		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	148.02											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	57.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.837

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	138	673	87	131	551	71	256	837	177	287	553	119
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	0	0	1	0	0	21	0	0	28	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	758	97	147	618	80	287	958	198	321	647	133
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	41	199	26	39	163	21	76	252	52	84	170	35
Total Analysis Volume [veh/h]	163	798	102	155	651	84	302	1008	208	338	681	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	36	0	16	36	0	29	40	0	28	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	32	32	12	32	32	23	36	36	24	37	37
g / C, Green / Cycle	0.10	0.27	0.27	0.10	0.27	0.27	0.19	0.30	0.30	0.20	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.10	0.25	0.26	0.09	0.21	0.21	0.18	0.29	0.14	0.20	0.20	0.09
s, saturation flow rate [veh/h]	1714	1800	1729	1714	1800	1729	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	171	480	461	171	480	461	330	1028	459	343	1055	471
d1, Uniform Delay [s]	53.71	43.31	43.31	53.43	40.75	40.76	47.52	41.65	34.03	47.83	35.88	31.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.23	0.11	0.11	0.30	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.00	31.48	32.33	15.69	11.93	12.38	18.71	9.24	0.70	34.06	0.67	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.96	0.96	0.90	0.78	0.78	0.92	0.98	0.45	0.99	0.65	0.30
d, Delay for Lane Group [s/veh]	75.71	74.79	75.65	69.12	52.68	53.14	66.23	50.89	34.73	81.89	36.55	32.00
Lane Group LOS	E	E	E	E	D	D	E	D	C	F	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.93	17.48	16.91	5.37	11.80	11.39	10.53	15.92	5.01	13.26	8.67	3.15
50th-Percentile Queue Length [ft/ln]	148.3	436.9	422.6	134.2	294.9	284.8	263.3	398.0	125.3	331.4	216.7	78.84
95th-Percentile Queue Length [veh/ln]	9.93	24.33	23.65	9.17	17.43	16.93	15.86	22.46	8.68	19.23	13.50	5.68
95th-Percentile Queue Length [ft/ln]	248.1	608.3	591.2	229.1	435.7	423.2	396.4	561.5	217.0	480.6	337.4	141.9

Movement, Approach, & Intersection Results

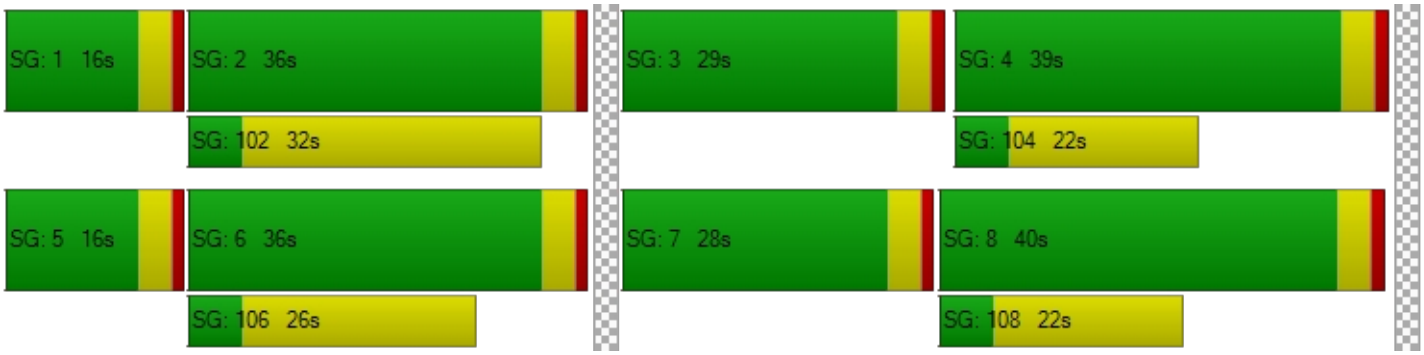
d_M, Delay for Movement [s/veh]	75.71	75.16	75.65	69.12	52.87	53.14	66.23	50.89	34.73	81.89	36.55	32.00
Movement LOS	E	E	E	E	D	D	E	D	C	F	D	C
d_A, Approach Delay [s/veh]	75.29			55.73			51.73			49.22		
Approach LOS	E			E			D			D		
d_I, Intersection Delay [s/veh]	57.28											
Intersection LOS	E											
Intersection V/C	0.837											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.756	2.730	2.866	2.862
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	533	600	583
d_b, Bicycle Delay [s]	32.27	32.27	29.40	30.10
l_b,int, Bicycle LOS Score for Intersection	2.437	2.294	2.812	2.516
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	44.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	103	798	135	153	488	119	200	689	134	200	501	162
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	7	3	0	10	5	3	13	0	1	15	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	901	154	171	557	138	227	785	150	225	576	181
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	30	237	41	45	147	36	60	207	39	59	152	48
Total Analysis Volume [veh/h]	121	948	162	180	586	145	239	826	158	237	606	191
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	39	0	18	33	0	27	39	0	24	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	40	40	14	43	43	19	32	32	18	32	32
g / C, Green / Cycle	0.09	0.33	0.33	0.12	0.36	0.36	0.16	0.26	0.26	0.15	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.07	0.28	0.11	0.11	0.17	0.09	0.14	0.24	0.10	0.14	0.18	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	148	1137	508	200	1240	554	267	908	405	263	900	402
d1, Uniform Delay [s]	53.86	37.04	29.96	52.31	29.47	26.99	49.71	42.72	36.16	49.91	39.63	37.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.13	0.11	0.11	0.12	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.28	7.24	1.65	13.47	1.29	1.15	11.72	3.94	0.61	12.07	0.88	0.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.83	0.32	0.90	0.47	0.26	0.90	0.91	0.39	0.90	0.67	0.48
d, Delay for Lane Group [s/veh]	64.14	44.27	31.62	65.78	30.77	28.14	61.43	46.67	36.77	61.97	40.51	38.15
Lane Group LOS	E	D	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.01	13.85	3.75	6.09	6.72	3.12	7.89	12.26	3.88	7.85	8.10	4.83
50th-Percentile Queue Length [ft/ln]	100.3	346.1	93.65	152.2	167.8	77.99	197.1	306.5	96.96	196.2	202.3	120.7
95th-Percentile Queue Length [veh/ln]	7.23	19.95	6.74	10.14	10.97	5.62	12.49	18.00	6.98	12.44	12.76	8.44
95th-Percentile Queue Length [ft/ln]	180.6	498.7	168.5	253.4	274.1	140.3	312.2	450.1	174.5	311.1	319.0	210.9

Movement, Approach, & Intersection Results

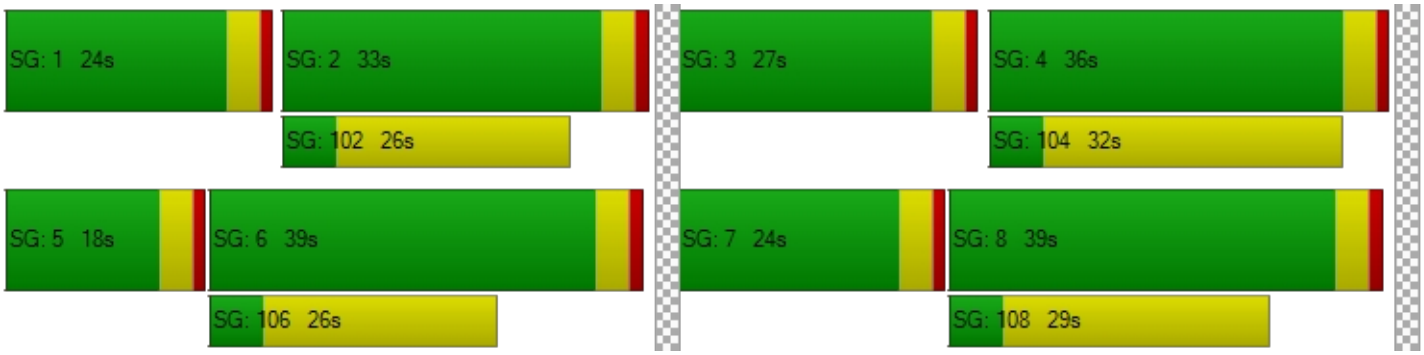
d_M, Delay for Movement [s/veh]	64.14	44.27	31.62	65.78	30.77	28.14	61.43	46.67	36.77	61.97	40.51	38.15
Movement LOS	E	D	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	44.56			37.27			48.27			45.00		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.18											
Intersection LOS	D											
Intersection V/C	0.761											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.917	3.020	2.809	2.826
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	483	583	533
d_b, Bicycle Delay [s]	30.10	34.50	30.10	32.27
l_b,int, Bicycle LOS Score for Intersection	2.575	2.311	2.569	2.413
Bicycle LOS	B	B	B	B

Sequence

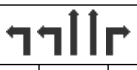
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.728

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	163	520	116	127	235	114	349	622	387	100	360	144
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	15	61	0	0	76	0	0	0	24	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	198	643	130	142	339	128	391	697	457	112	403	161
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	52	169	34	37	89	34	103	183	120	29	106	42
Total Analysis Volume [veh/h]	208	677	137	149	357	135	412	734	481	118	424	169
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	30	30	16	30	30	44	65	65	9	30	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	35	44	12	35	57	18	52	68	5	39	39
g / C, Green / Cycle	0.10	0.29	0.37	0.10	0.29	0.48	0.15	0.43	0.57	0.04	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.20	0.09	0.09	0.10	0.09	0.12	0.41	0.31	0.04	0.17	0.17
s, saturation flow rate [veh/h]	3329	3427	1530	1714	3427	1530	3329	1800	1530	3329	1800	1628
c, Capacity [veh/h]	333	1001	562	171	1001	729	503	779	866	139	582	527
d1, Uniform Delay [s]	51.84	37.46	26.39	53.23	33.56	18.04	49.36	32.59	16.47	57.13	33.17	33.22
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.32	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.92	3.66	1.03	12.44	0.99	0.56	3.38	15.37	2.56	13.33	0.76	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.68	0.24	0.87	0.36	0.19	0.82	0.94	0.56	0.85	0.53	0.54
d, Delay for Lane Group [s/veh]	53.76	41.12	27.42	65.67	34.55	18.60	52.74	47.96	19.03	70.46	33.93	34.07
Lane Group LOS	D	D	C	E	C	B	D	D	B	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.10	9.25	2.90	5.02	4.26	2.27	6.22	23.18	8.74	2.03	7.49	6.84
50th-Percentile Queue Length [ft/ln]	77.42	231.1	72.52	125.4	106.6	56.84	155.4	579.5	218.4	50.86	187.2	171.0
95th-Percentile Queue Length [veh/ln]	5.57	14.23	5.22	8.69	7.65	4.09	10.31	31.08	13.59	3.66	11.98	11.13
95th-Percentile Queue Length [ft/ln]	139.3	355.7	130.5	217.2	191.2	102.3	257.6	776.9	339.6	91.54	299.4	278.3

Movement, Approach, & Intersection Results

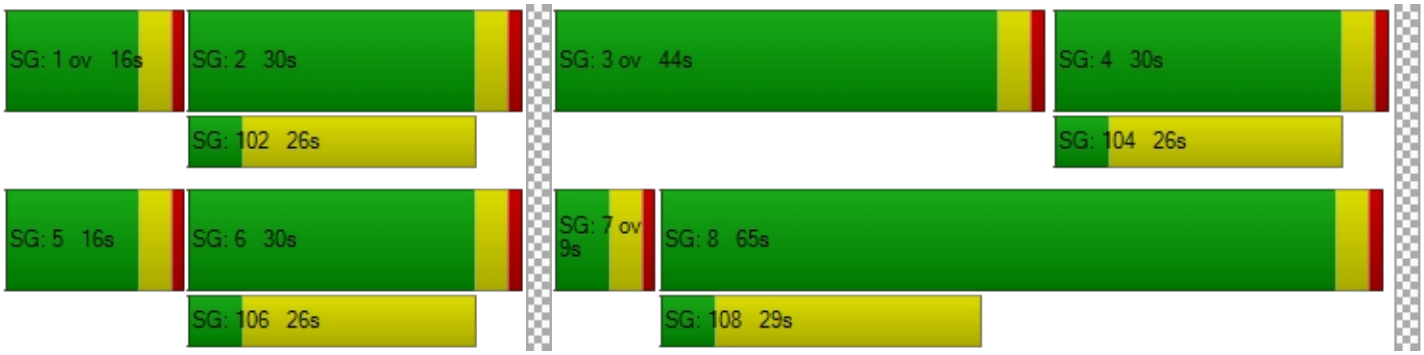
d_M, Delay for Movement [s/veh]	53.76	41.12	27.42	65.67	34.55	18.60	52.74	47.96	19.03	70.46	33.97	34.07
Movement LOS	D	D	C	E	C	B	D	D	B	E	C	C
d_A, Approach Delay [s/veh]	41.86			38.42			40.62			40.05		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.48											
Intersection LOS	D											
Intersection V/C	0.728											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.885	2.777	2.943	2.749
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	1017	433
d_b, Bicycle Delay [s]	36.82	36.82	14.50	36.82
l_b,int, Bicycle LOS Score for Intersection	2.403	2.088	4.244	2.146
Bicycle LOS	B	B	D	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	62.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.870

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	138	1069	219	69	777	93	84	606	98	116	542	59
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	113	18	0	156	0	0	0	0	30	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	1310	263	77	1026	104	94	679	110	160	607	66
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	41	345	69	20	270	27	25	179	29	42	160	17
Total Analysis Volume [veh/h]	163	1379	277	81	1080	109	99	715	116	168	639	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	43	0	10	37	0	21	51	0	16	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	39	39	6	33	33	9	47	47	12	50	50
g / C, Green / Cycle	0.10	0.33	0.33	0.05	0.28	0.28	0.07	0.39	0.39	0.10	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.10	0.33	0.33	0.05	0.23	0.23	0.06	0.40	0.08	0.10	0.36	0.05
s, saturation flow rate [veh/h]	1714	3427	1651	1714	3427	1717	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	171	1114	536	86	942	472	124	705	599	171	755	641
d1, Uniform Delay [s]	53.71	40.50	40.50	56.84	41.02	41.03	54.79	36.50	24.03	53.88	31.37	21.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.48	0.11	0.11	0.36	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.00	27.40	40.57	33.26	8.94	16.40	11.01	36.74	0.16	27.45	8.36	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	1.00	1.01	0.95	0.84	0.84	0.80	1.01	0.19	0.98	0.85	0.11
d, Delay for Lane Group [s/veh]	75.71	67.90	81.07	90.10	49.95	57.43	65.80	73.24	24.18	81.33	39.73	21.26
Lane Group LOS	E	F	F	F	D	E	E	F	C	F	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.93	20.42	21.64	3.24	12.13	13.14	3.33	27.35	2.21	6.36	18.06	1.20
50th-Percentile Queue Length [ft/ln]	148.3	510.5	540.8	80.97	303.2	328.5	83.17	683.8	55.23	158.9	451.5	30.06
95th-Percentile Queue Length [veh/ln]	9.93	27.87	29.40	5.83	17.84	19.09	5.99	36.31	3.98	10.49	25.03	2.16
95th-Percentile Queue Length [ft/ln]	248.1	696.7	735.0	145.7	446.0	477.2	149.7	907.7	99.41	262.3	625.7	54.11

Movement, Approach, & Intersection Results

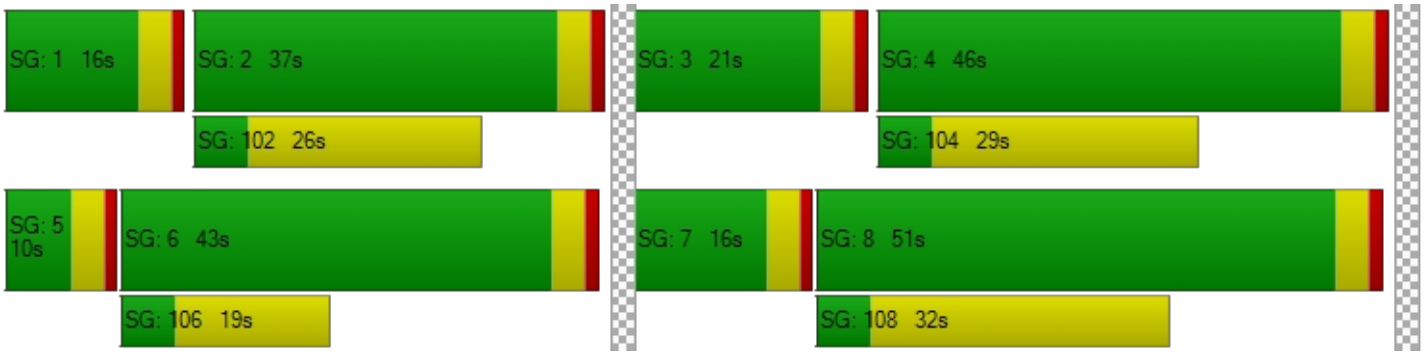
d_M, Delay for Movement [s/veh]	75.71	70.41	81.07	90.10	51.95	57.43	65.80	73.24	24.18	81.33	39.73	21.26
Movement LOS	E	E	F	F	D	E	E	F	C	F	D	C
d_A, Approach Delay [s/veh]	72.51			54.85			66.33			46.26		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	62.06											
Intersection LOS	E											
Intersection V/C	0.870											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.129	3.002	2.767	2.621
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	550	783	700
d_b, Bicycle Delay [s]	27.34	31.54	22.20	25.35
l_b,int, Bicycle LOS Score for Intersection	2.560	2.258	3.094	3.005
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	96	151	218	18	141	22	31	636	65	90	429	27
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	1	2	0	1	0	0	18	0	3	30	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	170	246	20	159	25	35	730	73	104	510	30
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	45	65	5	42	7	9	192	19	27	134	8
Total Analysis Volume [veh/h]	114	179	259	21	167	26	37	768	77	109	537	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	29	0	0	91	0	0	91	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	44	44	44	44	44	44	68	68	68	68	68	68
g / C, Green / Cycle	0.36	0.36	0.36	0.36	0.36	0.36	0.57	0.57	0.57	0.57	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.09	0.10	0.17	0.02	0.09	0.02	0.04	0.43	0.05	0.16	0.30	0.02
s, saturation flow rate [veh/h]	1209	1800	1530	966	1800	1530	856	1800	1530	662	1800	1530
c, Capacity [veh/h]	423	652	554	345	652	554	353	1028	874	189	1028	874
d1, Uniform Delay [s]	32.47	27.09	29.37	30.48	26.89	24.82	27.15	19.26	11.63	46.56	15.74	11.28
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.17	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.57	1.04	2.81	0.34	0.95	0.16	0.13	1.70	0.04	2.76	0.41	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.27	0.47	0.06	0.26	0.05	0.10	0.75	0.09	0.58	0.52	0.04
d, Delay for Lane Group [s/veh]	34.03	28.13	32.18	30.82	27.84	24.98	27.28	20.97	11.67	49.33	16.15	11.30
Lane Group LOS	C	C	C	C	C	C	C	C	B	D	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.75	3.83	6.15	0.47	3.55	0.51	0.75	15.82	0.94	3.27	8.88	0.38
50th-Percentile Queue Length [ft/ln]	68.87	95.87	153.8	11.86	88.71	12.74	18.76	395.3	23.46	81.86	221.8	9.45
95th-Percentile Queue Length [veh/ln]	4.96	6.90	10.22	0.85	6.39	0.92	1.35	22.34	1.69	5.89	13.76	0.68
95th-Percentile Queue Length [ft/ln]	123.9	172.5	255.5	21.35	159.6	22.94	33.76	558.4	42.22	147.3	344.0	17.01

Movement, Approach, & Intersection Results

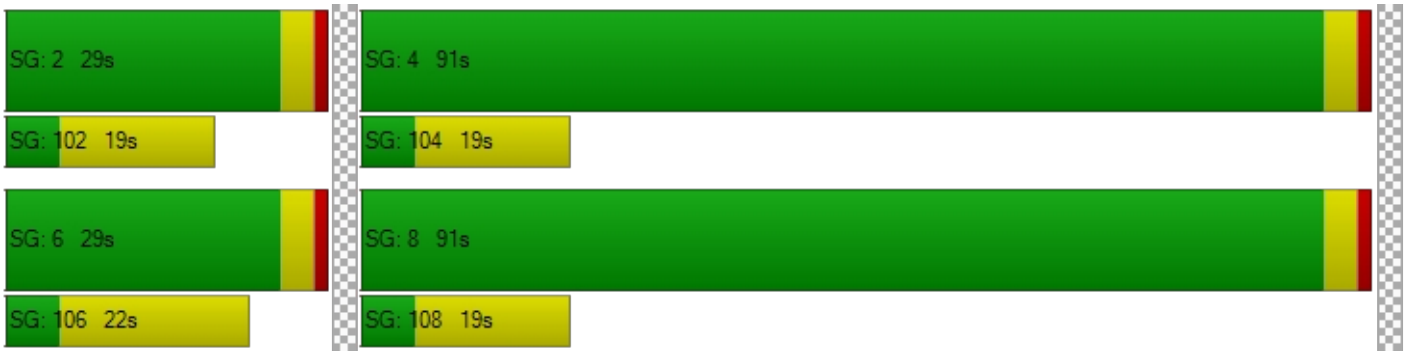
d_M, Delay for Movement [s/veh]	34.03	28.13	32.18	30.82	27.84	24.98	27.28	20.97	11.67	49.33	16.15	11.30
Movement LOS	C	C	C	C	C	C	C	C	B	D	B	B
d_A, Approach Delay [s/veh]	31.25			27.78			20.42			21.26		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.91											
Intersection LOS	C											
Intersection V/C	0.596											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.522	2.312	2.688	2.682
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	417	1450	1450
d_b, Bicycle Delay [s]	37.60	37.60	4.54	4.54
l_b,int, Bicycle LOS Score for Intersection	2.470	1.913	3.015	2.678
Bicycle LOS	B	A	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	45.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	175	861	169	138	729	67	78	565	168	144	309	92
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	2	0	1	0	0	10	0	3	17	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	196	968	191	155	817	75	87	643	188	164	363	103
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	52	255	50	41	215	20	23	169	49	43	96	27
Total Analysis Volume [veh/h]	206	1019	201	163	860	79	92	677	198	173	382	108
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	50	0	17	44	0	21	35	0	18	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	51	51	13	47	47	8	26	26	14	32	32
g / C, Green / Cycle	0.14	0.42	0.42	0.11	0.39	0.39	0.07	0.22	0.22	0.12	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.12	0.35	0.35	0.10	0.26	0.26	0.05	0.20	0.13	0.10	0.21	0.07
s, saturation flow rate [veh/h]	1714	1800	1699	1714	1800	1747	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	233	760	717	186	710	690	116	756	338	198	483	410
d1, Uniform Delay [s]	50.93	30.66	30.87	52.72	29.90	29.90	55.08	45.42	41.87	52.20	40.78	34.56
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.23	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.66	9.70	10.82	12.29	4.99	5.14	11.25	4.06	1.62	11.26	6.13	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.82	0.83	0.88	0.67	0.67	0.79	0.90	0.59	0.87	0.79	0.26
d, Delay for Lane Group [s/veh]	61.59	40.37	41.68	65.00	34.88	35.04	66.34	49.48	43.49	63.46	46.91	34.90
Lane Group LOS	E	D	D	E	C	D	E	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.76	17.68	17.19	5.47	12.18	11.86	3.11	10.17	5.41	5.74	11.24	2.54
50th-Percentile Queue Length [ft/ln]	168.9	442.0	429.8	136.7	304.5	296.5	77.63	254.2	135.1	143.4	281.1	63.41
95th-Percentile Queue Length [veh/ln]	11.02	24.58	23.99	9.30	17.91	17.51	5.59	15.40	9.22	9.67	16.74	4.57
95th-Percentile Queue Length [ft/ln]	275.5	614.5	599.8	232.5	447.6	437.8	139.7	384.9	230.4	241.6	418.6	114.1

Movement, Approach, & Intersection Results

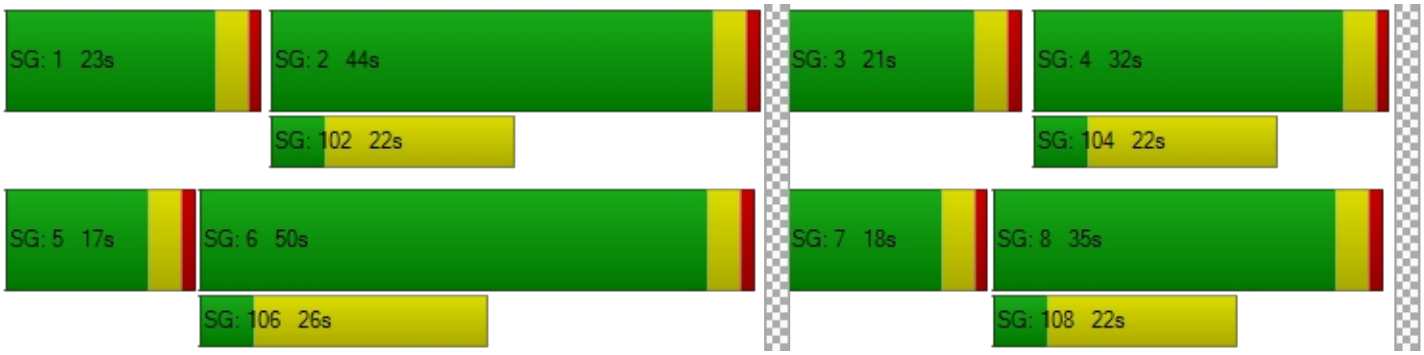
d_M, Delay for Movement [s/veh]	61.59	40.88	41.68	65.00	34.96	35.04	66.34	49.48	43.49	63.46	46.91	34.90
Movement LOS	E	D	D	E	C	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	43.98			39.41			49.86			49.27		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.98											
Intersection LOS	D											
Intersection V/C	0.744											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.833	2.768	2.634	2.745
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	667	517	467
d_b, Bicycle Delay [s]	22.82	26.67	33.00	35.27
l_b,int, Bicycle LOS Score for Intersection	2.736	2.469	2.357	2.654
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	37.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.588

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	85	770	56	108	507	77	101	475	89	64	311	53
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	10	2	0	11	0	0	3	0	3	5	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	872	65	121	579	86	113	535	100	75	353	59
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	25	229	17	32	152	23	30	141	26	20	93	16
Total Analysis Volume [veh/h]	100	918	68	127	609	91	119	563	105	79	372	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	47	0	16	50	0	15	46	0	11	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	61	61	11	63	63	10	26	26	7	23	23
g / C, Green / Cycle	0.07	0.51	0.51	0.09	0.52	0.52	0.08	0.22	0.22	0.06	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.28	0.07	0.20	0.20	0.07	0.19	0.19	0.05	0.12	0.12
s, saturation flow rate [veh/h]	1714	1800	1757	1714	1800	1719	1714	1800	1703	1714	1800	1712
c, Capacity [veh/h]	123	908	886	152	939	897	144	388	367	99	342	325
d1, Uniform Delay [s]	54.92	20.39	20.39	53.81	17.14	17.15	54.13	45.59	45.61	55.85	44.91	44.98
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.12	0.12	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.13	2.39	2.45	11.21	1.18	1.23	11.44	7.52	8.05	13.53	2.07	2.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.55	0.55	0.83	0.38	0.38	0.83	0.88	0.88	0.80	0.65	0.65
d, Delay for Lane Group [s/veh]	67.05	22.78	22.84	65.01	18.32	18.38	65.57	53.11	53.66	69.37	46.98	47.22
Lane Group LOS	E	C	C	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.39	10.00	9.77	4.24	6.13	5.88	3.99	10.67	10.17	2.73	6.29	6.07
50th-Percentile Queue Length [ft/ln]	84.85	249.8	244.3	106.1	153.2	146.9	99.83	266.8	254.3	68.35	157.1	151.7
95th-Percentile Queue Length [veh/ln]	6.11	15.18	14.90	7.62	10.19	9.85	7.19	16.03	15.41	4.92	10.40	10.11
95th-Percentile Queue Length [ft/ln]	152.7	379.5	372.5	190.5	254.7	246.3	179.7	400.7	385.1	123.0	259.9	252.6

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.05	22.81	22.84	65.01	18.34	18.38	65.57	53.32	53.66	69.37	47.08	47.22
Movement LOS	E	C	C	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.88			25.51			55.22			50.53		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	37.25											
Intersection LOS	D											
Intersection V/C	0.588											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.681	2.781	2.578	2.563
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	767	700	633
d_b, Bicycle Delay [s]	24.70	22.82	25.35	28.02
l_b,int, Bicycle LOS Score for Intersection	2.456	2.242	2.209	1.983
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.796

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	664	283	196	515	0	0	0	0	201	0	88
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	76	0	0	100	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	820	317	220	677	0	0	0	0	225	0	99
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	216	83	58	178	0	0	0	0	59	0	26
Total Analysis Volume [veh/h]	0	863	334	232	713	0	0	0	0	237	0	104
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	30	46	0	48	64	0	0	26	0	0	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	68	68	18	86	86	22	22	22	22
g / C, Green / Cycle	0.00	0.56	0.56	0.15	0.72	0.72	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.48	0.22	0.14	0.40	0.00	0.00	0.00	0.18	0.07
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1530	1637	1530	1309	1530
c, Capacity [veh/h]	1	1013	861	263	1288	1095	330	281	300	281
d1, Uniform Delay [s]	0.00	22.01	14.66	49.71	8.02	0.00	0.00	0.00	49.88	42.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	8.98	1.32	9.30	1.72	0.00	0.00	0.00	10.13	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.85	0.39	0.88	0.55	0.00	0.00	0.00	0.79	0.37
d, Delay for Lane Group [s/veh]	0.00	30.99	15.97	59.01	9.74	0.00	0.00	0.00	60.01	43.75
Lane Group LOS	A	C	B	E	A	A	A	A	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	21.89	5.30	7.48	8.38	0.00	0.00	0.00	7.91	2.78
50th-Percentile Queue Length [ft/ln]	0.00	547.1	132.6	186.9	209.4	0.00	0.00	0.00	197.66	69.48
95th-Percentile Queue Length [veh/ln]	0.00	29.56	9.08	11.96	13.12	0.00	0.00	0.00	12.52	5.00
95th-Percentile Queue Length [ft/ln]	0.00	739.0	227.0	299.0	328.0	0.00	0.00	0.00	312.94	125.07

Movement, Approach, & Intersection Results

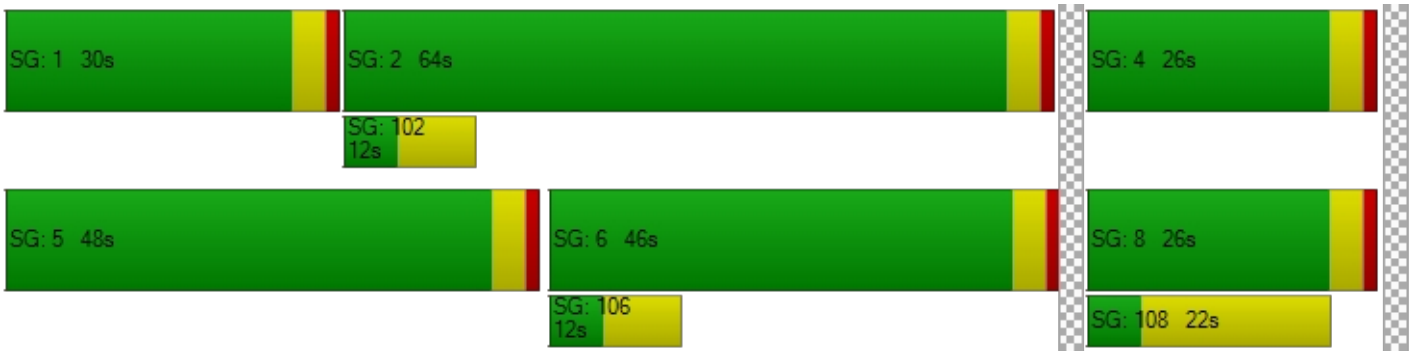
d_M, Delay for Movement [s/veh]	0.00	30.99	15.97	59.01	9.74	0.00	0.00	0.00	0.00	60.01	60.01	43.75
Movement LOS	A	C	B	E	A	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	26.80			21.84			0.00			55.05		
Approach LOS	C			C			A			E		
d_I, Intersection Delay [s/veh]	28.79											
Intersection LOS	C											
Intersection V/C	0.796											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.071	0.000	1.955	2.250
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	1000	367	367
d_b, Bicycle Delay [s]	25.35	15.00	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	3.535	3.119	1.560	2.122
Bicycle LOS	D	C	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	54.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	143	1366	112	38	688	56	87	141	294	122	67	73
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	131	0	0	186	0	0	0	0	2	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	1661	125	43	957	63	97	158	329	139	75	82
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	437	33	11	252	17	26	42	87	37	20	22
Total Analysis Volume [veh/h]	168	1748	132	45	1007	66	102	166	346	146	79	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	37	65	0	10	38	0	12	31	0	14	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	63	63	4	53	53	8	27	27	10	29
g / C, Green / Cycle	0.12	0.53	0.53	0.03	0.44	0.44	0.07	0.23	0.23	0.08	0.24
(v / s)_i Volume / Saturation Flow Rate	0.10	0.52	0.54	0.03	0.29	0.04	0.06	0.09	0.23	0.09	0.10
s, saturation flow rate [veh/h]	1714	1800	1756	1714	3427	1530	1714	1800	1530	1714	1648
c, Capacity [veh/h]	200	945	922	57	1515	676	114	405	344	143	398
d1, Uniform Delay [s]	51.94	28.35	28.51	57.56	26.46	19.53	55.57	39.70	46.50	55.00	38.34
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.38	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.20	28.09	34.66	20.42	2.32	0.29	19.99	0.67	43.60	40.68	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.99	1.02	0.78	0.66	0.10	0.89	0.41	1.01	1.02	0.41
d, Delay for Lane Group [s/veh]	61.14	56.44	63.17	77.99	28.78	19.82	75.56	40.36	90.10	95.68	39.03
Lane Group LOS	E	E	F	E	C	B	E	D	F	F	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.46	32.85	34.00	1.68	11.68	1.14	3.70	4.27	14.36	5.93	4.18
50th-Percentile Queue Length [ft/ln]	136.5	821.1	850.0	42.03	291.9	28.41	92.40	106.7	359.0	148.17	104.55
95th-Percentile Queue Length [veh/ln]	9.30	42.25	44.28	3.03	17.28	2.05	6.65	7.66	20.64	10.00	7.53
95th-Percentile Queue Length [ft/ln]	232.4	1056.	1106.	75.65	432.0	51.15	166.3	191.5	515.9	249.88	188.20

Movement, Approach, & Intersection Results

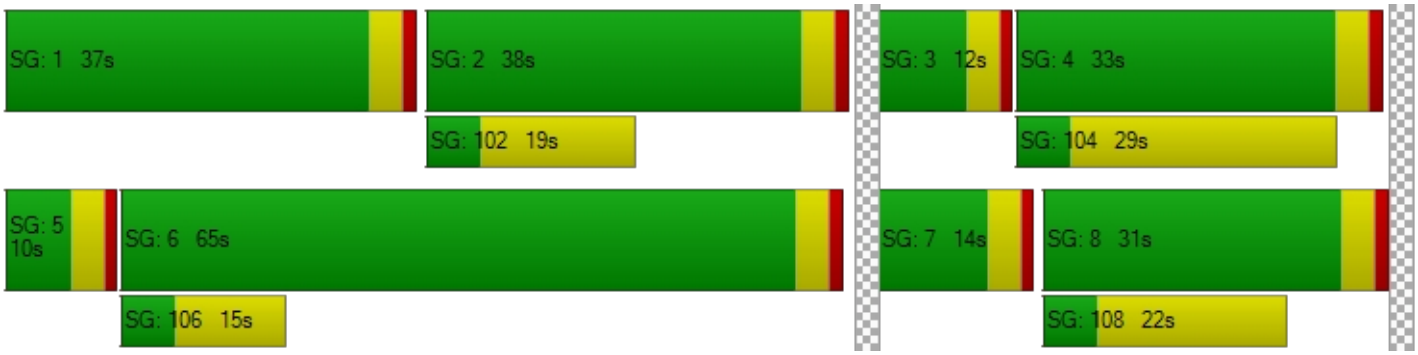
d_M, Delay for Movement [s/veh]	61.14	59.55	63.17	77.99	28.78	19.82	75.56	40.36	90.10	95.68	39.03	39.03
Movement LOS	E	E	E	E	C	B	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	59.91			30.23			74.24			65.62		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	54.38											
Intersection LOS	D											
Intersection V/C	0.873											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.044	3.035	2.372	2.168
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	567	450	483
d_b, Bicycle Delay [s]	14.50	30.82	36.04	34.50
l_b,int, Bicycle LOS Score for Intersection	3.249	2.482	2.573	2.073
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	48.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.549

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	88	400	0	0	314	39	80	0	165	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.120	1.000	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	3	0	0	2	2	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	451	0	0	354	46	90	0	185	0	0	0
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	0.950	1.000	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	119	0	0	93	12	24	0	49	0	0	0
Total Analysis Volume [veh/h]	104	475	0	0	373	48	95	0	195	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.30	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.44	0.00	0.00	0.00	0.00	0.00	48.52	0.00	12.78	0.00	0.00	0.00
Movement LOS	A	A			A	A	E		B			
95th-Percentile Queue Length [veh/ln]	0.30	0.30	0.00	0.00	0.00	0.00	2.83	0.00	1.24	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	7.45	7.45	0.00	0.00	0.00	0.00	70.70	0.00	31.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1.52			0.00			24.49			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	6.19											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	28.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	907	60	95	571	0	5	0	30	191	0	49
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	88	100	0	0	0	0	0	9	0	76
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1016	155	206	640	0	6	0	34	223	0	131
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	267	41	54	168	0	2	0	9	59	0	34
Total Analysis Volume [veh/h]	0	1069	163	217	674	0	6	0	36	235	0	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	27	50	0	31	54	0	0	9	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	64	64	17	81	81	4	4	19	19
g / C, Green / Cycle	0.00	0.53	0.53	0.14	0.68	0.68	0.03	0.03	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.00	0.35	0.35	0.13	0.19	0.19	0.00	0.03	0.14	0.09
s, saturation flow rate [veh/h]	1714	1800	1718	1714	1800	1800	1714	1392	1687	1530
c, Capacity [veh/h]	1	959	915	246	1216	1216	55	45	267	242
d1, Uniform Delay [s]	0.00	20.13	20.17	50.38	7.76	7.76	56.41	57.70	49.41	46.75
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.13	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	3.50	3.70	9.89	0.57	0.57	0.86	27.42	10.50	2.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.66	0.66	0.88	0.28	0.28	0.11	0.81	0.88	0.57
d, Delay for Lane Group [s/veh]	0.00	23.63	23.87	60.27	8.33	8.33	57.27	85.12	59.92	48.86
Lane Group LOS	A	C	C	E	A	A	E	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	13.21	12.71	7.05	3.47	3.47	0.19	1.43	7.65	3.96
50th-Percentile Queue Length [ft/ln]	0.00	330.1	317.8	176.3	86.77	86.77	4.75	35.65	191.34	99.04
95th-Percentile Queue Length [veh/ln]	0.00	19.17	18.56	11.41	6.25	6.25	0.34	2.57	12.19	7.13
95th-Percentile Queue Length [ft/ln]	0.00	479.1	464.0	285.2	156.1	156.1	8.55	64.18	304.76	178.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	23.73	23.87	60.27	8.33	8.33	57.27	71.19	85.12	59.92	59.92	48.86
Movement LOS	A	C	C	E	A	A	E	E	F	E	E	D
d_A, Approach Delay [s/veh]	23.75			20.98			81.14			55.83		
Approach LOS	C			C			F			E		
d_I, Intersection Delay [s/veh]	28.44											
Intersection LOS	C											
Intersection V/C	0.643											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	833	83	433
d_b, Bicycle Delay [s]	22.82	20.42	55.10	36.82
l_b,int, Bicycle LOS Score for Intersection	2.576	2.295	1.594	2.175
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.746

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	1	1458	200	199	841	1	0	1	0	107	0	206
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1458	200	223	841	1	0	1	0	107	0	231
Peak Hour Factor	0.946	0.946	0.946	0.950	0.946	0.950	0.950	0.950	0.946	0.946	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	385	53	59	222	0	0	0	0	28	0	61
Total Analysis Volume [veh/h]	1	1541	211	235	889	1	0	1	0	113	0	243
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	38	54	0	21	37	0	26	30	0	15	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	66	66	17	83	83	0	12	10	21
g / C, Green / Cycle	0.00	0.55	0.55	0.14	0.69	0.69	0.00	0.10	0.08	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.45	0.14	0.14	0.26	0.00	0.00	0.00	0.07	0.16
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1714	1530
c, Capacity [veh/h]	4	1879	839	243	2356	1052	1	174	137	269
d1, Uniform Delay [s]	59.74	22.26	14.21	51.23	7.92	5.87	0.00	48.96	54.38	48.41
k, delay calibration	0.11	0.50	0.50	0.12	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.43	4.16	0.72	21.38	0.46	0.00	0.00	0.01	11.64	10.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.82	0.25	0.97	0.38	0.00	0.00	0.01	0.82	0.90
d, Delay for Lane Group [s/veh]	86.17	26.42	14.93	72.61	8.38	5.87	0.00	48.97	66.02	59.08
Lane Group LOS	F	C	B	E	A	A	A	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.06	18.14	3.15	8.45	4.67	0.01	0.00	0.03	3.80	7.89
50th-Percentile Queue Length [ft/ln]	1.54	453.4	78.72	211.2	116.6	0.20	0.00	0.70	95.11	197.36
95th-Percentile Queue Length [veh/ln]	0.11	25.12	5.67	13.22	8.21	0.01	0.00	0.05	6.85	12.50
95th-Percentile Queue Length [ft/ln]	2.77	628.0	141.6	330.3	205.1	0.36	0.00	1.25	171.20	312.56

Movement, Approach, & Intersection Results

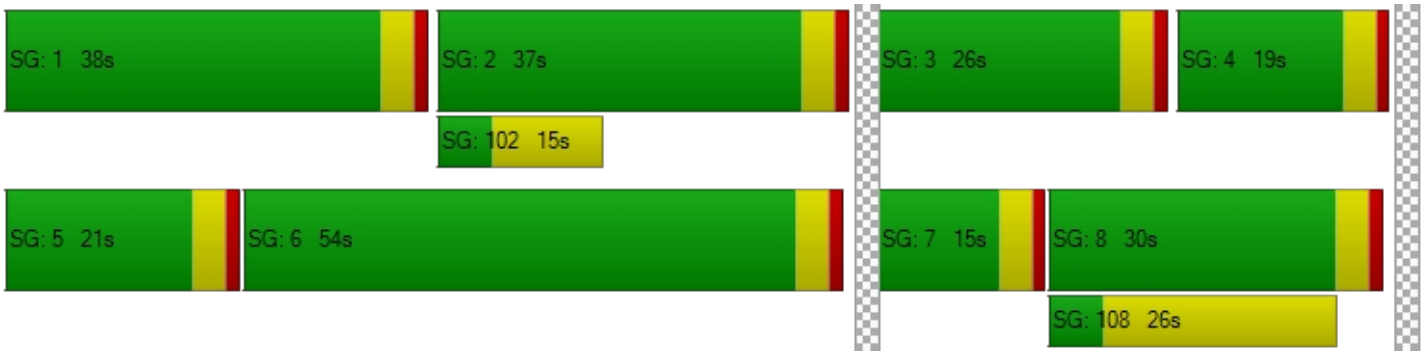
d_M, Delay for Movement [s/veh]	86.17	26.42	14.93	72.61	8.38	5.87	0.00	48.97	48.97	66.02	59.08	59.08
Movement LOS	F	C	B	E	A	A	A	D	D	E	E	E
d_A, Approach Delay [s/veh]	25.07			21.80			48.97			61.28		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	27.92											
Intersection LOS	C											
Intersection V/C	0.746											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.993	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	550	433	250
d_b, Bicycle Delay [s]	20.42	31.54	36.82	45.94
l_b,int, Bicycle LOS Score for Intersection	3.006	2.488	1.561	2.147
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	50.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.054

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	30	215	48	118	172	40	129	224	33	32	148	129
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	3	0	0	2	0	0	10	0	0	17	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	244	54	132	195	45	144	261	37	36	183	144
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	64	14	35	51	12	38	69	10	9	48	38
Total Analysis Volume [veh/h]	36	257	57	139	205	47	152	275	39	38	193	152
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	402	439	417	427	451	396	433
Degree of Utilization, x	0.73	0.13	0.94	1.05	0.09	0.58	0.35

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.70	0.44	10.57	14.10	0.28	3.58	1.55
95th-Percentile Queue Length [ft]	142.38	11.10	264.28	352.48	7.05	89.45	38.81
Approach Delay [s/veh]	29.01		59.35	83.28		20.45	
Approach LOS	D		F	F		C	
Intersection Delay [s/veh]	50.31						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.590

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	45	922	34	78	735	100	139	250	53	29	195	136
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	6	1	0	4	0	0	10	0	1	17	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	1039	39	87	827	112	156	290	59	33	235	152
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	273	10	23	218	29	41	76	16	9	62	40
Total Analysis Volume [veh/h]	53	1094	41	92	871	118	164	305	62	35	247	160
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	59	0	14	63	0	21	34	0	13	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	65	65	8	69	69	13	27	27	4	17	17
g / C, Green / Cycle	0.04	0.55	0.55	0.07	0.57	0.57	0.11	0.23	0.23	0.03	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.03	0.32	0.32	0.05	0.28	0.28	0.10	0.09	0.04	0.02	0.12	0.12
s, saturation flow rate [veh/h]	1714	1800	1777	1714	1800	1726	1714	3427	1530	1714	1800	1571
c, Capacity [veh/h]	68	980	968	115	1029	987	192	772	345	52	259	226
d1, Uniform Delay [s]	57.12	18.24	18.24	55.20	15.29	15.29	52.35	39.54	37.54	57.61	49.92	50.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.47	2.53	2.57	12.07	1.67	1.74	10.42	0.33	0.25	14.38	6.57	9.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.58	0.58	0.80	0.49	0.49	0.86	0.40	0.18	0.68	0.83	0.86
d, Delay for Lane Group [s/veh]	74.58	20.77	20.81	67.27	16.96	17.04	62.77	39.87	37.79	72.00	56.49	59.31
Lane Group LOS	E	C	C	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.92	10.95	10.83	3.13	8.45	8.13	5.40	3.88	1.51	1.26	6.69	6.24
50th-Percentile Queue Length [ft/ln]	48.06	273.8	270.8	78.22	211.2	203.1	135.0	96.88	37.65	31.48	167.1	156.0
95th-Percentile Queue Length [veh/ln]	3.46	16.38	16.23	5.63	13.22	12.80	9.21	6.98	2.71	2.27	10.93	10.34
95th-Percentile Queue Length [ft/ln]	86.51	409.5	405.7	140.8	330.4	320.0	230.3	174.3	67.77	56.67	273.2	258.4

Movement, Approach, & Intersection Results

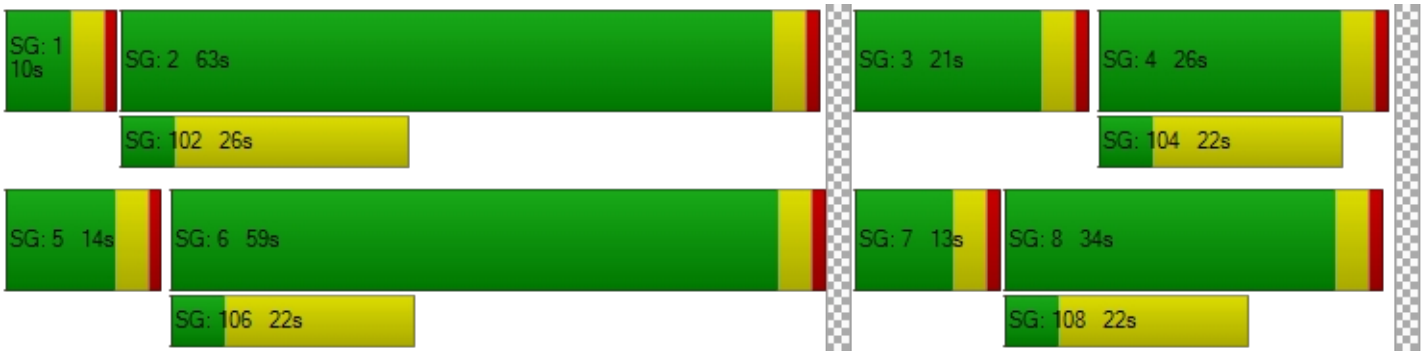
d_M, Delay for Movement [s/veh]	74.58	20.79	20.81	67.27	16.99	17.04	62.77	39.87	37.79	72.00	56.88	59.31
Movement LOS	E	C	C	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	23.19			21.28			46.70			58.96		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	31.28											
Intersection LOS	C											
Intersection V/C	0.590											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.736	2.874	2.622	2.611
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	983	500	367
d_b, Bicycle Delay [s]	17.60	15.50	33.75	40.02
l_b,int, Bicycle LOS Score for Intersection	2.540	2.451	1.998	1.924
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	43.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	833	164	64	696	56	75	453	101	111	270	46
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	4	5	0	0	5	17	12	5	2	0	8	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	938	184	72	785	80	96	512	115	124	310	52
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	34	247	48	19	207	21	25	135	30	33	82	14
Total Analysis Volume [veh/h]	138	987	194	76	826	84	101	539	121	131	326	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	65	0	11	61	0	14	30	0	14	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	44	44	7	40	40	9	43	43	10	45	45
g / C, Green / Cycle	0.09	0.37	0.37	0.06	0.33	0.33	0.07	0.36	0.36	0.08	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.08	0.34	0.34	0.04	0.26	0.26	0.06	0.19	0.19	0.08	0.11	0.11
s, saturation flow rate [veh/h]	1714	1800	1699	1714	1800	1742	1714	1800	1687	1714	1800	1711
c, Capacity [veh/h]	157	662	625	96	597	578	125	648	607	143	666	633
d1, Uniform Delay [s]	53.84	36.14	36.27	55.97	36.04	36.04	54.81	30.33	30.35	54.59	26.68	26.71
k, delay calibration	0.11	0.22	0.22	0.11	0.13	0.13	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.18	9.98	11.22	13.68	2.53	2.61	11.61	3.03	3.25	19.69	1.11	1.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.91	0.92	0.79	0.77	0.77	0.81	0.53	0.53	0.92	0.29	0.29
d, Delay for Lane Group [s/veh]	68.01	46.12	47.49	69.65	38.56	38.65	66.42	33.36	33.60	74.28	27.78	27.90
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.73	18.44	17.79	2.64	12.49	12.10	3.41	8.28	7.83	4.71	4.14	4.00
50th-Percentile Queue Length [ft/ln]	118.2	461.0	444.8	65.93	312.3	302.6	85.28	207.0	195.6	117.6	103.5	99.97
95th-Percentile Queue Length [veh/ln]	8.30	25.49	24.71	4.75	18.29	17.81	6.14	13.00	12.41	8.26	7.46	7.20
95th-Percentile Queue Length [ft/ln]	207.4	637.1	617.7	118.6	457.2	445.2	153.5	325.0	310.3	206.6	186.4	179.9

Movement, Approach, & Intersection Results

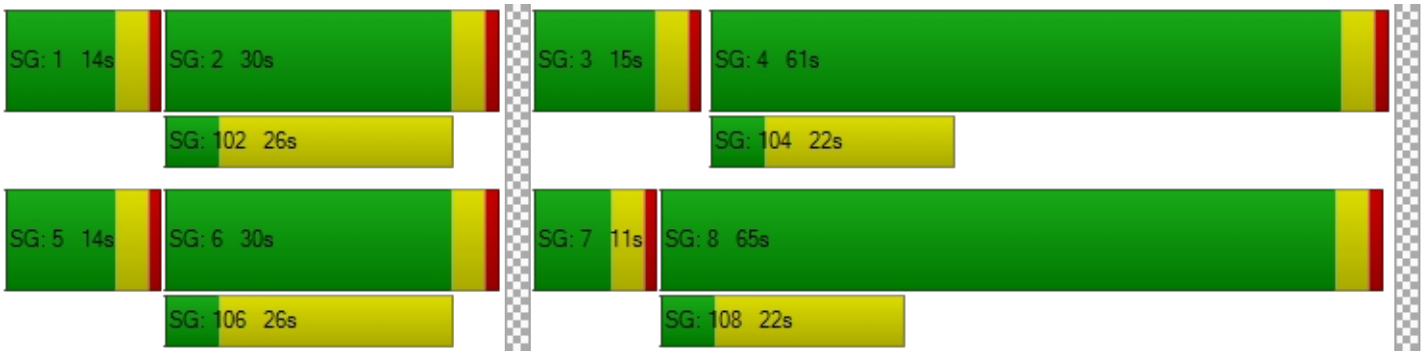
d_M, Delay for Movement [s/veh]	68.01	46.65	47.49	69.65	38.60	38.65	66.42	33.45	33.60	74.28	27.83	27.90
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	49.01			41.00			37.85			39.72		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.10											
Intersection LOS	D											
Intersection V/C	0.649											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.858	2.814	2.570	2.573
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	950	433	433
d_b, Bicycle Delay [s]	14.50	16.54	36.82	36.82
l_b,int, Bicycle LOS Score for Intersection	2.648	2.373	2.187	1.982
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	23.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.491

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	18	868	69	34	681	106	136	178	9	42	83	20
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	2	0	0	4	1	5	9	0	10	2	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	974	77	38	767	120	157	208	10	57	95	22
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	256	20	10	202	32	41	55	3	15	25	6
Total Analysis Volume [veh/h]	21	1025	81	40	807	126	165	219	11	60	100	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	52	0	9	46	0	33	49	0	10	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	78	78	4	79	79	14	17	17	5	9	9
g / C, Green / Cycle	0.02	0.65	0.65	0.03	0.66	0.66	0.11	0.14	0.14	0.04	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.01	0.31	0.31	0.02	0.27	0.27	0.10	0.12	0.01	0.04	0.06	0.02
s, saturation flow rate [veh/h]	1714	1800	1754	1714	1800	1716	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	37	1169	1140	53	1186	1131	195	255	217	76	131	111
d1, Uniform Delay [s]	58.16	10.69	10.69	57.71	9.50	9.50	52.16	50.31	44.51	56.78	54.63	52.39
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.04	1.41	1.44	19.60	1.02	1.07	9.72	8.16	0.10	16.23	8.92	0.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.48	0.48	0.76	0.40	0.40	0.85	0.86	0.05	0.79	0.76	0.21
d, Delay for Lane Group [s/veh]	71.19	12.10	12.14	77.31	10.52	10.57	61.88	58.47	44.60	73.00	63.55	53.30
Lane Group LOS	E	B	B	E	B	B	E	E	D	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.77	7.59	7.41	1.49	5.83	5.58	5.39	7.00	0.29	2.14	3.29	0.68
50th-Percentile Queue Length [ft/ln]	19.15	189.7	185.3	37.31	145.8	139.4	134.8	174.9	7.27	53.61	82.31	17.07
95th-Percentile Queue Length [veh/ln]	1.38	12.11	11.88	2.69	9.80	9.45	9.20	11.33	0.52	3.86	5.93	1.23
95th-Percentile Queue Length [ft/ln]	34.47	302.6	296.9	67.16	244.9	236.3	230.1	283.3	13.09	96.50	148.1	30.73

Movement, Approach, & Intersection Results

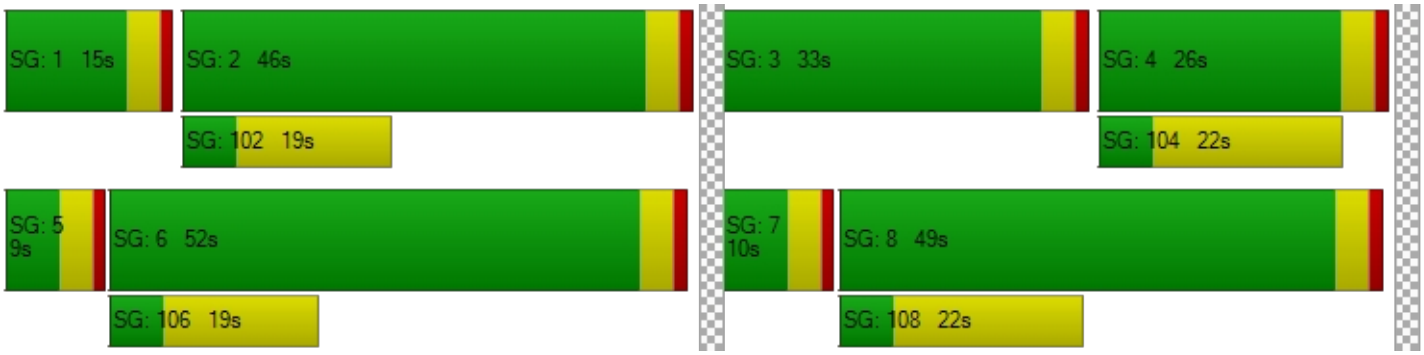
d_M, Delay for Movement [s/veh]	71.19	12.11	12.14	77.31	10.54	10.57	61.88	58.47	44.60	73.00	63.55	53.30
Movement LOS	E	B	B	E	B	B	E	E	D	E	E	D
d_A, Approach Delay [s/veh]	13.22			13.29			59.51			65.36		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	23.63											
Intersection LOS	C											
Intersection V/C	0.491											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.706	2.741	2.303	2.274
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	700	750	367
d_b, Bicycle Delay [s]	21.60	25.35	23.44	40.02
l_b,int, Bicycle LOS Score for Intersection	2.489	2.362	2.211	1.862
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	33.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.673

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	16	1461	163	160	882	2	5	2	5	165	0	124
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.120	1.120	1.120	1.000
In-Process Volume [veh/h]	144	0	0	0	0	0	0	106	93	0	116	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	1461	183	160	882	2	5	108	99	185	116	124
Peak Hour Factor	0.950	0.972	0.950	0.972	0.972	0.972	0.972	0.950	0.950	0.950	0.950	0.972
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	43	376	48	41	227	1	1	28	26	49	31	32
Total Analysis Volume [veh/h]	171	1503	193	165	907	2	5	114	104	195	122	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	39	49	0	20	30	0	9	33	0	18	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	59	59	13	58	58	1	18	14	31
g / C, Green / Cycle	0.12	0.49	0.49	0.11	0.48	0.48	0.01	0.15	0.12	0.26
(v / s)_i Volume / Saturation Flow Rate	0.10	0.33	0.33	0.10	0.18	0.00	0.00	0.13	0.11	0.15
s, saturation flow rate [veh/h]	1714	3427	1697	1714	4903	1530	1714	1660	1714	1651
c, Capacity [veh/h]	202	1678	831	191	2372	740	11	247	200	427
d1, Uniform Delay [s]	51.89	23.34	23.39	52.40	19.63	16.02	59.38	50.05	52.83	38.85
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.47	2.19	4.42	10.83	0.47	0.01	24.11	9.98	24.12	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.67	0.68	0.86	0.38	0.00	0.44	0.88	0.98	0.59
d, Delay for Lane Group [s/veh]	61.36	25.53	27.82	63.23	20.10	16.02	83.49	60.04	76.95	40.13
Lane Group LOS	E	C	C	E	C	B	F	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.57	12.45	12.93	5.46	5.41	0.03	0.23	7.08	7.18	6.58
50th-Percentile Queue Length [ft/ln]	139.2	311.3	323.2	136.4	135.2	0.75	5.71	177.08	179.60	164.54
95th-Percentile Queue Length [veh/ln]	9.44	18.24	18.83	9.29	9.23	0.05	0.41	11.45	11.58	10.79
95th-Percentile Queue Length [ft/ln]	236.0	456.0	470.7	232.1	230.6	1.35	10.27	286.19	289.49	269.72

Movement, Approach, & Intersection Results

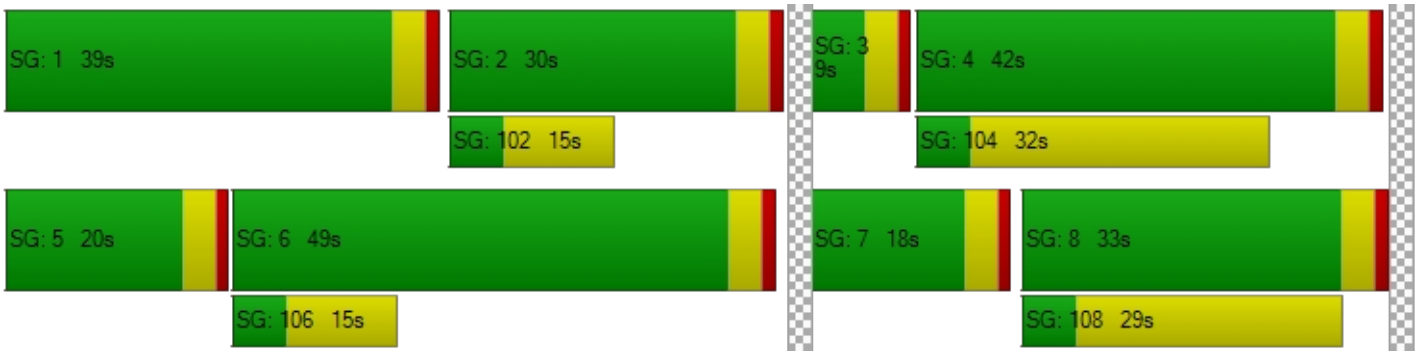
d_M, Delay for Movement [s/veh]	61.36	26.10	27.82	63.23	20.10	16.02	83.49	60.04	60.04	76.95	40.13	40.13
Movement LOS	E	C	C	E	C	B	F	E	E	E	D	D
d_A, Approach Delay [s/veh]	29.50			26.71			60.56			56.26		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	33.89											
Intersection LOS	C											
Intersection V/C	0.673											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.037	3.246	2.124	2.253
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	433	483	633
d_b, Bicycle Delay [s]	23.44	36.82	34.50	28.02
l_b,int, Bicycle LOS Score for Intersection	2.586	2.150	1.928	2.294
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	32.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.915

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	15	213	12	34	162	31	62	171	22	10	113	42
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	8	0	0	0	0	2	3	135	6	0	144	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	239	13	38	181	37	72	327	31	11	271	47
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	63	3	10	48	10	19	86	8	3	71	12
Total Analysis Volume [veh/h]	26	252	14	40	191	39	76	344	33	12	285	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	456	453	495	478
Degree of Utilization, x	0.64	0.60	0.91	0.72

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.41	3.80	10.66	5.82
95th-Percentile Queue Length [ft]	110.20	95.04	266.61	145.39
Approach Delay [s/veh]	23.97	22.03	49.09	27.86
Approach LOS	C	C	E	D
Intersection Delay [s/veh]	32.94			
Intersection LOS	D			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	34.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.865

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	33	51	48	20	4	12	42	7	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	37	57	54	22	4	13	47	8	1
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	10	15	14	6	1	3	12	2	0
Total Analysis Volume [veh/h]	0	39	60	57	23	4	14	49	8	1
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	453	425
Degree of Utilization, x	0.39	0.18

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.86	0.64
95th-Percentile Queue Length [ft]	46.39	16.10
Approach Delay [s/veh]	16.02	13.31
Approach LOS	C	B
Intersection Delay [s/veh]	34.76	
Intersection LOS	D	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	39	2	143	22	4	12	39	142	7	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	13	115	0	0	0	0	132	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	15	275	25	4	13	44	291	8	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	4	72	7	1	3	12	77	2	2
Total Analysis Volume [veh/h]	46	16	289	26	4	14	46	306	8	6
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	440	439
Degree of Utilization, x	0.86	0.87

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.80	8.80
95th-Percentile Queue Length [ft]	220.00	219.94
Approach Delay [s/veh]	44.85	44.99
Approach LOS	E	E
Intersection Delay [s/veh]	34.76	
Intersection LOS	D	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	3	16	240	40	0	5	39	95	31	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	3	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	18	269	45	0	6	44	106	38	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	71	12	0	2	12	28	10	2
Total Analysis Volume [veh/h]	3	19	283	47	0	6	46	112	40	8
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	436	392	435
Degree of Utilization, x	0.81	0.42	0.11

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.38	2.01	0.37
95th-Percentile Queue Length [ft]	184.53	50.28	9.24
Approach Delay [s/veh]	37.75	16.87	
Approach LOS	E	C	
Intersection Delay [s/veh]	34.76		
Intersection LOS	D		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.516

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	50	874	82	66	634	13	20	165	39	57	148	63
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	49	0	0	0	0	14	2	54	60	0	69	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	979	92	74	710	29	24	239	104	64	235	71
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	258	24	19	187	8	6	63	27	17	62	19
Total Analysis Volume [veh/h]	111	1031	97	78	747	31	25	252	109	67	247	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	40	67	0	11	38	0	9	26	0	16	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	76	76	7	73	73	3	16	16	6	19	19
g / C, Green / Cycle	0.08	0.63	0.63	0.06	0.61	0.61	0.02	0.13	0.13	0.05	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.06	0.32	0.32	0.05	0.22	0.22	0.01	0.07	0.07	0.04	0.14	0.05
s, saturation flow rate [veh/h]	1714	1800	1746	1714	1800	1775	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	139	1133	1100	98	1090	1075	41	445	199	86	281	239
d1, Uniform Delay [s]	54.16	12.06	12.07	55.89	11.93	11.93	58.04	49.03	48.91	56.35	49.51	44.92
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.92	1.61	1.66	13.63	0.92	0.94	14.15	1.13	2.35	14.22	8.63	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.50	0.51	0.80	0.36	0.36	0.62	0.57	0.55	0.78	0.88	0.31
d, Delay for Lane Group [s/veh]	64.08	13.66	13.73	69.52	12.85	12.87	72.19	50.16	51.25	70.57	58.15	45.66
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.68	8.43	8.22	2.70	5.41	5.34	0.91	3.62	3.20	2.35	7.90	2.04
50th-Percentile Queue Length [ft/ln]	91.96	210.7	205.5	67.58	135.1	133.3	22.81	90.56	79.88	58.64	197.5	51.01
95th-Percentile Queue Length [veh/ln]	6.62	13.19	12.92	4.87	9.22	9.12	1.64	6.52	5.75	4.22	12.51	3.67
95th-Percentile Queue Length [ft/ln]	165.5	329.7	323.0	121.6	230.4	228.0	41.05	163.0	143.7	105.5	312.8	91.81

Movement, Approach, & Intersection Results

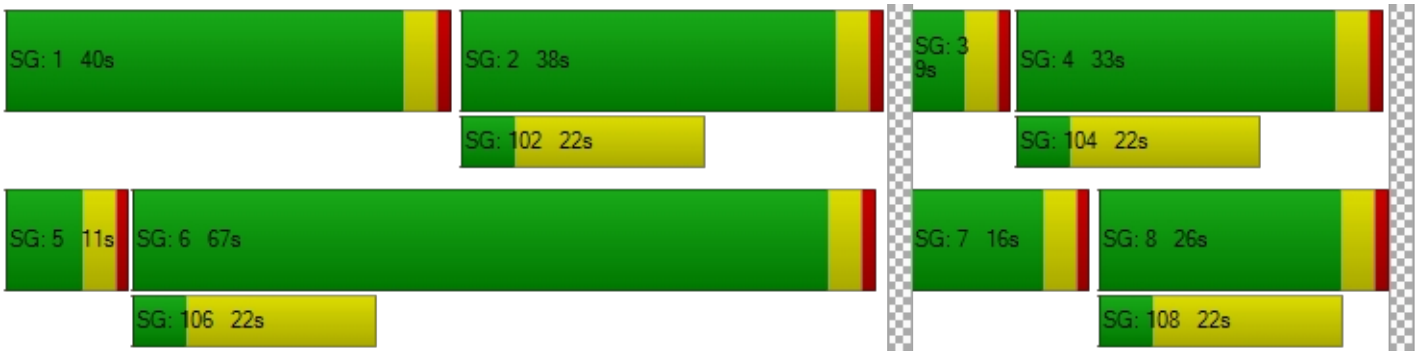
d_M, Delay for Movement [s/veh]	64.08	13.69	13.73	69.52	12.86	12.87	72.19	50.16	51.25	70.57	58.15	45.66
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	D
d_A, Approach Delay [s/veh]	18.21			18.02			51.89			57.88		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	28.06											
Intersection LOS	C											
Intersection V/C	0.516											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.737	2.703	2.466	2.601
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	567	367	483
d_b, Bicycle Delay [s]	13.54	30.82	40.02	34.50
l_b,int, Bicycle LOS Score for Intersection	2.582	2.266	1.878	2.201
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	31.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.619

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	68	1025	112	64	785	62	76	231	66	117	164	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	35	0	0	0	0	9	8	5	30	0	8	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	1148	125	72	879	78	93	264	104	131	192	65
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	29	302	33	19	231	21	24	69	27	34	51	17
Total Analysis Volume [veh/h]	117	1208	132	76	925	82	98	278	109	138	202	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	57	0	11	48	0	22	34	0	18	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	70	70	7	66	66	9	16	16	11	19	19
g / C, Green / Cycle	0.08	0.58	0.58	0.06	0.55	0.55	0.07	0.14	0.14	0.10	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.07	0.38	0.38	0.04	0.28	0.28	0.06	0.11	0.11	0.08	0.08	0.08
s, saturation flow rate [veh/h]	1714	1800	1739	1714	1800	1749	1714	1800	1632	1714	1800	1649
c, Capacity [veh/h]	143	1043	1008	95	993	965	123	245	222	164	287	263
d1, Uniform Delay [s]	54.09	17.03	17.12	55.98	16.83	16.83	54.81	50.43	50.58	53.37	45.93	46.04
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.78	3.15	3.34	13.80	1.90	1.96	10.93	6.72	8.29	10.96	1.26	1.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.65	0.66	0.80	0.51	0.51	0.79	0.82	0.84	0.84	0.48	0.50
d, Delay for Lane Group [s/veh]	64.87	20.18	20.46	69.79	18.73	18.79	65.74	57.15	58.87	64.33	47.19	47.50
Lane Group LOS	E	C	C	E	B	B	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.90	13.02	12.79	2.64	9.10	8.86	3.29	6.32	5.97	4.59	3.89	3.68
50th-Percentile Queue Length [ft/ln]	97.59	325.5	319.8	66.00	227.5	221.5	82.29	157.8	149.1	114.7	97.15	92.10
95th-Percentile Queue Length [veh/ln]	7.03	18.94	18.66	4.75	14.05	13.74	5.92	10.44	9.97	8.11	7.00	6.63
95th-Percentile Queue Length [ft/ln]	175.6	473.5	466.4	118.8	351.2	343.6	148.1	260.9	249.2	202.6	174.8	165.7

Movement, Approach, & Intersection Results

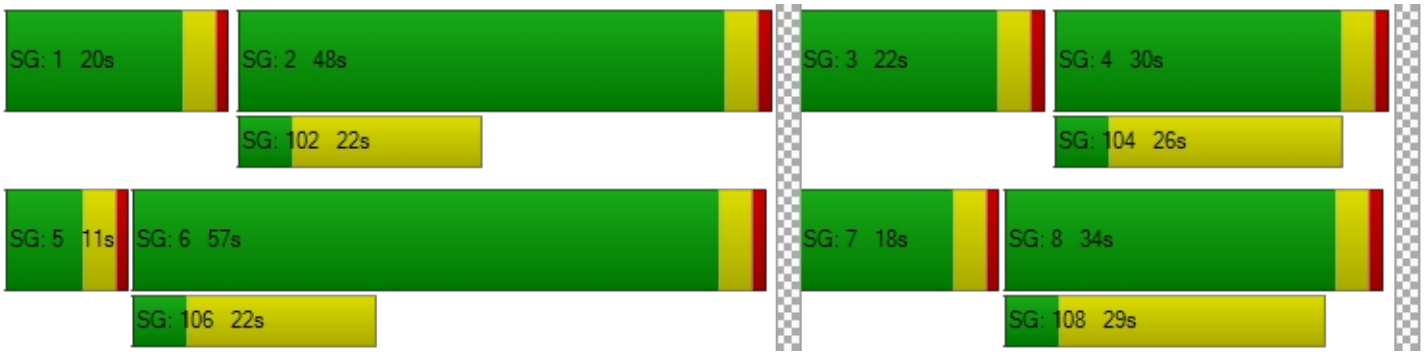
d_M, Delay for Movement [s/veh]	64.87	20.30	20.46	69.79	18.76	18.79	65.74	57.63	58.87	64.33	47.29	47.50
Movement LOS	E	C	C	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	23.90			22.34			59.55			53.09		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	31.91											
Intersection LOS	C											
Intersection V/C	0.619											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.975	2.867	2.488	2.489
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	883	733	500	433
d_b, Bicycle Delay [s]	18.70	24.07	33.75	36.82
l_b,int, Bicycle LOS Score for Intersection	2.762	2.453	1.960	1.896
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	58.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.911

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	119	208	360	107	282	534	817	1020	94	152	605	306
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	8	0	0	5	51
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	233	403	120	316	598	915	1150	105	170	683	394
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	35	61	106	32	83	157	241	303	28	45	180	104
Total Analysis Volume [veh/h]	140	245	424	126	333	629	963	1211	111	179	719	415
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	35	0	13	28	0	37	60	0	12	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	31	31	9	28	28	28	33	56	56	8	31	31
g / C, Green / Cycle	0.10	0.26	0.26	0.08	0.24	0.24	0.24	0.28	0.47	0.47	0.07	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.08	0.07	0.28	0.07	0.19	0.21	0.21	0.29	0.25	0.07	0.05	0.15	0.27
s, saturation flow rate [veh/h]	1714	3427	1530	171	180	153	153	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	167	885	395	129	424	361	361	916	2288	714	222	1267	395
d1, Uniform Delay [s]	53.20	35.55	44.50	55.4	43.0	44.1	44.1	43.50	22.66	18.40	55.24	38.68	44.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.49
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.41	0.78	66.03	32.3	13.5	24.0	24.0	30.04	0.19	0.10	6.78	0.40	58.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.28	1.07	0.98	0.78	0.87	0.87	1.05	0.53	0.16	0.81	0.57	1.05
d, Delay for Lane Group [s/veh]	63.61	36.32	110.5	87.7	56.5	68.1	68.1	73.54	22.86	18.50	62.01	39.08	102.9
Lane Group LOS	E	D	F	F	E	E	E	F	C	B	E	D	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.63	2.98	18.89	4.95	10.8	11.3	11.3	17.26	8.02	1.80	2.88	6.18	18.06
50th-Percentile Queue Length [ft/ln]	115.8	74.41	472.1	123.	270.	283.	283.	431.4	200.6	45.06	71.97	154.5	451.4
95th-Percentile Queue Length [veh/ln]	8.16	5.36	27.12	8.60	16.2	16.8	16.8	24.82	12.67	3.24	5.18	10.26	25.77
95th-Percentile Queue Length [ft/ln]	204.0	133.9	678.0	215.	405.	421.	421.	620.4	316.7	81.11	129.5	256.4	644.2

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.61	36.32	110.5	87.71	56.58	68.13	73.54	22.86	18.50	62.01	39.08	102.9
Movement LOS	E	D	F	F	E	E	F	C	B	E	D	F
d_A, Approach Delay [s/veh]	79.94			66.86			44.00			62.40		
Approach LOS	E			E			D			E		
d_I, Intersection Delay [s/veh]	58.22											
Intersection LOS	E											
Intersection V/C	0.911											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.701	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	400	933	517
d_b, Bicycle Delay [s]	33.00	38.40	17.07	33.00
l_b,int, Bicycle LOS Score for Intersection	2.227	2.457	2.816	2.282
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	35.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.638

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	74	48	43	114	42	359	674	752	63	37	631	140
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	51	0	0	0	8	0	0	56	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	54	48	179	47	402	755	850	71	41	763	157
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	22	14	13	47	12	106	199	224	19	11	201	41
Total Analysis Volume [veh/h]	87	57	51	188	49	423	795	895	75	43	803	165
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	29	0	28	23	0	35	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	8	21	21	21	32	70	70	4	42	42
g / C, Green / Cycle	0.07	0.07	0.07	0.18	0.18	0.18	0.27	0.59	0.59	0.03	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.03	0.07	0.07	0.16	0.24	0.18	0.05	0.03	0.19	0.19
s, saturation flow rate [veh/h]	1714	1800	1536	1714	1748	2708	3329	4903	1530	1714	3427	1648
c, Capacity [veh/h]	120	126	108	303	309	479	888	2877	898	57	1210	582
d1, Uniform Delay [s]	54.64	53.52	53.70	43.66	43.65	48.20	42.39	12.54	10.78	57.54	31.01	31.07
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.92	2.40	3.36	0.81	0.79	5.59	3.49	0.28	0.18	18.51	1.72	3.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.44	0.49	0.39	0.39	0.88	0.90	0.31	0.08	0.76	0.54	0.54
d, Delay for Lane Group [s/veh]	62.57	55.92	57.06	44.47	44.45	53.79	45.88	12.82	10.96	76.05	32.73	34.68
Lane Group LOS	E	E	E	D	D	D	D	B	B	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.84	1.70	1.63	3.17	3.22	6.53	11.69	4.04	0.90	1.59	7.81	7.89
50th-Percentile Queue Length [ft/ln]	71.04	42.45	40.63	79.14	80.47	163.1	292.1	101.0	22.57	39.65	195.2	197.1
95th-Percentile Queue Length [veh/ln]	5.12	3.06	2.93	5.70	5.79	10.72	17.29	7.28	1.63	2.86	12.39	12.49
95th-Percentile Queue Length [ft/ln]	127.8	76.41	73.13	142.4	144.8	267.9	432.3	181.9	40.63	71.38	309.7	312.3

Movement, Approach, & Intersection Results

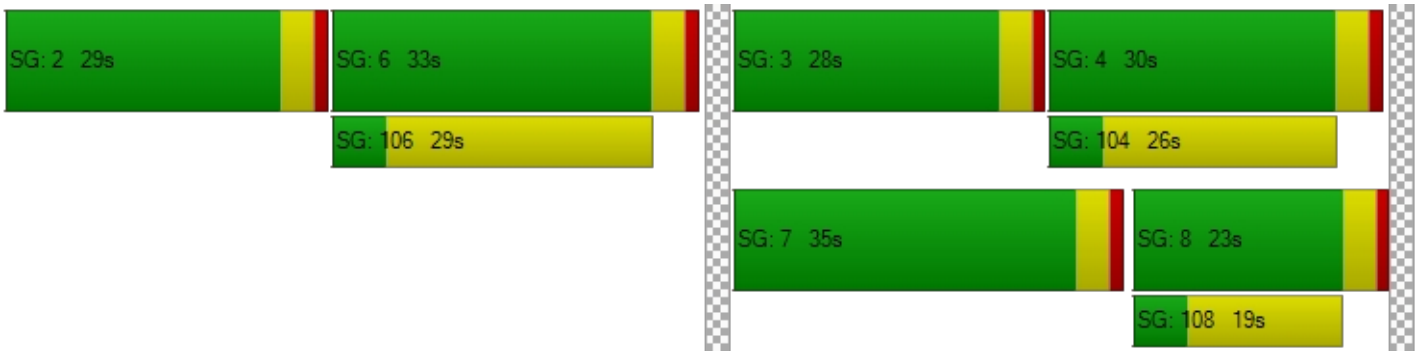
d_M, Delay for Movement [s/veh]	62.57	55.95	57.06	44.46	44.45	53.79	45.88	12.82	10.96	76.05	33.10	34.68
Movement LOS	E	E	E	D	D	D	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	59.19			50.44			27.63			35.19		
Approach LOS	E			D			C			D		
d_I, Intersection Delay [s/veh]	35.58											
Intersection LOS	D											
Intersection V/C	0.638											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.235	2.741	0.000	2.908
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	417	317	433
d_b, Bicycle Delay [s]	34.50	37.60	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.720	2.649	2.530	2.116
Bicycle LOS	A	B	B	B

Sequence

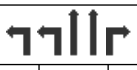
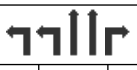
Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.561

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	158	754	90	148	608	171	182	575	229	108	268	65
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	10	6	0	2	2	35	24	0	9	54	35
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	177	854	107	166	683	194	239	668	256	130	354	108
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	47	225	28	44	180	51	63	176	67	34	93	28
Total Analysis Volume [veh/h]	186	899	113	175	719	204	252	703	269	137	373	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Unsig	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	52	0	14	51	0	18	42	0	12	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	61	8	60	60	11	28	28	7	24	24
g / C, Green / Cycle	0.07	0.51	0.07	0.50	0.50	0.09	0.23	0.23	0.06	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.06	0.26	0.05	0.21	0.13	0.08	0.21	0.18	0.04	0.14	0.14
s, saturation flow rate [veh/h]	3329	3427	3329	3427	1530	3329	3427	1530	3329	1800	1658
c, Capacity [veh/h]	242	1735	230	1722	769	310	803	358	190	357	329
d1, Uniform Delay [s]	54.63	19.84	54.88	18.79	17.14	53.37	44.26	42.68	55.63	44.86	44.94
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.12	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.05	1.11	5.12	0.75	0.84	5.10	3.22	3.46	5.08	2.58	2.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.52	0.76	0.42	0.27	0.81	0.88	0.75	0.72	0.71	0.71
d, Delay for Lane Group [s/veh]	59.69	20.95	60.00	19.54	17.98	58.48	47.47	46.15	60.71	47.45	47.84
Lane Group LOS	E	C	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.93	8.53	2.76	6.40	3.40	3.95	10.38	7.74	2.17	7.25	6.79
50th-Percentile Queue Length [ft/ln]	73.28	213.18	69.09	160.0	84.98	98.71	259.3	193.4	54.34	181.3	169.6
95th-Percentile Queue Length [veh/ln]	5.28	13.32	4.97	10.55	6.12	7.11	15.66	12.30	3.91	11.67	11.06
95th-Percentile Queue Length [ft/ln]	131.90	332.90	124.3	263.7	152.9	177.6	391.4	307.5	97.82	291.7	276.4

Movement, Approach, & Intersection Results

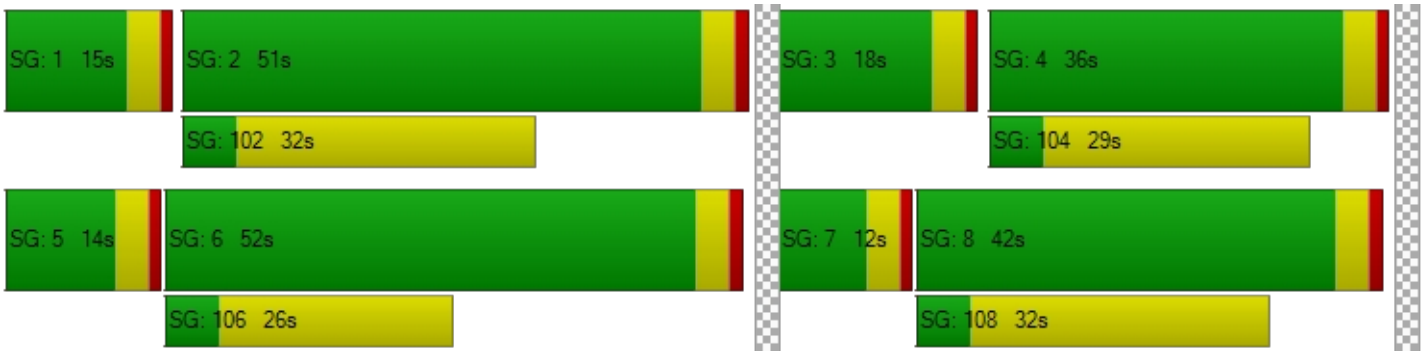
d_M, Delay for Movement [s/veh]	59.69	20.95	0.00	60.00	19.54	17.98	58.48	47.47	46.15	60.71	47.57	47.84
Movement LOS	E	C		E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	27.59			25.70			49.45			50.51		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.26											
Intersection LOS	D											
Intersection V/C	0.561											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.010	2.938	2.983	2.712
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	783	633	533
d_b, Bicycle Delay [s]	21.60	22.20	28.02	32.27
l_b,int, Bicycle LOS Score for Intersection	2.455	2.465	2.569	2.074
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	62.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.858

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	46	3	492	3	0	1	0	791	45	140	261	2
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	35	0	61	0	0	0	0	29	0	90	64	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	3	612	3	0	1	0	915	50	247	356	2
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	23	1	161	1	0	0	0	241	13	65	94	1
Total Analysis Volume [veh/h]	92	3	644	3	0	1	0	963	53	260	375	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	52	0	9	52	0	9	37	0	22	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	57	57	52	57	0	33	33	18	51	51
g / C, Green / Cycle	0.47	0.47	0.43	0.47	0.00	0.27	0.27	0.15	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.42	0.00	0.00	0.28	0.03	0.15	0.10	0.10
s, saturation flow rate [veh/h]	1439	1484	1530	839	1714	3427	1530	1714	1800	1797
c, Capacity [veh/h]	708	816	660	486	0	938	419	265	771	769
d1, Uniform Delay [s]	17.35	17.29	33.49	16.86	0.00	43.58	32.79	50.53	21.91	21.91
k, delay calibration	0.13	0.17	0.45	0.11	0.11	0.50	0.50	0.16	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.05	27.69	0.01	0.00	36.36	0.62	26.98	0.75	0.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.06	0.98	0.01	0.00	1.03	0.13	0.98	0.24	0.24
d, Delay for Lane Group [s/veh]	17.40	17.34	61.19	16.87	0.00	79.94	33.41	77.51	22.66	22.67
Lane Group LOS	B	B	E	B	A	F	C	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.69	0.78	22.94	0.06	0.00	18.49	1.24	9.75	3.57	3.56
50th-Percentile Queue Length [ft/ln]	17.14	19.53	573.5	1.50	0.00	462.3	31.05	243.6	89.23	89.09
95th-Percentile Queue Length [veh/ln]	1.23	1.41	30.80	0.11	0.00	25.97	2.24	14.87	6.42	6.41
95th-Percentile Queue Length [ft/ln]	30.86	35.16	769.9	2.70	0.00	649.2	55.88	371.6	160.6	160.3

Movement, Approach, & Intersection Results

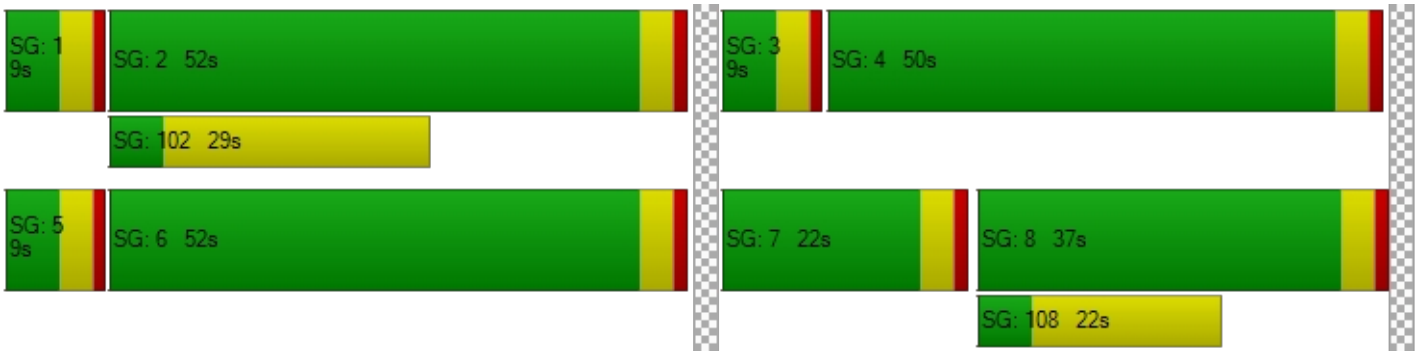
d_M, Delay for Movement [s/veh]	17.40	17.34	61.19	16.87	16.87	16.87	0.00	79.94	33.41	77.51	22.66	22.67
Movement LOS	B	B	E	B	B	B	A	F	C	E	C	C
d_A, Approach Delay [s/veh]	55.55			16.87			77.51			45.05		
Approach LOS	E			B			E			D		
d_I, Intersection Delay [s/veh]	62.01											
Intersection LOS	E											
Intersection V/C	0.858											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.520	0.000	2.951	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	950	550	767
d_b, Bicycle Delay [s]	16.54	16.54	31.54	22.82
l_b,int, Bicycle LOS Score for Intersection	2.779	1.566	2.398	2.085
Bicycle LOS	C	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.209

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	1295	400	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.0000	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	153	0	82	1	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	153	0	1532	449	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	40	0	403	118	0
Total Analysis Volume [veh/h]	0	161	0	1613	473	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.21	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	28.68	10.90	8.32	0.00	0.00	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.78	0.78	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	19.59	19.59	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.90		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.78					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	48.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.814

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	1021	140	76	775	225	468	667	302	75	184	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	130	0	10	159	1	82	0	0	0	0	18
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	1274	157	95	1027	253	606	747	338	84	206	83
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	335	41	25	270	67	159	197	89	22	54	22
Total Analysis Volume [veh/h]	77	1341	165	100	1081	266	638	786	356	88	217	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	28	0	11	30	30	45	55	0	26	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	43	43	7	45	90	41	46	8	13	13
g / C, Green / Cycle	0.04	0.36	0.36	0.06	0.37	0.75	0.34	0.39	0.07	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.04	0.29	0.29	0.06	0.22	0.17	0.37	0.23	0.05	0.09	0.09
s, saturation flow rate [veh/h]	1714	3427	1701	1714	4903	1530	1714	3427	1714	1800	1630
c, Capacity [veh/h]	71	1217	604	100	1823	1142	586	1327	113	201	182
d1, Uniform Delay [s]	57.50	35.33	35.34	56.50	30.38	4.66	39.50	29.23	55.17	51.88	52.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	71.86	6.52	12.33	41.83	1.43	0.48	63.79	0.42	10.85	6.49	8.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.83	0.83	1.00	0.59	0.23	1.09	0.59	0.78	0.78	0.81
d, Delay for Lane Group [s/veh]	129.3	41.86	47.66	98.33	31.81	5.14	103.29	29.65	66.03	58.36	60.29
Lane Group LOS	F	D	D	F	C	A	F	C	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.59	14.35	15.22	4.19	8.58	1.93	27.34	9.02	2.96	4.96	4.74
50th-Percentile Queue Length [ft/ln]	89.79	358.6	380.4	104.7	214.4	48.34	683.39	225.57	74.09	124.0	118.5
95th-Percentile Queue Length [veh/ln]	6.47	20.56	21.62	7.54	13.38	3.48	38.03	13.95	5.33	8.61	8.31
95th-Percentile Queue Length [ft/ln]	161.6	513.9	540.4	188.5	334.5	87.00	950.72	348.73	133.3	215.3	207.7

Movement, Approach, & Intersection Results

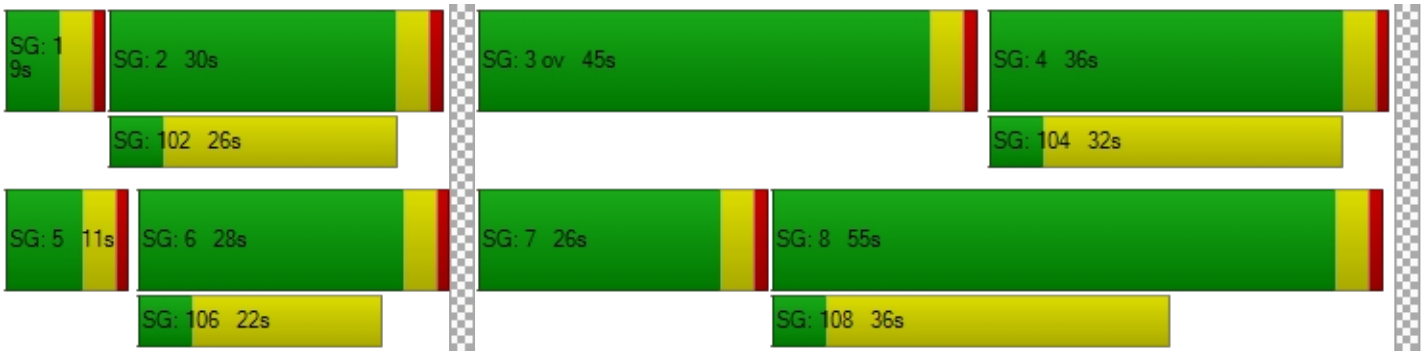
d_M, Delay for Movement [s/veh]	129.3	43.31	47.66	98.33	31.81	5.14	103.2	29.65	0.00	66.03	58.90	60.29
Movement LOS	F	D	D	F	C	A	F	C		E	E	E
d_A, Approach Delay [s/veh]	47.95			31.50			62.64			60.81		
Approach LOS	D			C			E			E		
d_I, Intersection Delay [s/veh]	48.40											
Intersection LOS	D											
Intersection V/C	0.814											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.163	3.169	2.791	2.596
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	433	850	533
d_b, Bicycle Delay [s]	38.40	36.82	19.84	32.27
l_b,int, Bicycle LOS Score for Intersection	2.430	2.355	2.734	1.883
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.516

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	17	158	25	39	100	35	68	546	12	13	227	35
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	1	0	0	0	5	0	0	10	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	177	28	45	112	39	76	617	13	15	264	39
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	47	7	12	29	10	20	162	3	4	69	10
Total Analysis Volume [veh/h]	20	186	29	47	118	41	80	649	14	16	278	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	23	0	0	23	0	81	88	0	9	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	59	59	7	47	2	42	42
g / C, Green / Cycle	0.49	0.49	0.06	0.39	0.02	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.14	0.13	0.05	0.37	0.01	0.15	0.03
s, saturation flow rate [veh/h]	1720	1590	1714	1793	1714	1800	1530
c, Capacity [veh/h]	881	821	105	698	30	622	528
d1, Uniform Delay [s]	17.78	17.48	55.46	35.49	58.49	30.40	26.42
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.74	0.73	10.73	7.79	14.32	0.50	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.25	0.76	0.95	0.54	0.45	0.08
d, Delay for Lane Group [s/veh]	18.52	18.21	66.19	43.28	72.81	30.91	26.48
Lane Group LOS	B	B	E	D	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.98	3.44	2.70	19.89	0.60	6.30	0.81
50th-Percentile Queue Length [ft/ln]	99.48	85.99	67.48	497.17	15.01	157.6	20.14
95th-Percentile Queue Length [veh/ln]	7.16	6.19	4.86	27.20	1.08	10.42	1.45
95th-Percentile Queue Length [ft/ln]	179.06	154.79	121.46	680.01	27.03	260.5	36.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.52	18.52	18.52	18.21	18.21	18.21	66.19	43.28	43.28	72.81	30.91	26.48
Movement LOS	B	B	B	B	B	B	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	18.52			18.21			45.75			32.37		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	34.85											
Intersection LOS	C											
Intersection V/C	0.516											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	1.917	1.980	2.439	0.000
Crosswalk LOS	A	A	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	1400	200
d_b, Bicycle Delay [s]	42.50	42.50	5.40	48.60
l_b,int, Bicycle LOS Score for Intersection	1.947	1.900	2.786	2.112
Bicycle LOS	A	A	C	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.498

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	5	19	54	26	3	0	14	23	8	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	9	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	30	60	29	3	0	16	26	9	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	8	16	8	1	0	4	7	2	3
Total Analysis Volume [veh/h]	6	32	63	31	3	0	17	27	9	14
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	11	11
g / C, Green / Cycle	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.08	0.04
s, saturation flow rate [veh/h]	1676	1604
c, Capacity [veh/h]	198	191
d1, Uniform Delay [s]	53.25	51.11
k, delay calibration	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	4.05	1.10
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.35
d, Delay for Lane Group [s/veh]	57.31	52.21
Lane Group LOS	E	D
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	4.22	1.96
50th-Percentile Queue Length [ft/ln]	105.58	49.03
95th-Percentile Queue Length [veh/ln]	7.59	3.53
95th-Percentile Queue Length [ft/ln]	189.83	88.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.31	57.31	57.31	57.31	57.31	52.21	52.21	52.21	52.21	52.21
Movement LOS	E	E	E	E	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	57.31					52.21				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	28.22									
Intersection LOS	C									
Intersection V/C	0.498									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.867	1.991
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250
d_b, Bicycle Delay [s]	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.725	1.619
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	8	128	402	18	1	6	12	184	18	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	6	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	143	450	26	1	7	13	207	20	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	38	118	7	0	2	3	54	5	3
Total Analysis Volume [veh/h]	9	151	474	27	1	7	14	218	21	11
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	63	0	0	9	0	63	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	79	72	79	69	69
g / C, Green / Cycle	0.66	0.60	0.66	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.13	0.28	0.02	0.12	0.02
s, saturation flow rate [veh/h]	1207	1782	957	1800	1530
c, Capacity [veh/h]	807	1074	563	1029	875
d1, Uniform Delay [s]	8.07	13.21	8.90	12.52	11.24
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.55	1.46	0.03	0.47	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.47	0.04	0.21	0.04
d, Delay for Lane Group [s/veh]	8.62	14.67	8.93	12.99	11.32
Lane Group LOS	A	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.63	7.67	0.19	2.96	0.39
50th-Percentile Queue Length [ft/ln]	40.71	191.70	4.64	73.93	9.77
95th-Percentile Queue Length [veh/ln]	2.93	12.21	0.33	5.32	0.70
95th-Percentile Queue Length [ft/ln]	73.28	305.24	8.35	133.07	17.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.62	8.62	14.67	14.67	14.67	8.93	8.93	12.99	11.32	11.32
Movement LOS	A	A	B	B	B	A	A	B	B	B
d_A, Approach Delay [s/veh]	13.21					12.48				
Approach LOS	B					B				
d_I, Intersection Delay [s/veh]	28.22									
Intersection LOS	C									
Intersection V/C	0.498									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.375	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	983
d_b, Bicycle Delay [s]	15.50	15.50
l_b,int, Bicycle LOS Score for Intersection	2.401	1.966
Bicycle LOS	B	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	7	16	152	12	4	4	7	52	62	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	18	170	13	4	4	8	58	69	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	5	45	3	1	1	2	15	18	1
Total Analysis Volume [veh/h]	8	19	179	14	4	4	8	61	73	2
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	29	0	0	0	0	29	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	18	18
g / C, Green / Cycle	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.13	0.04	0.05
s, saturation flow rate [veh/h]	1707	1652	1530
c, Capacity [veh/h]	285	278	225
d1, Uniform Delay [s]	50.14	45.48	45.89
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	4.78	0.50	0.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.26	0.33
d, Delay for Lane Group [s/veh]	54.92	45.98	46.75
Lane Group LOS	D	D	D
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.96	1.98	2.07
50th-Percentile Queue Length [ft/ln]	174.00	49.54	51.70
95th-Percentile Queue Length [veh/ln]	11.29	3.57	3.72
95th-Percentile Queue Length [ft/ln]	282.17	89.17	93.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.92	54.92	54.92	54.92	54.92	45.98	45.98	45.98	46.75	46.75
Movement LOS	D	D	D	D	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	54.92					46.37				
Approach LOS	D					D				
d_I, Intersection Delay [s/veh]	28.22									
Intersection LOS	C									
Intersection V/C	0.498									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.956	2.283
Crosswalk LOS	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	417
d_b, Bicycle Delay [s]	37.60	37.60
l_b,int, Bicycle LOS Score for Intersection	1.875	1.794
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	31.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.538

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	173	956	47	48	575	25	53	305	64	44	212	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	37	0	10	50	0	0	0	0	0	1	12
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	194	1108	53	64	694	28	59	342	72	49	238	92
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	292	14	17	183	7	16	90	19	13	63	24
Total Analysis Volume [veh/h]	204	1166	56	67	731	29	62	360	76	52	251	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	38	67	0	15	44	0	12	28	0	10	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	76	76	6	65	65	6	17	17	5	17	17
g / C, Green / Cycle	0.14	0.63	0.63	0.05	0.55	0.55	0.05	0.15	0.15	0.04	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.12	0.34	0.34	0.04	0.21	0.21	0.04	0.12	0.13	0.03	0.10	0.10
s, saturation flow rate [veh/h]	1714	1800	1771	1714	1800	1776	1714	1800	1693	1714	1800	1634
c, Capacity [veh/h]	236	1138	1119	86	980	967	79	263	247	66	249	226
d1, Uniform Delay [s]	50.66	12.34	12.37	56.33	15.80	15.80	56.63	49.96	50.06	57.19	49.48	49.66
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.21	1.85	1.89	13.99	1.17	1.19	15.34	7.52	8.62	18.04	3.91	4.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.54	0.54	0.78	0.39	0.39	0.78	0.85	0.86	0.78	0.72	0.74
d, Delay for Lane Group [s/veh]	59.87	14.19	14.26	70.32	16.97	16.99	71.97	57.49	58.68	75.22	53.39	54.48
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.60	9.33	9.24	2.34	6.28	6.20	2.20	7.07	6.82	1.90	5.43	5.15
50th-Percentile Queue Length [ft/ln]	164.9	233.2	230.9	58.53	156.9	155.0	54.93	176.6	170.5	47.40	135.6	128.8
95th-Percentile Queue Length [veh/ln]	10.81	14.34	14.22	4.21	10.39	10.28	3.96	11.43	11.11	3.41	9.25	8.88
95th-Percentile Queue Length [ft/ln]	270.2	358.4	355.6	105.3	259.6	257.1	98.88	285.6	277.6	85.32	231.1	221.9

Movement, Approach, & Intersection Results

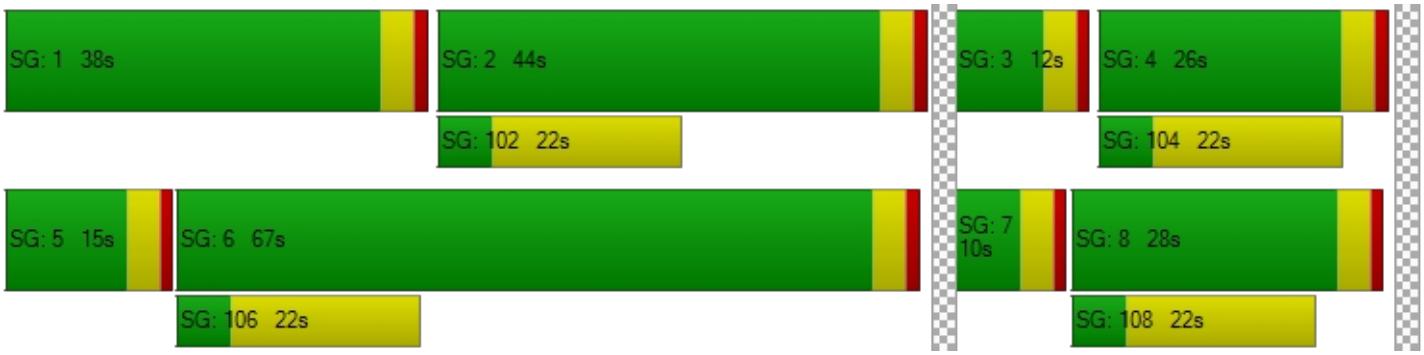
d_M, Delay for Movement [s/veh]	59.87	14.22	14.26	70.32	16.98	16.99	71.97	57.94	58.68	75.22	53.70	54.48
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	20.75			21.30			59.80			56.69		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	31.63											
Intersection LOS	C											
Intersection V/C	0.538											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.761	2.735	2.507	2.612
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	667	400	367
d_b, Bicycle Delay [s]	13.54	26.67	38.40	40.02
l_b,int, Bicycle LOS Score for Intersection	2.736	2.242	1.970	1.890
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	42.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	182	958	368	67	880	54	92	340	135	232	281	75
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	2	21	0	4	21	0	0	1	3	0	2	6
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	206	1094	412	79	1007	60	103	382	154	260	317	90
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	54	288	108	21	265	16	27	101	41	68	83	24
Total Analysis Volume [veh/h]	217	1152	434	83	1060	63	108	402	162	274	334	95
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	44	0	11	34	0	18	41	0	24	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	54	54	7	44	44	9	23	23	20	33	33
g / C, Green / Cycle	0.14	0.45	0.45	0.06	0.37	0.37	0.08	0.19	0.19	0.17	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.13	0.34	0.28	0.05	0.31	0.04	0.06	0.16	0.17	0.16	0.12	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1627	1714	1800	1665
c, Capacity [veh/h]	242	1550	692	100	1267	566	134	341	308	286	500	463
d1, Uniform Delay [s]	50.68	27.10	25.12	55.91	34.52	24.87	54.43	47.16	47.25	49.59	35.69	35.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.19	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.28	3.26	4.26	15.75	6.68	0.40	10.84	6.81	8.13	23.88	0.62	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.74	0.63	0.83	0.84	0.11	0.81	0.87	0.87	0.96	0.44	0.45
d, Delay for Lane Group [s/veh]	61.96	30.37	29.38	71.66	41.19	25.26	65.27	53.97	55.38	73.48	36.31	36.40
Lane Group LOS	E	C	C	E	D	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.15	14.02	10.12	2.92	15.07	1.25	3.61	9.17	8.49	10.01	5.46	5.09
50th-Percentile Queue Length [ft/ln]	178.8	350.4	252.9	73.09	376.6	31.30	90.36	229.1	212.1	250.3	136.5	127.2
95th-Percentile Queue Length [veh/ln]	11.54	20.16	15.33	5.26	21.43	2.25	6.51	14.13	13.26	15.20	9.29	8.79
95th-Percentile Queue Length [ft/ln]	288.5	503.9	383.3	131.5	535.7	56.34	162.6	353.3	331.5	380.0	232.3	219.7

Movement, Approach, & Intersection Results

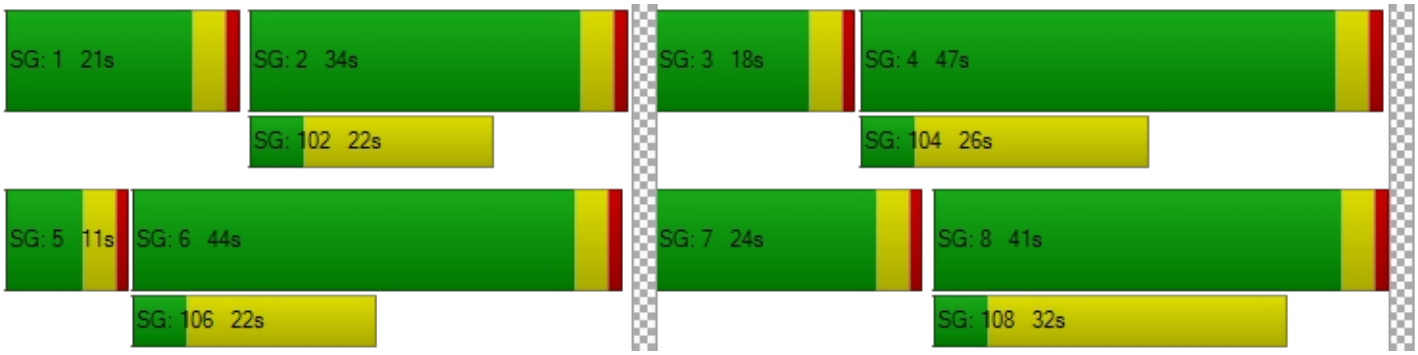
d_M, Delay for Movement [s/veh]	61.96	30.37	29.38	71.66	41.19	25.26	65.27	54.35	55.38	73.48	36.34	36.40
Movement LOS	E	C	C	E	D	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	33.93			42.46			56.35			50.82		
Approach LOS	C			D			E			D		
d_I, Intersection Delay [s/veh]	42.42											
Intersection LOS	D											
Intersection V/C	0.761											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.143	2.884	2.566	2.631
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	500	617	717
d_b, Bicycle Delay [s]	26.67	33.75	28.70	24.70
l_b,int, Bicycle LOS Score for Intersection	3.047	2.555	2.114	2.140
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.362

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	164	64	4	101	23	42	130	1	7	77	12
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	184	72	4	113	26	47	146	1	8	86	13
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	48	19	1	30	7	12	38	0	2	23	3
Total Analysis Volume [veh/h]	0	194	76	4	119	27	49	154	1	8	91	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	746	711	677	611	700
Degree of Utilization, x	0.36	0.21	0.30	0.16	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.66	0.79	1.27	0.58	0.06
95th-Percentile Queue Length [ft]	41.42	19.82	31.66	14.38	1.53
Approach Delay [s/veh]	10.54	9.41	10.59	9.51	
Approach LOS	B	A	B	A	
Intersection Delay [s/veh]	10.17				
Intersection LOS	B				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	35.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.624

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	257	937	121	64	940	30	75	256	340	136	91	88
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	16	0	0	11	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	1065	136	72	1064	34	84	287	381	152	102	99
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	76	280	36	19	280	9	22	76	100	40	27	26
Total Analysis Volume [veh/h]	303	1121	143	76	1120	36	88	302	401	160	107	104
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	38	0	11	33	0	19	60	0	11	52	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	56	56	7	51	51	8	34	34	7	33	33
g / C, Green / Cycle	0.10	0.47	0.47	0.06	0.42	0.42	0.06	0.29	0.29	0.06	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.09	0.25	0.25	0.04	0.22	0.22	0.05	0.09	0.26	0.05	0.03	0.07
s, saturation flow rate [veh/h]	3329	3427	1698	1714	3427	1771	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	333	1599	792	96	1447	748	113	981	438	194	955	426
d1, Uniform Delay [s]	53.47	22.67	22.67	55.98	25.76	25.76	55.20	33.53	41.44	55.89	32.22	33.49
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.14	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.57	1.26	2.52	13.76	1.37	2.65	11.04	0.18	10.02	8.46	0.05	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.53	0.53	0.80	0.53	0.53	0.78	0.31	0.92	0.82	0.11	0.24
d, Delay for Lane Group [s/veh]	63.03	23.92	25.19	69.74	27.13	28.40	66.25	33.71	51.46	64.36	32.28	33.79
Lane Group LOS	E	C	C	E	C	C	E	C	D	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.96	8.63	8.83	2.64	8.29	8.84	2.97	3.49	12.59	2.62	1.17	2.39
50th-Percentile Queue Length [ft/ln]	124.0	215.6	220.7	65.98	207.2	220.9	74.24	87.23	314.7	65.60	29.37	59.87
95th-Percentile Queue Length [veh/ln]	8.61	13.44	13.70	4.75	13.01	13.72	5.34	6.28	18.41	4.72	2.11	4.31
95th-Percentile Queue Length [ft/ln]	215.3	336.1	342.5	118.7	325.3	342.8	133.6	157.0	460.2	118.0	52.86	107.7

Movement, Approach, & Intersection Results

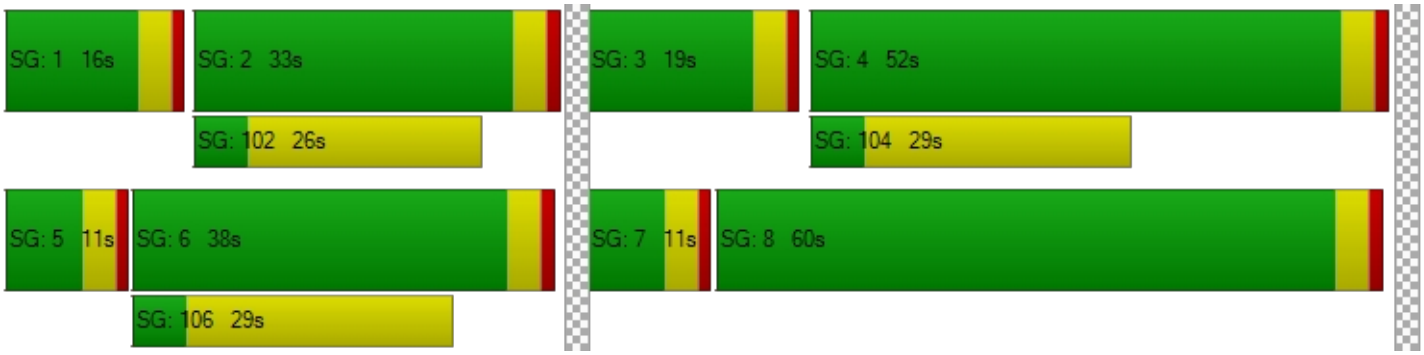
d_M, Delay for Movement [s/veh]	63.03	24.24	25.19	69.74	27.54	28.40	66.25	33.71	51.46	64.36	32.28	33.79
Movement LOS	E	C	C	E	C	C	E	C	D	E	C	C
d_A, Approach Delay [s/veh]	31.82			30.17			46.33			46.53		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.58											
Intersection LOS	D											
Intersection V/C	0.624											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.964	2.669	2.733
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	483	933	800
d_b, Bicycle Delay [s]	30.82	34.50	17.07	21.60
l_b,int, Bicycle LOS Score for Intersection	2.421	2.237	2.212	1.866
Bicycle LOS	B	B	B	A

Sequence

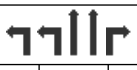
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	61.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.933

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	32	371	673	11	254	25	40	443	23	718	443	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	96	0	0	90	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	512	754	12	374	28	45	496	26	804	496	80
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	135	198	3	98	7	12	131	7	212	131	21
Total Analysis Volume [veh/h]	38	539	794	13	394	29	47	522	27	846	522	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	56	0	9	44	0	13	22	0	33	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	55	55	2	53	53	4	18	18	29	43	43
g / C, Green / Cycle	0.03	0.46	0.46	0.01	0.44	0.44	0.03	0.15	0.15	0.24	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.01	0.30	0.52	0.01	0.12	0.12	0.03	0.15	0.02	0.25	0.15	0.05
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1757	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	103	828	704	25	800	781	60	514	230	805	1222	546
d1, Uniform Delay [s]	57.01	24.96	32.39	58.67	21.03	21.05	57.44	51.00	44.13	45.50	29.30	26.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.22	3.95	74.86	14.89	0.82	0.85	19.32	22.38	0.23	30.65	0.24	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.65	1.13	0.51	0.27	0.27	0.78	1.02	0.12	1.05	0.43	0.15
d, Delay for Lane Group [s/veh]	59.23	28.91	107.2	73.57	21.84	21.89	76.75	73.38	44.35	76.15	29.54	26.41
Lane Group LOS	E	C	F	E	C	C	E	F	D	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.60	12.53	34.34	0.50	3.96	3.90	1.74	9.29	0.71	15.30	5.75	1.67
50th-Percentile Queue Length [ft/ln]	14.93	313.3	858.5	12.45	99.06	97.62	43.45	232.3	17.85	382.6	143.8	41.73
95th-Percentile Queue Length [veh/ln]	1.08	18.34	48.00	0.90	7.13	7.03	3.13	14.40	1.28	22.35	9.69	3.00
95th-Percentile Queue Length [ft/ln]	26.88	458.4	1200.	22.40	178.3	175.7	78.20	359.8	32.12	558.8	242.2	75.11

Movement, Approach, & Intersection Results

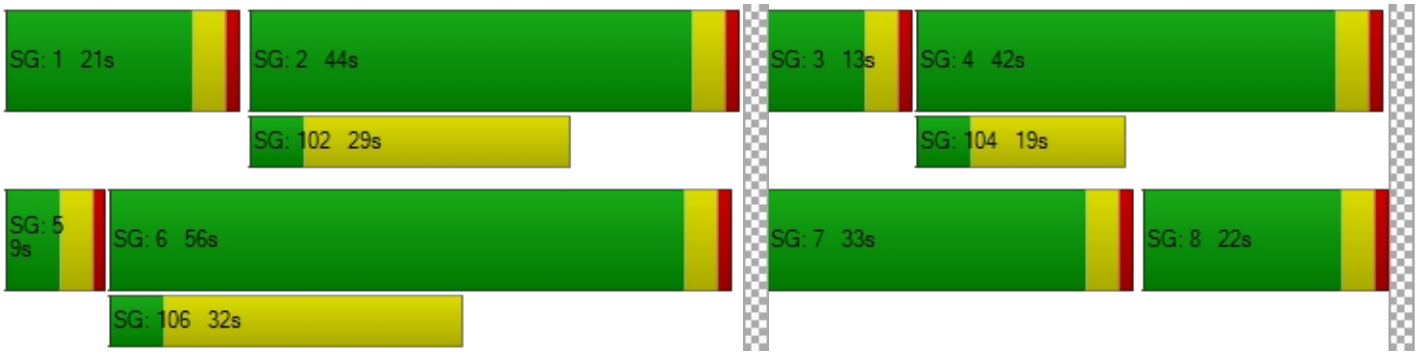
d_M, Delay for Movement [s/veh]	59.23	28.91	107.2	73.57	21.87	21.89	76.75	73.38	44.35	76.15	29.54	26.41
Movement LOS	E	C	F	E	C	C	E	F	D	F	C	C
d_A, Approach Delay [s/veh]	75.12			23.41			72.33			56.52		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	61.83											
Intersection LOS	E											
Intersection V/C	0.933											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.416	2.774	3.080
Crosswalk LOS	F	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	667	300	633
d_b, Bicycle Delay [s]	19.27	26.67	43.35	28.02
l_b,int, Bicycle LOS Score for Intersection	3.822	1.919	2.051	2.758
Bicycle LOS	D	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	53.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.966

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	247	951	696	98	948	67	178	452	354	395	240	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	129	0	2	157	0	0	0	0	0	0	1
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	277	1194	780	112	1219	75	199	506	396	442	269	93
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	73	314	205	29	321	20	52	133	104	116	71	24
Total Analysis Volume [veh/h]	292	1257	821	118	1283	79	209	533	417	465	283	98
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	20	51	0	11	42	0	22	40	40	18	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	61	61	7	52	52	10	22	42	14	27	27
g / C, Green / Cycle	0.13	0.50	0.50	0.06	0.43	0.43	0.08	0.19	0.35	0.12	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.09	0.37	0.54	0.07	0.26	0.05	0.06	0.16	0.27	0.14	0.11	0.11
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1644
c, Capacity [veh/h]	444	1728	771	100	2104	657	275	643	542	388	399	364
d1, Uniform Delay [s]	49.40	23.30	29.75	56.50	26.48	20.62	53.88	46.90	34.40	53.00	40.88	40.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.67	2.72	50.94	101.3	1.33	0.37	4.30	2.83	10.10	94.46	0.97	1.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.73	1.06	1.18	0.61	0.12	0.76	0.83	0.77	1.20	0.50	0.50
d, Delay for Lane Group [s/veh]	51.07	26.02	80.69	157.8	27.81	20.99	58.18	49.73	44.50	147.4	41.84	41.94
Lane Group LOS	D	C	F	F	C	C	E	D	D	F	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.26	14.17	32.10	5.84	9.60	1.41	3.26	7.90	12.22	10.93	5.27	4.83
50th-Percentile Queue Length [ft/ln]	106.6	354.2	802.4	146.0	239.8	35.28	81.38	197.4	305.5	273.3	131.6	120.6
95th-Percentile Queue Length [veh/ln]	7.65	20.34	43.48	10.27	14.68	2.54	5.86	12.51	17.96	17.54	9.03	8.43
95th-Percentile Queue Length [ft/ln]	191.2	508.6	1087.	256.8	366.8	63.50	146.4	312.6	448.8	438.5	225.7	210.7

Movement, Approach, & Intersection Results

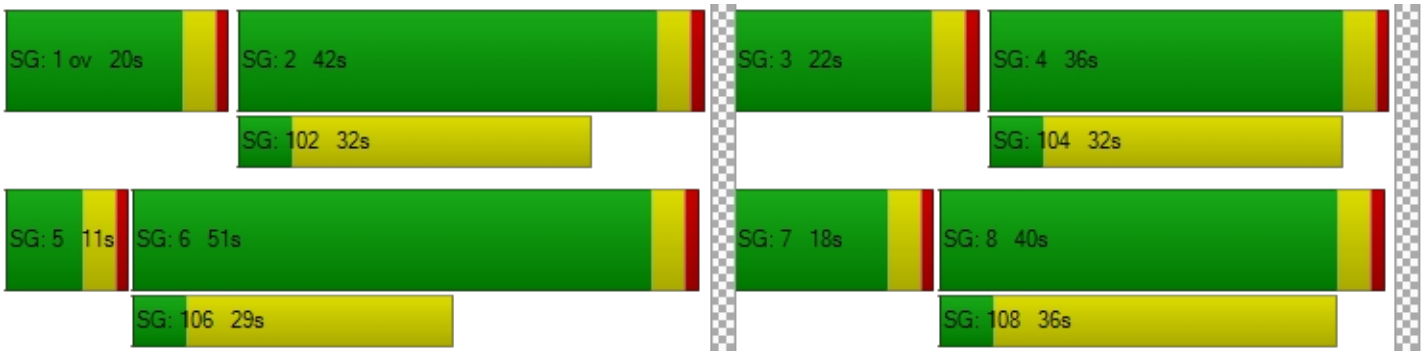
d_M, Delay for Movement [s/veh]	51.07	26.02	80.69	157.8	27.81	20.99	58.18	49.73	44.50	147.4	41.87	41.94
Movement LOS	D	C	F	F	C	C	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	48.04			37.82			49.37			99.92		
Approach LOS	D			D			D			F		
d_I, Intersection Delay [s/veh]	53.22											
Intersection LOS	D											
Intersection V/C	0.966											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.356	3.112	2.962	2.932
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	633	600	533
d_b, Bicycle Delay [s]	22.20	28.02	29.40	32.27
l_b,int, Bicycle LOS Score for Intersection	3.515	2.374	2.516	2.258
Bicycle LOS	D	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	16.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	15	5	4	23	3	46	4	21	43	157	1081	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	2	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	6	4	26	3	52	4	24	48	176	1213	17
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	4	2	1	7	1	14	1	6	13	46	319	4
Total Analysis Volume [veh/h]	18	6	4	27	3	55	4	25	51	185	1277	18
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	Permi
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	88	82	82
g / C, Green / Cycle	0.07	0.07	0.73	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.03	0.06	0.27	0.36	0.36
s, saturation flow rate [veh/h]	1655	1446	885	1800	1791
c, Capacity [veh/h]	157	153	657	1229	1223
d1, Uniform Delay [s]	53.59	55.08	5.93	9.45	9.46
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.33	3.33	1.53	1.63	1.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.57	0.36	0.53	0.53
d, Delay for Lane Group [s/veh]	54.91	58.41	7.46	11.08	11.10
Lane Group LOS	D	E	A	B	B
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.65	2.74	1.95	8.35	8.34
50th-Percentile Queue Length [ft/ln]	41.36	68.46	48.84	208.83	208.41
95th-Percentile Queue Length [veh/ln]	2.98	4.93	3.52	13.09	13.07
95th-Percentile Queue Length [ft/ln]	74.45	123.23	87.92	327.32	326.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.91	54.91	54.91	54.91	58.41	58.41	58.41	58.41	7.46	7.46	11.09	11.10
Movement LOS	D	D	D	D	E	E	E	E	A	A	B	B
d_A, Approach Delay [s/veh]	54.91				58.41				10.53			
Approach LOS	D				E				B			
d_I, Intersection Delay [s/veh]	16.05											
Intersection LOS	B											
Intersection V/C	0.509											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.777	0.000	2.861
Crosswalk LOS	A	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	467
d_b, Bicycle Delay [s]	45.94	45.94	35.27
l_b,int, Bicycle LOS Score for Intersection	1.606	1.612	2.670
Bicycle LOS	A	A	B

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	10	487	53	23	5	6	94	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	1	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	546	59	26	6	7	105	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	144	16	7	2	2	28	1
Total Analysis Volume [veh/h]	12	575	62	27	6	7	111	2
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	32	0	0	0	60	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	76	76	76	12
g / C, Green / Cycle	0.01	0.63	0.63	0.63	0.10
(v / s)_i Volume / Saturation Flow Rate	0.01	0.13	0.19	0.06	0.08
s, saturation flow rate [veh/h]	1714	1800	1800	1530	1551
c, Capacity [veh/h]	24	1141	1141	970	154
d1, Uniform Delay [s]	58.75	9.24	9.94	8.54	52.99
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.32	0.40	0.68	0.19	10.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.20	0.30	0.09	0.82
d, Delay for Lane Group [s/veh]	74.06	9.64	10.62	8.73	63.15
Lane Group LOS	E	A	B	A	E
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.46	2.60	4.16	0.93	4.16
50th-Percentile Queue Length [ft/ln]	11.60	65.11	103.89	23.24	104.01
95th-Percentile Queue Length [veh/ln]	0.84	4.69	7.48	1.67	7.49
95th-Percentile Queue Length [ft/ln]	20.89	117.21	187.01	41.82	187.21

Movement, Approach, & Intersection Results

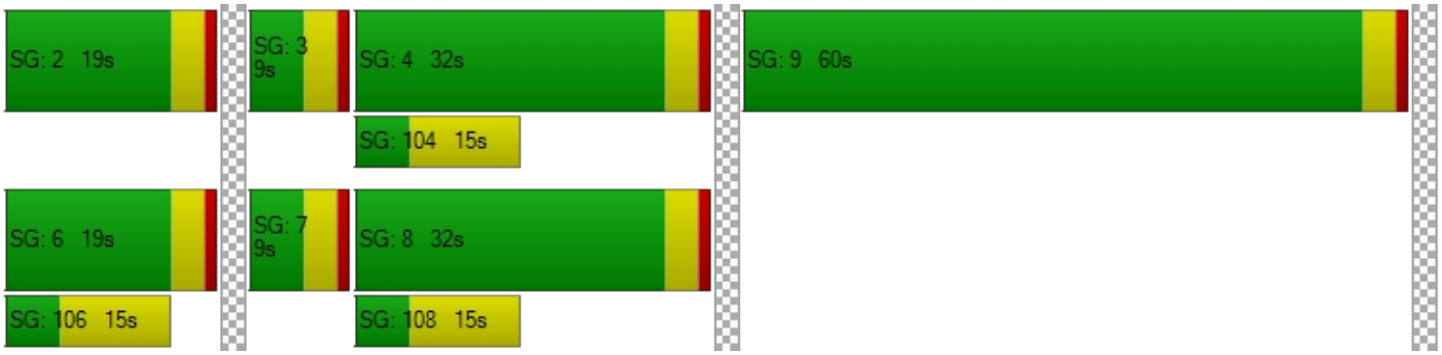
d_M, Delay for Movement [s/veh]	74.06	10.22	10.62	8.73	63.15	63.15	63.15	63.15
Movement LOS	E	B	B	A	E	E	E	E
d_A, Approach Delay [s/veh]	11.16				63.15			
Approach LOS	B				E			
d_I, Intersection Delay [s/veh]	16.05							
Intersection LOS	B							
Intersection V/C	0.509							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.199
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	933
d_b, Bicycle Delay [s]	35.27	17.07
l_b,int, Bicycle LOS Score for Intersection	2.095	1.764
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	369.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.411

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	4	2	18	74	0	20	117	1003	7	7	509	125
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	2	0	0	1	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	2	20	83	0	22	131	1125	8	8	571	140
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	1	5	22	0	6	34	296	2	2	150	37
Total Analysis Volume [veh/h]	4	2	21	87	0	23	138	1184	8	8	601	147
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

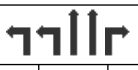
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.06	0.05	1.41	0.00	0.04	0.16	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	92.08	110.5	18.95	369.4	401.0	10.94	9.92	0.00	0.00	11.16	0.00	0.00
Movement LOS	F	F	C	F	F	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.68	0.68	0.68	7.51	7.51	0.11	0.56	0.00	0.00	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	17.00	17.00	17.00	187.7	187.7	2.84	14.06	0.00	0.00	1.03	0.00	0.00
d_A, Approach Delay [s/veh]	36.57			294.51			1.03			0.12		
Approach LOS	E			F			A			A		
d_I, Intersection Delay [s/veh]	15.67											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	48.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	553	970	285	96	540	41	70	663	405	158	753	183
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	34	0	0	50	0	0	2	0	0	1	3
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	619	1120	319	108	655	46	78	745	454	177	844	208
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	163	295	84	28	172	12	21	196	119	47	222	55
Total Analysis Volume [veh/h]	652	1179	336	114	689	48	82	784	478	186	888	219
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	49	0	13	33	0	12	46	0	12	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	47	47	9	31	31	5	40	40	8	43	43
g / C, Green / Cycle	0.21	0.39	0.39	0.08	0.26	0.26	0.04	0.33	0.33	0.07	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.20	0.34	0.22	0.07	0.21	0.21	0.02	0.23	0.31	0.06	0.32	0.32
s, saturation flow rate [veh/h]	3329	3427	1530	1714	1800	1759	3329	3427	1530	3329	1800	1679
c, Capacity [veh/h]	694	1344	600	129	466	455	133	1141	509	222	647	604
d1, Uniform Delay [s]	46.76	33.79	28.40	54.99	41.56	41.56	56.71	34.63	38.85	55.36	36.03	36.15
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.38	0.11	0.35	0.35
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.99	8.31	3.75	17.59	13.42	13.72	4.63	0.75	22.79	8.16	11.84	13.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.88	0.56	0.89	0.80	0.80	0.62	0.69	0.94	0.84	0.88	0.89
d, Delay for Lane Group [s/veh]	53.75	42.09	32.15	72.59	54.98	55.28	61.34	35.38	61.64	63.51	47.87	49.41
Lane Group LOS	D	D	C	E	D	E	E	D	E	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.20	17.16	8.10	4.04	11.99	11.76	1.31	9.96	16.68	3.03	17.55	16.76
50th-Percentile Queue Length [ft/ln]	255.0	429.0	202.6	101.0	299.7	294.0	32.75	248.9	417.0	75.80	438.6	419.0
95th-Percentile Queue Length [veh/ln]	15.44	23.96	12.77	7.27	17.67	17.38	2.36	15.13	23.38	5.46	24.42	23.47
95th-Percentile Queue Length [ft/ln]	385.9	598.9	319.3	181.8	441.7	434.6	58.95	378.3	584.4	136.4	610.4	586.8

Movement, Approach, & Intersection Results

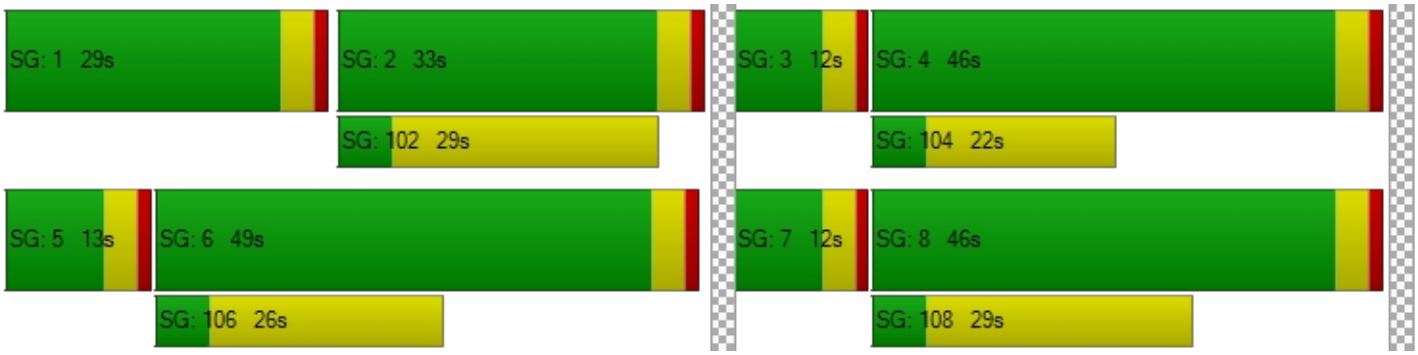
d_M, Delay for Movement [s/veh]	53.75	42.09	32.15	72.59	55.12	55.28	61.34	35.38	61.64	63.51	48.42	49.41
Movement LOS	D	D	C	E	E	E	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	44.06			57.47			46.30			50.76		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	48.14											
Intersection LOS	D											
Intersection V/C	0.779											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.099	2.770	3.018	3.049
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	483	700	700
d_b, Bicycle Delay [s]	23.44	34.50	25.35	25.35
l_b,int, Bicycle LOS Score for Intersection	3.347	2.262	2.668	2.626
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	60.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.910

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	236	1176	727	154	1201	87	267	863	219	633	638	106
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	4	15	0	5	18	0	0	0	2	0	0	8
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	268	1332	814	177	1363	97	299	967	247	709	715	127
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	71	351	214	47	359	26	79	254	65	187	188	33
Total Analysis Volume [veh/h]	282	1402	857	186	1435	102	315	1018	260	746	753	134
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	14	40	40	10	36	0	34	43	0	27	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	10	41	68	6	37	37	14	34	34	23	43	53
g / C, Green / Cycle	0.08	0.34	0.57	0.05	0.31	0.31	0.12	0.28	0.28	0.19	0.36	0.44
(v / s)_i Volume / Saturation Flow Rate	0.08	0.29	0.56	0.06	0.30	0.30	0.09	0.25	0.25	0.22	0.22	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1740	3329	3427	1619	3329	3427	2708
c, Capacity [veh/h]	277	1682	869	166	1061	539	389	966	456	638	1223	1192
d1, Uniform Delay [s]	55.00	36.26	25.45	57.00	40.69	40.71	51.68	41.42	41.44	48.50	31.82	19.79
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.30	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.30	5.02	27.34	69.69	19.54	30.27	4.05	3.31	15.54	80.11	0.51	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.02	0.83	0.99	1.12	0.96	0.96	0.81	0.90	0.90	1.17	0.62	0.11
d, Delay for Lane Group [s/veh]	84.30	41.28	52.79	126.6	60.23	70.98	55.73	44.73	56.97	128.6	32.33	19.83
Lane Group LOS	F	D	D	F	E	E	E	D	E	F	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.32	13.22	29.03	4.13	17.48	19.37	4.84	12.67	13.54	16.60	9.03	1.12
50th-Percentile Queue Length [ft/ln]	132.9	330.6	725.7	103.3	436.8	484.2	121.0	316.8	338.4	414.8	225.8	27.95
95th-Percentile Queue Length [veh/ln]	9.15	19.19	37.86	7.44	24.33	26.59	8.45	18.51	19.57	25.14	13.96	2.01
95th-Percentile Queue Length [ft/ln]	228.7	479.7	946.6	185.9	608.2	664.6	211.2	462.8	489.3	628.5	349.0	50.31

Movement, Approach, & Intersection Results

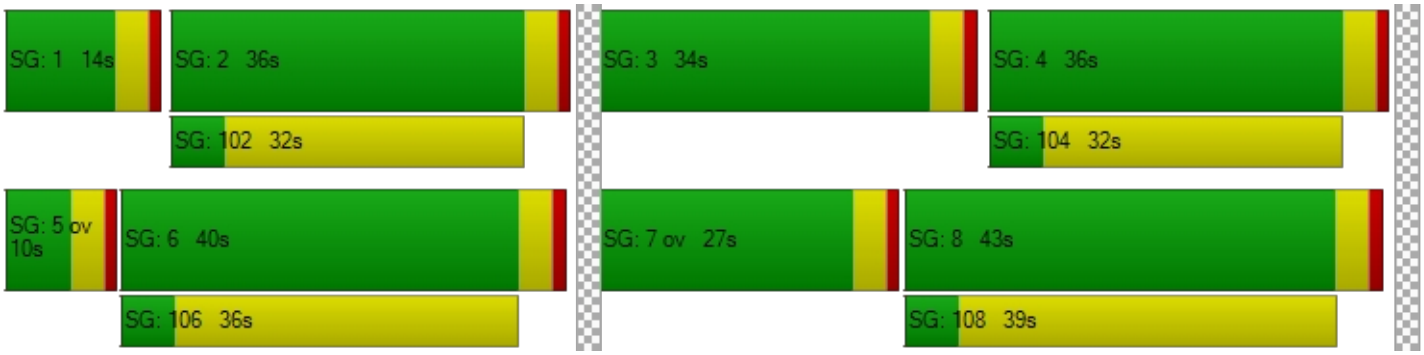
d_M, Delay for Movement [s/veh]	84.30	41.28	52.79	126.6	63.35	70.98	55.73	46.54	56.97	128.6	32.33	19.83
Movement LOS	F	D	D	F	E	E	E	D	E	F	C	B
d_A, Approach Delay [s/veh]	49.94			70.64			50.06			75.29		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	60.25											
Intersection LOS	E											
Intersection V/C	0.910											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.467	3.176	3.073	3.265
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	533	650	533
d_b, Bicycle Delay [s]	29.40	32.27	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.957	2.507	2.436	2.907
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.542

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	986	622	0	1033	422	0	0	0	347	0	432
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.000	1.120
In-Process Volume [veh/h]	0	16	0	0	5	6	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1120	622	0	1162	479	0	0	0	389	0	484
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	295	164	0	306	126	0	0	0	102	0	127
Total Analysis Volume [veh/h]	0	1179	655	0	1223	504	0	0	0	409	0	509
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	68	0	0	68	0	0	0	0	52	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	85	85		27	27	27
g / C, Green / Cycle	0.71	0.71		0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.34	0.25		0.18	0.19	0.20
s, saturation flow rate [veh/h]	3427	4903		1714	1585	1530
c, Capacity [veh/h]	2414	3453		393	363	351
d1, Uniform Delay [s]	8.00	6.99		43.54	44.15	44.44
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.29		3.60	5.24	6.33
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.35		0.79	0.84	0.86
d, Delay for Lane Group [s/veh]	8.71	7.28		47.15	49.39	50.77
Lane Group LOS	A	A		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.48	3.86		9.05	9.16	9.23
50th-Percentile Queue Length [ft/ln]	162.03	96.62		226.3	228.8	230.6
95th-Percentile Queue Length [veh/ln]	10.66	6.96		13.99	14.12	14.21
95th-Percentile Queue Length [ft/ln]	266.41	173.91		349.7	352.9	355.2

Movement, Approach, & Intersection Results

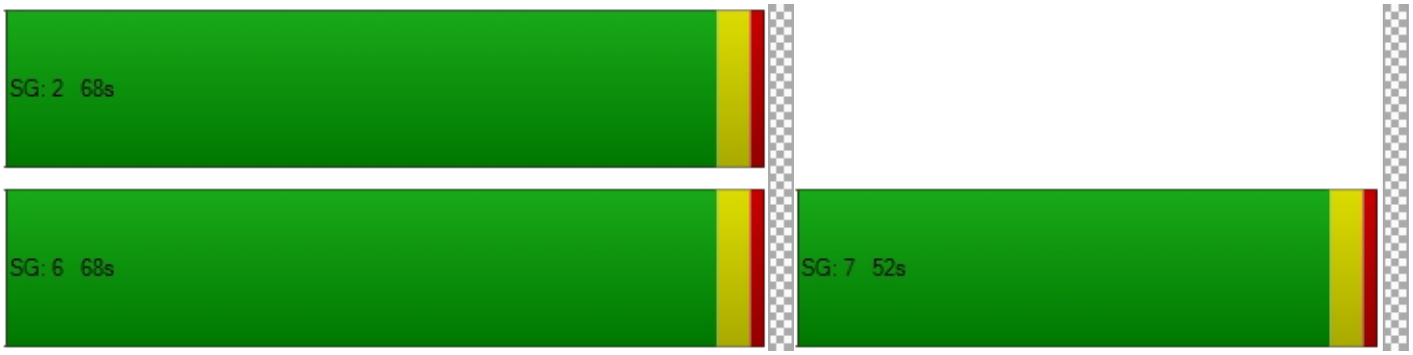
d_M, Delay for Movement [s/veh]	0.00	8.71	0.00	0.00	7.28	0.00	0.00	0.00	0.00	47.70	0.00	50.22
Movement LOS		A			A					D		D
d_A, Approach Delay [s/veh]	8.71			7.28			0.00			49.09		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	19.35											
Intersection LOS	B											
Intersection V/C	0.542											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1067	1067	0	800
d_b, Bicycle Delay [s]	13.07	13.07	60.00	21.60
l_b,int, Bicycle LOS Score for Intersection	2.532	2.232	4.132	3.074
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1339	389	0	1805	0	0	0	0	518	0	492
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.120	1.000	1.120	1.120	1.120	1.120	1.120	1.120	1.000	1.120
In-Process Volume [veh/h]	0	47	0	0	150	0	0	0	0	0	0	82
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1547	436	0	2172	0	0	0	0	580	0	633
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	0.950	0.950	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	407	115	0	572	0	0	0	0	153	0	167
Total Analysis Volume [veh/h]	0	1628	459	0	2286	0	0	0	0	611	0	666
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	19	0	0	19	0	0	0	0	101	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	56	56		56	56
g / C, Green / Cycle	0.47	0.47		0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.33	0.35		0.18	0.44
s, saturation flow rate [veh/h]	4903	6538		3329	1530
c, Capacity [veh/h]	2288	3050		1554	714
d1, Uniform Delay [s]	25.56	26.25		20.90	30.21
k, delay calibration	0.50	0.50		0.11	0.13
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	1.91	1.74		0.16	7.29
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.75		0.39	0.93
d, Delay for Lane Group [s/veh]	27.47	27.99		21.06	37.51
Lane Group LOS	C	C		C	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	12.49	13.45		5.61	19.03
50th-Percentile Queue Length [ft/ln]	312.37	336.13		140.31	475.67
95th-Percentile Queue Length [veh/ln]	18.29	19.46		9.50	26.18
95th-Percentile Queue Length [ft/ln]	457.30	486.47		237.44	654.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	27.47	0.00	0.00	27.99	0.00	0.00	0.00	0.00	21.06	0.00	37.51
Movement LOS		C			C					C		D
d_A, Approach Delay [s/veh]	27.47			27.99			0.00			29.64		
Approach LOS	C			C			A			C		
d_I, Intersection Delay [s/veh]	28.23											
Intersection LOS	C											
Intersection V/C	0.785											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	0	1617
d_b, Bicycle Delay [s]	45.94	45.94	60.00	2.20
l_b,int, Bicycle LOS Score for Intersection	2.455	2.503	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.549

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1075	256	0	892	474	0	0	0	240	0	498
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.000	1.120
In-Process Volume [veh/h]	0	8	0	0	50	0	0	0	0	0	0	26
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1212	256	0	1049	474	0	0	0	269	0	584
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	319	67	0	276	125	0	0	0	71	0	154
Total Analysis Volume [veh/h]	0	1276	269	0	1104	499	0	0	0	283	0	615
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	58	0	0	58	0	0	0	0	62	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	81	81		31	31
g / C, Green / Cycle	0.68	0.68		0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.26	0.32		0.17	0.23
s, saturation flow rate [veh/h]	4903	3427		1714	2708
c, Capacity [veh/h]	3309	2313		443	700
d1, Uniform Delay [s]	8.57	9.36		39.52	42.69
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.34	0.71		1.54	3.77
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.48		0.64	0.88
d, Delay for Lane Group [s/veh]	8.91	10.06		41.06	46.45
Lane Group LOS	A	B		D	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	4.66	6.68		7.60	9.06
50th-Percentile Queue Length [ft/ln]	116.54	167.04		189.98	226.59
95th-Percentile Queue Length [veh/ln]	8.20	10.92		12.12	14.00
95th-Percentile Queue Length [ft/ln]	205.06	273.02		303.01	350.02

Movement, Approach, & Intersection Results

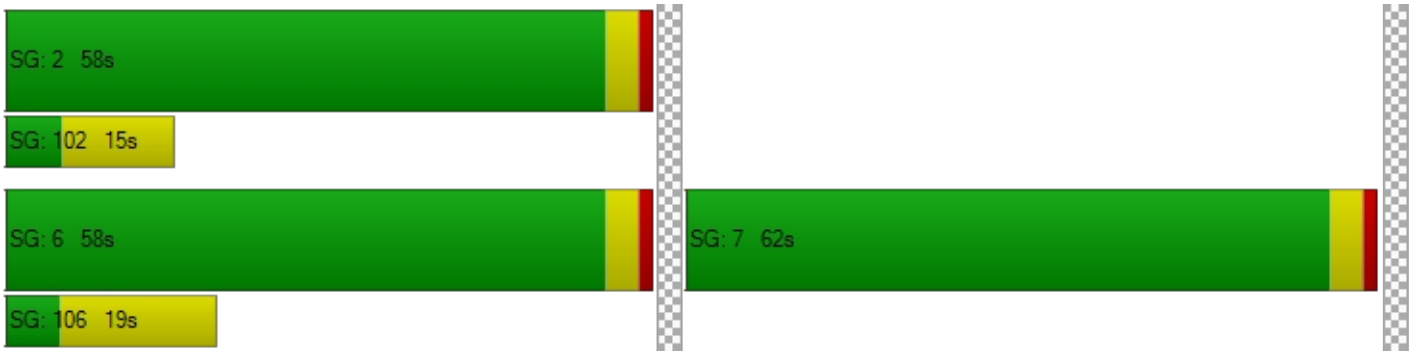
d_M, Delay for Movement [s/veh]	0.00	8.91	0.00	0.00	10.06	0.00	0.00	0.00	0.00	41.06	0.00	46.45
Movement LOS		A			B					D		D
d_A, Approach Delay [s/veh]	8.91			10.06			0.00			44.75		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	19.12											
Intersection LOS	B											
Intersection V/C	0.549											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.365
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	900	0	967
d_b, Bicycle Delay [s]	18.15	18.15	60.00	16.02
l_b,int, Bicycle LOS Score for Intersection	2.261	2.470	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.605

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1287	562	0	969	394	298	0	392	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	8	0	0	5	0	8	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1449	562	0	1090	394	306	0	392	0	0	0
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	1.000	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	381	148	0	287	104	81	0	103	0	0	0
Total Analysis Volume [veh/h]	0	1525	592	0	1147	415	322	0	413	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	34	0	0	34	0	86	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	76	76	36	36	
g / C, Green / Cycle	0.64	0.64	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.31	0.33	0.10	0.27	
s, saturation flow rate [veh/h]	4903	3427	3329	1530	
c, Capacity [veh/h]	3120	2181	989	454	
d1, Uniform Delay [s]	11.52	11.93	32.83	40.61	
k, delay calibration	0.50	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.55	0.91	0.19	7.25	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.49	0.53	0.33	0.91	
d, Delay for Lane Group [s/veh]	12.07	12.84	33.02	47.86	
Lane Group LOS	B	B	C	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	6.96	8.22	3.69	12.55	
50th-Percentile Queue Length [ft/ln]	173.88	205.40	92.34	313.87	
95th-Percentile Queue Length [veh/ln]	11.28	12.92	6.65	18.37	
95th-Percentile Queue Length [ft/ln]	282.00	322.92	166.21	459.15	

Movement, Approach, & Intersection Results

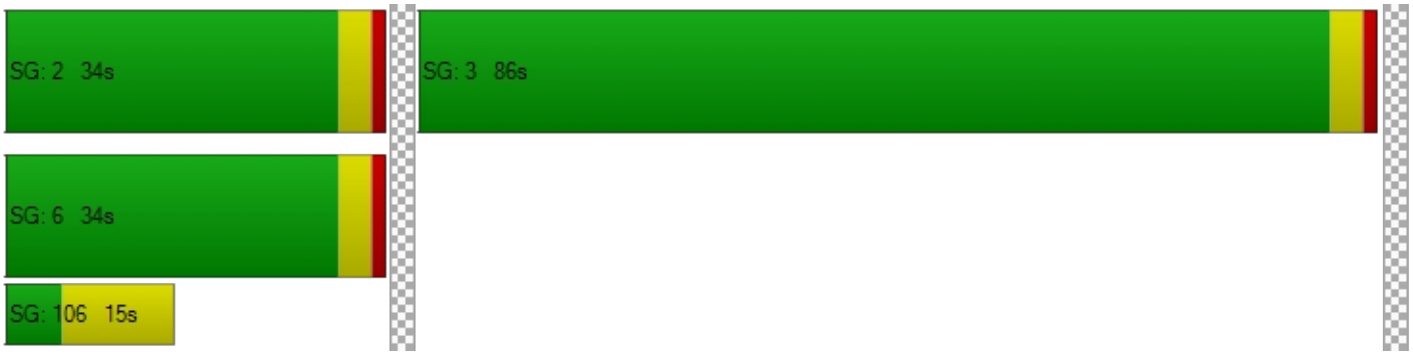
d_M, Delay for Movement [s/veh]	0.00	12.07	0.00	0.00	12.84	0.00	33.02	0.00	47.86	0.00	0.00	0.00
Movement LOS		B			B		C		D			
d_A, Approach Delay [s/veh]	12.07			12.84			41.36			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	18.65											
Intersection LOS	B											
Intersection V/C	0.605											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	500	1367	0
d_b, Bicycle Delay [s]	33.75	33.75	6.02	60.00
l_b,int, Bicycle LOS Score for Intersection	2.398	2.506	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.828

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1236	419	513	1182	0	509	43	548	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	39	0	123	28	0	7	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1423	469	698	1352	0	577	48	614	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	374	123	184	356	0	152	13	162	0	0	0
Total Analysis Volume [veh/h]	0	1498	494	735	1423	0	607	51	646	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	41	0	35	76	0	0	44	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	42	42	29	75	37	37	37	
g / C, Green / Cycle	0.35	0.35	0.24	0.63	0.31	0.31	0.31	
(v / s)_i Volume / Saturation Flow Rate	0.31	0.32	0.22	0.29	0.25	0.27	0.28	
s, saturation flow rate [veh/h]	4903	1530	3329	4903	1714	1628	1530	
c, Capacity [veh/h]	1725	538	798	3064	529	502	472	
d1, Uniform Delay [s]	36.31	37.24	44.50	11.90	38.44	39.14	40.08	
k, delay calibration	0.50	0.50	0.11	0.50	0.28	0.31	0.35	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	6.24	23.04	4.97	0.51	8.11	12.08	20.04	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.87	0.92	0.92	0.46	0.82	0.87	0.92	
d, Delay for Lane Group [s/veh]	42.54	60.27	49.47	12.40	46.55	51.22	60.12	
Lane Group LOS	D	E	D	B	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	14.45	17.09	11.15	6.57	12.94	13.65	14.88	
50th-Percentile Queue Length [ft/ln]	361.16	427.29	278.64	164.19	323.4	341.2	371.9	
95th-Percentile Queue Length [veh/ln]	20.68	23.87	16.62	10.77	18.84	19.71	21.20	
95th-Percentile Queue Length [ft/ln]	517.00	596.79	415.52	269.26	470.9	492.7	530.0	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	42.54	60.27	49.47	12.40	0.00	47.88	51.22	57.21	0.00	0.00	0.00
Movement LOS		D	E	D	B		D	D	E			
d_A, Approach Delay [s/veh]	46.94			25.03			52.63			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	39.63											
Intersection LOS	D											
Intersection V/C	0.828											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.464	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	1200	667	0
d_b, Bicycle Delay [s]	28.70	9.60	26.67	60.00
l_b,int, Bicycle LOS Score for Intersection	2.655	2.747	3.711	4.132
Bicycle LOS	B	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	893	509	501	647	0	451	7	212	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	8	0	45	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1008	570	606	730	0	505	8	237	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	265	150	159	192	0	133	2	62	0	0	0
Total Analysis Volume [veh/h]	0	1061	600	638	768	0	532	8	249	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	58	0	33	91	0	0	29	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	60	60	25	89	23	23	
g / C, Green / Cycle	0.50	0.50	0.21	0.75	0.19	0.19	
(v / s)_i Volume / Saturation Flow Rate	0.31	0.39	0.19	0.22	0.16	0.17	
s, saturation flow rate [veh/h]	3427	1530	3329	3427	3329	1537	
c, Capacity [veh/h]	1711	764	707	2553	627	290	
d1, Uniform Delay [s]	21.79	24.76	46.04	5.03	47.04	47.46	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.21	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.70	7.97	4.60	0.30	3.30	15.56	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.62	0.79	0.90	0.30	0.85	0.89	
d, Delay for Lane Group [s/veh]	23.50	32.73	50.64	5.33	50.34	63.01	
Lane Group LOS	C	C	D	A	D	E	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	10.99	15.30	9.68	2.88	7.94	8.71	
50th-Percentile Queue Length [ft/ln]	274.83	382.38	242.00	72.04	198.59	217.85	
95th-Percentile Queue Length [veh/ln]	16.43	21.71	14.78	5.19	12.57	13.56	
95th-Percentile Queue Length [ft/ln]	410.77	542.72	369.56	129.68	314.15	338.88	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	23.50	32.73	50.64	5.33	0.00	50.34	63.01	63.01	0.00	0.00	0.00
Movement LOS		C	C	D	A		D	E	E			
d_A, Approach Delay [s/veh]	26.83			25.89			54.47			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	32.14											
Intersection LOS	C											
Intersection V/C	0.751											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	1450	417	0
d_b, Bicycle Delay [s]	18.15	4.54	37.60	60.00
l_b,int, Bicycle LOS Score for Intersection	2.473	2.720	2.861	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	69.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.130

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	512	1223	467	480	861	796	914	0	457	463	0	566
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.000	1.120
In-Process Volume [veh/h]	0	8	0	16	5	0	0	0	0	0	0	11
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	573	1378	523	554	969	892	1024	0	512	519	0	645
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	1.000	0.950	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	151	363	138	146	255	235	269	0	135	137	0	170
Total Analysis Volume [veh/h]	603	1451	551	583	1020	939	1078	0	539	546	0	679
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	86	0	0	86	0	34	0	0	34	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	82	82	82	82	30	30
g / C, Green / Cycle	0.68	0.68	0.68	0.68	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.55	0.30	0.81	0.21	0.32	0.16
s, saturation flow rate [veh/h]	1091	4903	724	4903	3329	3329
c, Capacity [veh/h]	698	3351	448	3351	832	832
d1, Uniform Delay [s]	23.15	8.55	32.17	7.60	45.00	40.37
k, delay calibration	0.50	0.50	0.50	0.50	0.19	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.47	0.41	151.66	0.23	136.40	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.43	1.30	0.30	1.30	0.66
d, Delay for Lane Group [s/veh]	36.62	8.96	183.83	7.83	181.40	41.26
Lane Group LOS	D	A	F	A	F	D
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.70	5.40	16.24	3.37	28.04	7.32
50th-Percentile Queue Length [ft/ln]	217.41	134.93	406.08	84.16	700.96	183.11
95th-Percentile Queue Length [veh/ln]	13.53	9.21	27.25	6.06	42.07	11.76
95th-Percentile Queue Length [ft/ln]	338.32	230.17	681.15	151.48	1051.72	294.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.62	8.96	0.00	183.8	7.83	0.00	181.4	0.00	0.00	41.26	0.00	0.00
Movement LOS	D	A		F	A		F			D		
d_A, Approach Delay [s/veh]	17.08			71.84			181.40			41.26		
Approach LOS	B			E			F			D		
d_I, Intersection Delay [s/veh]	69.74											
Intersection LOS	E											
Intersection V/C	1.130											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.501	3.365
Crosswalk LOS	F	F	D	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1367	1367	500	500
d_b, Bicycle Delay [s]	6.02	6.02	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	2.689	2.441	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	42.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.793

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	174	1468	329	62	520	118	237	979	186	107	541	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	8	8	0	0	0	8	0	5	5	5
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	1644	376	77	582	132	265	1104	208	125	611	119
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	433	99	20	153	35	70	291	55	33	161	31
Total Analysis Volume [veh/h]	205	1731	396	81	613	139	279	1162	219	132	643	125
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	36	46	0	9	19	0	39	51	0	14	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	46	46	5	40	40	22	44	44	10	32	32
g / C, Green / Cycle	0.08	0.38	0.38	0.04	0.34	0.34	0.18	0.36	0.36	0.08	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.06	0.35	0.26	0.02	0.13	0.09	0.16	0.34	0.14	0.08	0.19	0.08
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	274	1861	581	129	1649	515	310	1250	558	143	917	409
d1, Uniform Delay [s]	53.86	35.69	31.15	56.81	30.20	29.07	48.10	36.63	28.25	54.62	39.64	35.06
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.13	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.09	9.79	6.36	4.88	0.64	1.29	10.98	3.67	0.45	20.64	0.99	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.93	0.68	0.63	0.37	0.27	0.90	0.93	0.39	0.92	0.70	0.31
d, Delay for Lane Group [s/veh]	57.95	45.48	37.51	61.69	30.85	30.36	59.08	40.30	28.70	75.26	40.63	35.48
Lane Group LOS	E	D	D	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.18	17.56	10.53	1.30	4.59	3.12	9.09	16.71	4.74	4.78	8.65	2.98
50th-Percentile Queue Length [ft/ln]	79.60	438.9	263.3	32.45	114.6	78.08	227.1	417.8	118.6	119.4	216.1	74.46
95th-Percentile Queue Length [veh/ln]	5.73	24.43	15.86	2.34	8.10	5.62	14.03	23.42	8.32	8.36	13.47	5.36
95th-Percentile Queue Length [ft/ln]	143.2	610.7	396.3	58.40	202.5	140.5	350.7	585.4	207.9	209.0	336.7	134.0

Movement, Approach, & Intersection Results

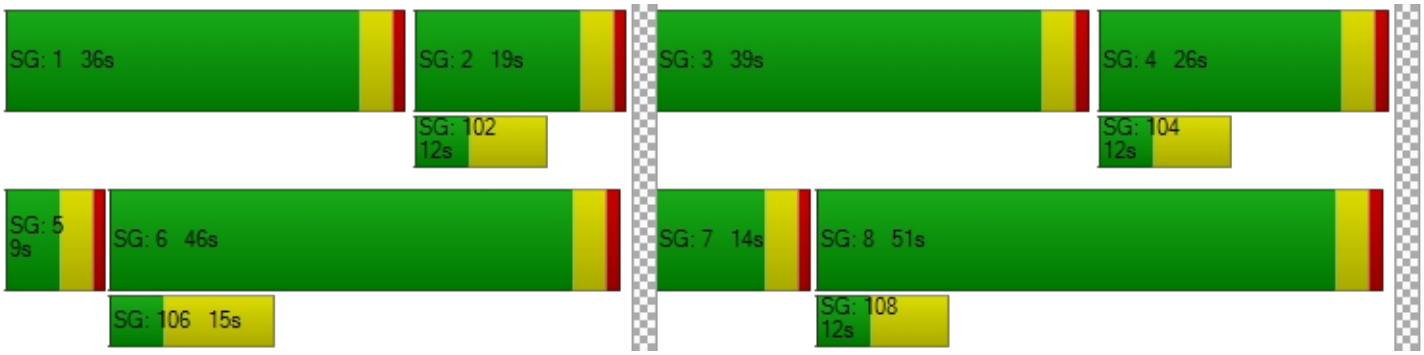
d_M, Delay for Movement [s/veh]	57.95	45.48	37.51	61.69	30.85	30.36	59.08	40.30	28.70	75.26	40.63	35.48
Movement LOS	E	D	D	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	45.22			33.77			41.93			44.99		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	42.56											
Intersection LOS	D											
Intersection V/C	0.793											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.222	3.186	2.898	2.881
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	250	783	367
d_b, Bicycle Delay [s]	25.35	45.94	22.20	40.02
l_b,int, Bicycle LOS Score for Intersection	2.842	2.018	2.929	2.302
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	55	791	257	87	219	179	347	879	21	68	490	173
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	24	0	0	15	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	886	288	97	245	200	389	1008	24	76	564	194
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	233	76	26	64	53	102	265	6	20	148	51
Total Analysis Volume [veh/h]	65	933	303	102	258	211	409	1061	25	80	594	204
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	23	37	0	12	26	26	41	62	0	9	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	41	41	8	43	78	31	50	50	5	24	36
g / C, Green / Cycle	0.05	0.34	0.34	0.07	0.36	0.65	0.26	0.42	0.42	0.04	0.20	0.30
(v / s)_i Volume / Saturation Flow Rate	0.04	0.27	0.20	0.06	0.08	0.14	0.24	0.30	0.30	0.02	0.17	0.13
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1785	3329	3427	1530
c, Capacity [veh/h]	86	1177	526	114	1235	998	443	752	746	129	679	456
d1, Uniform Delay [s]	56.30	35.53	32.24	55.57	26.55	8.43	43.35	29.17	29.20	56.80	46.67	34.10
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.29	0.19	0.19	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.88	5.51	4.55	19.99	0.38	0.48	18.60	2.32	2.37	4.76	3.75	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.79	0.58	0.89	0.21	0.21	0.92	0.72	0.73	0.62	0.87	0.45
d, Delay for Lane Group [s/veh]	69.18	41.04	36.79	75.56	26.93	8.91	61.95	31.49	31.58	61.56	50.41	34.79
Lane Group LOS	E	D	D	E	C	A	E	C	C	E	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.25	13.08	7.84	3.70	2.63	2.26	14.02	13.39	13.34	1.28	8.92	4.92
50th-Percentile Queue Length [ft/ln]	56.31	326.9	196.0	92.40	65.86	56.54	350.4	334.7	333.3	32.01	223.0	122.8
95th-Percentile Queue Length [veh/ln]	4.05	19.01	12.43	6.65	4.74	4.07	20.16	19.39	19.32	2.30	13.82	8.55
95th-Percentile Queue Length [ft/ln]	101.3	475.2	310.8	166.3	118.5	101.7	504.0	484.7	483.1	57.62	345.4	213.7

Movement, Approach, & Intersection Results

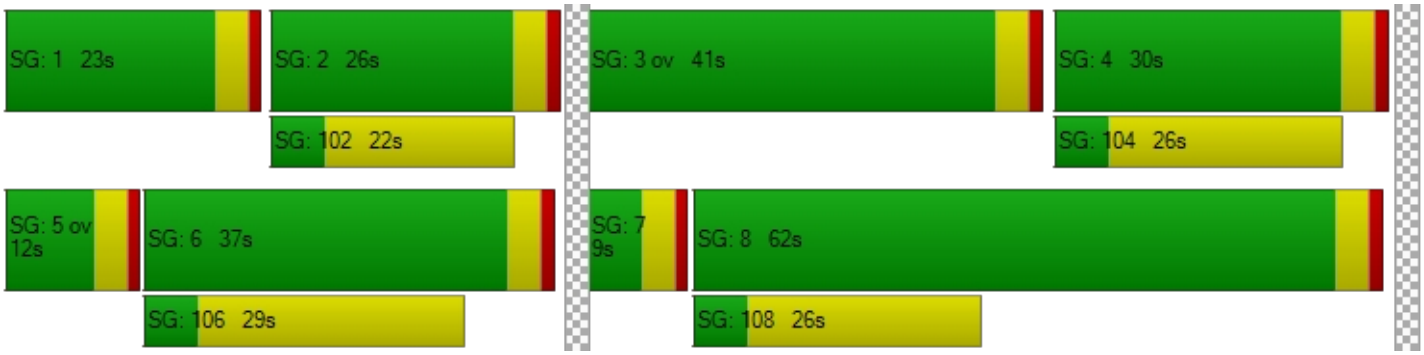
d_M, Delay for Movement [s/veh]	69.18	41.04	36.79	75.56	26.93	8.91	61.95	31.53	31.58	61.56	50.41	34.79
Movement LOS	E	D	D	E	C	A	E	C	C	E	D	C
d_A, Approach Delay [s/veh]	41.46			28.96			39.85			47.80		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	40.52											
Intersection LOS	D											
Intersection V/C	0.744											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.739	2.812	2.776	2.936
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	367	967	433
d_b, Bicycle Delay [s]	31.54	40.02	16.02	36.82
l_b,int, Bicycle LOS Score for Intersection	2.633	2.031	2.793	2.284
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	37.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.702

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	35	857	66	377	983	405	440	672	84	60	177	364
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	31	0	0	23	5	8	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	991	74	422	1124	459	501	753	94	67	198	408
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	261	19	111	296	121	132	198	25	18	52	107
Total Analysis Volume [veh/h]	41	1043	78	444	1183	483	527	793	99	71	208	429
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	9	33	0	21	45	45	23	57	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	4	49	49	17	62	85	19	34	34	5	19	40
g / C, Green / Cycle	0.03	0.41	0.41	0.14	0.52	0.71	0.16	0.28	0.28	0.04	0.16	0.33
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.22	0.13	0.24	0.32	0.16	0.25	0.25	0.02	0.06	0.28
s, saturation flow rate [veh/h]	1714	3427	1737	3329	4903	1530	3329	1800	1731	3329	3427	1530
c, Capacity [veh/h]	54	1394	706	472	2535	1084	527	505	485	126	548	512
d1, Uniform Delay [s]	57.67	26.97	26.98	51.01	18.44	7.44	50.50	41.52	41.63	56.75	45.08	36.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.14	0.15	0.11	0.11	0.36
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.60	1.47	2.88	9.69	0.62	1.33	18.17	7.66	8.60	3.90	0.43	11.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.53	0.53	0.94	0.47	0.45	1.00	0.90	0.90	0.56	0.38	0.84
d, Delay for Lane Group [s/veh]	77.27	28.43	29.86	60.70	19.06	8.76	68.67	49.18	50.23	60.65	45.52	48.14
Lane Group LOS	E	C	C	E	B	A	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.53	8.30	8.70	7.23	7.00	5.20	9.21	13.85	13.58	1.13	2.82	13.11
50th-Percentile Queue Length [ft/ln]	38.20	207.4	217.5	180.6	175.0	130.0	230.2	346.3	339.6	28.18	70.40	327.7
95th-Percentile Queue Length [veh/ln]	2.75	13.02	13.54	11.63	11.34	8.94	14.19	19.96	19.63	2.03	5.07	19.05
95th-Percentile Queue Length [ft/ln]	68.76	325.5	338.4	290.8	283.5	223.5	354.6	498.9	490.7	50.72	126.7	476.2

Movement, Approach, & Intersection Results

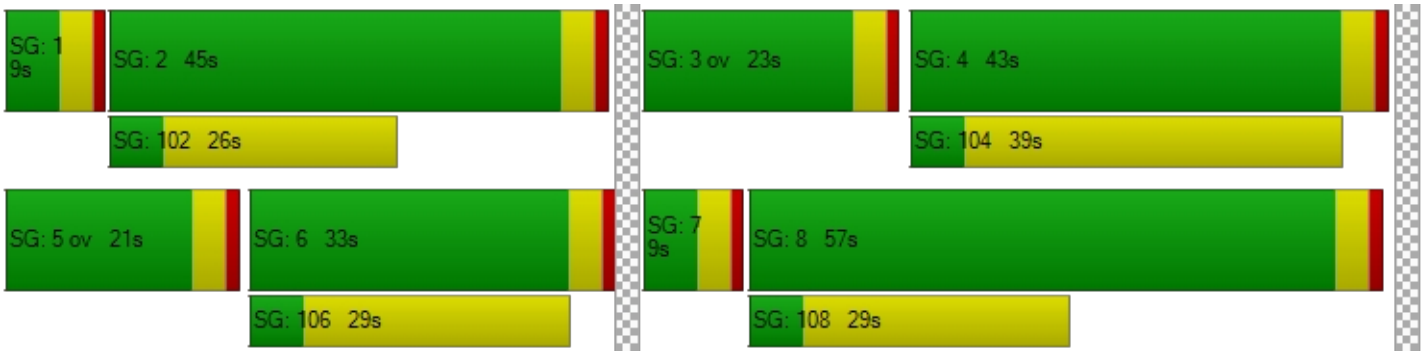
d_M, Delay for Movement [s/veh]	77.27	28.84	29.86	60.70	19.06	8.76	68.67	49.63	50.23	60.65	45.52	48.14
Movement LOS	E	C	C	E	B	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	30.62			25.47			56.74			48.63		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	37.83											
Intersection LOS	D											
Intersection V/C	0.702											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.047	3.382	2.818	2.891
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	683	883	650
d_b, Bicycle Delay [s]	34.50	26.00	18.70	27.34
l_b,int, Bicycle LOS Score for Intersection	2.199	2.720	2.730	2.144
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	573.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	33.040

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	8	601	29	67	890	130	243	49	30	13	21	83
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	8	0	13	5	5	8	0	0	0	0	15
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	681	32	88	1002	151	280	55	34	15	24	108
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	179	8	23	264	40	74	14	9	4	6	28
Total Analysis Volume [veh/h]	9	717	34	93	1055	159	295	58	36	16	25	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	12	12	5	16	16	91	91	91	91
g / C, Green / Cycle	0.01	0.10	0.10	0.04	0.13	0.13	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.01	0.14	0.15	0.05	0.24	0.24	32.80	0.02	0.65	0.07
s, saturation flow rate [veh/h]	1714	3427	1759	1714	3427	1682	11	1530	63	1530
c, Capacity [veh/h]	19	347	178	71	452	222	63	1158	90	1158
d1, Uniform Delay [s]	59.02	53.93	53.93	57.50	52.08	52.08	51.54	3.62	35.69	3.82
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.37	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.41	209.0	225.5	156.3	368.4	377.7	2096.75	0.01	11.88	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	1.43	1.44	1.30	1.80	1.80	5.58	0.03	0.46	0.10
d, Delay for Lane Group [s/veh]	77.43	262.9	279.4	213.8	420.5	429.7	2148.29	3.63	47.57	3.86
Lane Group LOS	E	F	F	F	F	F	F	A	D	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.37	15.29	16.51	5.27	29.95	29.97	38.75	0.19	1.30	0.65
50th-Percentile Queue Length [ft/ln]	9.17	382.2	412.6	131.6	748.7	749.1	968.67	4.87	32.41	16.28
95th-Percentile Queue Length [veh/ln]	0.66	24.49	26.21	9.48	47.19	47.22	69.74	0.35	2.33	1.17
95th-Percentile Queue Length [ft/ln]	16.51	612.3	655.3	237.0	1179.	1180.	1743.60	8.77	58.33	29.30

Movement, Approach, & Intersection Results

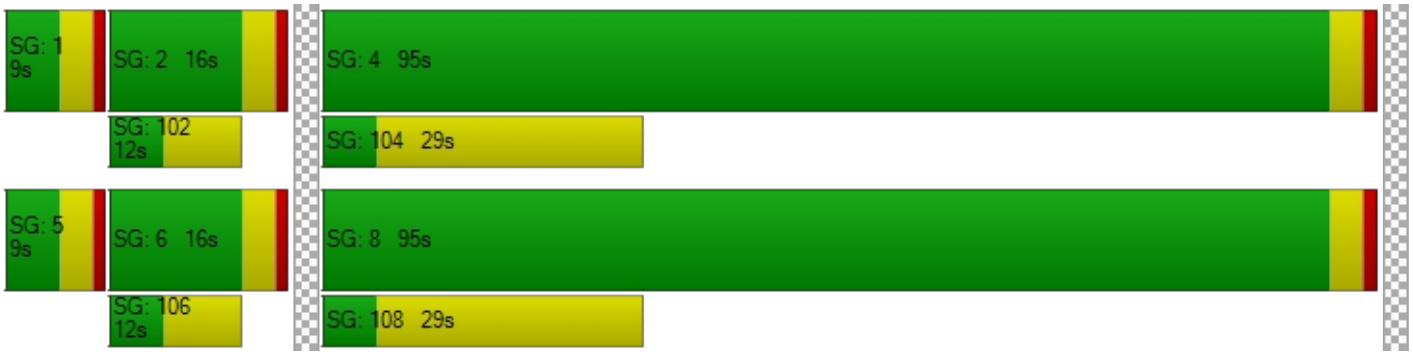
d_M, Delay for Movement [s/veh]	77.43	268.0	279.4	213.8	422.6	429.7	2148.	2148.	3.63	47.57	47.57	3.86
Movement LOS	E	F	F	F	F	F	F	F	A	D	D	A
d_A, Approach Delay [s/veh]	266.32			408.66			1949.81			15.42		
Approach LOS	F			F			F			B		
d_I, Intersection Delay [s/veh]	573.50											
Intersection LOS	F											
Intersection V/C	33.040											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.892	3.368	2.145	2.066
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	1.978	2.278	2.201	1.815
Bicycle LOS	A	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	40	40	0	24	24	24	0	33	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	104	0	104	112	0	0	0	0	0
g / C, Green / Cycle	0.00	0.87	0.87	0.00	0.87	0.93	0.00	0.00	0.00	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1687	3373	1772	1687	3373	1506	1687	1772	2665	1687	1772
c, Capacity [veh/h]	1	2920	1533	1	2919	1405	1	1	1	1	1
d1, Uniform Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Group LOS	A	A	A	A	A	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	No	No	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement, Approach, & Intersection Results

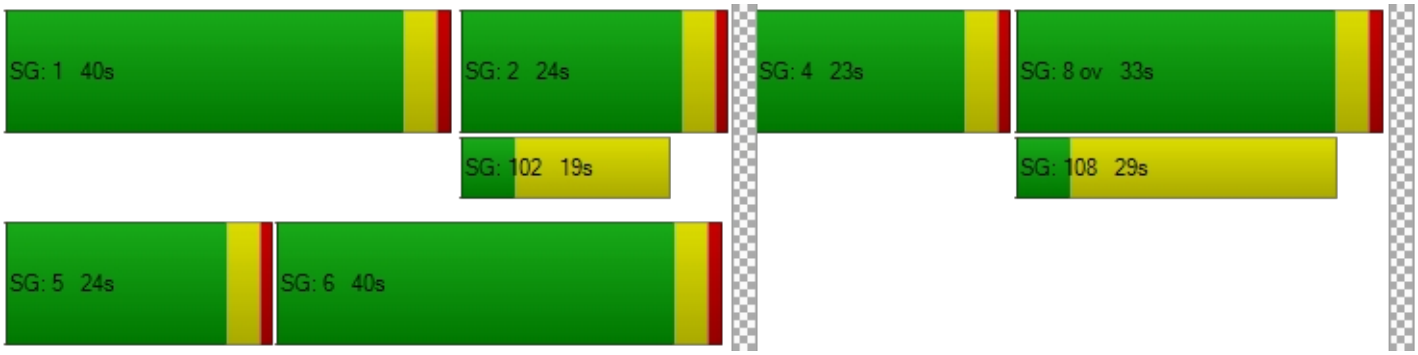
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											
Intersection V/C	0.000											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.609	0.000	2.468	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	333	483	317
d_b, Bicycle Delay [s]	29.40	41.67	34.50	42.50
l_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560	1.560
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-5

INTERSECTION ANALYSIS
WORKSHEETS –
OPENING YEAR 2027 PLUS PHASES 1
AND 2

Speedway Commerce Center

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Report File: K:\...\6 OY 2027 CUM Plus Phases 1 and 2 AM.pdf

Scenario 6 OY 2027 CUM Plus Phases 1 and 2 AM
1/14/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.681	34.7	C
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.623	26.7	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.513	20.0	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.690	27.6	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.756	31.7	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.526	17.9	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.452	32.1	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.673	38.1	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.632	33.1	C
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.831	61.1	E
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.496	21.8	C
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.555	27.9	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.777	41.2	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.536	39.9	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.934	56.8	E
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	EB Left	0.617	34.2	C
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.658	49.8	D

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.947	38.9	D
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.702	27.5	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	NB Left	0.864	62.6	E
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.770	43.1	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	3.036	1,507.9	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.825	52.9	D
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	NB Left	0.745	44.0	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.787	43.1	D
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.845	54.5	D
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.552	29.4	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.799	50.9	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.635	38.2	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.791	28.3	C
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	WB Left	0.920	64.1	E
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.448	45.6	E
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.694	32.1	C
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.707	26.6	C
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	WB Thru	0.996	42.7	E
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.582	30.8	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	NB Left	0.635	41.0	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.506	22.4	C

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.938	92.3	F
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	WB Thru	1.656	177.9	F
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	WB Thru	1.172	57.1	F
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.619	35.8	D
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	SB Left	0.614	30.7	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Left	0.819	50.4	D
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	SB Right	0.735	59.7	E
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.635	36.3	D
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	EB Left	0.715	41.6	D
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.469	18.1	C
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.767	45.4	D
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	EB Left	0.553	32.9	C
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	SB Left	0.369	32.2	C
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.696	41.7	D
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	NB Left	0.720	33.1	C
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	WB Thru	0.348	10.2	B
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.511	27.0	C
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	SB Left	0.473	28.7	C
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	WB Left	0.835	50.3	D
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.569	28.5	C
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Thru	0.025	120.8	F

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Right	0.907	65.4	E
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	SB Left	0.770	36.5	D
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.576	23.7	C
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	WB Right	1.051	70.5	E
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.602	21.9	C
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.816	30.5	C
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	EB Right	0.918	46.4	D
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.787	35.9	D
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	SB Left	0.783	28.7	C
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	EB Left	0.737	39.6	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	NB Left	0.731	37.4	D
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	EB Left	0.737	37.5	D
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	75.638	605.6	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition	NB Left	0.394	36.1	D
998543	New Intersection	Unknown	?		?	?	?
998552	New Intersection	Unknown	?		?	?	?
998555	New Intersection	Unknown	?		?	?	?

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.681

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	166	303	0	0	712	200	0	0	0	360	4	252
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	14	6	0	0	4	0	0	0	0	17	0	0
Site-Generated Trips [veh/h]	34	0	0	0	9	0	0	0	0	85	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	234	345	0	0	810	224	0	0	0	505	4	282
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	62	91	0	0	213	59	0	0	0	133	1	74
Total Analysis Volume [veh/h]	246	363	0	0	853	236	0	0	0	532	4	297
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	24	56	0	0	32	0	0	0	0	0	64	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	19	72	49	49		40	40
g / C, Green / Cycle	0.16	0.60	0.40	0.40		0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.14	0.11	0.21	0.22		0.31	0.19
s, saturation flow rate [veh/h]	1714	3427	3427	1615		1715	1530
c, Capacity [veh/h]	272	2041	1383	652		580	517
d1, Uniform Delay [s]	49.61	10.99	27.08	27.53		38.26	32.63
k, delay calibration	0.14	0.50	0.50	0.50		0.19	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	13.32	0.19	1.43	3.42		10.99	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.18	0.52	0.56		0.92	0.57
d, Delay for Lane Group [s/veh]	62.93	11.18	28.51	30.95		49.24	33.64
Lane Group LOS	E	B	C	C		D	C
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	8.23	2.20	8.09	8.56		16.74	7.22
50th-Percentile Queue Length [ft/ln]	205.87	55.05	202.24	214.11		418.61	180.59
95th-Percentile Queue Length [veh/ln]	12.94	3.96	12.75	13.36		23.46	11.63
95th-Percentile Queue Length [ft/ln]	323.53	99.08	318.86	334.09		586.38	290.79

Movement, Approach, & Intersection Results

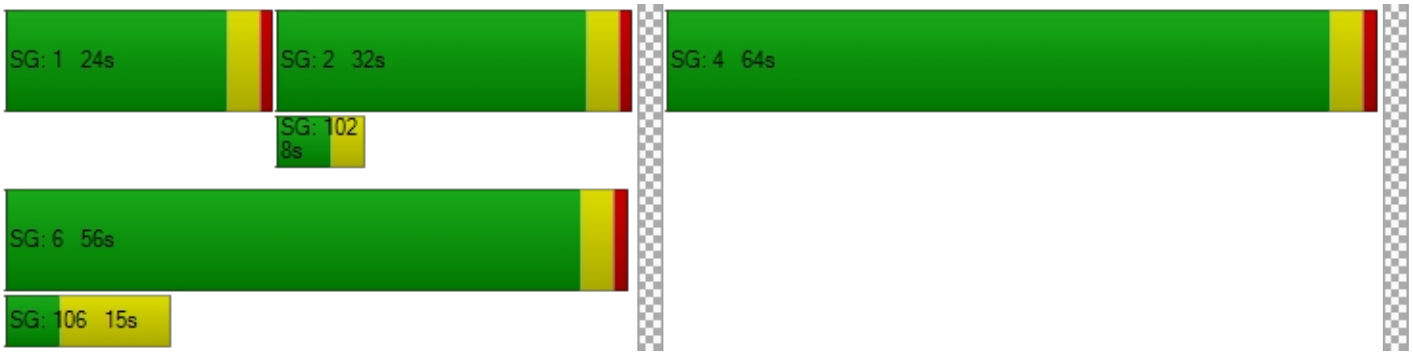
d_M, Delay for Movement [s/veh]	62.93	11.18	0.00	0.00	28.87	30.95	0.00	0.00	0.00	49.24	49.24	33.64
Movement LOS	E	B			C	C				D	D	C
d_A, Approach Delay [s/veh]	32.08			29.32			0.00			43.68		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	34.71											
Intersection LOS	C											
Intersection V/C	0.681											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.912	2.226
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	467	0	1000
d_b, Bicycle Delay [s]	19.27	35.27	60.00	15.00
l_b,int, Bicycle LOS Score for Intersection	2.062	2.159	4.132	2.934
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	26.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.623

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	302	906	0	0	822	355	0	0	0	421	1	309
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	0	6	0	0	4	0	0	0	0	5	0	0
Site-Generated Trips [veh/h]	0	0	0	0	9	0	0	0	0	9	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	338	1021	0	0	934	398	0	0	0	486	1	346
Peak Hour Factor	0.964	0.964	1.000	1.000	0.964	0.964	1.000	1.000	1.000	0.964	0.964	0.964
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	88	265	0	0	242	103	0	0	0	126	0	90
Total Analysis Volume [veh/h]	351	1059	0	0	969	413	0	0	0	504	1	359
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	20	61	0	0	41	0	0	0	0	0	59	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	15	81	62	62		31	31	31
g / C, Green / Cycle	0.12	0.67	0.52	0.52		0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.11	0.31	0.28	0.27		0.15	0.15	0.23
s, saturation flow rate [veh/h]	3329	3427	3427	1530		1714	1715	1530
c, Capacity [veh/h]	406	2297	1765	788		451	451	402
d1, Uniform Delay [s]	51.71	9.44	19.68	19.33		38.21	38.21	42.57
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	5.60	0.67	1.23	2.49		1.09	1.09	6.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.46	0.55	0.52		0.56	0.56	0.89
d, Delay for Lane Group [s/veh]	57.31	10.11	20.91	21.82		39.30	39.30	49.55
Lane Group LOS	E	B	C	C		D	D	D
Critical Lane Group	Yes	No	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.49	6.41	9.26	8.04		6.56	6.56	10.96
50th-Percentile Queue Length [ft/ln]	137.31	160.22	231.45	201.11		164.0	164.0	273.9
95th-Percentile Queue Length [veh/ln]	9.34	10.56	14.25	12.70		10.76	10.76	16.39
95th-Percentile Queue Length [ft/ln]	233.40	264.02	356.20	317.40		269.1	269.1	409.7

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.31	10.11	0.00	0.00	20.91	21.82	0.00	0.00	0.00	39.30	39.30	49.55
Movement LOS	E	B			C	C				D	D	D
d_A, Approach Delay [s/veh]	21.86			21.18			0.00			43.56		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	26.73											
Intersection LOS	C											
Intersection V/C	0.623											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.103	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	617	0	917
d_b, Bicycle Delay [s]	16.54	28.70	60.00	17.60
l_b,int, Bicycle LOS Score for Intersection	2.723	2.700	4.132	2.985
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	20.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.513

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	792	0	0	1079	0	0	0	0	510	0	291
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	0	6	0	0	4	0	0	0	0	2	0	0
Site-Generated Trips [veh/h]	0	0	0	0	9	0	0	0	0	5	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	893	0	0	1221	0	0	0	0	578	0	326
Peak Hour Factor	1.000	0.869	1.000	1.000	0.869	1.000	1.000	1.000	1.000	0.869	0.869	0.869
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	257	0	0	351	0	0	0	0	166	0	94
Total Analysis Volume [veh/h]	0	1028	0	0	1405	0	0	0	0	665	0	375
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	58	0	0	58	0	0	0	0	0	62	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	81	81		31	31	31
g / C, Green / Cycle	0.67	0.67		0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.21	0.29		0.20	0.20	0.23
s, saturation flow rate [veh/h]	4903	4903		1714	1698	1530
c, Capacity [veh/h]	3306	3306		444	440	397
d1, Uniform Delay [s]	8.06	8.93		41.28	41.38	42.58
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	0.40		3.02	3.18	6.15
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.43		0.78	0.79	0.87
d, Delay for Lane Group [s/veh]	8.31	9.33		44.29	44.56	48.73
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.52	5.34		9.86	9.90	10.47
50th-Percentile Queue Length [ft/ln]	88.05	133.54		246.5	247.5	261.6
95th-Percentile Queue Length [veh/ln]	6.34	9.13		15.01	15.06	15.77
95th-Percentile Queue Length [ft/ln]	158.49	228.30		375.2	376.5	394.2

Movement, Approach, & Intersection Results

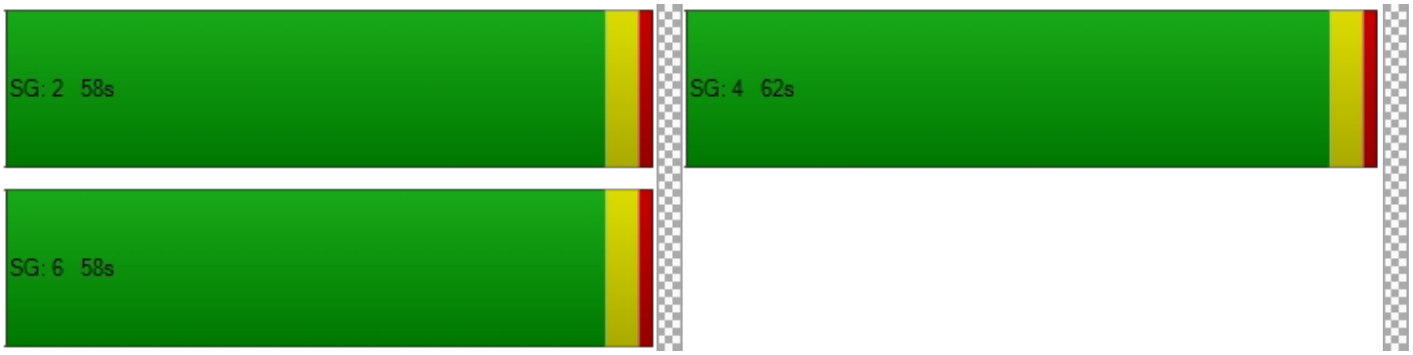
d_M, Delay for Movement [s/veh]	0.00	8.31	0.00	0.00	9.33	0.00	0.00	0.00	0.00	44.42	44.56	48.41
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	8.31			9.33			0.00			45.86		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	19.97											
Intersection LOS	B											
Intersection V/C	0.513											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	900	0	967
d_b, Bicycle Delay [s]	18.15	18.15	60.00	16.02
l_b,int, Bicycle LOS Score for Intersection	2.125	2.332	4.132	3.276
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.690

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	427	319	160	805	0	153	5	296	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	20	22	0	21	0	0	0	12	0	0	0
Site-Generated Trips [veh/h]	0	34	74	0	94	0	0	0	48	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	532	453	179	1017	0	171	6	392	0	0	0
Peak Hour Factor	1.000	0.952	0.952	0.952	0.952	1.000	0.952	0.952	0.952	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	140	119	47	267	0	45	2	103	0	0	0
Total Analysis Volume [veh/h]	0	559	476	188	1068	0	180	6	412	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	53	0	21	74	0	0	46	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	58	58	15	77	35	35	
g / C, Green / Cycle	0.49	0.49	0.13	0.64	0.29	0.29	
(v / s)_i Volume / Saturation Flow Rate	0.16	0.31	0.11	0.31	0.11	0.27	
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1717	1530	
c, Capacity [veh/h]	1662	742	215	2206	497	443	
d1, Uniform Delay [s]	19.03	23.11	51.53	11.06	33.96	41.44	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.29	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.55	4.23	10.53	0.76	0.47	19.45	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.34	0.64	0.87	0.48	0.37	0.93	
d, Delay for Lane Group [s/veh]	19.57	27.35	62.06	11.83	34.43	60.89	
Lane Group LOS	B	C	E	B	C	E	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	4.89	10.73	6.18	7.20	4.41	14.13	
50th-Percentile Queue Length [ft/ln]	122.22	268.13	154.45	179.91	110.14	353.20	
95th-Percentile Queue Length [veh/ln]	8.51	16.10	10.25	11.60	7.85	20.29	
95th-Percentile Queue Length [ft/ln]	212.87	402.40	256.36	289.89	196.20	507.30	

Movement, Approach, & Intersection Results

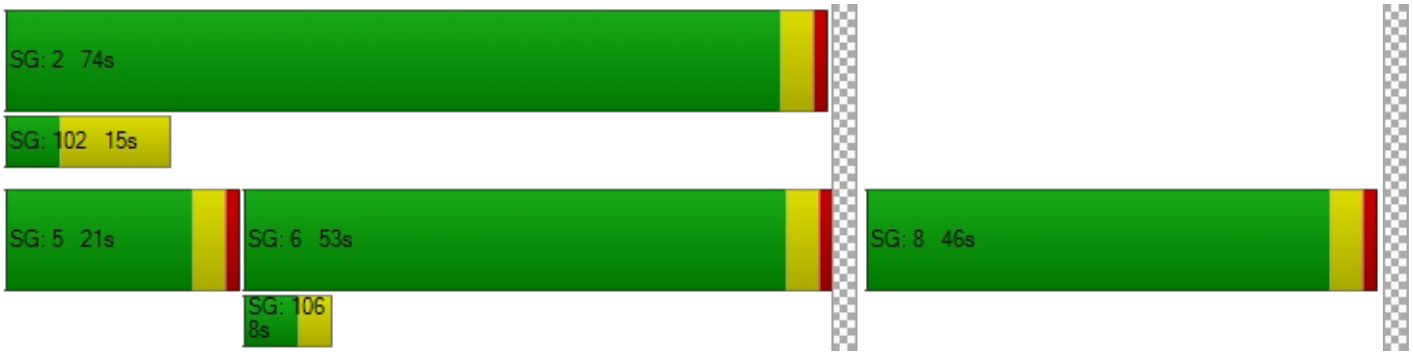
d_M, Delay for Movement [s/veh]	0.00	19.57	27.35	62.06	11.83	0.00	34.43	34.43	60.89	0.00	0.00	0.00
Movement LOS		B	C	E	B		C	C	E			
d_A, Approach Delay [s/veh]	23.15			19.35			52.66			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	27.60											
Intersection LOS	C											
Intersection V/C	0.690											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.150	2.092
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	1167	700	0
d_b, Bicycle Delay [s]	21.00	10.42	25.35	60.00
l_b,int, Bicycle LOS Score for Intersection	2.129	2.596	2.546	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.756

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	817	408	302	931	0	411	3	402	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	6	7	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	3	0	18	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	921	467	338	1070	0	460	3	450	0	0	0
Peak Hour Factor	1.000	0.966	0.966	0.966	0.966	1.000	0.966	0.966	0.966	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	238	121	87	277	0	119	1	116	0	0	0
Total Analysis Volume [veh/h]	0	953	483	350	1108	0	476	3	466	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	64	0	19	83	0	0	37	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	66	66	14	84	28	28	28	
g / C, Green / Cycle	0.55	0.55	0.12	0.70	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.40	0.45	0.11	0.32	0.19	0.19	0.20	
s, saturation flow rate [veh/h]	1800	1609	3329	3427	1714	1620	1530	
c, Capacity [veh/h]	988	883	402	2409	395	373	353	
d1, Uniform Delay [s]	20.33	22.07	51.83	7.83	43.60	44.11	44.66	
k, delay calibration	0.50	0.50	0.11	0.50	0.21	0.24	0.27	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.67	8.10	5.90	0.63	7.31	10.77	16.15	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.73	0.81	0.87	0.46	0.80	0.84	0.89	
d, Delay for Lane Group [s/veh]	25.00	30.16	57.73	8.46	50.90	54.88	60.81	
Lane Group LOS	C	C	E	A	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	15.78	17.72	5.50	5.94	9.67	10.03	10.54	
50th-Percentile Queue Length [ft/ln]	394.40	442.97	137.43	148.57	241.7	250.7	263.5	
95th-Percentile Queue Length [veh/ln]	22.29	24.62	9.34	9.94	14.77	15.22	15.87	
95th-Percentile Queue Length [ft/ln]	557.25	615.55	233.56	248.53	369.2	380.5	396.6	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	26.27	30.16	57.73	8.46	0.00	52.24	54.88	58.88	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	E			
d_A, Approach Delay [s/veh]	27.58			20.29			55.51			0.00		
Approach LOS	C			C			E			A		
d_I, Intersection Delay [s/veh]	31.69											
Intersection LOS	C											
Intersection V/C	0.756											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.377	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	1317	550	0
d_b, Bicycle Delay [s]	15.00	7.00	31.54	60.00
I_b,int, Bicycle LOS Score for Intersection	2.744	2.762	3.119	4.132
Bicycle LOS	B	C	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.526

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	946	463	0	1265	26	160	0	553	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.000	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	6	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1066	520	0	1437	26	179	0	619	0	0	0
Peak Hour Factor	1.000	0.942	0.942	1.000	0.942	1.000	0.942	0.942	0.942	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	283	138	0	381	7	48	0	164	0	0	0
Total Analysis Volume [veh/h]	0	1132	552	0	1525	26	190	0	657	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	63	0	0	63	0	0	57	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	83	83	29	29	29	
g / C, Green / Cycle	0.69	0.69	0.24	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.23	0.31	0.11	0.21	0.21	
s, saturation flow rate [veh/h]	4903	4903	1714	1530	1530	
c, Capacity [veh/h]	3376	3376	420	375	375	
d1, Uniform Delay [s]	7.57	8.45	38.48	43.58	43.58	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.27	0.44	0.76	6.62	6.62	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.34	0.45	0.45	0.88	0.88	
d, Delay for Lane Group [s/veh]	7.84	8.89	39.25	50.19	50.19	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	3.75	5.65	4.86	10.02	10.02	
50th-Percentile Queue Length [ft/ln]	93.73	141.23	121.4	250.5	250.5	
95th-Percentile Queue Length [veh/ln]	6.75	9.55	8.47	15.22	15.22	
95th-Percentile Queue Length [ft/ln]	168.72	238.69	211.8	380.3	380.3	

Movement, Approach, & Intersection Results

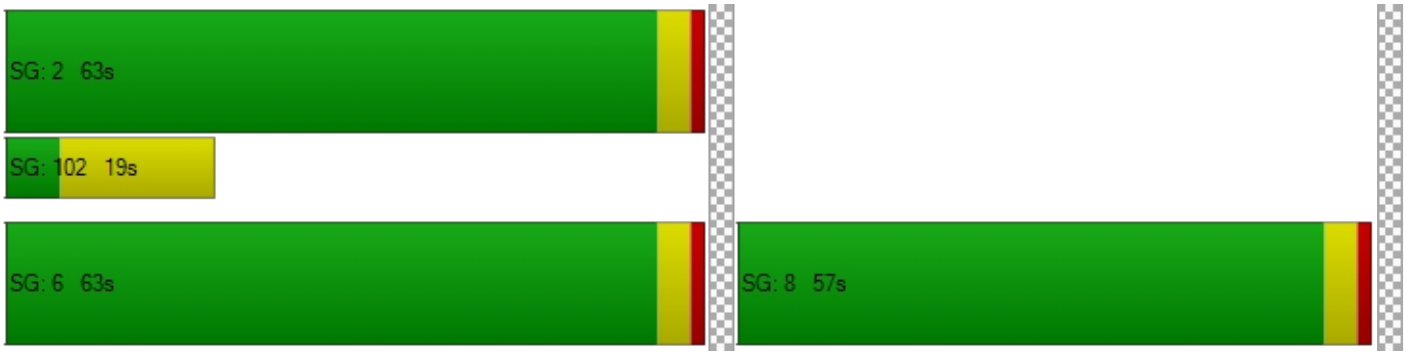
d_M, Delay for Movement [s/veh]	0.00	7.84	0.00	0.00	8.89	0.00	39.25	50.19	50.19	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	7.84			8.89			47.74			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	17.94											
Intersection LOS	B											
Intersection V/C	0.526											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.353	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	983	883	0
d_b, Bicycle Delay [s]	15.50	15.50	18.70	60.00
l_b,int, Bicycle LOS Score for Intersection	2.182	2.398	2.957	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	37	570	67	55	502	93	117	199	75	90	208	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	638	75	62	562	104	131	223	84	101	233	68
Peak Hour Factor	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	12	179	21	17	158	29	37	63	24	28	65	19
Total Analysis Volume [veh/h]	46	716	84	70	631	117	147	250	94	113	262	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	30	0	14	32	0	48	61	0	15	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	71	71	6	73	73	12	17	17	10	14	14
g / C, Green / Cycle	0.03	0.59	0.59	0.05	0.61	0.61	0.10	0.14	0.14	0.08	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.23	0.23	0.04	0.21	0.21	0.09	0.10	0.10	0.07	0.10	0.10
s, saturation flow rate [veh/h]	1714	1800	1735	1714	1800	1703	1714	1800	1636	1714	1800	1664
c, Capacity [veh/h]	59	1064	1026	89	1096	1037	178	258	235	137	216	199
d1, Uniform Delay [s]	57.50	12.96	12.96	56.23	11.67	11.67	52.72	48.84	48.97	54.37	51.45	51.58
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.90	1.04	1.08	14.08	0.88	0.94	9.31	3.27	3.85	11.62	6.94	8.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.38	0.38	0.79	0.35	0.35	0.83	0.69	0.71	0.82	0.81	0.82
d, Delay for Lane Group [s/veh]	77.40	14.00	14.04	70.31	12.55	12.61	62.02	52.11	52.82	65.99	58.40	59.84
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.71	5.95	5.75	2.44	5.21	4.96	4.80	5.32	4.99	3.80	5.51	5.28
50th-Percentile Queue Length [ft/ln]	42.75	148.7	143.7	61.10	130.3	123.8	120.0	132.9	124.7	95.09	137.6	131.9
95th-Percentile Queue Length [veh/ln]	3.08	9.95	9.68	4.40	8.96	8.61	8.40	9.10	8.65	6.85	9.35	9.05
95th-Percentile Queue Length [ft/ln]	76.95	248.7	241.9	109.9	223.9	215.1	209.9	227.4	216.2	171.1	233.8	226.1

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	77.40	14.02	14.04	70.31	12.57	12.61	62.02	52.32	52.82	65.99	58.88	59.84
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	17.47			17.52			55.32			60.83		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	32.12											
Intersection LOS	C											
Intersection V/C	0.452											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.643	2.658	2.494	2.607
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	467	950	400
d_b, Bicycle Delay [s]	36.82	35.27	16.54	38.40
l_b,int, Bicycle LOS Score for Intersection	2.258	2.234	1.965	1.932
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	38.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.673

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	75	725	72	337	942	150	215	192	53	91	197	246
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	13	0	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	0	18	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	828	81	377	1082	168	241	215	59	102	221	276
Peak Hour Factor	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	23	225	22	103	295	46	66	59	16	28	60	75
Total Analysis Volume [veh/h]	92	902	88	411	1179	183	263	234	64	111	241	301
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	40	0	21	49	0	15	37	0	22	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	50	50	17	59	59	11	28	28	10	26	26
g / C, Green / Cycle	0.07	0.42	0.42	0.14	0.49	0.49	0.09	0.23	0.23	0.08	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.06	0.12	0.34	0.12	0.08	0.07	0.04	0.06	0.13	0.20
s, saturation flow rate [veh/h]	1714	3427	1530	3329	3427	1530	3329	3427	1530	1714	1800	1530
c, Capacity [veh/h]	114	1429	638	462	1676	748	305	789	352	139	395	336
d1, Uniform Delay [s]	55.26	27.69	21.65	50.79	23.87	17.79	53.75	38.16	37.11	54.19	42.20	45.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.59	2.13	0.45	6.10	2.50	0.78	7.13	0.21	0.24	10.08	1.53	11.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.63	0.14	0.89	0.70	0.24	0.86	0.30	0.18	0.80	0.61	0.90
d, Delay for Lane Group [s/veh]	67.86	29.82	22.10	56.89	26.37	18.56	60.88	38.37	37.35	64.27	43.73	57.12
Lane Group LOS	E	C	C	E	C	B	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.14	10.54	1.62	6.45	13.28	3.10	4.21	2.88	1.54	3.69	6.61	9.76
50th-Percentile Queue Length [ft/ln]	78.58	263.5	40.59	161.1	331.9	77.44	105.3	72.04	38.62	92.13	165.2	243.9
95th-Percentile Queue Length [veh/ln]	5.66	15.87	2.92	10.61	19.25	5.58	7.58	5.19	2.78	6.63	10.83	14.88
95th-Percentile Queue Length [ft/ln]	141.4	396.7	73.07	265.2	481.2	139.4	189.5	129.6	69.51	165.8	270.6	372.0

Movement, Approach, & Intersection Results

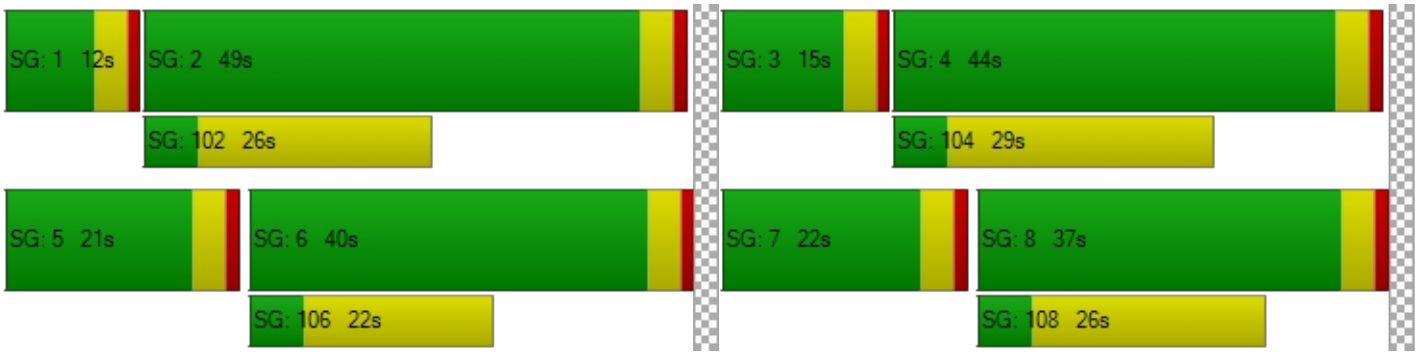
d_M, Delay for Movement [s/veh]	67.86	29.82	22.10	56.89	26.37	18.56	60.88	38.37	37.35	64.27	43.73	57.12
Movement LOS	E	C	C	E	C	B	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	32.43			32.64			48.81			53.39		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.14											
Intersection LOS	D											
Intersection V/C	0.673											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.864	3.060	2.759	2.693
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	750	550	667
d_b, Bicycle Delay [s]	29.40	23.44	31.54	26.67
l_b,int, Bicycle LOS Score for Intersection	2.452	3.022	2.022	2.637
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	33.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.632

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	160	919	38	219	1191	403	291	252	173	16	252	199
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	9	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	1039	43	245	1354	451	326	282	194	18	282	223
Peak Hour Factor	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	48	277	11	65	361	120	87	75	52	5	75	59
Total Analysis Volume [veh/h]	191	1108	46	261	1443	481	348	301	207	19	301	238
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	34	0	23	45	0	20	54	0	9	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	56	56	12	60	60	15	34	34	2	21	21
g / C, Green / Cycle	0.07	0.47	0.47	0.10	0.50	0.50	0.12	0.28	0.28	0.02	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.23	0.03	0.08	0.29	0.31	0.10	0.09	0.14	0.01	0.09	0.16
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	222	2299	717	325	2451	765	403	960	429	66	614	274
d1, Uniform Delay [s]	55.45	21.87	17.45	53.00	21.26	21.88	51.77	34.08	35.95	57.97	44.33	47.89
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.41	0.73	0.17	4.61	1.05	3.90	5.60	0.18	0.84	2.34	0.61	8.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.48	0.06	0.80	0.59	0.63	0.86	0.31	0.48	0.29	0.49	0.87
d, Delay for Lane Group [s/veh]	64.85	22.59	17.62	57.61	22.31	25.78	57.37	34.27	36.80	60.31	44.94	56.14
Lane Group LOS	E	C	B	E	C	C	E	C	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.15	7.21	0.74	4.06	9.62	10.49	5.45	3.51	5.16	0.31	4.09	7.53
50th-Percentile Queue Length [ft/ln]	78.74	180.3	18.40	101.5	240.5	262.2	136.1	87.73	128.9	7.66	102.3	188.2
95th-Percentile Queue Length [veh/ln]	5.67	11.62	1.32	7.31	14.71	15.80	9.27	6.32	8.88	0.55	7.37	12.03
95th-Percentile Queue Length [ft/ln]	141.7	290.4	33.12	182.7	367.7	394.9	231.8	157.9	222.0	13.78	184.2	300.8

Movement, Approach, & Intersection Results

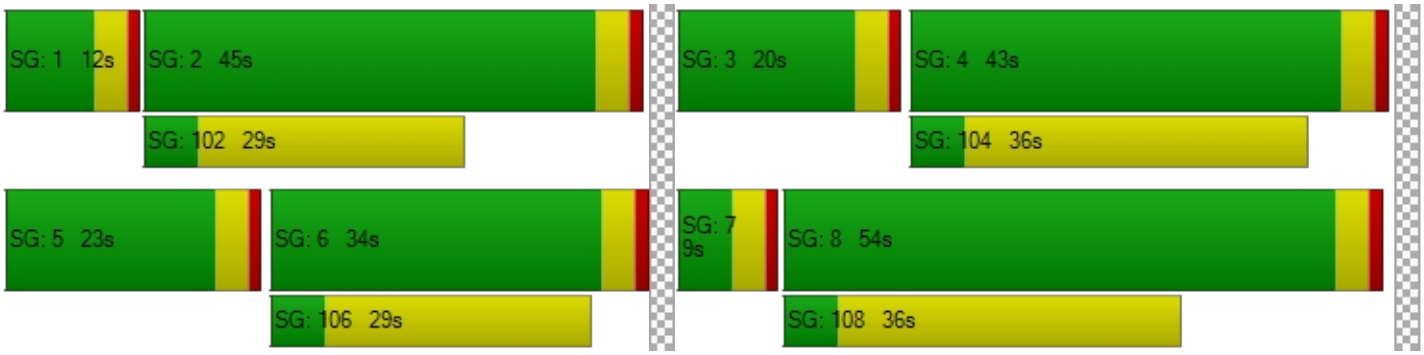
d_M, Delay for Movement [s/veh]	64.85	22.59	17.62	57.61	22.31	25.78	57.37	34.27	36.80	60.31	44.94	56.14
Movement LOS	E	C	B	E	C	C	E	C	D	E	D	E
d_A, Approach Delay [s/veh]	28.43			27.29			44.27			50.24		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.13											
Intersection LOS	C											
Intersection V/C	0.632											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.191	3.285	2.864	2.772
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	683	833	650
d_b, Bicycle Delay [s]	33.75	26.00	20.42	27.34
l_b,int, Bicycle LOS Score for Intersection	2.299	2.761	2.266	2.020
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	61.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.831

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	268	102	147	286	257	107	507	78	172	1112	236
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	6	6	0	0	4	0	0	0	4	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	9	0	0	0	9	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	306	114	165	333	288	120	568	100	193	1245	264
Peak Hour Factor	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	36	82	30	44	89	77	32	152	27	52	333	71
Total Analysis Volume [veh/h]	142	327	122	176	356	308	128	607	107	206	1330	282
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	36	36	15	40	0	12	52	0	17	57	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	32	46	11	36	36	8	51	51	10	53	53
g / C, Green / Cycle	0.06	0.27	0.38	0.09	0.30	0.30	0.07	0.43	0.43	0.08	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.04	0.18	0.08	0.10	0.20	0.20	0.07	0.14	0.14	0.06	0.45	0.47
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1530	1714	3427	1666	3329	1800	1695
c, Capacity [veh/h]	194	480	584	157	540	459	114	1463	711	271	795	748
d1, Uniform Delay [s]	55.60	39.43	24.94	54.50	36.63	36.79	56.00	22.91	22.96	53.95	33.50	33.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.49	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.31	7.61	0.81	71.46	6.18	7.59	76.44	0.13	0.27	4.34	37.07	52.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.68	0.21	1.12	0.66	0.67	1.12	0.33	0.33	0.76	1.02	1.07
d, Delay for Lane Group [s/veh]	60.90	47.04	25.75	125.9	42.81	44.38	132.4	23.04	23.23	58.30	70.57	86.33
Lane Group LOS	E	D	C	F	D	D	F	C	C	E	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.26	9.63	2.49	7.86	10.00	8.85	5.88	4.53	4.50	3.21	30.58	32.06
50th-Percentile Queue Length [ft/ln]	56.43	240.7	62.14	196.4	249.9	221.2	147.0	113.2	112.5	80.28	764.5	801.6
95th-Percentile Queue Length [veh/ln]	4.06	14.72	4.47	12.97	15.19	13.73	10.21	8.02	7.98	5.78	40.31	43.48
95th-Percentile Queue Length [ft/ln]	101.5	367.9	111.8	324.2	379.6	343.2	255.1	200.4	199.4	144.5	1007.	1086.

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.90	47.04	25.75	125.9	42.81	44.38	132.4	23.08	23.23	58.30	76.71	86.33
Movement LOS	E	D	C	F	D	D	F	C	C	E	E	F
d_A, Approach Delay [s/veh]	45.98			60.81			39.72			76.11		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	61.13											
Intersection LOS	E											
Intersection V/C	0.831											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.673	2.623	2.894	3.073
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	800	883
d_b, Bicycle Delay [s]	32.27	29.40	21.60	18.70
l_b,int, Bicycle LOS Score for Intersection	2.535	2.253	2.023	3.059
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	21.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.496

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	367	0	567	0	537	236	0	946	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.000	1.120	1.120	1.000	1.120	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	22	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	433	0	635	0	601	264	0	1060	0
Peak Hour Factor	1.000	1.000	1.000	0.908	1.000	0.908	1.000	0.908	0.908	1.000	0.908	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	119	0	175	0	165	73	0	292	0
Total Analysis Volume [veh/h]	0	0	0	477	0	699	0	662	291	0	1167	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Split	Permi	Split	Permi	Permi	Unsig	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	79	0	0	0	41	0	0	41	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		36	36	76	76
g / C, Green / Cycle		0.30	0.30	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate		0.14	0.26	0.14	0.24
s, saturation flow rate [veh/h]		3329	2708	4903	4903
c, Capacity [veh/h]		988	804	3121	3121
d1, Uniform Delay [s]		34.63	39.99	9.16	10.40
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.37	3.07	0.16	0.34
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.48	0.87	0.21	0.37
d, Delay for Lane Group [s/veh]		35.00	43.06	9.32	10.75
Lane Group LOS		C	D	A	B
Critical Lane Group		No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		5.78	10.04	2.39	4.80
50th-Percentile Queue Length [ft/ln]		144.51	250.99	59.82	119.95
95th-Percentile Queue Length [veh/ln]		9.72	15.24	4.31	8.39
95th-Percentile Queue Length [ft/ln]		243.09	380.90	107.67	209.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	35.00	0.00	43.06	0.00	9.32	0.00	0.00	10.75	0.00
Movement LOS				C		D		A			B	
d_A, Approach Delay [s/veh]	0.00			39.79			9.32			10.75		
Approach LOS	A			D			A			B		
d_I, Intersection Delay [s/veh]	21.80											
Intersection LOS	C											
Intersection V/C	0.496											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.544	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1250	617	617
d_b, Bicycle Delay [s]	60.00	8.44	28.70	28.70
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	1.924	2.201
Bicycle LOS	D	A	A	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.555

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	278	2	306	0	0	0	354	565	0	0	1595	179
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	22	0	0	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	2	343	0	0	0	396	655	0	0	1786	234
Peak Hour Factor	0.952	0.952	0.952	1.000	1.000	1.000	0.952	0.952	1.000	1.000	0.952	0.952
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	82	1	90	0	0	0	104	172	0	0	469	61
Total Analysis Volume [veh/h]	327	2	360	0	0	0	416	688	0	0	1876	246
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Unsig
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	9	0	0	0	0	41	111	0	0	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	36	36	36		18	76	55
g / C, Green / Cycle	0.30	0.30	0.30		0.15	0.64	0.45
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.14		0.12	0.14	0.29
s, saturation flow rate [veh/h]	1714	1596	1530		3329	4903	6538
c, Capacity [veh/h]	508	473	453		496	3123	2972
d1, Uniform Delay [s]	34.58	34.65	34.68		49.65	9.20	25.03
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	3.17	3.48	3.67		3.86	0.04	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.48	0.48		0.84	0.22	0.63
d, Delay for Lane Group [s/veh]	37.75	38.12	38.35		53.51	9.23	25.26
Lane Group LOS	D	D	D		D	A	C
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.23	5.92	5.74		6.33	2.47	10.10
50th-Percentile Queue Length [ft/ln]	155.8	147.9	143.3		158.19	61.78	252.49
95th-Percentile Queue Length [veh/ln]	10.33	9.91	9.66		10.45	4.45	15.31
95th-Percentile Queue Length [ft/ln]	258.1	247.6	241.5		261.33	111.20	382.79

Movement, Approach, & Intersection Results

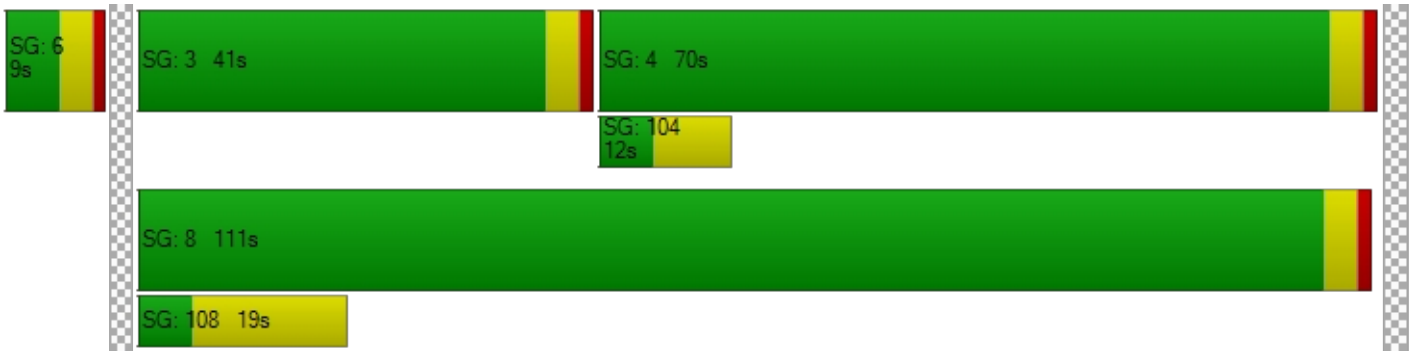
d_M, Delay for Movement [s/veh]	37.86	38.12	38.27	0.00	0.00	0.00	53.51	9.23	0.00	0.00	25.26	0.00
Movement LOS	D	D	D				D	A			C	
d_A, Approach Delay [s/veh]	38.07			0.00			25.92			25.26		
Approach LOS	D			A			C			C		
d_I, Intersection Delay [s/veh]	27.86											
Intersection LOS	C											
Intersection V/C	0.555											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.314	1.934	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	0	1783	1100
d_b, Bicycle Delay [s]	55.10	60.00	0.70	12.15
l_b,int, Bicycle LOS Score for Intersection	2.696	4.132	2.167	2.333
Bicycle LOS	B	D	B	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	41.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	63	529	155	69	828	410	232	502	139	414	1336	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	42	45	0	32	0	0	0	0	33	0	0
Site-Generated Trips [veh/h]	34	108	8	0	142	0	0	0	22	80	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	742	227	77	1101	459	260	562	178	577	1496	74
Peak Hour Factor	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	29	202	62	21	299	125	71	153	48	157	407	20
Total Analysis Volume [veh/h]	114	807	247	84	1197	499	283	611	193	627	1626	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	43	0	9	43	0	19	40	0	28	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	42	42	5	42	42	12	33	33	24	45	45
g / C, Green / Cycle	0.04	0.35	0.35	0.04	0.35	0.35	0.10	0.27	0.27	0.20	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.16	0.03	0.24	0.33	0.09	0.12	0.13	0.19	0.33	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	139	1732	540	131	1720	537	343	1344	419	666	1819	568
d1, Uniform Delay [s]	57.06	30.04	29.93	56.81	33.45	37.52	52.75	36.11	36.18	47.31	35.51	25.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.33	0.90	2.77	5.17	2.35	24.82	5.00	0.24	0.79	7.36	1.74	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.47	0.46	0.64	0.70	0.93	0.82	0.45	0.46	0.94	0.89	0.14
d, Delay for Lane Group [s/veh]	68.39	30.95	32.70	61.98	35.80	62.34	57.75	36.35	36.96	54.68	37.25	25.16
Lane Group LOS	E	C	C	E	D	E	E	D	D	D	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.93	6.16	5.92	1.35	10.28	17.59	4.42	4.99	4.80	9.87	14.93	1.54
50th-Percentile Queue Length [ft/ln]	48.34	154.0	147.9	33.74	256.9	439.8	110.4	124.6	119.9	246.6	373.3	38.55
95th-Percentile Queue Length [veh/ln]	3.48	10.23	9.91	2.43	15.54	24.47	7.87	8.65	8.39	15.02	21.27	2.78
95th-Percentile Queue Length [ft/ln]	87.01	255.7	247.7	60.73	388.4	611.8	196.6	216.2	209.7	375.4	531.7	69.38

Movement, Approach, & Intersection Results

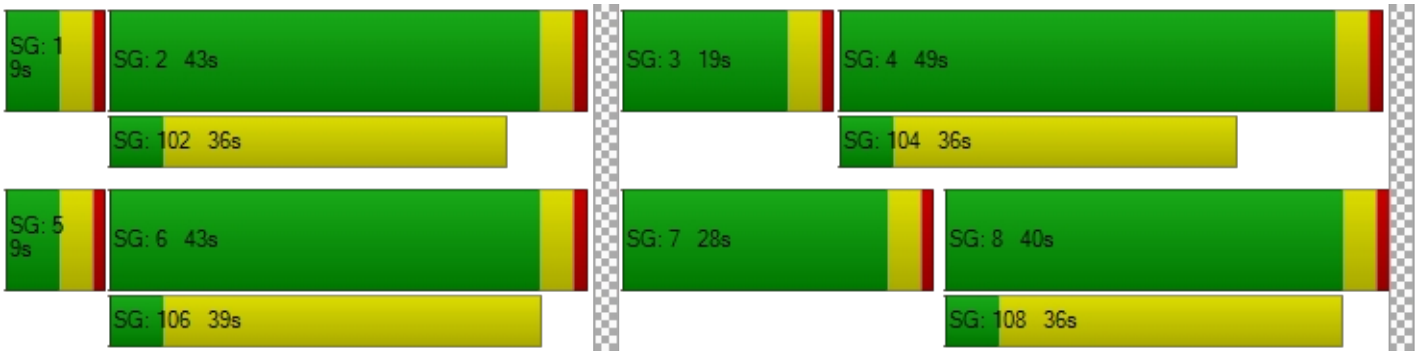
d_M, Delay for Movement [s/veh]	68.39	30.95	32.70	61.98	35.80	62.34	57.75	36.35	36.96	54.68	37.25	25.16
Movement LOS	E	C	C	E	D	E	E	D	D	D	D	C
d_A, Approach Delay [s/veh]	34.97			44.48			42.03			41.52		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	41.23											
Intersection LOS	D											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.209	3.184	3.388	3.301
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	650	600	750
d_b, Bicycle Delay [s]	27.34	27.34	29.40	23.44
l_b,int, Bicycle LOS Score for Intersection	2.202	2.539	2.157	2.843
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.536

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	239	13	94	239	197	132	419	37	45	589	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	38	0	0	27	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	3	0	0	63	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	268	15	105	268	221	148	510	41	50	750	92
Peak Hour Factor	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	22	81	5	32	81	67	45	154	12	15	226	28
Total Analysis Volume [veh/h]	88	324	18	127	324	267	179	616	50	60	906	111
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	36	0	16	40	0	24	44	0	24	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	51	51	11	54	54	14	36	36	6	27	27
g / C, Green / Cycle	0.06	0.43	0.43	0.09	0.45	0.45	0.12	0.30	0.30	0.05	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.01	0.07	0.18	0.18	0.10	0.13	0.03	0.04	0.20	0.20
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1772	1511	1714	4903	1506	1687	3427	1701
c, Capacity [veh/h]	109	1467	655	152	802	684	207	1487	457	79	786	390
d1, Uniform Delay [s]	55.44	21.69	19.87	53.82	21.89	21.94	51.79	33.32	30.13	56.51	44.44	44.48
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.80	0.35	0.08	11.30	1.46	1.74	10.27	0.18	0.10	13.69	2.99	6.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.22	0.03	0.84	0.40	0.40	0.86	0.41	0.11	0.76	0.86	0.87
d, Delay for Lane Group [s/veh]	68.24	22.03	19.95	65.12	23.35	23.68	62.06	33.50	30.24	70.20	47.42	50.49
Lane Group LOS	E	C	B	E	C	C	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.02	2.96	0.31	4.25	6.26	5.46	5.87	4.80	1.06	2.10	9.98	10.28
50th-Percentile Queue Length [ft/ln]	75.41	74.10	7.72	106.2	156.4	136.4	146.8	119.9	26.61	52.49	249.4	257.0
95th-Percentile Queue Length [veh/ln]	5.43	5.34	0.56	7.63	10.36	9.29	9.85	8.39	1.92	3.78	15.16	15.54
95th-Percentile Queue Length [ft/ln]	135.7	133.3	13.89	190.7	259.0	232.1	246.1	209.8	47.91	94.48	378.9	388.5

Movement, Approach, & Intersection Results

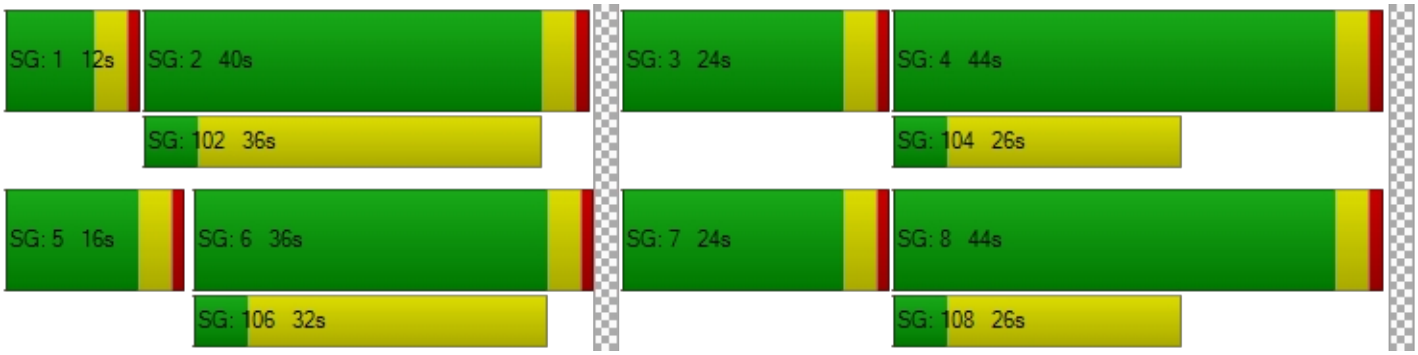
d_M, Delay for Movement [s/veh]	68.24	22.03	19.95	65.12	23.36	23.68	62.06	33.50	30.24	70.20	48.19	50.49
Movement LOS	E	C	B	E	C	C	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	31.40			30.86			39.36			49.65		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.87											
Intersection LOS	D											
Intersection V/C	0.536											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.609	2.685	3.093	2.965
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	667	667
d_b, Bicycle Delay [s]	32.27	29.40	26.67	26.67
l_b,int, Bicycle LOS Score for Intersection	1.914	2.152	2.024	2.152
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	56.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.934

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	120	571	733	124	771	237	274	346	109	156	659	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	2	2	0	0	9	11	21	0	2	14	0
Site-Generated Trips [veh/h]	0	0	5	0	0	18	2	1	0	8	36	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	642	828	139	864	292	320	410	122	185	788	114
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	36	170	220	37	229	77	85	109	32	49	209	30
Total Analysis Volume [veh/h]	142	682	879	148	917	310	340	435	130	196	837	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	17	62	0	13	58	0	15	26	0	19	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	12	61	61	9	58	58	11	25	25	9	23	36
g / C, Green / Cycle	0.10	0.51	0.51	0.08	0.48	0.48	0.09	0.21	0.21	0.08	0.19	0.30
(v / s)_i Volume / Saturation Flow Rate	0.08	0.38	0.57	0.09	0.27	0.20	0.10	0.09	0.08	0.06	0.17	0.08
s, saturation flow rate [veh/h]	1714	1800	1530	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	168	910	774	129	1655	739	305	1022	319	258	952	463
d1, Uniform Delay [s]	53.25	23.60	29.66	55.50	21.90	20.12	54.50	41.26	41.09	54.25	46.97	31.69
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.07	5.63	76.70	86.18	1.34	1.75	61.71	0.28	0.84	4.55	2.81	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.75	1.14	1.15	0.55	0.42	1.11	0.43	0.41	0.76	0.88	0.26
d, Delay for Lane Group [s/veh]	64.32	29.22	106.3	141.6	23.24	21.87	116.2	41.54	41.93	58.80	49.78	31.99
Lane Group LOS	E	C	F	F	C	C	F	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.73	16.34	37.75	6.96	9.29	5.93	7.22	3.76	3.41	3.07	8.32	2.71
50th-Percentile Queue Length [ft/ln]	118.1	408.4	943.8	174.0	232.1	148.3	180.4	94.11	85.29	76.67	207.8	67.86
95th-Percentile Queue Length [veh/ln]	8.29	22.97	52.68	11.81	14.28	9.93	12.08	6.78	6.14	5.52	13.04	4.89
95th-Percentile Queue Length [ft/ln]	207.2	574.2	1317.	295.3	357.0	248.2	301.8	169.4	153.5	138.0	326.1	122.1

Movement, Approach, & Intersection Results

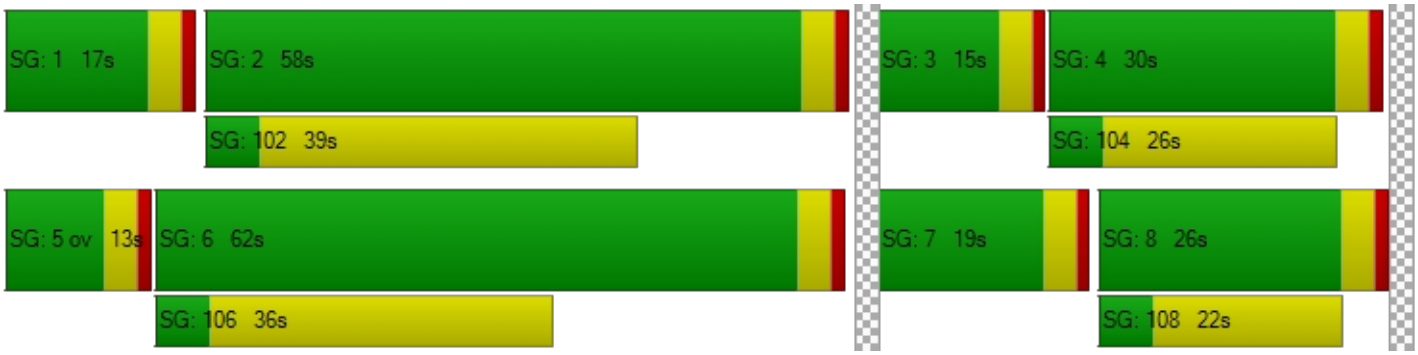
d_M, Delay for Movement [s/veh]	64.32	29.22	106.3	141.6	23.24	21.87	116.2	41.54	41.93	58.80	49.78	31.99
Movement LOS	E	C	F	F	C	C	F	D	D	E	D	C
d_A, Approach Delay [s/veh]	71.96			35.68			69.65			49.45		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	56.79											
Intersection LOS	E											
Intersection V/C	0.934											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.890	2.877	3.102	3.237
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	900	367	433
d_b, Bicycle Delay [s]	16.02	18.15	40.02	36.82
l_b,int, Bicycle LOS Score for Intersection	2.965	2.694	2.057	2.194
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.617

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	157	629	56	220	1054	104	94	405	109	90	492	139
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	5	0	0	4	6	10	6	0	0	4	0
Site-Generated Trips [veh/h]	0	0	0	0	5	18	1	0	0	0	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	709	63	246	1189	140	116	460	122	101	564	156
Peak Hour Factor	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891	0.891
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	49	199	18	69	334	39	33	129	34	28	158	44
Total Analysis Volume [veh/h]	198	796	71	276	1334	157	130	516	137	113	633	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	40	0	23	50	0	10	47	0	10	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	66	66	12	70	70	6	19	19	6	19	19
g / C, Green / Cycle	0.08	0.55	0.55	0.10	0.58	0.58	0.05	0.16	0.16	0.05	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.05	0.08	0.39	0.10	0.04	0.11	0.09	0.03	0.13	0.11
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	250	2715	847	339	1990	888	166	795	248	163	790	247
d1, Uniform Delay [s]	54.58	14.27	12.54	52.77	17.28	11.76	56.35	47.07	46.26	56.18	48.48	47.68
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.63	0.27	0.19	4.73	1.82	0.43	7.73	0.90	1.91	5.21	1.94	3.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.29	0.08	0.81	0.67	0.18	0.78	0.65	0.55	0.69	0.80	0.71
d, Delay for Lane Group [s/veh]	60.21	14.55	12.73	57.50	19.10	12.20	64.08	47.97	48.17	61.39	50.42	51.43
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.14	3.86	0.94	4.29	12.61	2.05	2.13	4.88	3.90	1.80	6.22	5.21
50th-Percentile Queue Length [ft/ln]	78.43	96.61	23.44	107.3	315.2	51.18	53.14	122.0	97.54	45.08	155.5	130.3
95th-Percentile Queue Length [veh/ln]	5.65	6.96	1.69	7.69	18.44	3.68	3.83	8.51	7.02	3.25	10.31	8.96
95th-Percentile Queue Length [ft/ln]	141.1	173.8	42.20	192.3	460.8	92.12	95.65	212.6	175.5	81.15	257.7	223.9

Movement, Approach, & Intersection Results

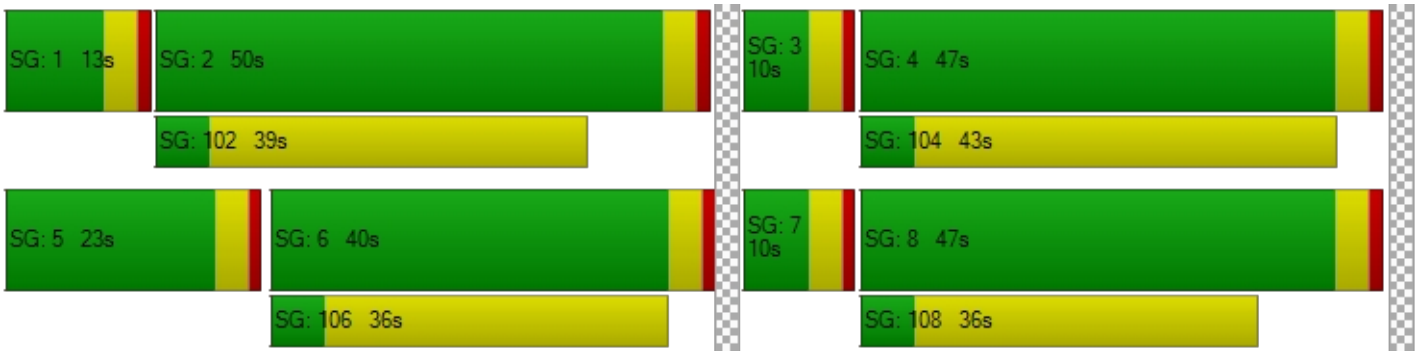
d_M, Delay for Movement [s/veh]	60.21	14.55	12.73	57.50	19.10	12.20	64.08	47.97	48.17	61.39	50.42	51.43
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	22.92			24.49			50.68			51.96		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.22											
Intersection LOS	C											
Intersection V/C	0.617											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.151	3.348	3.154	3.058
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	767	717	717
d_b, Bicycle Delay [s]	29.40	22.82	24.70	24.70
l_b,int, Bicycle LOS Score for Intersection	2.145	3.017	1.990	2.066
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	49.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.658

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	141	239	145	76	282	121	87	249	108	94	464	69
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	12	1	0	8	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	18	0	0	0	0	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	280	163	85	342	136	97	279	121	106	520	77
Peak Hour Factor	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843	0.843
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	47	83	48	25	101	40	29	83	36	31	154	23
Total Analysis Volume [veh/h]	187	332	193	101	406	161	115	331	144	126	617	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	19	30	0	12	23	23	0	30	0	0	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	39	39	8	32	32	24	24	33	33
g / C, Green / Cycle	0.12	0.32	0.32	0.07	0.27	0.27	0.20	0.20	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.11	0.15	0.16	0.06	0.12	0.11	0.18	0.18	0.25	0.25
s, saturation flow rate [veh/h]	1714	1800	1582	1714	3427	1530	1768	1498	1775	1574
c, Capacity [veh/h]	212	579	509	114	906	404	361	306	487	432
d1, Uniform Delay [s]	51.70	32.67	32.73	55.54	36.83	36.29	46.35	46.45	42.06	42.07
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.15	0.16	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.22	2.85	3.29	18.98	1.60	2.91	9.55	12.06	12.54	13.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.48	0.49	0.88	0.45	0.40	0.88	0.89	0.91	0.91
d, Delay for Lane Group [s/veh]	62.93	35.52	36.01	74.52	38.43	39.20	55.89	58.51	54.59	55.94
Lane Group LOS	E	D	D	E	D	D	E	E	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.19	6.94	6.22	3.63	5.18	4.22	10.12	8.89	14.25	12.80
50th-Percentile Queue Length [ft/ln]	154.6	173.6	155.6	90.80	129.4	105.3	252.99	222.22	356.19	320.02
95th-Percentile Queue Length [veh/ln]	10.27	11.27	10.32	6.54	8.91	7.58	15.34	13.78	20.44	18.67
95th-Percentile Queue Length [ft/ln]	256.6	281.6	257.8	163.4	222.7	189.5	383.42	344.46	510.95	466.71

Movement, Approach, & Intersection Results

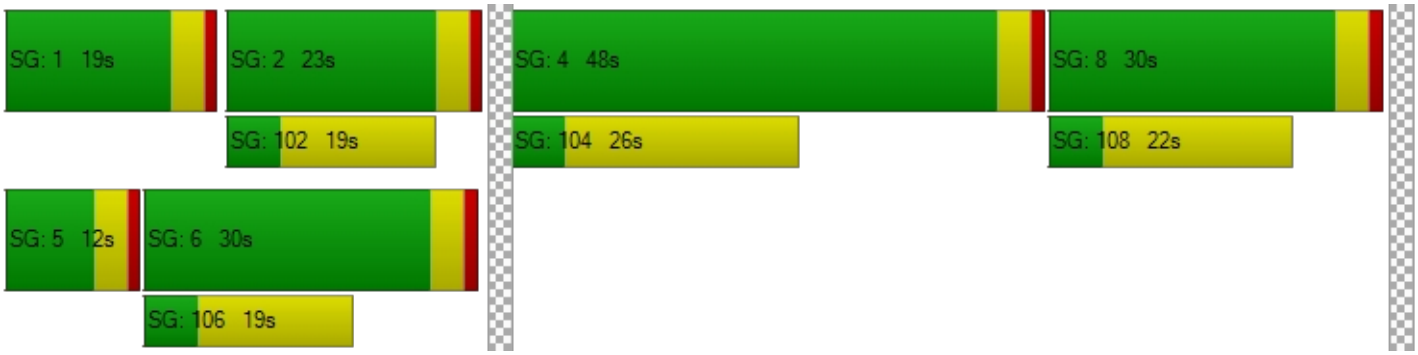
d_M, Delay for Movement [s/veh]	62.93	35.60	36.01	74.52	38.43	39.20	55.89	56.91	58.51	54.59	55.25	55.94
Movement LOS	E	D	D	E	D	D	E	E	E	D	E	E
d_A, Approach Delay [s/veh]	42.89			44.08			57.10			55.23		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	49.83											
Intersection LOS	D											
Intersection V/C	0.658											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.586	2.664	2.525	2.502
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	317	433	733
d_b, Bicycle Delay [s]	36.82	42.50	36.82	24.07
l_b,int, Bicycle LOS Score for Intersection	2.147	2.111	2.046	2.248
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	38.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.947

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	150	0	849	0	520	798	0	1435	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.000	1.120	1.120	1.000	1.120	1.000
In-Process Volume [veh/h]	0	0	0	26	0	0	0	12	0	0	16	0
Site-Generated Trips [veh/h]	0	0	0	94	0	0	0	27	0	0	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	288	0	951	0	621	894	0	1633	0
Peak Hour Factor	1.000	1.000	1.000	0.945	1.000	0.945	1.000	0.945	0.945	1.000	0.945	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	76	0	252	0	164	237	0	432	0
Total Analysis Volume [veh/h]	0	0	0	305	0	1006	0	657	946	0	1728	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	43	0	0	0	77	0	0	77	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		39	39	39	73	73	73
g / C, Green / Cycle		0.33	0.33	0.33	0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate		0.18	0.33	0.33	0.13	0.62	0.35
s, saturation flow rate [veh/h]		1714	1530	1530	4903	1530	4903
c, Capacity [veh/h]		557	497	497	2983	931	2983
d1, Uniform Delay [s]		33.25	40.50	40.50	10.63	23.50	14.21
k, delay calibration		0.12	0.47	0.47	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.97	42.06	42.06	0.17	33.66	0.83
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.55	1.01	1.01	0.22	1.02	0.58
d, Delay for Lane Group [s/veh]		34.22	82.56	82.56	10.80	57.16	15.04
Lane Group LOS		C	F	F	B	F	B
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		7.43	20.26	20.26	2.62	32.87	9.28
50th-Percentile Queue Length [ft/ln]		185.6	506.5	506.5	65.48	821.81	231.89
95th-Percentile Queue Length [veh/ln]		11.90	27.86	27.86	4.71	42.88	14.27
95th-Percentile Queue Length [ft/ln]		297.4	696.4	696.4	117.87	1072.07	356.76

Movement, Approach, & Intersection Results

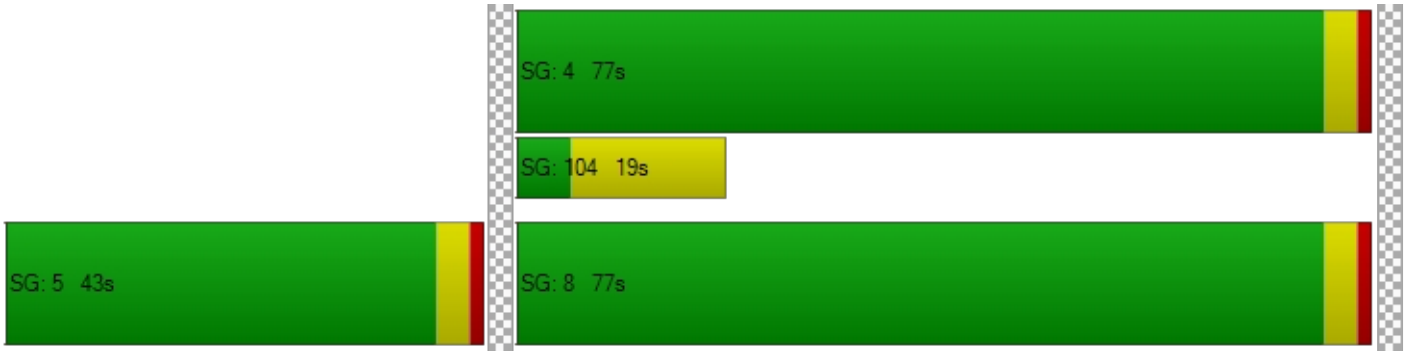
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	34.22	0.00	82.56	0.00	10.80	57.16	0.00	15.04	0.00
Movement LOS				C		F		B	F		B	
d_A, Approach Delay [s/veh]	0.00			71.31			38.16			15.04		
Approach LOS	A			E			D			B		
d_I, Intersection Delay [s/veh]	38.92											
Intersection LOS	D											
Intersection V/C	0.947											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.466	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	650	1217	1217
d_b, Bicycle Delay [s]	60.00	27.34	9.20	9.20
l_b,int, Bicycle LOS Score for Intersection	4.132	3.723	2.441	2.510
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.702

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	873	0	494	0	0	0	0	441	0	0	1219	197
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	38	0	0	16	36
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	121	0	0	10	61
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	978	0	553	0	0	0	0	653	0	0	1391	318
Peak Hour Factor	0.879	1.000	0.879	1.000	1.000	1.000	1.000	0.879	1.000	1.000	0.879	0.879
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	278	0	157	0	0	0	0	186	0	0	396	90
Total Analysis Volume [veh/h]	1113	0	629	0	0	0	0	743	0	0	1582	362
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	66	0	0	0	0	0	0	54	0	0	54	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	50	50	50		62	62	62
g / C, Green / Cycle	0.42	0.42	0.42		0.52	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.34	0.34	0.38		0.15	0.32	0.24
s, saturation flow rate [veh/h]	1714	1697	1530		4903	4903	1530
c, Capacity [veh/h]	716	709	639		2528	2528	789
d1, Uniform Delay [s]	30.75	30.91	32.77		16.60	20.79	18.45
k, delay calibration	0.21	0.22	0.27		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	4.38	4.75	11.86		0.30	1.18	1.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.82	0.91		0.29	0.63	0.46
d, Delay for Lane Group [s/veh]	35.13	35.65	44.64		16.90	21.98	20.37
Lane Group LOS	D	D	D		B	C	C
Critical Lane Group	No	No	Yes		No	Yes	No
50th-Percentile Queue Length [veh/ln]	15.40	15.54	17.59		3.93	10.58	6.70
50th-Percentile Queue Length [ft/ln]	385.0	388.5	439.8		98.34	264.59	167.47
95th-Percentile Queue Length [veh/ln]	21.84	22.01	24.47		7.08	15.92	10.94
95th-Percentile Queue Length [ft/ln]	545.9	550.1	611.8		177.02	397.97	273.58

Movement, Approach, & Intersection Results

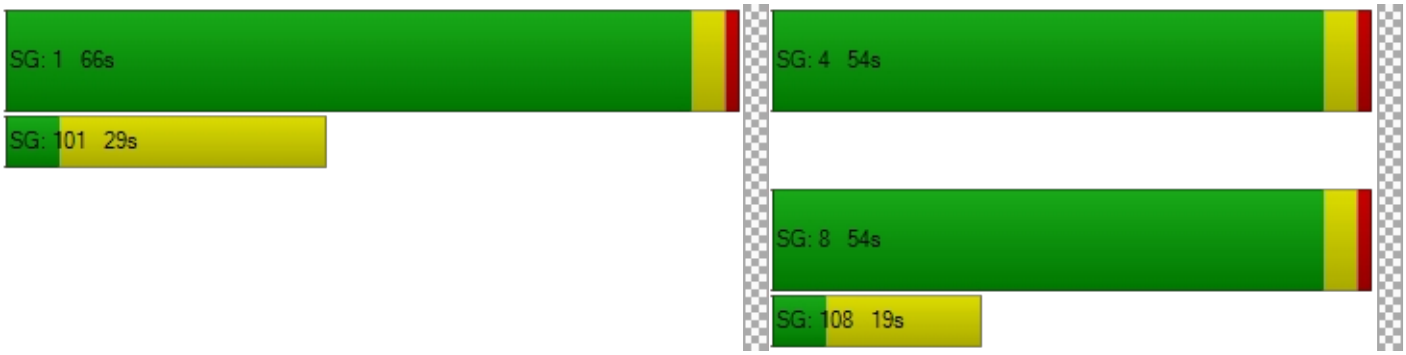
d_M, Delay for Movement [s/veh]	35.38	0.00	43.95	0.00	0.00	0.00	0.00	16.90	0.00	0.00	21.98	20.37
Movement LOS	D		D					B			C	C
d_A, Approach Delay [s/veh]	38.47			0.00			16.90			21.68		
Approach LOS	D			A			B			C		
d_I, Intersection Delay [s/veh]	27.48											
Intersection LOS	C											
Intersection V/C	0.702											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.571	0.000	0.000	3.071
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	0	833	833
d_b, Bicycle Delay [s]	14.02	60.00	20.42	20.42
l_b,int, Bicycle LOS Score for Intersection	4.434	4.132	1.968	2.629
Bicycle LOS	E	D	A	B

Sequence

Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	62.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.864

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	153	199	67	50	341	230	100	448	210	342	1200	115
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	52	13	1	0	8	0	0	0	38	0	0	0
Site-Generated Trips [veh/h]	71	0	0	0	19	0	0	0	121	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	294	236	76	56	409	258	112	502	394	384	1344	129
Peak Hour Factor	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	80	64	21	15	111	70	30	136	107	104	365	35
Total Analysis Volume [veh/h]	319	256	83	61	444	280	122	545	428	417	1459	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	50	0	11	36	0	9	36	36	23	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	47	47	6	32	32	5	34	59	17	46	46
g / C, Green / Cycle	0.18	0.40	0.40	0.05	0.27	0.27	0.04	0.28	0.49	0.14	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.19	0.14	0.05	0.04	0.21	0.22	0.04	0.16	0.28	0.13	0.43	0.09
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1571	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	300	711	604	80	480	419	139	965	749	478	1314	587
d1, Uniform Delay [s]	49.50	25.60	23.22	56.55	41.07	41.12	57.20	36.84	21.69	50.31	37.00	25.11
k, delay calibration	0.26	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11	0.13	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	55.65	1.42	0.47	13.86	13.34	15.32	15.84	0.52	3.15	5.11	53.18	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.36	0.14	0.76	0.80	0.81	0.88	0.57	0.57	0.87	1.11	0.24
d, Delay for Lane Group [s/veh]	105.1	27.02	23.69	70.40	54.41	56.45	73.04	37.36	24.83	55.42	90.18	25.32
Lane Group LOS	F	C	C	E	D	E	E	D	C	E	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	13.59	5.43	1.59	2.14	12.37	11.08	2.15	6.89	9.03	6.46	28.53	2.76
50th-Percentile Queue Length [ft/ln]	339.7	135.7	39.85	53.42	309.1	276.9	53.63	172.2	225.8	161.5	713.1	68.93
95th-Percentile Queue Length [veh/ln]	20.25	9.25	2.87	3.85	18.13	16.53	3.86	11.19	13.96	10.63	40.07	4.96
95th-Percentile Queue Length [ft/ln]	506.2	231.2	71.72	96.16	453.3	413.3	96.54	279.8	349.0	265.7	1001.	124.0

Movement, Approach, & Intersection Results

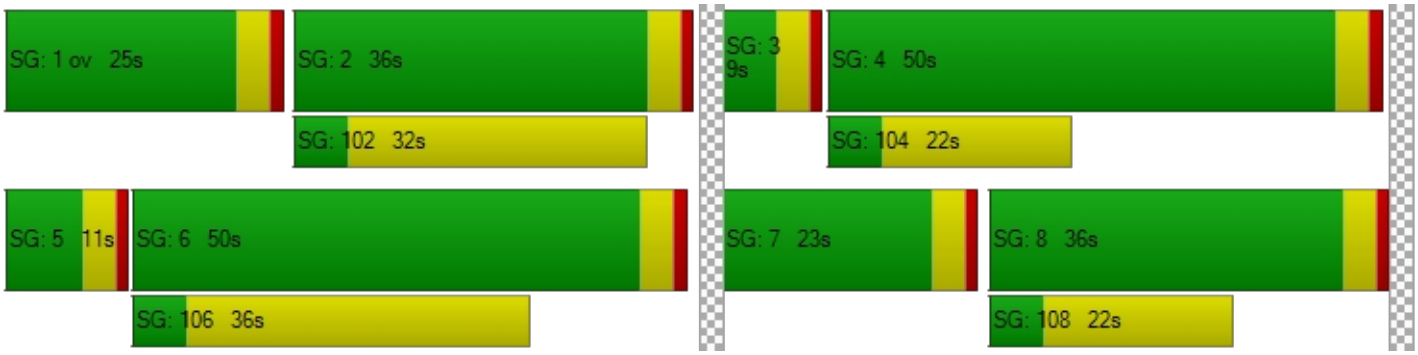
d_M, Delay for Movement [s/veh]	105.1	27.02	23.69	70.40	54.68	56.45	73.04	37.36	24.83	55.42	90.18	25.32
Movement LOS	F	C	C	E	D	E	E	D	C	E	F	C
d_A, Approach Delay [s/veh]	64.48			56.53			36.44			78.49		
Approach LOS	E			E			D			E		
d_I, Intersection Delay [s/veh]	62.57											
Intersection LOS	E											
Intersection V/C	0.864											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.695	2.569	3.125	3.157
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	533	533	767
d_b, Bicycle Delay [s]	22.82	32.27	32.27	22.82
l_b,int, Bicycle LOS Score for Intersection	2.645	2.207	2.463	3.223
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	43.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	214	404	115	164	793	203	183	414	153	284	1138	98
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	91	29	0	72	0	1	0	0	19	0	0
Site-Generated Trips [veh/h]	0	156	5	0	259	1	0	0	0	43	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	240	699	163	184	1219	228	206	464	171	380	1275	110
Peak Hour Factor	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.922
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	65	190	44	50	331	62	56	126	46	103	346	30
Total Analysis Volume [veh/h]	260	758	177	200	1322	247	223	503	185	412	1383	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	24	44	0	20	40	40	13	36	0	20	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	20	42	42	16	38	51	9	30	30	16	37	57
g / C, Green / Cycle	0.17	0.35	0.35	0.13	0.32	0.42	0.08	0.25	0.25	0.13	0.31	0.47
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.12	0.12	0.27	0.16	0.07	0.10	0.12	0.12	0.28	0.08
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	284	1714	535	226	1546	648	250	1237	386	444	1523	727
d1, Uniform Delay [s]	49.21	30.03	28.70	51.23	38.52	23.77	55.02	37.39	38.17	51.43	39.73	17.90
k, delay calibration	0.16	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.57	0.83	1.66	11.08	6.28	1.70	10.66	0.22	0.92	8.88	2.39	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.44	0.33	0.89	0.86	0.38	0.89	0.41	0.48	0.93	0.91	0.16
d, Delay for Lane Group [s/veh]	64.78	30.85	30.36	62.31	44.79	25.47	65.68	37.61	39.09	60.31	42.12	18.01
Lane Group LOS	E	C	C	E	D	C	E	D	D	E	D	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.87	5.74	4.00	6.60	12.92	5.11	3.71	4.15	4.74	6.66	13.26	1.91
50th-Percentile Queue Length [ft/ln]	221.6	143.5	100.0	164.9	322.9	127.7	92.74	103.6	118.5	166.5	331.3	47.70
95th-Percentile Queue Length [veh/ln]	13.75	9.67	7.21	10.81	18.81	8.82	6.68	7.46	8.31	10.89	19.23	3.43
95th-Percentile Queue Length [ft/ln]	343.7	241.8	180.1	270.2	470.2	220.4	166.9	186.6	207.8	272.3	480.6	85.86

Movement, Approach, & Intersection Results

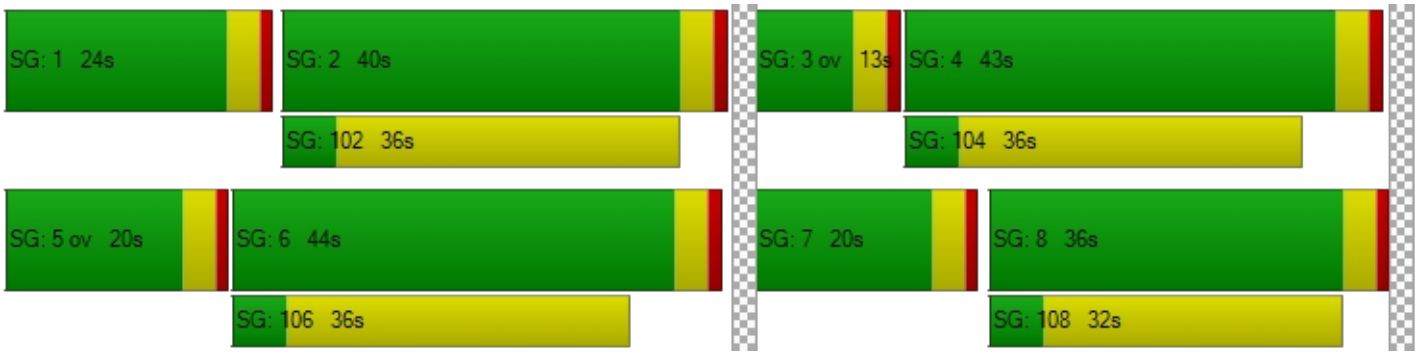
d_M, Delay for Movement [s/veh]	64.78	30.85	30.36	62.31	44.79	25.47	65.68	37.61	39.09	60.31	42.12	18.01
Movement LOS	E	C	C	E	D	C	E	D	D	E	D	B
d_A, Approach Delay [s/veh]	38.16			44.08			44.78			44.54		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.12											
Intersection LOS	D											
Intersection V/C	0.770											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.120	3.175	3.168	3.167
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	600	533	650
d_b, Bicycle Delay [s]	26.67	29.40	32.27	27.34
l_b,int, Bicycle LOS Score for Intersection	2.217	2.533	2.061	2.612
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	1,507.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.036

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	21	0	102	0	0	0	0	621	36	198	1526	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	1	0	0	0	0	29	0	2	19	0
Site-Generated Trips [veh/h]	0	0	5	0	0	0	0	5	0	8	43	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	0	120	0	0	0	0	730	40	232	1771	0
Peak Hour Factor	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823	0.823
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	0	36	0	0	0	0	222	12	70	538	0
Total Analysis Volume [veh/h]	29	0	146	0	0	0	0	887	49	282	2152	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	3.04	0.00	0.27	0.00	0.00	0.00	0.00	0.01	0.00	0.38	0.02	0.00
d_M, Delay for Movement [s/veh]	1507.	2243.	1137.	1538.	1160.	21.50	19.19	0.00	0.00	12.83	0.00	0.00
Movement LOS	F	F	F	F	F	C	C	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	18.75	18.75	18.75	0.00	0.00	0.00	0.00	0.00	0.00	1.79	0.00	0.00
95th-Percentile Queue Length [ft/ln]	468.7	468.7	468.7	0.00	0.00	0.00	0.00	0.00	0.00	44.78	0.00	0.00
d_A, Approach Delay [s/veh]	1198.92			906.89			0.00			1.49		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	60.21											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	52.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	143	515	78	132	724	162	149	428	114	235	797	78
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	0	0	2	0	0	23	0	0	15	0
Site-Generated Trips [veh/h]	0	5	0	0	8	0	0	5	0	0	34	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	586	87	148	821	181	167	507	128	263	942	87
Peak Hour Factor	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	44	160	24	40	225	50	46	139	35	72	258	24
Total Analysis Volume [veh/h]	175	641	95	162	898	198	183	555	140	288	1031	95
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	43	0	18	44	0	18	31	0	28	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	40	40	13	40	40	14	29	29	22	37	37
g / C, Green / Cycle	0.11	0.33	0.33	0.11	0.33	0.33	0.12	0.24	0.24	0.18	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.10	0.21	0.21	0.09	0.31	0.31	0.11	0.16	0.09	0.17	0.30	0.06
s, saturation flow rate [veh/h]	1714	1800	1720	1714	1800	1689	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	186	597	570	189	600	563	200	825	369	316	1057	472
d1, Uniform Delay [s]	53.13	33.89	33.89	52.48	38.83	38.93	52.41	41.26	38.06	48.00	41.05	30.60
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.21	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.52	4.99	5.22	10.74	24.59	26.51	15.03	0.96	0.65	17.31	8.36	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.63	0.63	0.86	0.94	0.94	0.92	0.67	0.38	0.91	0.98	0.20
d, Delay for Lane Group [s/veh]	72.65	38.88	39.11	63.22	63.42	65.44	67.44	42.22	38.71	65.32	49.42	30.81
Lane Group LOS	E	D	D	E	E	E	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.24	10.05	9.64	5.36	19.98	19.17	6.28	7.53	3.52	9.94	16.10	2.07
50th-Percentile Queue Length [ft/ln]	155.9	251.2	241.0	133.9	499.5	479.1	156.9	188.1	87.94	248.5	402.5	51.76
95th-Percentile Queue Length [veh/ln]	10.33	15.25	14.73	9.15	27.31	26.34	10.38	12.03	6.33	15.11	22.68	3.73
95th-Percentile Queue Length [ft/ln]	258.3	381.2	368.3	228.7	682.7	658.6	259.6	300.6	158.2	377.8	567.0	93.17

Movement, Approach, & Intersection Results

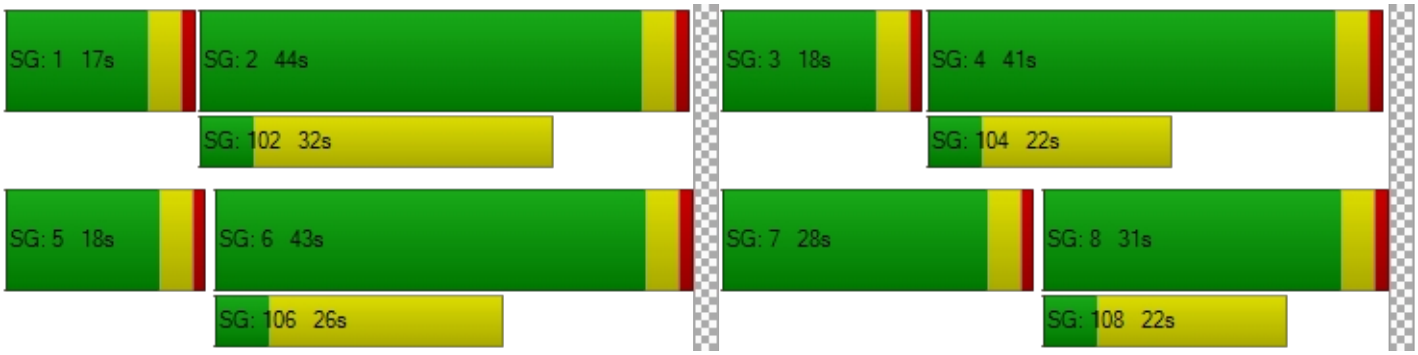
d_M, Delay for Movement [s/veh]	72.65	38.98	39.11	63.22	64.17	65.44	67.44	42.22	38.71	65.32	49.42	30.81
Movement LOS	E	D	D	E	E	E	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	45.46			64.25			46.92			51.41		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	52.93											
Intersection LOS	D											
Intersection V/C	0.825											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.751	2.740	2.839	2.830
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	667	450	617
d_b, Bicycle Delay [s]	27.34	26.67	36.04	28.70
l_b,int, Bicycle LOS Score for Intersection	2.311	2.597	2.284	2.726
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	44.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	79	436	79	192	814	126	211	375	100	151	611	125
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	9	2	0	8	2	3	14	0	3	9	0
Site-Generated Trips [veh/h]	0	5	5	0	16	6	0	5	0	8	19	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	502	95	215	936	149	239	439	112	180	712	140
Peak Hour Factor	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902	0.902
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	139	26	60	259	41	66	122	31	50	197	39
Total Analysis Volume [veh/h]	98	557	105	238	1038	165	265	487	124	200	789	155
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	32	0	24	44	0	27	40	0	24	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	35	35	18	45	45	20	35	35	16	30	30
g / C, Green / Cycle	0.07	0.29	0.29	0.15	0.38	0.38	0.17	0.29	0.29	0.13	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.07	0.14	0.30	0.11	0.15	0.14	0.08	0.12	0.23	0.10
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	114	987	440	264	1287	574	292	997	445	229	871	389
d1, Uniform Delay [s]	55.44	36.33	32.67	49.84	33.57	26.23	48.83	35.17	32.84	50.97	43.38	37.15
k, delay calibration	0.11	0.50	0.50	0.12	0.50	0.50	0.17	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.32	2.34	1.27	12.02	5.49	1.26	14.98	0.37	0.34	9.90	3.95	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.56	0.24	0.90	0.81	0.29	0.91	0.49	0.28	0.87	0.91	0.40
d, Delay for Lane Group [s/veh]	71.76	38.67	33.95	61.86	39.07	27.49	63.81	35.54	33.17	60.87	47.33	37.82
Lane Group LOS	E	D	C	E	D	C	E	D	C	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.45	7.25	2.50	7.88	14.32	3.52	8.98	5.94	2.84	6.52	11.74	3.86
50th-Percentile Queue Length [ft/ln]	86.30	181.2	62.61	196.9	358.0	87.88	224.5	148.4	71.02	163.0	293.6	96.58
95th-Percentile Queue Length [veh/ln]	6.21	11.66	4.51	12.48	20.53	6.33	13.90	9.94	5.11	10.71	17.36	6.95
95th-Percentile Queue Length [ft/ln]	155.3	291.5	112.7	312.0	513.2	158.1	347.4	248.4	127.8	267.7	434.1	173.8

Movement, Approach, & Intersection Results

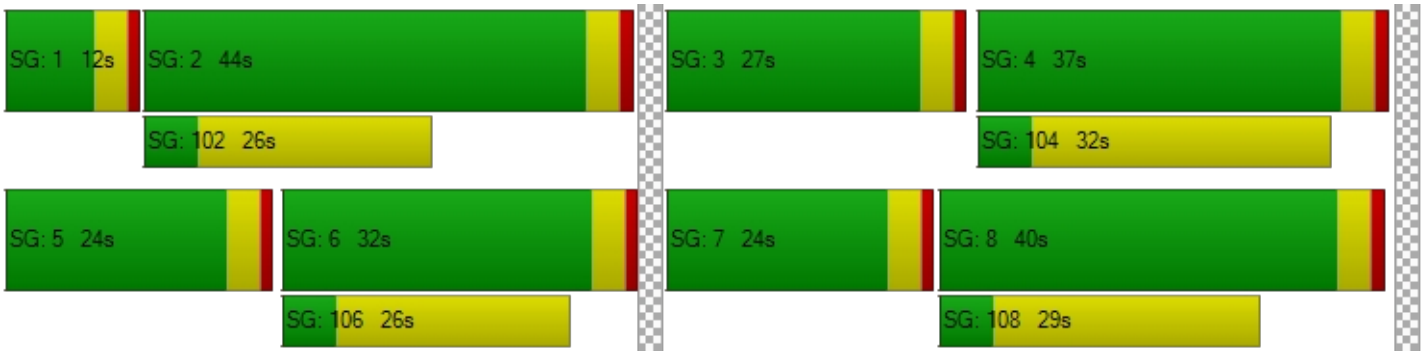
d_M, Delay for Movement [s/veh]	71.76	38.67	33.95	61.86	39.07	27.49	63.81	35.54	33.17	60.87	47.33	37.82
Movement LOS	E	D	C	E	D	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	42.29			41.50			43.76			48.41		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.98											
Intersection LOS	D											
Intersection V/C	0.745											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.905	3.035	2.781	2.789
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	667	600	550
d_b, Bicycle Delay [s]	35.27	26.67	29.40	31.54
l_b,int, Bicycle LOS Score for Intersection	2.187	2.748	2.282	2.503
Bicycle LOS	B	B	B	B

Sequence

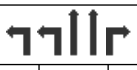
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	43.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.787

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	325	161	36	120	324	392	93	245	148	141	699	133
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	18	66	0	0	46	0	0	0	12	0	0	0
Site-Generated Trips [veh/h]	0	71	0	0	141	0	0	0	27	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	382	317	40	134	550	439	104	274	205	158	783	149
Peak Hour Factor	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865	0.865
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	110	92	12	39	159	127	30	79	59	46	226	43
Total Analysis Volume [veh/h]	442	366	46	155	636	508	120	317	237	183	905	172
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	23	35	35	18	30	30	10	51	51	16	57	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	45	58	13	40	50	6	38	60	9	40	40
g / C, Green / Cycle	0.15	0.38	0.48	0.11	0.33	0.41	0.05	0.31	0.50	0.07	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.13	0.11	0.03	0.09	0.19	0.33	0.04	0.18	0.15	0.05	0.31	0.31
s, saturation flow rate [veh/h]	3329	3427	1530	1714	3427	1530	3329	1800	1530	3329	1800	1702
c, Capacity [veh/h]	500	1285	737	181	1133	633	166	562	759	245	605	571
d1, Uniform Delay [s]	49.96	26.24	16.61	52.74	33.02	30.86	56.17	34.44	18.04	54.49	38.18	38.26
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.17	0.11	0.24	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.35	0.56	0.16	10.81	2.01	10.33	5.77	0.89	0.37	4.51	11.67	12.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.28	0.06	0.85	0.56	0.80	0.72	0.56	0.31	0.75	0.91	0.92
d, Delay for Lane Group [s/veh]	55.31	26.80	16.77	63.55	35.03	41.19	61.94	35.33	18.41	59.01	49.86	51.02
Lane Group LOS	E	C	B	E	D	D	E	D	B	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.86	3.77	0.72	5.13	7.90	14.47	1.92	7.85	3.98	2.87	17.32	16.64
50th-Percentile Queue Length [ft/ln]	171.4	94.29	17.89	128.3	197.3	361.6	48.12	196.1	99.52	71.67	432.9	416.0
95th-Percentile Queue Length [veh/ln]	11.15	6.79	1.29	8.85	12.50	20.70	3.46	12.44	7.17	5.16	24.14	23.33
95th-Percentile Queue Length [ft/ln]	278.7	169.7	32.20	221.2	312.5	517.5	86.62	311.0	179.1	129.0	603.5	583.3

Movement, Approach, & Intersection Results

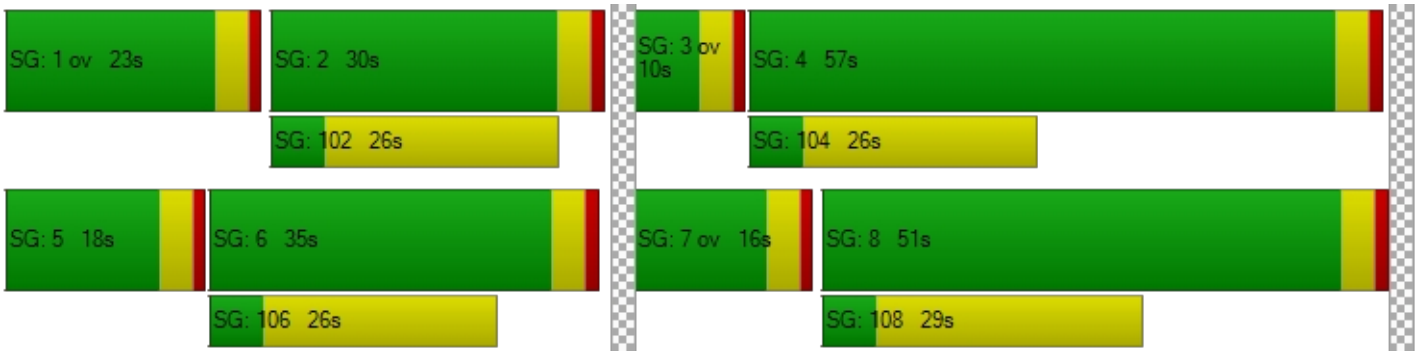
d_M, Delay for Movement [s/veh]	55.31	26.80	16.77	63.55	35.03	41.19	61.94	35.33	18.41	59.01	50.31	51.02
Movement LOS	E	C	B	E	D	D	E	D	B	E	D	D
d_A, Approach Delay [s/veh]	41.01			40.84			34.12			51.67		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	43.11											
Intersection LOS	D											
Intersection V/C	0.787											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.875	2.786	2.961	2.757
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	433	783	883
d_b, Bicycle Delay [s]	33.00	36.82	22.20	18.70
l_b,int, Bicycle LOS Score for Intersection	2.264	2.631	2.672	2.599
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	54.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	103	671	122	53	1008	95	70	390	93	154	601	59
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	121	20	0	91	0	0	0	0	13	0	0
Site-Generated Trips [veh/h]	0	161	0	0	302	0	0	0	0	35	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	1034	157	59	1522	106	78	437	104	220	673	66
Peak Hour Factor	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	30	273	41	16	401	28	21	115	27	58	177	17
Total Analysis Volume [veh/h]	121	1091	166	62	1605	112	82	461	110	232	710	70
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	49	0	9	45	0	10	40	0	22	52	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	45	45	5	41	41	6	36	36	18	48	48
g / C, Green / Cycle	0.08	0.38	0.38	0.04	0.34	0.34	0.05	0.30	0.30	0.15	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.07	0.25	0.25	0.04	0.33	0.33	0.05	0.26	0.07	0.14	0.39	0.05
s, saturation flow rate [veh/h]	1714	3427	1681	1714	3427	1741	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	129	1285	630	71	1171	595	86	540	459	257	720	612
d1, Uniform Delay [s]	55.24	31.09	31.09	57.17	38.93	38.96	56.87	39.49	31.66	50.16	35.67	22.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.35	0.11	0.11	0.46	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.92	2.63	5.27	25.15	20.37	30.93	35.51	11.52	0.27	11.78	28.91	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.66	0.66	0.87	0.97	0.97	0.96	0.85	0.24	0.90	0.99	0.11
d, Delay for Lane Group [s/veh]	80.15	33.71	36.36	82.32	59.30	69.89	92.38	51.01	31.92	61.95	64.58	22.72
Lane Group LOS	F	C	D	F	E	E	F	D	C	E	E	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.53	10.51	10.77	2.37	19.55	21.64	3.32	14.40	2.46	7.67	25.85	1.27
50th-Percentile Queue Length [ft/ln]	113.2	262.6	269.3	59.21	488.7	541.0	83.10	359.8	61.41	191.7	646.2	31.74
95th-Percentile Queue Length [veh/ln]	8.02	15.82	16.16	4.26	26.80	29.27	5.98	20.62	4.42	12.21	34.19	2.29
95th-Percentile Queue Length [ft/ln]	200.4	395.5	403.9	106.5	670.0	731.8	149.5	515.4	110.5	305.3	854.7	57.13

Movement, Approach, & Intersection Results

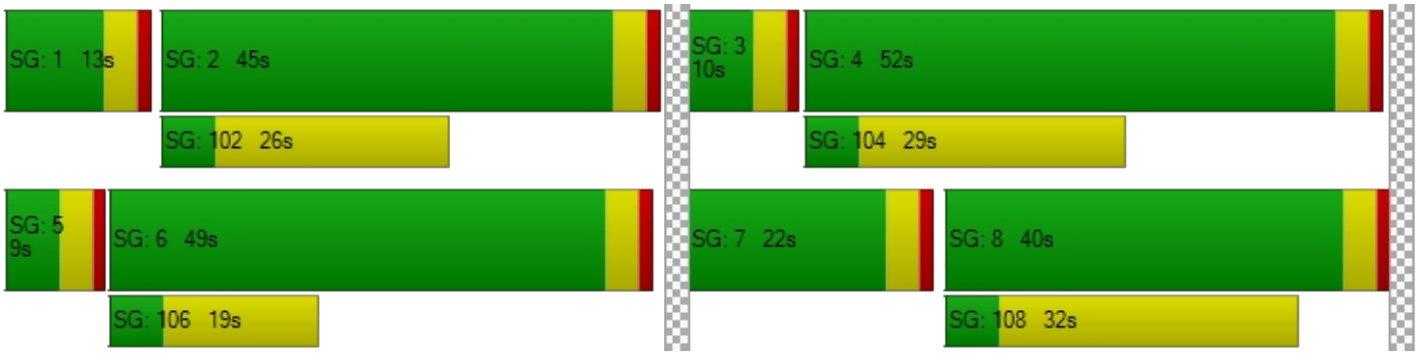
d_M, Delay for Movement [s/veh]	80.15	34.32	36.36	82.32	62.38	69.89	92.38	51.01	31.92	61.95	64.58	22.72
Movement LOS	F	C	D	F	E	E	F	D	C	E	E	C
d_A, Approach Delay [s/veh]	38.59			63.55			52.99			61.08		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	54.47											
Intersection LOS	D											
Intersection V/C	0.845											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.146	3.030	2.727	2.561
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	683	600	800
d_b, Bicycle Delay [s]	23.44	26.00	29.40	21.60
l_b,int, Bicycle LOS Score for Intersection	2.318	2.538	2.637	3.229
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	29.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.552

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	83	127	114	14	154	84	41	337	58	140	598	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	1	3	0	2	0	0	20	0	2	13	0
Site-Generated Trips [veh/h]	0	5	0	0	8	0	0	0	0	3	35	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	148	131	16	182	94	46	397	65	162	718	25
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	41	36	4	50	26	13	109	18	45	198	7
Total Analysis Volume [veh/h]	103	163	144	18	201	104	51	438	72	179	792	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	26	0	0	26	0	0	94	0	0	94	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	56	56	56	56	56	56	56	56	56	56	56	56
g / C, Green / Cycle	0.47	0.47	0.47	0.47	0.47	0.47	0.46	0.46	0.46	0.46	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.09	0.02	0.11	0.07	0.08	0.24	0.05	0.20	0.44	0.02
s, saturation flow rate [veh/h]	1091	1800	1530	1089	1800	1530	678	1800	1530	904	1800	1530
c, Capacity [veh/h]	421	842	716	438	842	716	154	838	712	370	838	712
d1, Uniform Delay [s]	29.69	18.68	18.75	26.04	19.12	18.22	48.06	22.66	18.00	32.35	30.62	17.47
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.17	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.38	0.51	0.63	0.18	0.67	0.43	1.24	0.51	0.06	0.98	9.04	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.19	0.20	0.04	0.24	0.15	0.33	0.52	0.10	0.48	0.95	0.04
d, Delay for Lane Group [s/veh]	31.07	19.19	19.38	26.22	19.79	18.65	49.30	23.17	18.06	33.33	39.66	17.49
Lane Group LOS	C	B	B	C	B	B	D	C	B	C	D	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.37	2.78	2.48	0.37	3.51	1.74	1.48	8.77	1.14	4.35	23.25	0.43
50th-Percentile Queue Length [ft/ln]	59.24	69.46	62.09	9.17	87.82	43.50	36.93	219.3	28.55	108.8	581.2	10.77
95th-Percentile Queue Length [veh/ln]	4.27	5.00	4.47	0.66	6.32	3.13	2.66	13.63	2.06	7.78	31.16	0.78
95th-Percentile Queue Length [ft/ln]	106.6	125.0	111.7	16.51	158.0	78.30	66.47	340.8	51.39	194.3	778.9	19.39

Movement, Approach, & Intersection Results

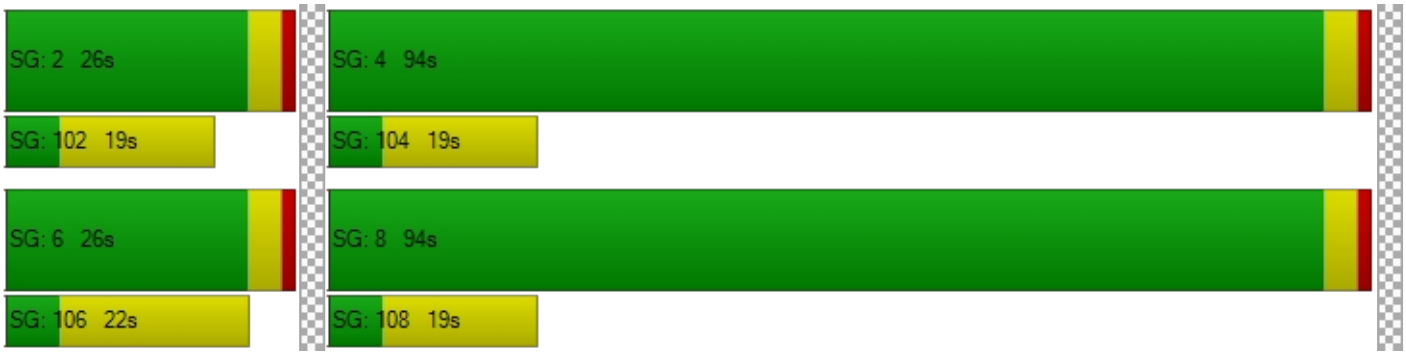
d_M, Delay for Movement [s/veh]	31.07	19.19	19.38	26.22	19.79	18.65	49.30	23.17	18.06	33.33	39.66	17.49
Movement LOS	C	B	B	C	B	B	D	C	B	C	D	B
d_A, Approach Delay [s/veh]	22.24			19.78			24.89			37.90		
Approach LOS	C			B			C			D		
d_I, Intersection Delay [s/veh]	29.37											
Intersection LOS	C											
Intersection V/C	0.552											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.611	2.357	2.673	2.653
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	367	1500	1500
d_b, Bicycle Delay [s]	40.02	40.02	3.75	3.75
l_b,int, Bicycle LOS Score for Intersection	2.236	2.093	2.485	3.208
Bicycle LOS	B	B	B	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	50.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.799

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	208	617	205	96	791	141	73	255	105	226	437	131
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	3	0	2	0	0	11	0	2	7	0
Site-Generated Trips [veh/h]	0	5	0	0	8	0	0	0	0	3	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	233	700	233	108	896	158	82	297	118	258	516	147
Peak Hour Factor	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	60	181	60	28	232	41	21	77	31	67	134	38
Total Analysis Volume [veh/h]	241	725	241	112	928	164	85	307	122	267	534	152
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	53	0	13	44	0	11	28	0	26	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	51	51	9	42	42	7	24	24	21	37	37
g / C, Green / Cycle	0.15	0.42	0.42	0.08	0.35	0.35	0.06	0.20	0.20	0.17	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.14	0.28	0.28	0.07	0.31	0.31	0.05	0.09	0.08	0.16	0.30	0.10
s, saturation flow rate [veh/h]	1714	1800	1649	1714	1800	1707	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	257	759	695	129	624	592	100	681	304	294	561	477
d1, Uniform Delay [s]	50.44	27.87	27.92	54.93	37.19	37.24	55.98	42.32	41.87	48.78	40.40	31.55
k, delay calibration	0.13	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.17	0.40	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.91	4.53	5.01	16.02	18.12	19.19	17.50	0.47	0.86	15.35	23.82	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.66	0.67	0.87	0.90	0.90	0.85	0.45	0.40	0.91	0.95	0.32
d, Delay for Lane Group [s/veh]	67.35	32.40	32.93	70.95	55.31	56.43	73.48	42.79	42.72	64.13	64.22	31.93
Lane Group LOS	E	C	C	E	E	E	E	D	D	E	E	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.34	12.40	11.52	3.92	18.48	17.77	3.04	4.06	3.23	9.08	18.95	3.44
50th-Percentile Queue Length [ft/ln]	208.6	309.9	287.9	98.03	462.0	444.1	75.89	101.5	80.75	227.0	473.7	85.92
95th-Percentile Queue Length [veh/ln]	13.08	18.17	17.08	7.06	25.53	24.68	5.46	7.31	5.81	14.02	26.09	6.19
95th-Percentile Queue Length [ft/ln]	327.0	454.2	427.0	176.4	638.2	616.9	136.5	182.7	145.3	350.5	652.1	154.6

Movement, Approach, & Intersection Results

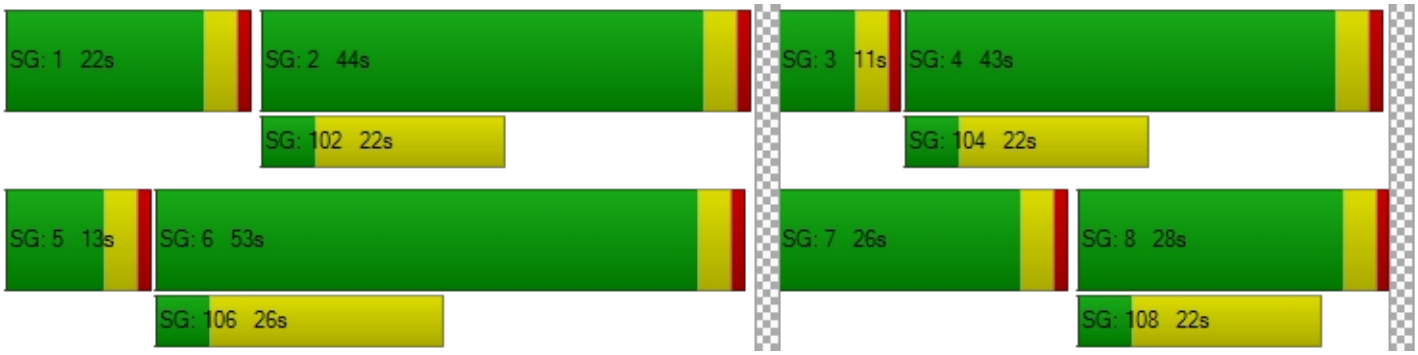
d_M, Delay for Movement [s/veh]	67.35	32.56	32.93	70.95	55.75	56.43	73.48	42.79	42.72	64.13	64.22	31.93
Movement LOS	E	C	C	E	E	E	E	D	D	E	E	C
d_A, Approach Delay [s/veh]	39.58			57.26			47.85			59.04		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	50.95											
Intersection LOS	D											
Intersection V/C	0.799											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.807	2.737	2.598	2.730
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	667	400	650
d_b, Bicycle Delay [s]	21.00	26.67	38.40	27.34
l_b,int, Bicycle LOS Score for Intersection	2.555	2.553	1.984	3.132
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	38.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	87	511	35	58	717	69	67	402	82	69	527	55
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	11	3	0	11	0	0	3	0	2	2	0
Site-Generated Trips [veh/h]	0	10	0	0	24	0	0	0	0	3	6	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	593	42	65	838	77	75	453	92	82	598	62
Peak Hour Factor	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	173	12	19	244	22	22	132	27	24	174	18
Total Analysis Volume [veh/h]	113	691	49	76	977	90	87	528	107	96	697	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	44	0	12	43	0	11	52	0	12	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	61	61	7	59	59	7	28	28	8	29	29
g / C, Green / Cycle	0.08	0.51	0.51	0.06	0.49	0.49	0.06	0.23	0.23	0.07	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.07	0.21	0.21	0.04	0.30	0.30	0.05	0.18	0.18	0.06	0.22	0.22
s, saturation flow rate [veh/h]	1714	1800	1758	1714	1800	1747	1714	1800	1696	1714	1800	1741
c, Capacity [veh/h]	129	917	895	96	882	857	100	423	398	114	438	423
d1, Uniform Delay [s]	54.96	18.25	18.25	55.95	22.30	22.30	56.05	42.91	42.95	55.37	43.90	43.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.12	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.78	1.35	1.38	13.46	3.18	3.28	19.52	3.03	3.26	14.82	6.99	7.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.41	0.41	0.79	0.61	0.61	0.87	0.77	0.78	0.84	0.89	0.89
d, Delay for Lane Group [s/veh]	71.74	19.59	19.63	69.41	25.47	25.58	75.56	45.94	46.21	70.18	50.89	51.13
Lane Group LOS	E	B	B	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.98	6.70	6.55	2.63	11.68	11.38	3.15	9.38	8.91	3.34	12.01	11.66
50th-Percentile Queue Length [ft/ln]	99.51	167.4	163.8	65.81	292.0	284.3	78.87	234.5	222.6	83.52	300.3	291.4
95th-Percentile Queue Length [veh/ln]	7.16	10.94	10.75	4.74	17.28	16.91	5.68	14.40	13.80	6.01	17.70	17.26
95th-Percentile Queue Length [ft/ln]	179.1	273.5	268.8	118.4	432.1	422.6	141.9	360.1	345.0	150.3	442.4	431.4

Movement, Approach, & Intersection Results

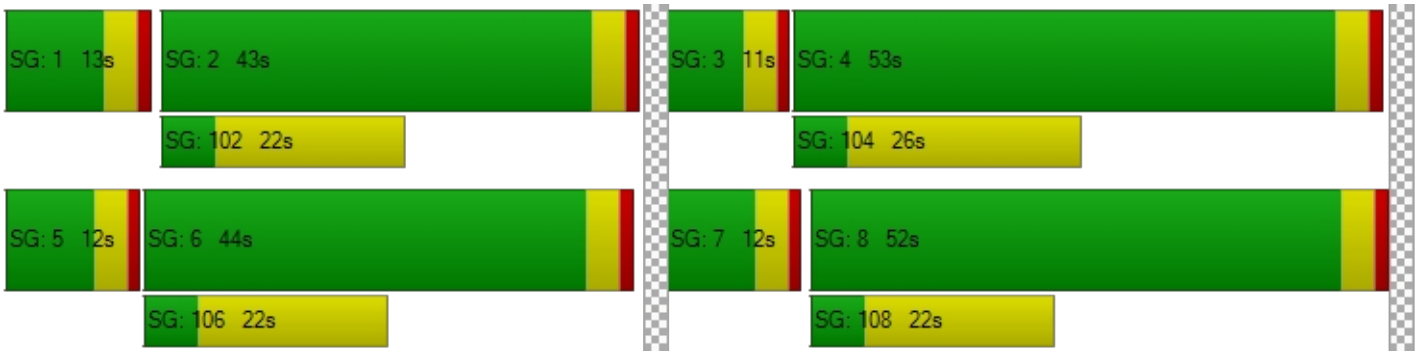
d_M, Delay for Movement [s/veh]	71.74	19.61	19.63	69.41	25.52	25.58	75.56	46.05	46.21	70.18	51.00	51.13
Movement LOS	E	B	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.52			28.45			49.63			53.14		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.22											
Intersection LOS	D											
Intersection V/C	0.635											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.712	2.792	2.631	2.611
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	650	800	817
d_b, Bicycle Delay [s]	26.67	27.34	21.60	21.00
l_b,int, Bicycle LOS Score for Intersection	2.263	2.503	2.155	2.273
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	28.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.791

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	418	151	65	572	0	0	0	0	234	0	137
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	84	0	0	58	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	71	0	0	168	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	623	169	73	867	0	0	0	0	262	0	153
Peak Hour Factor	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	182	49	21	253	0	0	0	0	76	0	45
Total Analysis Volume [veh/h]	0	727	197	85	1012	0	0	0	0	306	0	179
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	71	0	17	79	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	72	72	8	80	80	28	28	28	28
g / C, Green / Cycle	0.00	0.60	0.60	0.06	0.67	0.67	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.00	0.40	0.13	0.05	0.56	0.00	0.00	0.00	0.23	0.12
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1530	1680	1530	1337	1530
c, Capacity [veh/h]	2	1086	923	108	1198	1018	422	357	372	357
d1, Uniform Delay [s]	0.00	15.83	10.83	55.39	15.35	0.00	0.00	0.00	46.75	39.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.39	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	3.28	0.53	11.59	7.41	0.00	0.00	0.00	14.74	1.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.67	0.21	0.78	0.84	0.00	0.00	0.00	0.82	0.50
d, Delay for Lane Group [s/veh]	0.00	19.12	11.36	66.99	22.75	0.00	0.00	0.00	61.49	41.03
Lane Group LOS	A	B	B	E	C	A	A	A	E	D
Critical Lane Group	No	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	13.57	2.47	2.89	21.53	0.00	0.00	0.00	10.55	4.70
50th-Percentile Queue Length [ft/ln]	0.00	339.3	61.71	72.14	538.3	0.00	0.00	0.00	263.70	117.60
95th-Percentile Queue Length [veh/ln]	0.00	19.61	4.44	5.19	29.14	0.00	0.00	0.00	15.87	8.26
95th-Percentile Queue Length [ft/ln]	0.00	490.3	111.0	129.8	728.5	0.00	0.00	0.00	396.86	206.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	19.12	11.36	66.99	22.75	0.00	0.00	0.00	0.00	61.49	61.49	41.03
Movement LOS	A	B	B	E	C	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	17.46			26.18			0.00			53.94		
Approach LOS	B			C			A			D		
d_I, Intersection Delay [s/veh]	28.34											
Intersection LOS	C											
Intersection V/C	0.791											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.188	0.000	1.955	2.205
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1117	1250	467	467
d_b, Bicycle Delay [s]	11.70	8.44	35.27	35.27
l_b,int, Bicycle LOS Score for Intersection	3.084	3.370	1.560	2.360
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	64.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.920

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	186	806	132	35	1068	89	30	30	200	150	136	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	140	0	0	104	0	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	161	0	0	337	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	1204	148	39	1637	100	34	34	224	169	152	76
Peak Hour Factor	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	57	328	40	11	446	27	9	9	61	46	41	21
Total Analysis Volume [veh/h]	227	1313	161	43	1785	109	37	37	244	184	166	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	69	0	9	59	0	9	26	0	16	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	67	67	4	56	56	4	21	21	12	29
g / C, Green / Cycle	0.13	0.56	0.56	0.03	0.47	0.47	0.03	0.17	0.17	0.10	0.24
(v / s)_i Volume / Saturation Flow Rate	0.13	0.41	0.42	0.03	0.52	0.07	0.02	0.02	0.16	0.11	0.15
s, saturation flow rate [veh/h]	1714	1800	1733	1714	3427	1530	1714	1800	1530	1714	1700
c, Capacity [veh/h]	214	1008	970	55	1601	715	52	314	267	171	415
d1, Uniform Delay [s]	52.50	19.80	20.10	57.63	31.97	18.34	57.67	41.75	48.65	54.00	40.16
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.18	0.11	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	45.65	4.82	5.40	20.18	60.90	0.45	16.48	0.17	18.09	53.49	1.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.74	0.75	0.78	1.11	0.15	0.71	0.12	0.91	1.07	0.60
d, Delay for Lane Group [s/veh]	98.15	24.62	25.50	77.81	92.87	18.79	74.14	41.92	66.74	107.49	42.00
Lane Group LOS	F	C	C	E	F	B	E	D	E	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	9.15	16.25	16.33	1.61	35.89	1.84	1.35	0.95	8.49	7.71	6.72
50th-Percentile Queue Length [ft/ln]	228.8	406.3	408.3	40.17	897.2	45.88	33.78	23.63	212.3	192.80	167.96
95th-Percentile Queue Length [veh/ln]	14.46	22.86	22.96	2.89	49.58	3.30	2.43	1.70	13.27	12.60	10.97
95th-Percentile Queue Length [ft/ln]	361.6	571.6	574.0	72.30	1239.	82.58	60.81	42.53	331.8	314.97	274.24

Movement, Approach, & Intersection Results

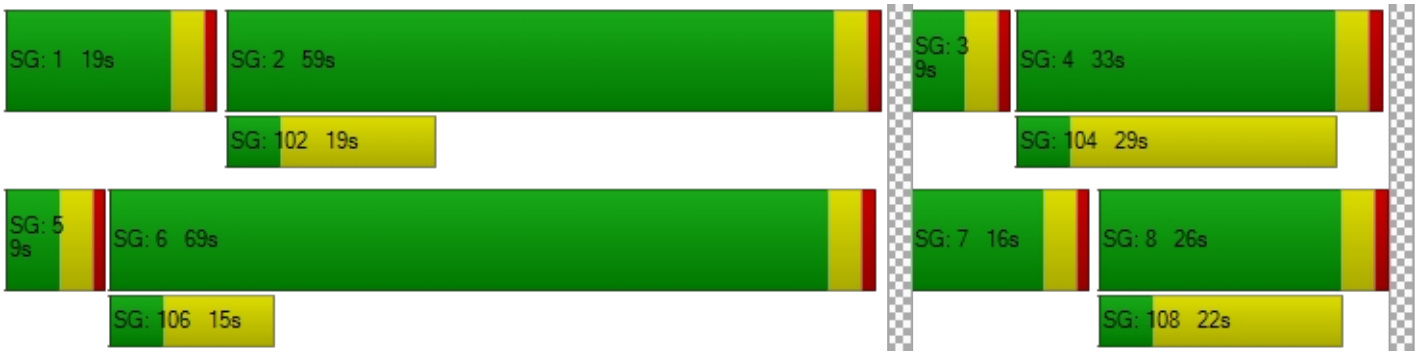
d_M, Delay for Movement [s/veh]	98.15	25.00	25.50	77.81	92.87	18.79	74.14	41.92	66.74	107.4	42.00	42.00
Movement LOS	F	C	C	E	F	B	E	D	E	F	D	D
d_A, Approach Delay [s/veh]	34.81			88.37			64.71			69.83		
Approach LOS	C			F			E			E		
d_I, Intersection Delay [s/veh]	64.07											
Intersection LOS	E											
Intersection V/C	0.920											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.104	3.079	2.346	2.174
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1083	917	367	483
d_b, Bicycle Delay [s]	12.60	17.60	40.02	34.50
l_b,int, Bicycle LOS Score for Intersection	2.963	3.158	2.084	2.274
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	45.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.448

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	134	290	0	0	261	111	57	0	66	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.120	1.000	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	0	3	1	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	11	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	334	0	0	306	125	64	0	74	0	0	0
Peak Hour Factor	0.913	0.913	1.000	1.000	0.913	0.913	0.913	1.000	0.913	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	41	91	0	0	84	34	18	0	20	0	0	0
Total Analysis Volume [veh/h]	164	366	0	0	335	137	70	0	81	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.12	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.84	0.00	0.00	0.00	0.00	0.00	45.55	0.00	11.31	0.00	0.00	0.00
Movement LOS	A	A			A	A	E		B			
95th-Percentile Queue Length [veh/ln]	0.52	0.52	0.00	0.00	0.00	0.00	2.05	0.00	0.42	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	13.08	13.08	0.00	0.00	0.00	0.00	51.20	0.00	10.59	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	2.74			0.00			27.19			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	4.82											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	1	551	201	49	753	1	0	0	2	174	0	40
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	73	58	0	0	0	0	0	9	0	84
Site-Generated Trips [veh/h]	0	0	110	168	0	0	0	0	0	111	0	71
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	617	408	281	843	1	0	0	2	315	0	200
Peak Hour Factor	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	163	108	74	223	0	0	0	1	83	0	53
Total Analysis Volume [veh/h]	1	652	431	297	891	1	0	0	2	333	0	211
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	12	9	0	60	57	0	0	9	0	0	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	54	54	23	77	77	0	0	26	26
g / C, Green / Cycle	0.00	0.45	0.45	0.19	0.64	0.64	0.00	0.00	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.00	0.32	0.32	0.17	0.25	0.25	0.00	0.00	0.20	0.14
s, saturation flow rate [veh/h]	1714	1800	1564	1714	1800	1799	1800	1392	1687	1530
c, Capacity [veh/h]	3	814	707	330	1157	1157	5	4	370	335
d1, Uniform Delay [s]	59.81	26.53	26.55	47.35	10.18	10.18	59.64	59.73	45.59	42.45
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.18	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	47.33	5.23	6.02	8.94	0.97	0.97	0.00	67.03	12.49	1.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.71	0.71	0.90	0.39	0.39	0.00	0.48	0.90	0.63
d, Delay for Lane Group [s/veh]	107.1	31.76	32.57	56.28	11.15	11.15	59.64	126.76	58.08	44.40
Lane Group LOS	F	C	C	E	B	B	E	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.07	14.29	12.60	9.46	5.65	5.65	0.00	0.14	10.89	5.85
50th-Percentile Queue Length [ft/ln]	1.82	357.2	315.0	236.4	141.3	141.3	0.00	3.46	272.17	146.19
95th-Percentile Queue Length [veh/ln]	0.13	20.49	18.42	14.50	9.55	9.55	0.00	0.25	16.30	9.81
95th-Percentile Queue Length [ft/ln]	3.27	512.2	460.5	362.5	238.8	238.8	0.00	6.23	407.45	245.34

Movement, Approach, & Intersection Results

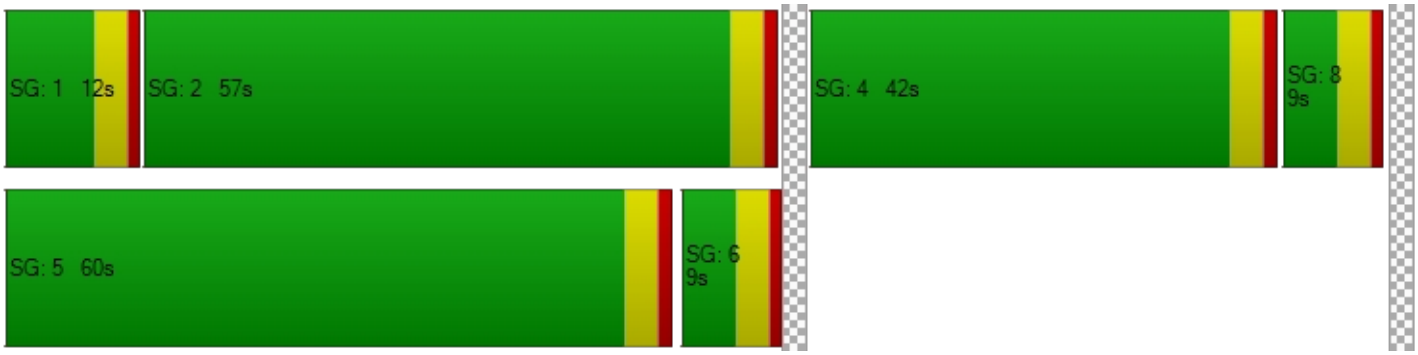
d_M, Delay for Movement [s/veh]	107.1	31.85	32.57	56.28	11.15	11.15	59.64	59.64	126.7	58.08	58.08	44.40
Movement LOS	F	C	C	E	B	B	E	E	F	E	E	D
d_A, Approach Delay [s/veh]	32.21			22.43			126.76			52.77		
Approach LOS	C			C			F			D		
d_I, Intersection Delay [s/veh]	32.12											
Intersection LOS	C											
Intersection V/C	0.694											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	883	83	633
d_b, Bicycle Delay [s]	55.10	18.70	55.10	28.02
l_b,int, Bicycle LOS Score for Intersection	2.454	2.541	1.561	2.457
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	3	813	117	130	1237	0	0	0	0	145	0	253
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	161	0	0	337	0	0	0	0	20	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	974	117	146	1574	0	0	0	0	165	0	283
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	267	32	40	431	0	0	0	0	45	0	77
Total Analysis Volume [veh/h]	3	1067	128	160	1724	0	0	0	0	181	0	310
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	53	0	17	61	0	26	30	0	20	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	64	64	13	77	77	0	12	14	27
g / C, Green / Cycle	0.00	0.54	0.54	0.11	0.64	0.64	0.00	0.10	0.12	0.22
(v / s)_i Volume / Saturation Flow Rate	0.00	0.31	0.08	0.09	0.50	0.00	0.00	0.00	0.11	0.20
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1714	1530
c, Capacity [veh/h]	7	1842	822	185	2198	981	1	181	207	337
d1, Uniform Delay [s]	59.61	18.64	14.01	52.66	15.53	0.00	0.00	0.00	51.87	45.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	35.88	1.34	0.40	11.30	2.89	0.00	0.00	0.00	10.99	13.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.58	0.16	0.86	0.78	0.00	0.00	0.00	0.87	0.92
d, Delay for Lane Group [s/veh]	95.50	19.98	14.41	63.96	18.43	0.00	0.00	0.00	62.85	59.06
Lane Group LOS	F	B	B	E	B	A	A	A	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	10.05	1.84	5.32	16.61	0.00	0.00	0.00	5.98	10.23
50th-Percentile Queue Length [ft/ln]	4.03	251.2	46.07	132.9	415.3	0.00	0.00	0.00	149.48	255.66
95th-Percentile Queue Length [veh/ln]	0.29	15.25	3.32	9.10	23.30	0.00	0.00	0.00	9.99	15.47
95th-Percentile Queue Length [ft/ln]	7.26	381.2	82.92	227.5	582.4	0.00	0.00	0.00	249.74	386.77

Movement, Approach, & Intersection Results

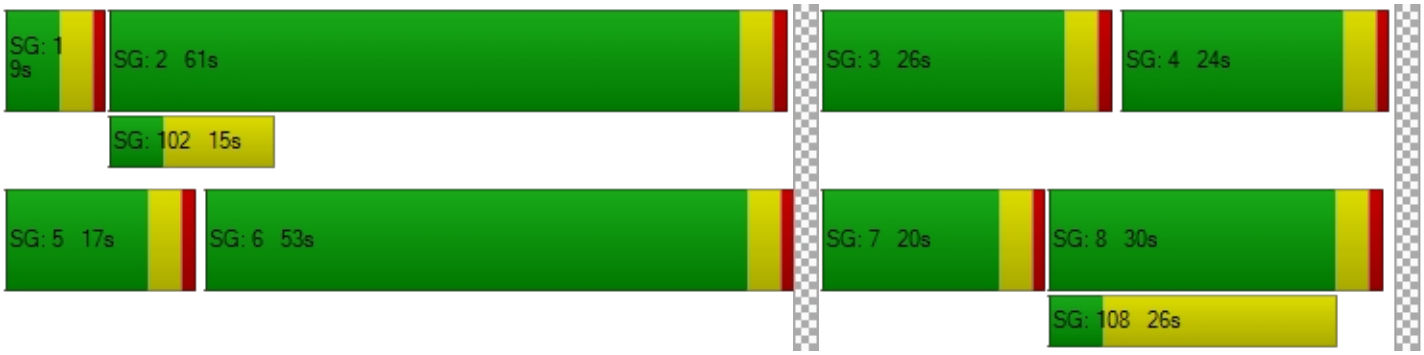
d_M, Delay for Movement [s/veh]	95.50	19.98	14.41	63.96	18.43	0.00	0.00	0.00	0.00	62.85	59.06	59.06
Movement LOS	F	B	B	E	B	A	A	A	A	E	E	E
d_A, Approach Delay [s/veh]	19.57			22.29			0.00			60.46		
Approach LOS	B			C			A			E		
d_I, Intersection Delay [s/veh]	26.63											
Intersection LOS	C											
Intersection V/C	0.707											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.041	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	950	433	333
d_b, Bicycle Delay [s]	21.00	16.54	36.82	41.67
I_b,int, Bicycle LOS Score for Intersection	2.548	3.114	1.560	2.370
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	42.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.996

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	51	162	58	56	145	76	103	129	56	67	230	153
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	0	0	3	0	0	11	0	0	7	0
Site-Generated Trips [veh/h]	0	5	0	0	11	0	0	0	0	0	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	190	65	63	176	85	115	155	63	75	285	171
Peak Hour Factor	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886	0.886
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	54	18	18	50	24	32	44	18	21	80	48
Total Analysis Volume [veh/h]	64	214	73	71	199	96	130	175	71	85	322	193
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	396	434	418	395	438	408	451
Degree of Utilization, x	0.70	0.17	0.88	0.77	0.16	1.00	0.43

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.23	0.60	8.92	6.46	0.57	12.26	2.10
95th-Percentile Queue Length [ft]	130.72	14.97	223.01	161.54	14.30	306.46	52.59
Approach Delay [s/veh]	26.90		48.37	32.13		55.18	
Approach LOS	D		E	D		F	
Intersection Delay [s/veh]	42.72						
Intersection LOS	E						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.582

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	51	676	27	61	902	92	147	156	48	43	206	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	7	1	0	4	0	0	11	0	1	7	0
Site-Generated Trips [veh/h]	0	5	0	0	11	0	0	0	0	1	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	769	31	68	1025	103	165	186	54	50	258	115
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	200	8	18	267	27	43	48	14	13	67	30
Total Analysis Volume [veh/h]	59	801	32	71	1068	107	172	194	56	52	269	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	47	0	10	48	0	37	40	0	23	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	67	67	6	68	68	14	26	26	5	16	16
g / C, Green / Cycle	0.04	0.56	0.56	0.05	0.57	0.57	0.12	0.22	0.22	0.04	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.03	0.23	0.23	0.04	0.33	0.33	0.10	0.06	0.04	0.03	0.11	0.12
s, saturation flow rate [veh/h]	1714	1800	1776	1714	1800	1743	1714	3427	1530	1714	1800	1617
c, Capacity [veh/h]	71	1009	996	86	1024	992	204	739	330	69	247	222
d1, Uniform Delay [s]	57.07	15.10	15.10	56.49	16.67	16.69	51.79	39.13	38.32	56.97	50.30	50.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.49	1.26	1.28	17.79	2.42	2.51	9.20	0.19	0.24	14.87	6.52	8.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.42	0.42	0.83	0.58	0.58	0.85	0.26	0.17	0.75	0.82	0.84
d, Delay for Lane Group [s/veh]	77.55	16.36	16.38	74.28	19.08	19.20	61.00	39.32	38.56	71.84	56.81	58.89
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.18	6.77	6.68	2.56	10.90	10.62	5.59	2.41	1.37	1.85	6.33	5.99
50th-Percentile Queue Length [ft/ln]	54.55	169.1	167.0	63.89	272.5	265.4	139.7	60.28	34.36	46.21	158.3	149.8
95th-Percentile Queue Length [veh/ln]	3.93	11.03	10.92	4.60	16.31	15.96	9.47	4.34	2.47	3.33	10.46	10.01
95th-Percentile Queue Length [ft/ln]	98.20	275.8	273.0	115.0	407.8	399.0	236.6	108.5	61.84	83.18	261.5	250.1

Movement, Approach, & Intersection Results

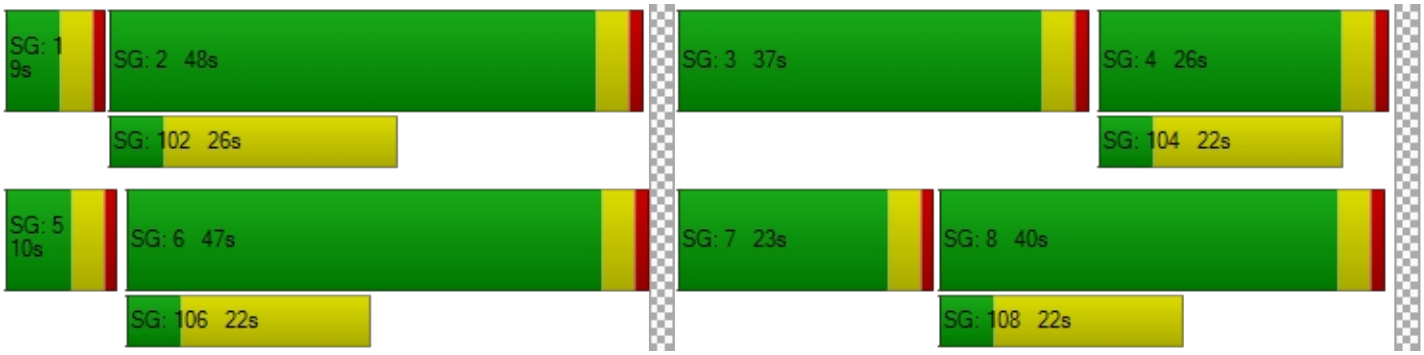
d_M, Delay for Movement [s/veh]	77.55	16.37	16.38	74.28	19.13	19.20	61.00	39.32	38.56	71.84	57.33	58.89
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	20.42			22.28			48.06			59.47		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	30.82											
Intersection LOS	C											
Intersection V/C	0.582											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.718	2.848	2.607	2.588
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	733	600	367
d_b, Bicycle Delay [s]	24.70	24.07	29.40	40.02
l_b,int, Bicycle LOS Score for Intersection	2.296	2.588	1.908	1.923
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	41.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	57	568	91	33	877	42	50	340	93	134	370	43
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	1	5	0	0	5	12	15	6	2	0	4	0
Site-Generated Trips [veh/h]	5	0	0	0	5	31	10	0	0	0	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	641	102	37	992	90	81	387	106	150	427	48
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	177	28	10	273	25	22	107	29	41	118	13
Total Analysis Volume [veh/h]	77	707	112	41	1094	99	89	427	117	165	471	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	63	0	10	63	0	13	30	0	17	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	46	46	4	44	44	8	41	41	13	46	46
g / C, Green / Cycle	0.05	0.38	0.38	0.03	0.36	0.36	0.06	0.34	0.34	0.11	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.04	0.23	0.23	0.02	0.34	0.34	0.05	0.16	0.16	0.10	0.15	0.15
s, saturation flow rate [veh/h]	1714	1800	1715	1714	1800	1748	1714	1800	1669	1714	1800	1737
c, Capacity [veh/h]	86	689	657	55	657	638	111	618	573	186	696	671
d1, Uniform Delay [s]	56.70	29.78	29.78	57.57	36.40	36.44	55.32	30.68	30.73	52.78	26.51	26.53
k, delay calibration	0.11	0.11	0.11	0.11	0.23	0.24	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	25.68	0.87	0.91	17.59	11.20	11.70	12.19	2.41	2.64	13.21	1.60	1.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.61	0.61	0.74	0.92	0.92	0.80	0.46	0.46	0.89	0.38	0.38
d, Delay for Lane Group [s/veh]	82.38	30.65	30.69	75.16	47.60	48.14	67.51	33.09	33.38	65.99	28.11	28.19
Lane Group LOS	F	C	C	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.93	9.83	9.38	1.50	18.69	18.29	3.03	6.74	6.35	5.58	5.79	5.62
50th-Percentile Queue Length [ft/ln]	73.30	245.7	234.4	37.62	467.3	457.3	75.83	168.5	158.7	139.5	144.8	140.5
95th-Percentile Queue Length [veh/ln]	5.28	14.97	14.40	2.71	25.78	25.31	5.46	11.00	10.48	9.46	9.74	9.51
95th-Percentile Queue Length [ft/ln]	131.9	374.2	359.9	67.71	644.6	632.7	136.4	275.0	262.0	236.3	243.4	237.7

Movement, Approach, & Intersection Results

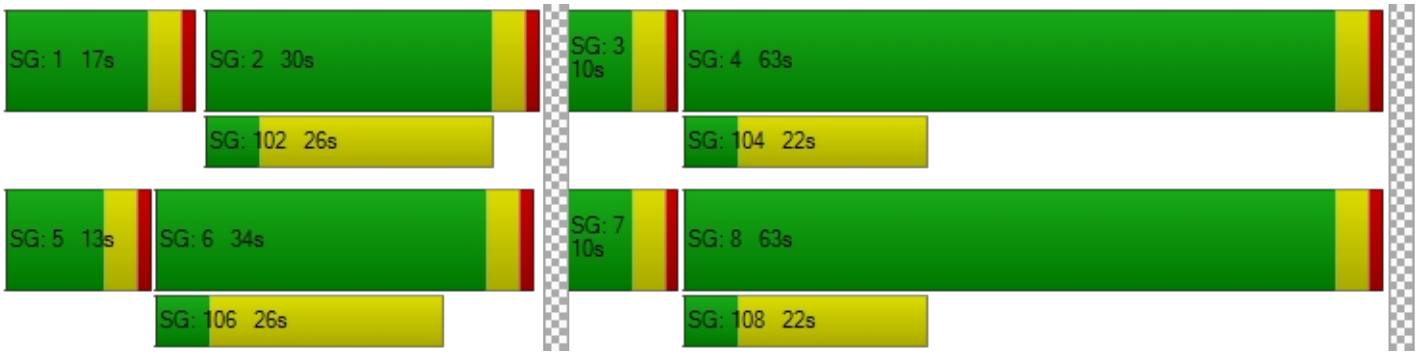
d_M, Delay for Movement [s/veh]	82.38	30.67	30.69	75.16	47.84	48.14	67.51	33.19	33.38	65.99	28.14	28.19
Movement LOS	F	C	C	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	35.11			48.77			38.05			37.21		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.95											
Intersection LOS	D											
Intersection V/C	0.635											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.837	2.807	2.565	2.563
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	983	433	500
d_b, Bicycle Delay [s]	15.50	15.50	36.82	33.75
l_b,int, Bicycle LOS Score for Intersection	2.299	2.578	2.082	2.128
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	22.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.506

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	20	645	75	23	871	122	103	90	11	74	78	31
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	2	0	0	3	2	6	12	0	5	5	0
Site-Generated Trips [veh/h]	0	0	0	0	4	8	5	10	0	9	16	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	724	84	26	983	147	126	123	12	97	108	35
Peak Hour Factor	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	6	196	23	7	266	40	34	33	3	26	29	9
Total Analysis Volume [veh/h]	24	783	91	28	1063	159	136	133	13	105	117	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	43	0	9	43	0	42	26	0	42	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	79	79	3	80	80	12	12	12	9	10	10
g / C, Green / Cycle	0.02	0.66	0.66	0.03	0.66	0.66	0.10	0.10	0.10	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.01	0.25	0.25	0.02	0.35	0.35	0.08	0.07	0.01	0.06	0.07	0.02
s, saturation flow rate [veh/h]	1714	1800	1735	1714	1800	1719	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	40	1190	1147	44	1194	1141	166	185	157	133	150	127
d1, Uniform Delay [s]	58.07	9.15	9.15	57.94	10.40	10.42	53.16	52.18	48.74	54.39	53.93	51.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.02	0.90	0.93	14.72	1.64	1.72	9.53	5.22	0.22	9.98	8.51	1.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	0.37	0.37	0.64	0.52	0.52	0.82	0.72	0.08	0.79	0.78	0.30
d, Delay for Lane Group [s/veh]	72.09	10.05	10.08	72.65	12.03	12.14	62.69	57.40	48.96	64.37	62.44	53.00
Lane Group LOS	E	B	B	E	B	B	E	E	D	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.88	5.25	5.07	1.02	8.47	8.16	4.46	4.15	0.36	3.49	3.82	1.12
50th-Percentile Queue Length [ft/ln]	21.92	131.3	126.8	25.52	211.7	204.0	111.5	103.7	9.11	87.19	95.46	28.11
95th-Percentile Queue Length [veh/ln]	1.58	9.01	8.77	1.84	13.25	12.85	7.93	7.47	0.66	6.28	6.87	2.02
95th-Percentile Queue Length [ft/ln]	39.45	225.2	219.2	45.94	331.1	321.2	198.1	186.7	16.39	156.9	171.8	50.60

Movement, Approach, & Intersection Results

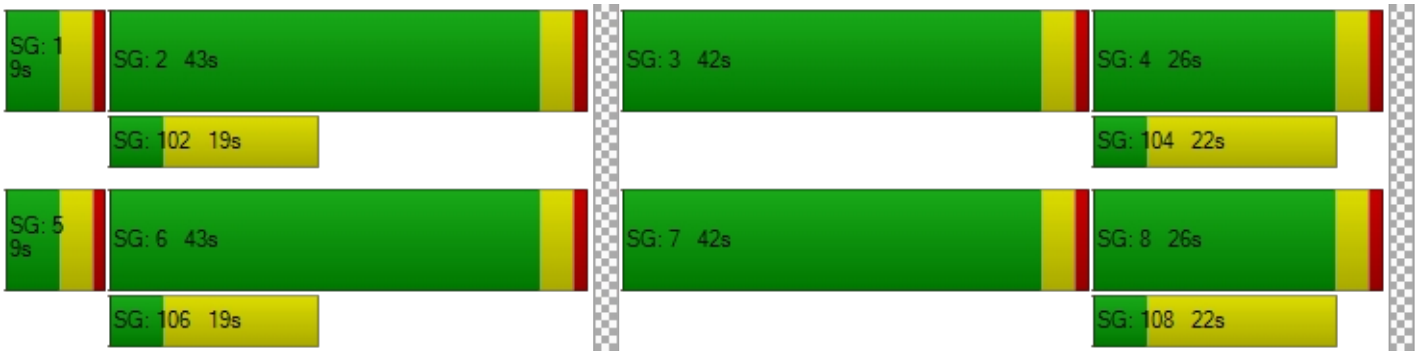
d_M, Delay for Movement [s/veh]	72.09	10.06	10.08	72.65	12.08	12.14	62.69	57.40	48.96	64.37	62.44	53.00
Movement LOS	E	B	B	E	B	B	E	E	D	E	E	D
d_A, Approach Delay [s/veh]	11.72			13.44			59.56			61.84		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	22.38											
Intersection LOS	C											
Intersection V/C	0.506											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.720	2.745	2.288	2.271
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	650	367	367
d_b, Bicycle Delay [s]	27.34	27.34	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	2.300	2.591	2.025	1.989
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	92.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.938

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	10	838	104	156	1207	9	0	1	0	214	0	109
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.120	1.120	1.120	1.000
In-Process Volume [veh/h]	117	0	0	0	0	0	0	123	96	0	97	0
Site-Generated Trips [veh/h]	190	192	0	0	161	41	13	36	156	0	143	54
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	318	1030	116	156	1368	50	13	160	252	240	240	163
Peak Hour Factor	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	87	281	32	43	374	14	4	44	69	66	66	45
Total Analysis Volume [veh/h]	348	1126	127	170	1495	55	14	175	275	262	262	178
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	35	0	20	39	0	9	33	0	32	56	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	35	35	14	37	37	2	35	20	53
g / C, Green / Cycle	0.10	0.29	0.29	0.11	0.31	0.31	0.02	0.29	0.17	0.44
(v / s)_i Volume / Saturation Flow Rate	0.20	0.24	0.24	0.10	0.30	0.04	0.01	0.28	0.15	0.26
s, saturation flow rate [veh/h]	1714	3427	1708	1714	4903	1530	1714	1625	1714	1680
c, Capacity [veh/h]	171	1003	500	196	1506	470	27	471	291	746
d1, Uniform Delay [s]	54.00	39.71	39.72	52.23	41.44	29.88	58.60	41.86	48.82	25.15
k, delay calibration	0.31	0.50	0.50	0.11	0.50	0.50	0.11	0.39	0.17	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	476.1	8.12	15.06	10.87	21.56	0.51	14.56	27.26	14.05	1.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.03	0.83	0.83	0.87	0.99	0.12	0.52	0.96	0.90	0.59
d, Delay for Lane Group [s/veh]	530.1	47.83	54.78	63.10	63.00	30.39	73.16	69.12	62.86	26.17
Lane Group LOS	F	D	D	E	E	C	E	E	E	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	27.84	12.59	13.52	5.62	17.51	1.22	0.53	16.49	8.80	9.53
50th-Percentile Queue Length [ft/ln]	695.9	314.6	337.9	140.4	437.8	30.51	13.29	412.22	220.08	238.21
95th-Percentile Queue Length [veh/ln]	44.16	18.40	19.55	9.51	24.37	2.20	0.96	23.15	13.67	14.59
95th-Percentile Queue Length [ft/ln]	1104.	460.0	488.6	237.6	609.3	54.93	23.92	578.71	341.72	364.77

Movement, Approach, & Intersection Results

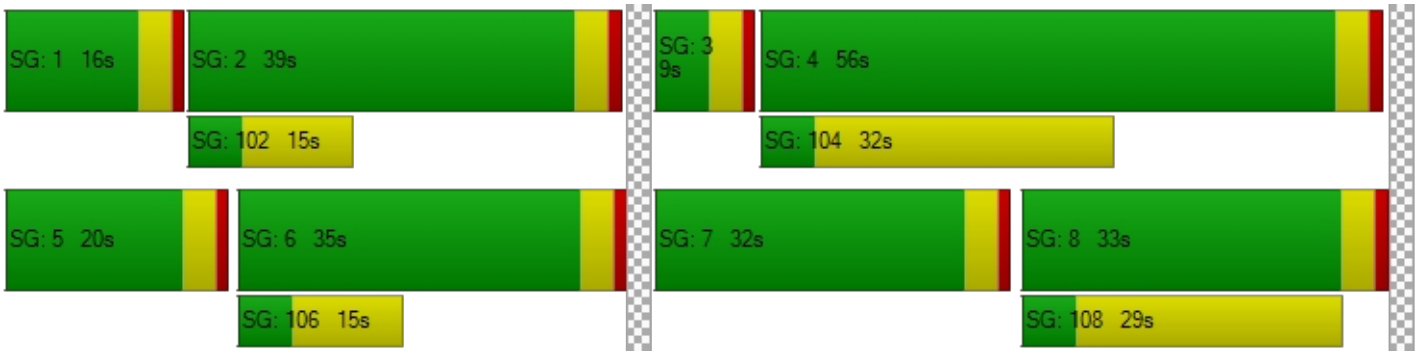
d_M, Delay for Movement [s/veh]	530.1	49.62	54.78	63.10	63.00	30.39	73.16	69.12	69.12	62.86	26.17	26.17
Movement LOS	F	D	D	E	E	C	E	E	E	E	C	C
d_A, Approach Delay [s/veh]	154.47			61.96			69.24			39.86		
Approach LOS	F			E			E			D		
d_I, Intersection Delay [s/veh]	92.27											
Intersection LOS	F											
Intersection V/C	0.938											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.115	3.278	2.322	2.337
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	583	483	867
d_b, Bicycle Delay [s]	33.00	30.10	34.50	19.27
l_b,int, Bicycle LOS Score for Intersection	2.440	2.506	2.325	2.718
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	177.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.656

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	17	193	42	6	194	82	55	115	18	31	173	39
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	4	0	0	0	0	3	4	129	8	0	102	0
Site-Generated Trips [veh/h]	9	0	0	0	0	11	5	31	0	0	159	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	216	47	7	217	106	71	289	28	35	455	44
Peak Hour Factor	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.840
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	64	14	2	65	32	21	86	8	10	135	13
Total Analysis Volume [veh/h]	38	257	56	8	258	126	85	344	33	42	542	52
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	380	392	462	636
Degree of Utilization, x	0.93	1.00	1.21	1.66

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	9.83	12.12	19.01	37.81
95th-Percentile Queue Length [ft]	245.81	302.92	475.32	945.15
Approach Delay [s/veh]	60.69	76.38	144.25	329.67
Approach LOS	F	F	F	F
Intersection Delay [s/veh]	177.92			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	57.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.172

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	4	43	60	69	61	1	41	86	14	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	48	67	77	68	1	46	96	16	10
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	13	18	20	18	0	12	25	4	3
Total Analysis Volume [veh/h]	4	50	70	81	71	1	48	101	17	11
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	444	414
Degree of Utilization, x	0.62	0.43

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.13	2.11
95th-Percentile Queue Length [ft]	103.31	52.76
Approach Delay [s/veh]	23.60	18.09
Approach LOS	C	C
Intersection Delay [s/veh]	57.12	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	46	6	95	57	0	27	55	146	14	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	17	105	0	0	0	0	89	0	0
Site-Generated Trips [veh/h]	0	16	10	0	0	0	0	118	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	40	221	64	0	30	62	371	16	4
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	11	58	17	0	8	16	97	4	1
Total Analysis Volume [veh/h]	55	42	232	67	0	32	65	390	17	4
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	441	508
Degree of Utilization, x	0.90	1.17

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	9.72	19.23
95th-Percentile Queue Length [ft]	242.98	480.73
Approach Delay [s/veh]	50.28	126.70
Approach LOS	F	F
Intersection Delay [s/veh]	57.12	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	2	13	66	23	1	13	45	123	26	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	7	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	24	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	15	74	26	1	15	50	138	60	7
Peak Hour Factor	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	19	7	0	4	13	36	16	2
Total Analysis Volume [veh/h]	2	16	78	27	1	16	53	145	63	7
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	425	423	470
Degree of Utilization, x	0.29	0.51	0.15

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.20	2.78	0.52
95th-Percentile Queue Length [ft]	30.02	69.40	12.99
Approach Delay [s/veh]	14.96	17.65	
Approach LOS	B	C	
Intersection Delay [s/veh]	57.12		
Intersection LOS	F		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	35.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.619

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	591	196	103	849	50	80	110	135	123	108	67
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	39	0	0	0	0	8	2	60	42	0	42	0
Site-Generated Trips [veh/h]	29	0	0	0	0	13	0	5	5	0	76	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	662	220	115	951	77	92	188	198	138	239	75
Peak Hour Factor	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	49	167	55	29	240	19	23	47	50	35	60	19
Total Analysis Volume [veh/h]	197	667	222	116	959	78	93	190	200	139	241	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	25	59	0	18	52	0	17	26	0	17	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	65	65	10	59	59	8	18	18	12	21	21
g / C, Green / Cycle	0.13	0.54	0.54	0.08	0.49	0.49	0.07	0.15	0.15	0.10	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.11	0.26	0.26	0.07	0.29	0.29	0.05	0.06	0.13	0.08	0.13	0.05
s, saturation flow rate [veh/h]	1714	1800	1648	1714	1800	1753	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	226	969	887	142	881	858	117	513	229	165	319	271
d1, Uniform Delay [s]	51.11	17.24	17.25	54.13	22.09	22.10	55.06	45.94	49.92	53.35	46.90	42.74
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.05	1.69	1.85	10.78	2.97	3.05	11.32	0.45	10.03	11.04	3.70	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.48	0.48	0.82	0.60	0.60	0.79	0.37	0.87	0.84	0.76	0.28
d, Delay for Lane Group [s/veh]	61.16	18.93	19.10	64.91	25.06	25.15	66.38	46.39	59.95	64.39	50.60	43.30
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.43	8.26	7.61	3.87	11.19	10.93	3.14	2.59	6.50	4.63	7.16	2.00
50th-Percentile Queue Length [ft/ln]	160.8	206.4	190.2	96.79	279.7	273.2	78.51	64.84	162.4	115.6	178.9	50.11
95th-Percentile Queue Length [veh/ln]	10.59	12.97	12.13	6.97	16.67	16.35	5.65	4.67	10.68	8.16	11.54	3.61
95th-Percentile Queue Length [ft/ln]	264.8	324.2	303.3	174.2	416.8	408.7	141.3	116.7	266.9	203.8	288.5	90.20

Movement, Approach, & Intersection Results

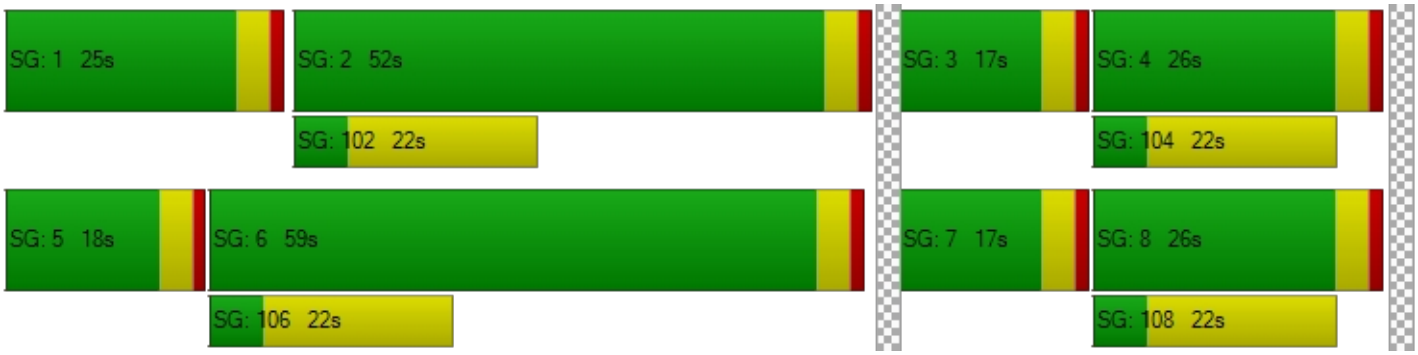
d_M, Delay for Movement [s/veh]	61.16	18.98	19.10	64.91	25.10	25.15	66.38	46.39	59.95	64.39	50.60	43.30
Movement LOS	E	B	B	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	26.66			29.11			55.85			53.59		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	35.85											
Intersection LOS	D											
Intersection V/C	0.619											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.780	2.703	2.510	2.628
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	800	367	367
d_b, Bicycle Delay [s]	17.60	21.60	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	2.456	2.511	1.958	2.312
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	31	725	49	22	1043	36	57	200	93	134	203	50
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	20	0	0	0	0	8	9	6	32	0	4	0
Site-Generated Trips [veh/h]	32	0	0	0	0	9	0	0	0	0	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	812	55	25	1168	57	73	230	136	150	240	56
Peak Hour Factor	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	23	211	14	6	303	15	19	60	35	39	62	15
Total Analysis Volume [veh/h]	90	842	57	26	1212	59	76	239	141	156	249	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	55	0	9	52	0	26	33	0	23	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	72	72	3	67	67	7	16	16	13	22	22
g / C, Green / Cycle	0.07	0.60	0.60	0.02	0.56	0.56	0.06	0.14	0.14	0.11	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.25	0.02	0.36	0.36	0.04	0.11	0.11	0.09	0.09	0.09
s, saturation flow rate [veh/h]	1714	1800	1760	1714	1800	1771	1714	1800	1583	1714	1800	1685
c, Capacity [veh/h]	112	1078	1054	42	1005	988	99	245	216	184	334	313
d1, Uniform Delay [s]	55.35	12.92	12.92	57.98	18.18	18.20	55.72	50.33	50.55	52.61	43.61	43.69
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.70	1.21	1.24	14.06	3.09	3.15	11.50	6.35	8.48	10.29	1.03	1.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.42	0.42	0.62	0.64	0.64	0.77	0.81	0.84	0.85	0.47	0.48
d, Delay for Lane Group [s/veh]	68.05	14.13	14.16	72.04	21.27	21.35	67.22	56.69	59.04	62.90	44.65	44.83
Lane Group LOS	E	B	B	E	C	C	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.08	6.73	6.58	0.95	12.61	12.45	2.59	6.23	5.81	5.14	4.27	4.09
50th-Percentile Queue Length [ft/ln]	76.99	168.1	164.6	23.65	315.1	311.3	64.69	155.7	145.2	128.4	106.8	102.1
95th-Percentile Queue Length [veh/ln]	5.54	10.98	10.79	1.70	18.43	18.24	4.66	10.32	9.76	8.86	7.67	7.36
95th-Percentile Queue Length [ft/ln]	138.5	274.4	269.8	42.57	460.7	455.9	116.4	258.0	244.0	221.4	191.6	183.9

Movement, Approach, & Intersection Results

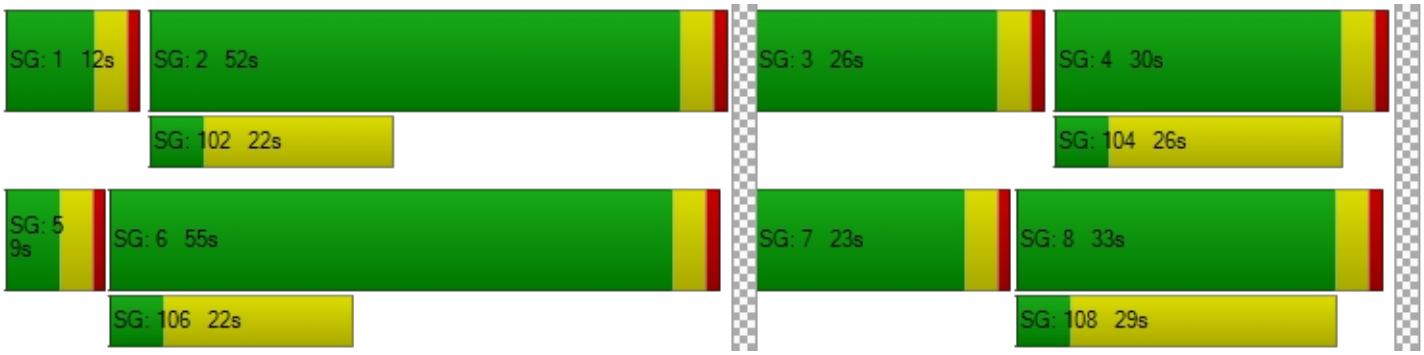
d_M, Delay for Movement [s/veh]	68.05	14.14	14.16	72.04	21.31	21.35	67.22	57.08	59.04	62.90	44.71	44.83
Movement LOS	E	B	B	E	C	C	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	19.05			22.32			59.38			50.86		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	30.71											
Intersection LOS	C											
Intersection V/C	0.614											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.957	2.837	2.482	2.468
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	850	800	483	433
d_b, Bicycle Delay [s]	19.84	21.60	34.50	36.82
l_b,int, Bicycle LOS Score for Intersection	2.376	2.630	1.936	1.942
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	50.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.819

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	86	48	77	136	246	885	267	400	59	134	1190	220
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	4	0	0	6	47
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	9	0	0	0	116
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	54	86	152	276	991	299	461	66	150	1339	409
Peak Hour Factor	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	15	24	42	76	273	82	127	18	41	369	113
Total Analysis Volume [veh/h]	106	60	95	168	304	1093	330	508	73	165	1476	451
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	12	0	49	49	0	17	48	0	11	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	39	39	14	45	45	45	13	44	44	7	38	38
g / C, Green / Cycle	0.07	0.33	0.33	0.12	0.38	0.38	0.38	0.11	0.37	0.37	0.06	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.02	0.06	0.10	0.17	0.36	0.36	0.10	0.10	0.05	0.05	0.30	0.29
s, saturation flow rate [veh/h]	1714	3427	1530	171	180	153	153	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	114	1119	499	199	677	575	575	361	1793	559	194	1548	483
d1, Uniform Delay [s]	55.71	27.71	29.03	51.9	28.1	36.3	36.3	52.95	26.94	25.36	55.98	40.20	39.85
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.75	0.09	0.84	9.22	2.15	26.9	26.9	9.33	0.09	0.10	9.87	4.29	23.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.05	0.19	0.84	0.45	0.95	0.95	0.91	0.28	0.13	0.85	0.95	0.93
d, Delay for Lane Group [s/veh]	80.46	27.80	29.87	61.1	30.2	63.3	63.3	62.28	27.02	25.46	65.85	44.50	63.75
Lane Group LOS	F	C	C	E	C	E	E	E	C	C	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.98	0.61	2.10	5.46	6.96	19.5	19.5	5.38	3.46	1.42	2.74	14.64	15.95
50th-Percentile Queue Length [ft/ln]	99.38	15.28	52.44	136.	173.	488.	488.	134.5	86.60	35.40	68.52	366.0	398.7
95th-Percentile Queue Length [veh/ln]	7.16	1.10	3.78	9.30	11.2	26.7	26.7	9.19	6.24	2.55	4.93	20.92	22.50
95th-Percentile Queue Length [ft/ln]	178.8	27.51	94.40	232.	282.	669.	669.	229.7	155.8	63.72	123.3	522.9	562.5

Movement, Approach, & Intersection Results

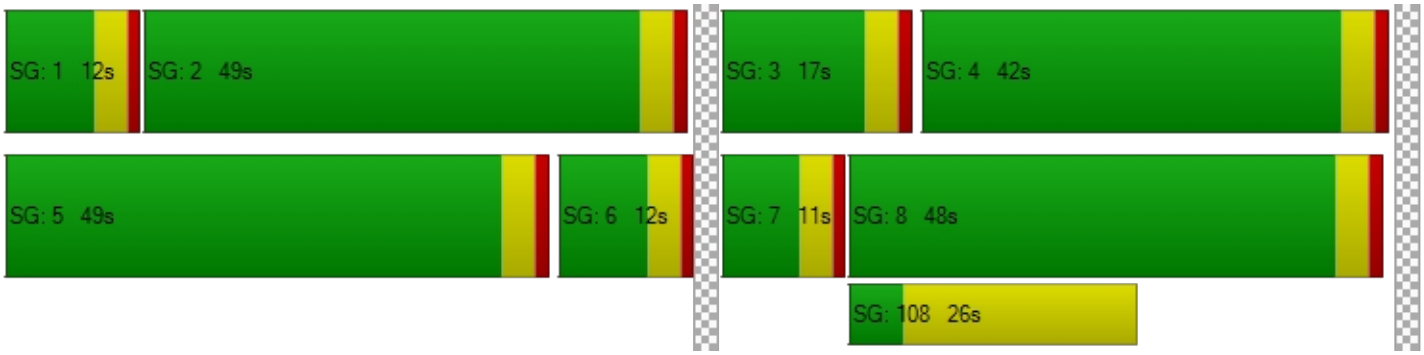
d_M, Delay for Movement [s/veh]	80.46	27.80	29.87	61.16	30.26	63.33	62.28	27.02	25.46	65.85	44.50	63.75
Movement LOS	F	C	C	E	C	E	E	C	C	E	D	E
d_A, Approach Delay [s/veh]	49.94			56.67			39.67			50.33		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	50.36											
Intersection LOS	D											
Intersection V/C	0.819											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.599	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	133	750	733	633
d_b, Bicycle Delay [s]	52.27	23.44	24.07	28.02
l_b,int, Bicycle LOS Score for Intersection	1.775	2.851	2.061	2.710
Bicycle LOS	A	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	59.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	44	25	34	338	49	955	255	331	25	30	552	95
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	45	0	0	0	4	0	0	53	0
Site-Generated Trips [veh/h]	0	0	0	149	0	0	0	9	0	0	116	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	28	38	573	55	1070	286	384	28	34	787	106
Peak Hour Factor	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	8	10	154	15	287	77	103	8	9	211	28
Total Analysis Volume [veh/h]	53	30	41	615	59	1148	307	412	30	36	844	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	48	0	9	23	0	16	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	6	44	44	44	13	51	51	4	41	41
g / C, Green / Cycle	0.05	0.05	0.05	0.37	0.37	0.37	0.11	0.42	0.42	0.03	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.03	0.20	0.19	0.42	0.09	0.08	0.02	0.02	0.19	0.19
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1729	2708	3329	4903	1530	1714	3427	1693
c, Capacity [veh/h]	83	87	74	629	634	993	372	2070	646	50	1164	575
d1, Uniform Delay [s]	56.04	55.23	55.81	29.96	29.89	38.00	52.15	21.87	20.43	57.75	32.17	32.22
k, delay calibration	0.11	0.11	0.11	0.12	0.11	0.15	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.80	2.30	6.24	0.78	0.74	74.07	4.65	0.22	0.14	17.35	1.87	3.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.34	0.55	0.54	0.53	1.16	0.83	0.20	0.05	0.72	0.55	0.55
d, Delay for Lane Group [s/veh]	63.85	57.54	62.05	30.73	30.63	112.0	56.80	22.09	20.57	75.11	34.04	36.02
Lane Group LOS	E	E	E	C	C	F	E	C	C	E	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.76	0.94	1.34	7.78	7.76	24.50	4.76	2.50	0.53	1.33	7.84	8.11
50th-Percentile Queue Length [ft/ln]	43.94	23.39	33.59	194.5	193.9	612.5	118.8	62.39	13.13	33.14	195.8	202.6
95th-Percentile Queue Length [veh/ln]	3.16	1.68	2.42	12.36	12.33	35.81	8.33	4.49	0.95	2.39	12.43	12.77
95th-Percentile Queue Length [ft/ln]	79.09	42.11	60.47	308.9	308.2	895.2	208.2	112.3	23.64	59.66	310.6	319.3

Movement, Approach, & Intersection Results

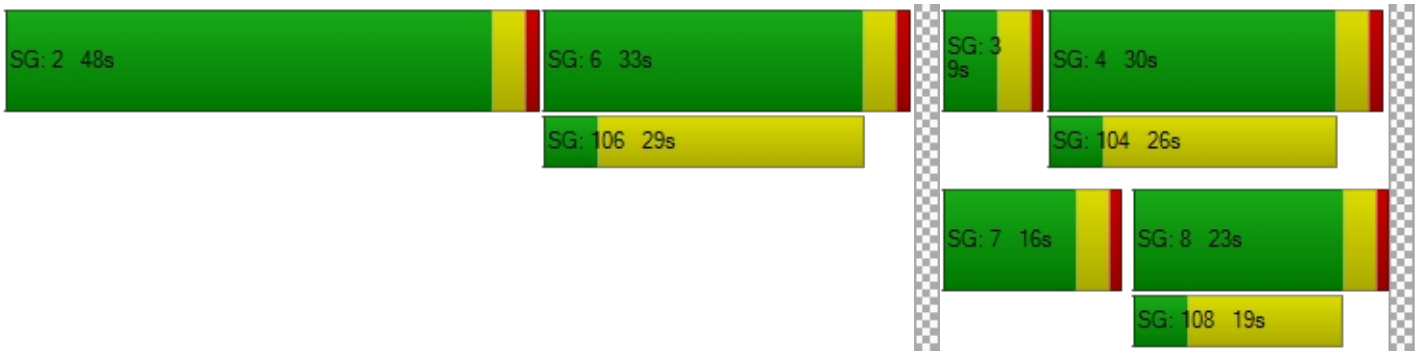
d_M, Delay for Movement [s/veh]	63.85	57.54	62.05	30.69	30.63	112.0	56.80	22.09	20.57	75.11	34.52	36.02
Movement LOS	E	E	E	C	C	F	E	C	C	E	C	D
d_A, Approach Delay [s/veh]	61.73			81.96			36.25			36.16		
Approach LOS	E			F			D			D		
d_I, Intersection Delay [s/veh]	59.66											
Intersection LOS	E											
Intersection V/C	0.735											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.207	2.837	0.000	2.896
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	733	317	433
d_b, Bicycle Delay [s]	34.50	24.07	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.662	4.566	1.972	2.106
Bicycle LOS	A	E	A	B

Sequence

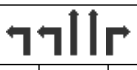
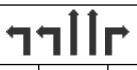
Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	228	643	85	59	766	139	149	155	92	143	309	42
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	7	2	0	1	2	27	22	0	12	51	35
Site-Generated Trips [veh/h]	0	96	12	0	111	0	5	153	0	2	116	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	255	823	109	66	970	158	199	349	103	174	513	82
Peak Hour Factor	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	69	222	29	18	262	43	54	94	28	47	138	22
Total Analysis Volume [veh/h]	275	888	118	71	1046	170	215	376	111	188	553	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Unsig	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	47	0	9	36	0	14	36	0	28	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	65	5	58	58	10	25	25	9	25	25
g / C, Green / Cycle	0.10	0.54	0.04	0.48	0.48	0.08	0.21	0.21	0.08	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.02	0.31	0.11	0.06	0.11	0.07	0.06	0.18	0.18
s, saturation flow rate [veh/h]	3329	3427	3329	3427	1530	3329	3427	1530	3329	1800	1715
c, Capacity [veh/h]	335	1856	126	1641	733	267	721	322	255	372	355
d1, Uniform Delay [s]	52.91	17.01	56.76	23.45	18.33	54.25	42.01	40.33	54.21	46.16	46.17
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.02	0.89	3.92	1.90	0.74	5.61	0.59	0.63	4.11	6.87	7.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.48	0.56	0.64	0.23	0.80	0.52	0.34	0.74	0.88	0.88
d, Delay for Lane Group [s/veh]	57.93	17.90	60.67	25.36	19.07	59.86	42.60	40.96	58.32	53.02	53.39
Lane Group LOS	E	B	E	C	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.30	7.65	1.13	11.32	2.92	3.40	5.00	2.86	2.93	10.17	9.73
50th-Percentile Queue Length [ft/ln]	107.39	191.18	28.18	283.1	72.94	85.00	125.1	71.50	73.17	254.1	243.2
95th-Percentile Queue Length [veh/ln]	7.69	12.18	2.03	16.84	5.25	6.12	8.67	5.15	5.27	15.39	14.85
95th-Percentile Queue Length [ft/ln]	192.36	304.56	50.73	421.0	131.2	152.9	216.8	128.7	131.7	384.8	371.1

Movement, Approach, & Intersection Results

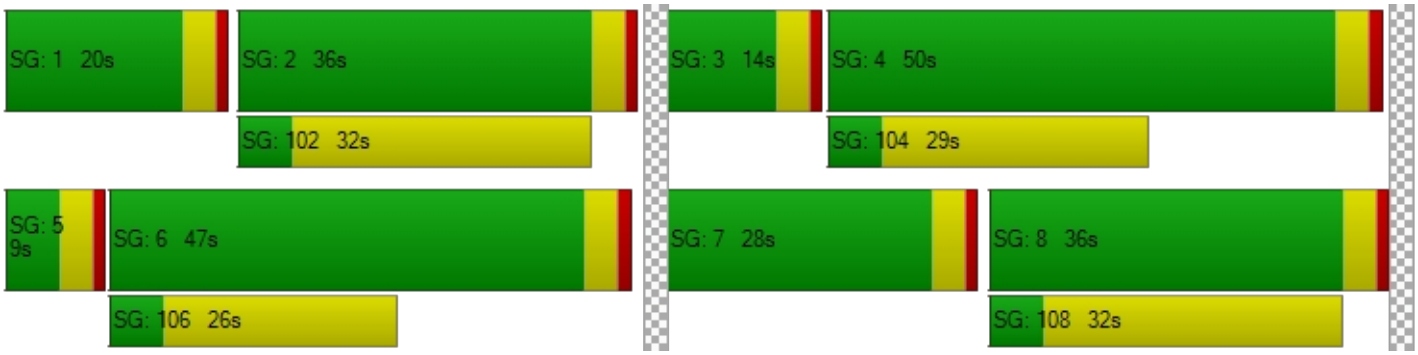
d_M, Delay for Movement [s/veh]	57.93	17.90	0.00	60.67	25.36	19.07	59.86	42.60	40.96	58.32	53.17	53.39
Movement LOS	E	B		E	C	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	27.36			26.47			47.62			54.36		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.27											
Intersection LOS	D											
Intersection V/C	0.635											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.046	2.954	2.948	2.675
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	533	533	767
d_b, Bicycle Delay [s]	24.70	32.27	32.27	22.82
l_b,int, Bicycle LOS Score for Intersection	2.519	2.621	2.139	2.244
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	41.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	46	3	220	4	8	0	1	182	33	263	473	2
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	35	0	39	0	0	0	0	24	0	86	62	0
Site-Generated Trips [veh/h]	0	0	133	0	0	0	0	165	0	40	118	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	3	418	4	9	0	1	393	37	421	710	2
Peak Hour Factor	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	1	117	1	3	0	0	110	10	118	198	1
Total Analysis Volume [veh/h]	97	3	467	4	10	0	1	439	41	470	793	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	47	0	9	33	0	33	26	0	38	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	46	46	39	46	0	28	28	35	62	62
g / C, Green / Cycle	0.38	0.38	0.32	0.38	0.00	0.23	0.23	0.29	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.31	0.01	0.00	0.13	0.03	0.27	0.22	0.22
s, saturation flow rate [veh/h]	1427	1432	1530	1443	1714	3427	1530	1714	1800	1798
c, Capacity [veh/h]	541	661	495	608	2	786	351	498	933	932
d1, Uniform Delay [s]	24.12	24.04	39.49	23.25	59.87	40.88	36.62	41.60	17.86	17.86
k, delay calibration	0.11	0.11	0.32	0.11	0.11	0.50	0.50	0.33	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.05	21.27	0.02	87.54	2.86	0.68	21.32	1.42	1.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.08	0.94	0.02	0.42	0.56	0.12	0.94	0.43	0.43
d, Delay for Lane Group [s/veh]	24.19	24.09	60.76	23.26	147.4	43.74	37.30	62.92	19.28	19.28
Lane Group LOS	C	C	E	C	F	D	D	E	B	B
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.85	1.02	16.14	0.25	0.09	6.05	1.03	16.39	7.08	7.08
50th-Percentile Queue Length [ft/ln]	21.36	25.58	403.4	6.34	2.21	151.2	25.66	409.8	177.1	176.9
95th-Percentile Queue Length [veh/ln]	1.54	1.84	22.73	0.46	0.16	10.09	1.85	23.04	11.45	11.44
95th-Percentile Queue Length [ft/ln]	38.44	46.04	568.1	11.41	3.99	252.1	46.19	575.8	286.2	286.0

Movement, Approach, & Intersection Results

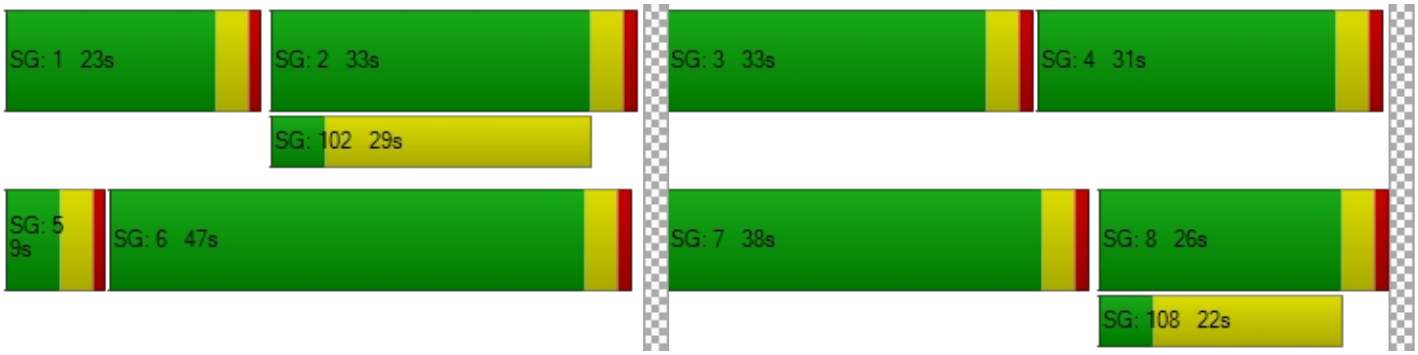
d_M, Delay for Movement [s/veh]	24.19	24.09	60.76	23.26	23.26	23.26	147.4	43.74	37.30	62.92	19.28	19.28
Movement LOS	C	C	E	C	C	C	F	D	D	E	B	B
d_A, Approach Delay [s/veh]	54.30			23.26			43.41			35.50		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	41.64											
Intersection LOS	D											
Intersection V/C	0.715											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.527	0.000	2.942	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	367	450
d_b, Bicycle Delay [s]	19.27	19.27	40.02	36.04
l_b,int, Bicycle LOS Score for Intersection	2.495	1.583	1.956	2.603
Bicycle LOS	B	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	18.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.469

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	3	0	397	746	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.0000	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	146	0	60	3	0
Site-Generated Trips [veh/h]	0	68	212	87	90	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	217	212	592	929	1
Peak Hour Factor	0.9060	0.9060	1.0000	0.9060	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	60	53	163	256	0
Total Analysis Volume [veh/h]	0	240	212	653	1025	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.47	0.32	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	80.76	18.10	12.80	0.00	0.00	0.00
Movement LOS	F	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	2.47	2.47	1.35	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	61.79	61.79	33.74	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	18.10		3.14		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.31					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	45.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.767

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	111	854	95	88	904	383	181	80	118	143	332	79
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	88	0	12	131	3	60	0	0	0	0	10
Site-Generated Trips [veh/h]	0	257	0	17	209	90	87	0	0	0	0	39
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	1301	106	128	1352	522	350	90	132	160	372	137
Peak Hour Factor	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	34	355	29	35	369	143	96	25	36	44	102	37
Total Analysis Volume [veh/h]	136	1422	116	140	1478	570	383	98	144	175	407	150
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	38	0	14	37	37	32	40	0	28	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	44	44	10	43	75	28	36	14	22	22
g / C, Green / Cycle	0.09	0.37	0.37	0.08	0.36	0.62	0.23	0.30	0.12	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.30	0.30	0.08	0.30	0.37	0.22	0.03	0.10	0.16	0.16
s, saturation flow rate [veh/h]	1714	3427	1731	1714	4903	1530	1714	3427	1714	1800	1637
c, Capacity [veh/h]	157	1251	632	143	1748	954	400	1023	206	333	303
d1, Uniform Delay [s]	53.77	34.48	34.49	54.90	35.56	13.58	45.41	30.40	51.74	47.52	47.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.37	0.11	0.11	0.16	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.09	5.99	11.23	30.44	5.24	2.76	29.65	0.04	9.42	10.28	11.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.82	0.82	0.98	0.85	0.60	0.96	0.10	0.85	0.87	0.88
d, Delay for Lane Group [s/veh]	66.86	40.47	45.72	85.34	40.80	16.34	75.06	30.44	61.16	57.80	59.25
Lane Group LOS	E	D	D	F	D	B	E	C	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.62	14.33	15.42	5.43	13.93	9.51	14.48	1.04	5.70	9.38	8.70
50th-Percentile Queue Length [ft/ln]	115.4	358.3	385.4	135.6	348.1	237.6	361.88	25.99	142.4	234.5	217.5
95th-Percentile Queue Length [veh/ln]	8.14	20.54	21.86	9.25	20.05	14.56	20.71	1.87	9.61	14.41	13.54
95th-Percentile Queue Length [ft/ln]	203.5	513.5	546.4	231.1	501.2	364.0	517.87	46.78	240.3	360.1	338.5

Movement, Approach, & Intersection Results

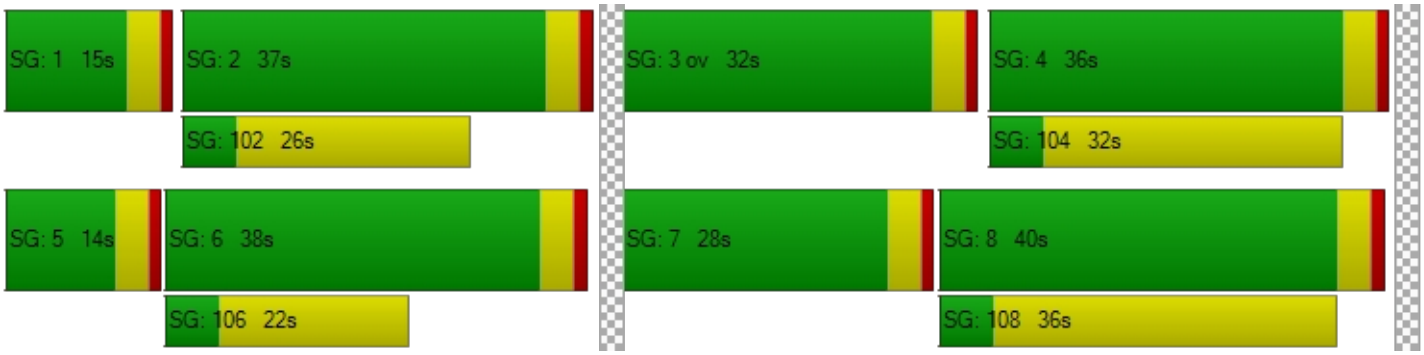
d_M, Delay for Movement [s/veh]	66.86	41.95	45.72	85.34	40.80	16.34	75.06	30.44	0.00	61.16	58.22	59.25
Movement LOS	E	D	D	F	D	B	E	C		E	E	E
d_A, Approach Delay [s/veh]	44.23			37.28			65.97			59.13		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	45.44											
Intersection LOS	D											
Intersection V/C	0.767											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.225	3.246	2.727	2.527
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	550	600	533
d_b, Bicycle Delay [s]	30.82	31.54	29.40	32.27
l_b,int, Bicycle LOS Score for Intersection	2.480	2.763	1.956	2.164
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.553

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	29	126	6	43	129	75	30	216	16	7	341	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	2	0	0	0	6	0	0	6	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	17	0	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	141	7	50	144	84	34	265	18	8	418	74
Peak Hour Factor	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768	0.768
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	46	2	16	47	27	11	86	6	3	136	24
Total Analysis Volume [veh/h]	42	184	9	65	188	109	44	345	23	10	544	96
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	23	0	0	23	0	9	88	0	9	88	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	65	65	4	41	1	39	39
g / C, Green / Cycle	0.54	0.54	0.03	0.34	0.01	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.15	0.23	0.03	0.21	0.01	0.30	0.06
s, saturation flow rate [veh/h]	1590	1607	1714	1780	1714	1800	1530
c, Capacity [veh/h]	899	909	56	612	22	583	496
d1, Uniform Delay [s]	14.40	15.86	57.62	32.56	58.82	39.30	29.26
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	1.31	20.86	0.95	14.20	7.44	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	0.40	0.79	0.60	0.46	0.93	0.19
d, Delay for Lane Group [s/veh]	15.11	17.17	78.48	33.51	73.02	46.74	29.45
Lane Group LOS	B	B	E	C	E	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.51	5.98	1.65	8.97	0.39	16.54	2.04
50th-Percentile Queue Length [ft/ln]	87.72	149.45	41.27	224.29	9.71	413.4	51.01
95th-Percentile Queue Length [veh/ln]	6.32	9.99	2.97	13.88	0.70	23.21	3.67
95th-Percentile Queue Length [ft/ln]	157.90	249.70	74.28	347.10	17.48	580.1	91.82

Movement, Approach, & Intersection Results

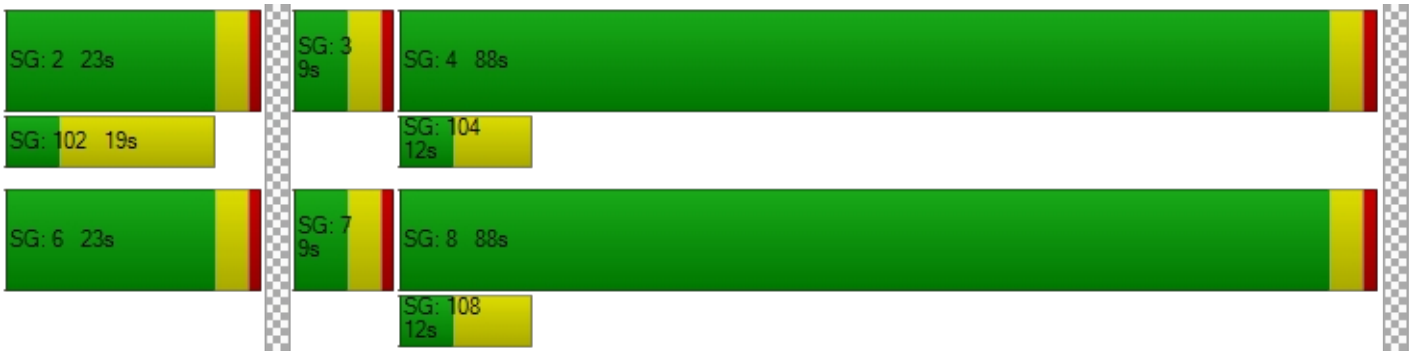
d_M, Delay for Movement [s/veh]	15.11	15.11	15.11	17.17	17.17	17.17	78.48	33.51	33.51	73.02	46.74	29.45
Movement LOS	B	B	B	B	B	B	E	C	C	E	D	C
d_A, Approach Delay [s/veh]	15.11			17.17			38.31			44.59		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	32.87											
Intersection LOS	C											
Intersection V/C	0.553											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	1.952	2.065	2.476	0.000
Crosswalk LOS	A	B	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	1400	1400
d_b, Bicycle Delay [s]	42.50	42.50	5.40	5.40
l_b,int, Bicycle LOS Score for Intersection	1.947	2.157	2.239	2.632
Bicycle LOS	A	B	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.369

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	1	21	14	9	8	0	42	34	21	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	6	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	17	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	47	16	10	9	0	47	38	24	17
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	15	5	3	3	0	15	12	8	5
Total Analysis Volume [veh/h]	1	60	20	13	11	0	60	48	31	22
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	43	0	0	0	0	43	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	15	15
g / C, Green / Cycle	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.09	0.11
s, saturation flow rate [veh/h]	1135	1515
c, Capacity [veh/h]	187	227
d1, Uniform Delay [s]	50.42	51.54
k, delay calibration	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	2.63	4.02
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.71
d, Delay for Lane Group [s/veh]	53.05	55.56
Lane Group LOS	D	E
Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	3.18	5.00
50th-Percentile Queue Length [ft/ln]	79.41	124.99
95th-Percentile Queue Length [veh/ln]	5.72	8.67
95th-Percentile Queue Length [ft/ln]	142.93	216.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.05	53.05	53.05	53.05	53.05	55.56	55.56	55.56	55.56	55.56
Movement LOS	D	D	D	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	53.05					55.56				
Approach LOS	D					E				
d_I, Intersection Delay [s/veh]	32.22									
Intersection LOS	C									
Intersection V/C	0.369									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.877	1.922
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	650
d_b, Bicycle Delay [s]	27.34	27.34
l_b,int, Bicycle LOS Score for Intersection	1.616	1.690
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	9	42	159	11	5	1	9	169	11	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	1	7	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	12	5	0	0	0	13	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	47	191	24	6	1	10	202	12	7
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	15	61	8	2	0	3	64	4	2
Total Analysis Volume [veh/h]	13	60	243	31	8	1	13	257	15	9
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	43	0	0	9	0	43	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	78	72	78	70	70
g / C, Green / Cycle	0.65	0.60	0.65	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.01	0.14	0.02
s, saturation flow rate [veh/h]	1166	1757	1144	1800	1530
c, Capacity [veh/h]	774	1061	754	1047	890
d1, Uniform Delay [s]	7.84	11.21	7.62	12.26	10.67
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.24	0.61	0.01	0.56	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.27	0.02	0.25	0.03
d, Delay for Lane Group [s/veh]	8.09	11.82	7.63	12.81	10.73
Lane Group LOS	A	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.71	3.65	0.12	3.48	0.28
50th-Percentile Queue Length [ft/ln]	17.86	91.17	3.12	87.02	7.09
95th-Percentile Queue Length [veh/ln]	1.29	6.56	0.22	6.27	0.51
95th-Percentile Queue Length [ft/ln]	32.16	164.11	5.61	156.63	12.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.09	8.09	11.82	11.82	11.82	7.63	7.63	12.81	10.73	10.73
Movement LOS	A	A	B	B	B	A	A	B	B	B
d_A, Approach Delay [s/veh]	11.05					12.40				
Approach LOS	B					B				
d_I, Intersection Delay [s/veh]	32.22									
Intersection LOS	C									
Intersection V/C	0.369									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.324	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	650
d_b, Bicycle Delay [s]	27.34	27.34
l_b,int, Bicycle LOS Score for Intersection	2.033	2.010
Bicycle LOS	B	B

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	10	36	12	1	3	14	94	78	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	11	40	13	1	3	16	105	87	2
Peak Hour Factor	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850	0.7850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	13	4	0	1	5	33	28	1
Total Analysis Volume [veh/h]	0	14	51	17	1	4	20	134	111	3
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	25	0	0	0	0	25	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	15
g / C, Green / Cycle	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.09	0.10	0.07
s, saturation flow rate [veh/h]	940	1598	1530
c, Capacity [veh/h]	152	233	190
d1, Uniform Delay [s]	48.54	50.71	49.73
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	3.05	3.44	3.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.68	0.60
d, Delay for Lane Group [s/veh]	51.59	54.15	52.76
Lane Group LOS	D	D	D
Critical Lane Group	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.42	4.82	3.40
50th-Percentile Queue Length [ft/ln]	60.56	120.53	85.02
95th-Percentile Queue Length [veh/ln]	4.36	8.42	6.12
95th-Percentile Queue Length [ft/ln]	109.01	210.55	153.04

Movement, Approach, & Intersection Results

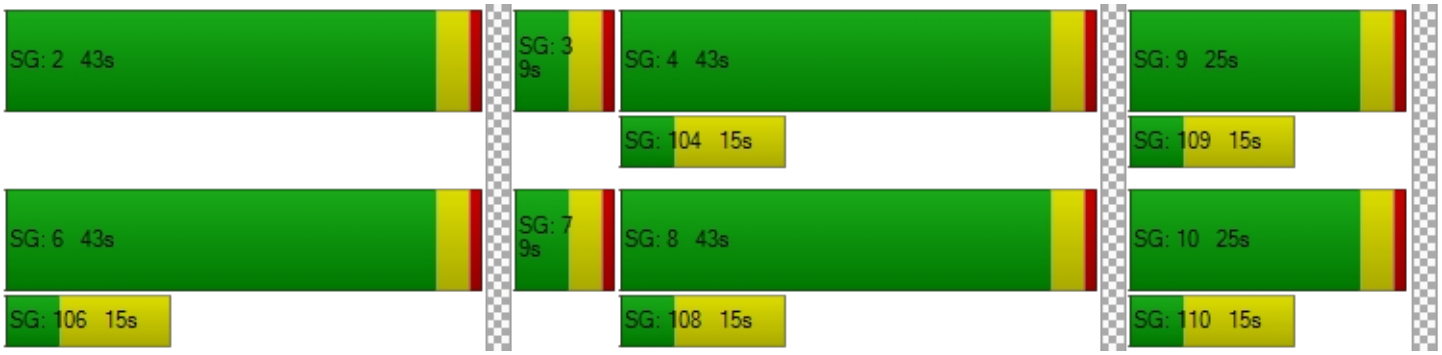
d_M, Delay for Movement [s/veh]	51.59	51.59	51.59	51.59	51.59	54.15	54.15	54.15	52.76	52.76
Movement LOS	D	D	D	D	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	51.59					53.56				
Approach LOS	D					D				
d_I, Intersection Delay [s/veh]	32.22									
Intersection LOS	C									
Intersection V/C	0.369									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.961	2.235
Crosswalk LOS	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	350	350
d_b, Bicycle Delay [s]	40.84	40.84
l_b,int, Bicycle LOS Score for Intersection	1.645	1.997
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	41.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	116	589	159	100	785	63	135	118	67	107	130	261
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	31	0	10	32	0	0	1	0	0	0	8
Site-Generated Trips [veh/h]	0	9	0	5	0	0	0	12	0	0	13	20
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	130	700	178	127	911	71	151	145	75	120	159	320
Peak Hour Factor	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932	0.932
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	35	188	48	34	244	19	41	39	20	32	43	86
Total Analysis Volume [veh/h]	139	751	191	136	977	76	162	156	80	129	171	343
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	42	0	15	42	0	17	43	0	20	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	51	51	11	51	51	13	32	32	11	29	29
g / C, Green / Cycle	0.09	0.42	0.42	0.09	0.42	0.42	0.11	0.26	0.26	0.09	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.27	0.27	0.08	0.30	0.30	0.09	0.07	0.07	0.08	0.10	0.22
s, saturation flow rate [veh/h]	1714	1800	1676	1714	1800	1755	1714	1800	1601	1714	1800	1530
c, Capacity [veh/h]	157	758	706	157	758	739	186	473	420	156	442	376
d1, Uniform Delay [s]	53.87	27.57	27.58	53.77	28.56	28.57	52.68	35.01	35.11	53.59	37.74	44.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.20
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.76	4.17	4.48	13.09	5.40	5.56	11.86	0.29	0.34	10.37	0.55	14.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.64	0.64	0.87	0.70	0.70	0.87	0.26	0.27	0.83	0.39	0.91
d, Delay for Lane Group [s/veh]	68.64	31.75	32.07	66.86	33.96	34.13	64.54	35.29	35.45	63.96	38.30	58.41
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.79	11.85	11.10	4.62	13.55	13.26	5.41	2.89	2.69	4.28	4.28	11.35
50th-Percentile Queue Length [ft/ln]	119.7	296.1	277.5	115.4	338.7	331.5	135.3	72.28	67.18	106.9	106.9	283.7
95th-Percentile Queue Length [veh/ln]	8.38	17.49	16.56	8.14	19.59	19.23	9.23	5.20	4.84	7.67	7.67	16.88
95th-Percentile Queue Length [ft/ln]	209.4	437.2	414.1	203.5	489.6	480.8	230.7	130.1	120.9	191.6	191.7	421.9

Movement, Approach, & Intersection Results

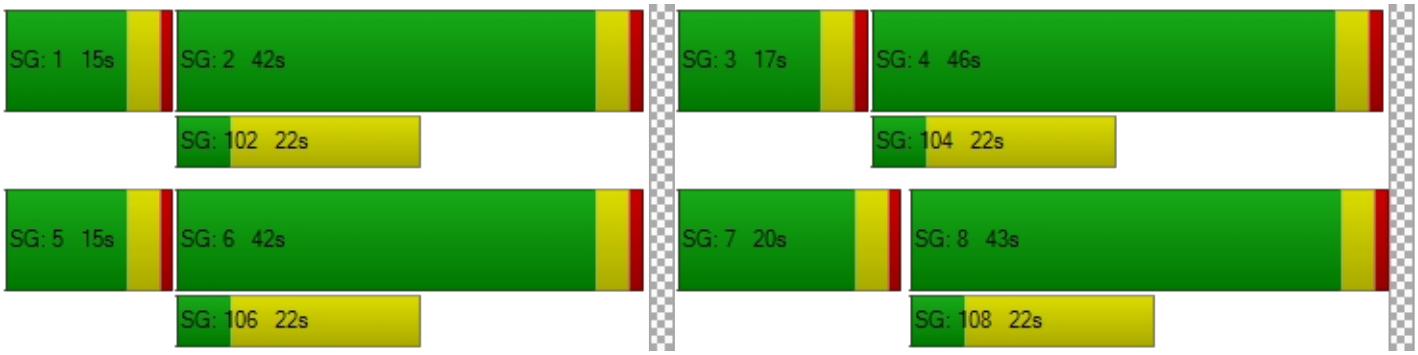
d_M, Delay for Movement [s/veh]	68.64	31.86	32.07	66.86	34.04	34.13	64.54	35.33	35.45	63.96	38.30	58.41
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	36.62			37.80			47.24			54.18		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.73											
Intersection LOS	D											
Intersection V/C	0.696											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.757	2.792	2.468	2.651
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	633	650	700
d_b, Bicycle Delay [s]	28.02	28.02	27.34	25.35
l_b,int, Bicycle LOS Score for Intersection	2.451	2.541	1.888	2.090
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	33.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.720

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	731	162	10	1158	67	27	177	83	258	306	38
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	1	13	0	4	22	0	0	2	2	0	1	3
Site-Generated Trips [veh/h]	14	16	0	0	0	0	0	0	12	0	2	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	848	181	15	1319	75	30	200	107	289	346	53
Peak Hour Factor	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953	0.953
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	222	47	4	346	20	8	52	28	76	91	14
Total Analysis Volume [veh/h]	73	890	190	16	1384	79	31	210	112	303	363	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	28	0	26	44	0	14	36	0	30	52	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	65	65	2	61	61	3	14	14	23	34	34
g / C, Green / Cycle	0.05	0.54	0.54	0.02	0.51	0.51	0.03	0.12	0.12	0.19	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.12	0.01	0.40	0.05	0.02	0.09	0.10	0.18	0.12	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1597	1714	1800	1717
c, Capacity [veh/h]	86	1847	824	31	1736	775	46	212	188	329	509	486
d1, Uniform Delay [s]	56.56	17.24	14.57	58.42	24.49	15.40	57.84	51.46	51.72	47.56	35.02	35.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.24	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.04	0.90	0.65	13.08	3.90	0.26	15.31	6.35	8.75	19.26	0.55	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.48	0.23	0.52	0.80	0.10	0.67	0.79	0.82	0.92	0.42	0.42
d, Delay for Lane Group [s/veh]	76.60	18.14	15.22	71.50	28.40	15.66	73.16	57.81	60.47	66.82	35.57	35.61
Lane Group LOS	E	B	B	E	C	B	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.67	7.73	2.86	0.59	16.68	1.19	1.13	5.25	5.02	10.61	5.19	4.97
50th-Percentile Queue Length [ft/ln]	66.79	193.2	71.39	14.84	416.8	29.65	28.26	131.3	125.3	265.3	129.6	124.2
95th-Percentile Queue Length [veh/ln]	4.81	12.29	5.14	1.07	23.37	2.13	2.03	9.01	8.69	15.95	8.92	8.62
95th-Percentile Queue Length [ft/ln]	120.2	307.2	128.5	26.71	584.3	53.36	50.86	225.2	217.1	398.8	223.0	215.6

Movement, Approach, & Intersection Results

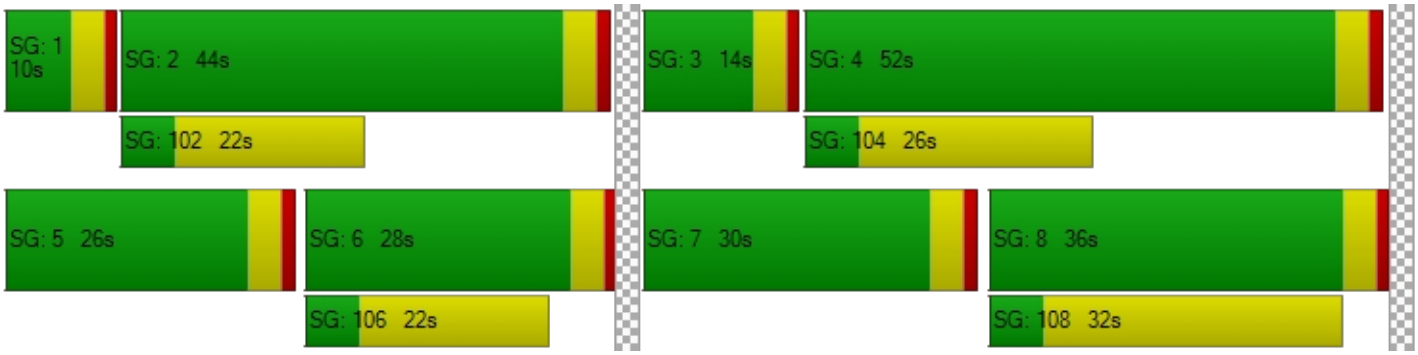
d_M, Delay for Movement [s/veh]	76.60	18.14	15.22	71.50	28.40	15.66	73.16	58.36	60.47	66.82	35.59	35.61
Movement LOS	E	B	B	E	C	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	21.36			28.18			60.33			48.70		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	33.12											
Intersection LOS	C											
Intersection V/C	0.720											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.100	2.867	2.484	2.537
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	667	533	800
d_b, Bicycle Delay [s]	38.40	26.67	32.27	21.60
l_b,int, Bicycle LOS Score for Intersection	2.511	2.780	1.851	2.155
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.348

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	6	102	8	8	123	45	21	43	2	21	147	7
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	114	9	9	138	50	24	48	2	24	165	8
Peak Hour Factor	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854	0.854
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	33	3	3	40	15	7	14	1	7	48	2
Total Analysis Volume [veh/h]	8	133	11	11	162	59	28	56	2	28	193	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	707	739	663	635	736
Degree of Utilization, x	0.22	0.31	0.13	0.35	0.01

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.81	1.35	0.44	1.55	0.04
95th-Percentile Queue Length [ft]	20.31	33.63	11.12	38.84	0.93
Approach Delay [s/veh]	9.48	10.09	9.24	11.21	
Approach LOS	A	B	A	B	
Intersection Delay [s/veh]	10.22				
Intersection LOS	B				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.511

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	292	941	78	41	857	43	25	45	128	165	161	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	9	0	0	13	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	108	0	0	113	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	327	1171	87	46	1086	48	28	50	143	185	180	76
Peak Hour Factor	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911	0.911
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	90	321	24	13	298	13	8	14	39	51	49	21
Total Analysis Volume [veh/h]	359	1285	95	50	1192	53	31	55	157	203	198	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	26	60	0	12	46	0	15	33	0	15	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	76	76	4	65	65	3	15	15	9	21	21
g / C, Green / Cycle	0.13	0.63	0.63	0.04	0.54	0.54	0.03	0.12	0.12	0.08	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.11	0.27	0.27	0.03	0.24	0.24	0.02	0.02	0.10	0.06	0.06	0.05
s, saturation flow rate [veh/h]	3329	3427	1737	1714	3427	1761	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	426	2159	1095	64	1849	950	48	417	186	258	587	262
d1, Uniform Delay [s]	51.14	11.21	11.21	57.26	16.74	16.74	57.75	47.04	51.58	54.38	43.73	43.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.60	0.61	1.21	18.02	0.78	1.51	13.86	0.14	9.85	5.29	0.34	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.42	0.42	0.78	0.44	0.44	0.65	0.13	0.84	0.79	0.34	0.32
d, Delay for Lane Group [s/veh]	55.74	11.82	12.42	75.28	17.51	18.25	71.61	47.18	61.43	59.67	44.07	44.25
Lane Group LOS	E	B	B	E	B	B	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.54	6.07	6.34	1.83	6.93	7.31	1.12	0.75	5.13	3.20	2.63	2.22
50th-Percentile Queue Length [ft/ln]	138.5	151.6	158.5	45.64	173.1	182.8	27.91	18.66	128.2	80.04	65.68	55.53
95th-Percentile Queue Length [veh/ln]	9.40	10.11	10.47	3.29	11.24	11.75	2.01	1.34	8.84	5.76	4.73	4.00
95th-Percentile Queue Length [ft/ln]	235.0	252.6	261.8	82.16	281.1	293.7	50.24	33.58	221.1	144.0	118.2	99.96

Movement, Approach, & Intersection Results

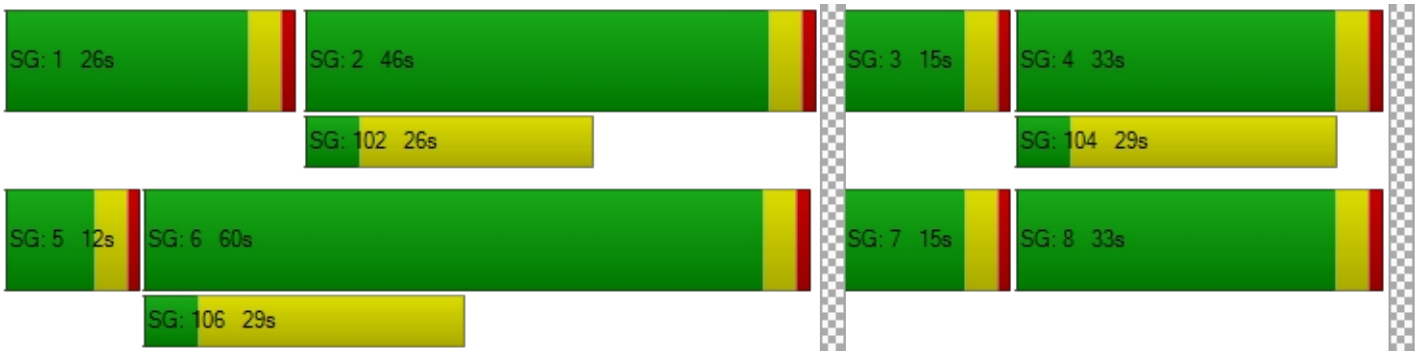
d_M, Delay for Movement [s/veh]	55.74	11.99	12.42	75.28	17.74	18.25	71.61	47.18	61.43	59.67	44.07	44.25
Movement LOS	E	B	B	E	B	B	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	21.05			19.98			59.50			50.64		
Approach LOS	C			B			E			D		
d_I, Intersection Delay [s/veh]	26.97											
Intersection LOS	C											
Intersection V/C	0.511											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.984	2.607	2.704
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	700	483	483
d_b, Bicycle Delay [s]	17.07	25.35	34.50	34.50
l_b,int, Bicycle LOS Score for Intersection	2.516	2.272	1.760	1.959
Bicycle LOS	B	B	A	A

Sequence

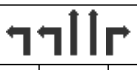
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	28.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	56	215	398	8	307	42	18	107	21	394	320	30
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	74	0	0	86	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	133	0	0	40	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	448	446	9	470	47	20	120	24	441	358	34
Peak Hour Factor	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	114	114	2	120	12	5	31	6	112	91	9
Total Analysis Volume [veh/h]	64	457	455	9	479	48	20	122	24	450	365	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	56	0	9	56	0	9	9	0	46	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	77	77	1	74	74	2	6	6	19	23	23
g / C, Green / Cycle	0.04	0.64	0.64	0.01	0.62	0.62	0.02	0.05	0.05	0.16	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.30	0.01	0.15	0.15	0.01	0.04	0.02	0.14	0.11	0.02
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1743	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	123	1156	983	19	1110	1075	35	182	81	533	660	294
d1, Uniform Delay [s]	56.76	10.29	10.93	58.96	10.35	10.36	58.23	55.80	54.67	48.94	43.79	40.04
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.42	1.01	1.57	16.39	0.51	0.53	13.44	4.26	2.00	3.76	0.73	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.40	0.46	0.47	0.24	0.24	0.57	0.67	0.30	0.84	0.55	0.12
d, Delay for Lane Group [s/veh]	60.17	11.30	12.49	75.35	10.86	10.89	71.67	60.06	56.67	52.70	44.52	40.22
Lane Group LOS	E	B	B	E	B	B	E	E	E	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.01	5.85	6.27	0.36	3.25	3.18	0.73	1.92	0.74	6.82	4.98	0.88
50th-Percentile Queue Length [ft/ln]	25.29	146.2	156.6	9.00	81.29	79.45	18.36	48.03	18.61	170.4	124.4	21.89
95th-Percentile Queue Length [veh/ln]	1.82	9.81	10.37	0.65	5.85	5.72	1.32	3.46	1.34	11.10	8.64	1.58
95th-Percentile Queue Length [ft/ln]	45.52	245.3	259.3	16.21	146.3	143.0	33.04	86.46	33.50	277.4	215.9	39.41

Movement, Approach, & Intersection Results

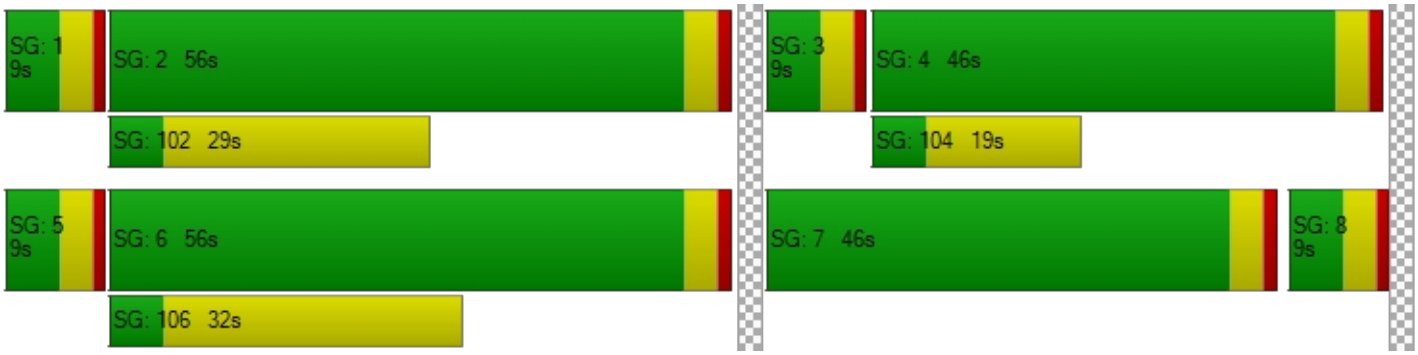
d_M, Delay for Movement [s/veh]	60.17	11.30	12.49	75.35	10.87	10.89	71.67	60.06	56.67	52.70	44.52	40.22
Movement LOS	E	B	B	E	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	15.06			11.96			60.97			48.67		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	28.72											
Intersection LOS	C											
Intersection V/C	0.473											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.402	2.699	2.916
Crosswalk LOS	F	B	B	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	83	700
d_b, Bicycle Delay [s]	19.27	19.27	55.10	25.35
l_b,int, Bicycle LOS Score for Intersection	3.170	2.002	1.697	2.261
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	50.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.835

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	466	1012	370	91	1138	69	86	116	267	506	305	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	88	0	1	130	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	216	0	35	174	0	0	0	0	0	0	40
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	522	1437	414	138	1579	77	96	130	299	567	342	120
Peak Hour Factor	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951	0.951
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	137	378	109	36	415	20	25	34	79	149	90	32
Total Analysis Volume [veh/h]	549	1511	435	145	1660	81	101	137	314	596	360	126
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	22	43	0	15	36	0	13	40	40	22	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	63	63	11	56	56	5	12	34	18	24	24
g / C, Green / Cycle	0.15	0.53	0.53	0.09	0.47	0.47	0.05	0.10	0.28	0.15	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.16	0.44	0.28	0.08	0.34	0.05	0.03	0.04	0.21	0.18	0.14	0.14
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1643
c, Capacity [veh/h]	499	1808	807	157	2300	718	154	334	430	499	362	331
d1, Uniform Delay [s]	51.00	23.96	18.72	54.08	25.57	17.86	56.29	50.90	39.04	51.00	44.56	44.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.32	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	52.11	4.76	2.58	19.08	2.00	0.32	4.69	0.80	6.87	91.64	2.47	2.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.10	0.84	0.54	0.92	0.72	0.11	0.66	0.41	0.73	1.19	0.70	0.70
d, Delay for Lane Group [s/veh]	103.1	28.73	21.30	73.16	27.56	18.18	60.98	51.70	45.91	142.6	47.02	47.27
Lane Group LOS	F	C	C	E	C	B	E	D	D	F	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.09	18.59	8.40	5.17	12.82	1.33	1.61	1.98	9.15	13.83	7.26	6.66
50th-Percentile Queue Length [ft/ln]	277.2	464.6	209.9	129.3	320.4	33.26	40.16	49.45	228.7	345.7	181.5	166.4
95th-Percentile Queue Length [veh/ln]	17.27	25.66	13.15	8.90	18.69	2.40	2.89	3.56	14.11	21.53	11.68	10.89
95th-Percentile Queue Length [ft/ln]	431.8	641.4	328.8	222.5	467.2	59.88	72.29	89.00	352.7	538.3	292.0	272.2

Movement, Approach, & Intersection Results

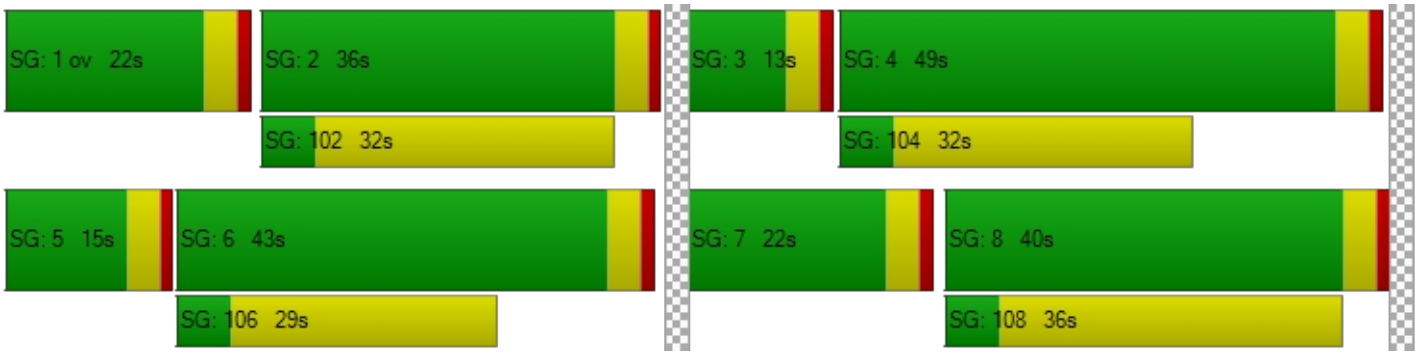
d_M, Delay for Movement [s/veh]	103.1	28.73	21.30	73.16	27.56	18.18	60.98	51.70	45.91	142.6	47.10	47.27
Movement LOS	F	C	C	E	C	B	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	43.80			30.67			50.10			99.75		
Approach LOS	D			C			D			F		
d_I, Intersection Delay [s/veh]	50.32											
Intersection LOS	D											
Intersection V/C	0.835											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.413	3.182	2.929	2.860
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	533	600	750
d_b, Bicycle Delay [s]	27.34	32.27	29.40	23.44
l_b,int, Bicycle LOS Score for Intersection	3.618	2.597	2.015	2.452
Bicycle LOS	D	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	28.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.569

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	8	9	4	23	1	73	5	50	26	56	314	11
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	1	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	35	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	10	4	26	1	82	6	56	29	63	388	12
Peak Hour Factor	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877	0.877
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	3	3	1	7	0	23	2	16	8	18	111	3
Total Analysis Volume [veh/h]	10	11	5	30	1	94	7	64	33	72	442	14
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	Permi
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	70	63	63
g / C, Green / Cycle	0.12	0.12	0.58	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.03	0.11	0.13	0.13	0.13
s, saturation flow rate [veh/h]	1641	1466	778	1800	1781
c, Capacity [veh/h]	240	230	422	945	935
d1, Uniform Delay [s]	47.58	51.73	13.46	15.49	15.50
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	4.21	1.41	0.61	0.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.72	0.25	0.24	0.24
d, Delay for Lane Group [s/veh]	48.07	55.94	14.86	16.10	16.11
Lane Group LOS	D	E	B	B	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.56	5.19	1.41	3.55	3.52
50th-Percentile Queue Length [ft/ln]	38.93	129.69	35.20	88.79	88.07
95th-Percentile Queue Length [veh/ln]	2.80	8.92	2.53	6.39	6.34
95th-Percentile Queue Length [ft/ln]	70.08	223.07	63.36	159.82	158.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.07	48.07	48.07	48.07	55.94	55.94	55.94	55.94	14.86	14.86	16.11	16.11
Movement LOS	D	D	D	D	E	E	E	E	B	B	B	B
d_A, Approach Delay [s/veh]	48.07				55.94				15.88			
Approach LOS	D				E				B			
d_I, Intersection Delay [s/veh]	28.52											
Intersection LOS	C											
Intersection V/C	0.569											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.783	0.000	2.746
Crosswalk LOS	A	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	250
d_b, Bicycle Delay [s]	45.94	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.603	1.678	1.963
Bicycle LOS	A	A	A

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	16	545	49	18	10	9	194	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	40	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	650	55	20	11	10	217	1
Peak Hour Factor	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770	0.8770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	185	16	6	3	3	62	0
Total Analysis Volume [veh/h]	21	741	63	23	13	11	247	1
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	19	0	0	0	73	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	61	61	61	23
g / C, Green / Cycle	0.02	0.51	0.51	0.51	0.19
(v / s)_i Volume / Saturation Flow Rate	0.01	0.16	0.25	0.06	0.18
s, saturation flow rate [veh/h]	1714	1800	1800	1530	1547
c, Capacity [veh/h]	36	908	908	772	302
d1, Uniform Delay [s]	58.20	17.55	19.64	15.60	47.14
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.79	0.93	1.94	0.29	9.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.32	0.50	0.11	0.90
d, Delay for Lane Group [s/veh]	71.99	18.47	21.58	15.89	56.71
Lane Group LOS	E	B	C	B	E
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.77	4.94	8.68	1.30	8.71
50th-Percentile Queue Length [ft/ln]	19.28	123.49	217.07	32.58	217.68
95th-Percentile Queue Length [veh/ln]	1.39	8.58	13.52	2.35	13.55
95th-Percentile Queue Length [ft/ln]	34.71	214.61	337.89	58.65	338.66

Movement, Approach, & Intersection Results

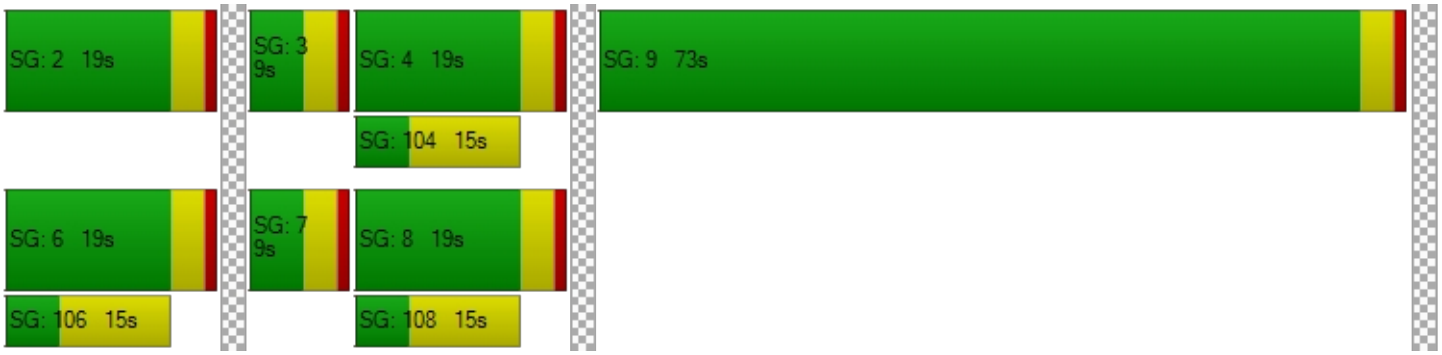
d_M, Delay for Movement [s/veh]	71.99	20.36	21.58	15.89	56.71	56.71	56.71	56.71
Movement LOS	E	C	C	B	E	E	E	E
d_A, Approach Delay [s/veh]	21.19				56.71			
Approach LOS	C				E			
d_I, Intersection Delay [s/veh]	28.52							
Intersection LOS	C							
Intersection V/C	0.569							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.125
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	1150
d_b, Bicycle Delay [s]	45.94	10.84
l_b,int, Bicycle LOS Score for Intersection	2.240	2.007
Bicycle LOS	B	B

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	120.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.025

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	6	1	21	92	3	29	14	399	8	14	605	72
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	1	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	35	0	0	40	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	1	24	103	3	32	16	483	9	16	718	81
Peak Hour Factor	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885	0.885
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	0	7	29	1	9	5	136	3	5	203	23
Total Analysis Volume [veh/h]	8	1	27	116	3	36	18	546	10	18	811	92
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop			Stop			Free			Free		
Flared Lane	No											
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance	No			No								
Number of Storage Spaces in Median	0			0			0			0		

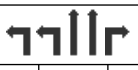
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.01	0.04	0.88	0.02	0.06	0.02	0.01	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	27.21	37.53	10.92	118.2	120.8	11.86	9.84	0.00	0.00	8.58	0.00	0.00
Movement LOS	D	E	B	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.31	0.31	0.31	5.93	5.93	0.21	0.07	0.00	0.00	0.05	0.00	0.00
95th-Percentile Queue Length [ft/ln]	7.66	7.66	7.66	148.3	148.3	5.13	1.81	0.00	0.00	1.34	0.00	0.00
d_A, Approach Delay [s/veh]	15.28			93.60			0.31			0.17		
Approach LOS	C			F			A			A		
d_I, Intersection Delay [s/veh]	9.13											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	65.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.907

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	439	581	136	84	759	31	35	281	464	265	376	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	30	0	0	32	0	0	1	0	0	0	1
Site-Generated Trips [veh/h]	40	9	0	0	0	0	0	0	35	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	532	690	152	94	882	35	39	316	555	297	421	93
Peak Hour Factor	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957	0.957
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	139	180	40	25	230	9	10	83	145	78	110	24
Total Analysis Volume [veh/h]	556	721	159	98	922	37	41	330	580	310	440	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	45	0	13	35	0	11	47	0	15	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	42	42	8	31	31	4	43	43	11	50	50
g / C, Green / Cycle	0.16	0.35	0.35	0.07	0.26	0.26	0.03	0.36	0.36	0.09	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.17	0.21	0.10	0.06	0.27	0.27	0.01	0.10	0.38	0.09	0.15	0.15
s, saturation flow rate [veh/h]	3329	3427	1530	1714	1800	1776	3329	3427	1530	3329	1800	1689
c, Capacity [veh/h]	527	1187	530	121	465	459	106	1228	548	305	753	706
d1, Uniform Delay [s]	50.50	32.47	28.62	54.99	44.50	44.50	56.93	27.34	38.50	54.50	24.01	24.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.74	2.32	1.45	12.18	51.97	52.28	2.28	0.12	54.66	27.96	0.30	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.05	0.61	0.30	0.81	1.04	1.04	0.39	0.27	1.06	1.02	0.37	0.37
d, Delay for Lane Group [s/veh]	85.24	34.79	30.07	67.17	96.47	96.78	59.22	27.45	93.16	82.46	24.31	24.34
Lane Group LOS	F	C	C	E	F	F	E	C	F	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.43	9.01	3.57	3.33	20.40	20.17	0.64	3.40	24.13	5.79	5.46	5.13
50th-Percentile Queue Length [ft/ln]	260.6	225.3	89.20	83.24	510.1	504.2	16.10	84.96	603.3	144.6	136.5	128.3
95th-Percentile Queue Length [veh/ln]	16.12	13.94	6.42	5.99	28.46	28.18	1.16	6.12	33.46	9.79	9.29	8.85
95th-Percentile Queue Length [ft/ln]	402.9	348.4	160.5	149.8	711.5	704.3	28.98	152.9	836.5	244.6	232.3	221.2

Movement, Approach, & Intersection Results

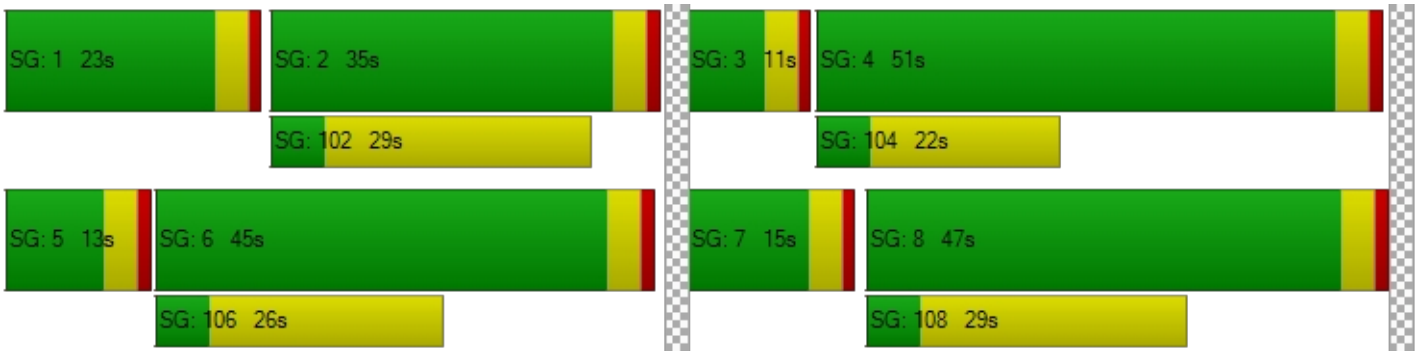
d_M, Delay for Movement [s/veh]	85.24	34.79	30.07	67.17	96.62	96.78	59.22	27.45	93.16	82.46	24.32	24.34
Movement LOS	F	C	C	E	F	F	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	53.80			93.89			68.89			45.60		
Approach LOS	D			F			E			D		
d_I, Intersection Delay [s/veh]	65.40											
Intersection LOS	E											
Intersection V/C	0.907											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.062	2.689	2.885	2.915
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	517	717	783
d_b, Bicycle Delay [s]	26.00	33.00	24.70	22.20
l_b,int, Bicycle LOS Score for Intersection	2.744	2.432	2.344	2.258
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	36.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	180	1217	675	109	1386	98	170	259	151	546	419	94
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	1	10	0	6	18	0	0	0	1	0	0	4
Site-Generated Trips [veh/h]	0	21	0	0	12	0	0	0	0	0	0	9
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	203	1394	756	128	1582	110	190	290	170	612	469	118
Peak Hour Factor	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.936
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	54	372	202	34	423	29	51	77	45	163	125	32
Total Analysis Volume [veh/h]	217	1489	808	137	1690	118	203	310	182	654	501	126
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	40	40	9	36	0	35	43	0	28	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	58	86	5	54	54	10	17	17	24	31	40
g / C, Green / Cycle	0.08	0.48	0.72	0.04	0.45	0.45	0.08	0.14	0.14	0.20	0.26	0.34
(v / s)_i Volume / Saturation Flow Rate	0.07	0.30	0.53	0.04	0.35	0.35	0.06	0.09	0.12	0.20	0.15	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1741	3329	3427	1530	3329	3427	2708
c, Capacity [veh/h]	250	2367	1095	139	1540	782	271	488	218	666	894	910
d1, Uniform Delay [s]	54.92	23.06	10.26	57.47	27.97	28.02	53.91	48.52	50.09	47.79	38.39	27.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.97	1.28	4.45	32.63	3.93	7.60	4.11	1.38	8.18	12.56	0.55	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.63	0.74	0.99	0.78	0.78	0.75	0.64	0.84	0.98	0.56	0.14
d, Delay for Lane Group [s/veh]	63.89	24.34	14.71	90.10	31.90	35.62	58.02	49.90	58.28	60.35	38.95	27.83
Lane Group LOS	E	C	B	F	C	D	E	D	E	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.56	10.51	12.61	2.70	15.07	16.19	3.15	4.48	5.81	10.84	6.45	1.28
50th-Percentile Queue Length [ft/ln]	88.88	262.7	315.2	67.62	376.7	404.6	78.86	111.8	145.1	270.9	161.2	32.01
95th-Percentile Queue Length [veh/ln]	6.40	15.83	18.43	4.87	21.44	22.79	5.68	7.95	9.76	16.24	10.61	2.30
95th-Percentile Queue Length [ft/ln]	159.9	395.6	460.7	121.7	535.9	569.6	141.9	198.6	243.9	405.9	265.3	57.62

Movement, Approach, & Intersection Results

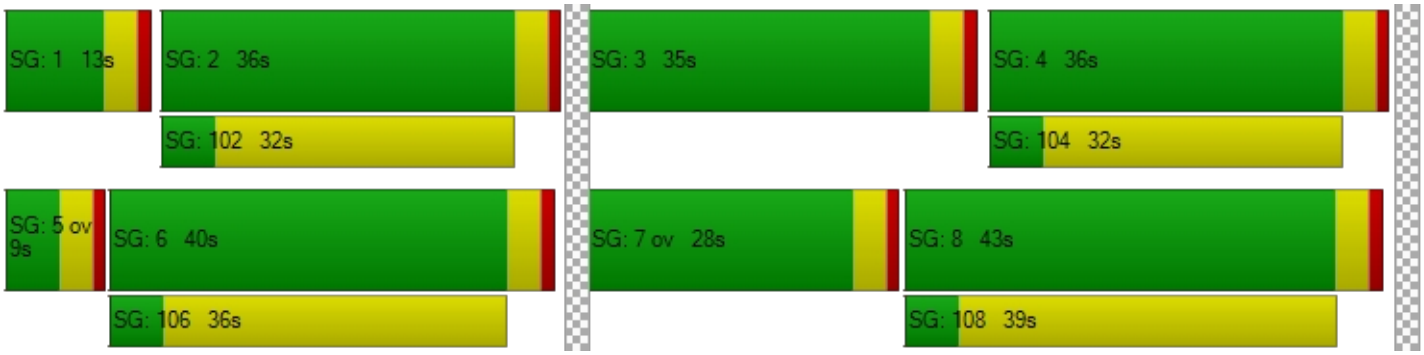
d_M, Delay for Movement [s/veh]	63.89	24.34	14.71	90.10	32.98	35.62	58.02	49.90	58.28	60.35	38.95	27.83
Movement LOS	E	C	B	F	C	D	E	D	E	E	D	C
d_A, Approach Delay [s/veh]	24.66			37.17			54.47			48.78		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	36.46											
Intersection LOS	D											
Intersection V/C	0.770											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.473	3.199	2.927	3.139
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	533	650	533
d_b, Bicycle Delay [s]	29.40	32.27	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.942	2.629	1.942	2.616
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	762	445	0	774	408	0	0	0	490	0	531
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.000	1.120
In-Process Volume [veh/h]	0	9	0	0	6	7	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	108	0	0	0	113	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	970	445	0	873	577	0	0	0	549	0	595
Peak Hour Factor	1.000	0.924	1.000	1.000	0.924	0.924	1.000	1.000	1.000	0.924	1.000	0.924
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	262	111	0	236	156	0	0	0	149	0	161
Total Analysis Volume [veh/h]	0	1050	445	0	945	624	0	0	0	594	0	644
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	33	0	0	33	0	0	0	0	87	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	75	75		37	37	37
g / C, Green / Cycle	0.63	0.63		0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.31	0.19		0.24	0.26	0.27
s, saturation flow rate [veh/h]	3427	4903		1714	1606	1530
c, Capacity [veh/h]	2151	3077		524	491	468
d1, Uniform Delay [s]	12.00	10.31		38.08	38.91	39.59
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.80	0.26		2.67	3.95	5.61
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.31		0.79	0.84	0.88
d, Delay for Lane Group [s/veh]	12.80	10.57		40.75	42.86	45.20
Lane Group LOS	B	B		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.43	3.78		11.41	11.80	12.19
50th-Percentile Queue Length [ft/ln]	185.80	94.57		285.3	295.0	304.7
95th-Percentile Queue Length [veh/ln]	11.90	6.81		16.95	17.44	17.92
95th-Percentile Queue Length [ft/ln]	297.57	170.22		423.8	435.9	447.9

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.80	0.00	0.00	10.57	0.00	0.00	0.00	0.00	41.39	0.00	44.36
Movement LOS		B			B					D		D
d_A, Approach Delay [s/veh]	12.80			10.57			0.00			42.94		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	23.69											
Intersection LOS	C											
Intersection V/C	0.576											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	483	0	1383
d_b, Bicycle Delay [s]	34.50	34.50	60.00	5.70
l_b,int, Bicycle LOS Score for Intersection	2.426	2.079	4.132	3.602
Bicycle LOS	B	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	70.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.051

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	993	543	0	1748	0	0	0	0	738	0	637
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.120	1.000	1.120	1.120	1.120	1.120	1.120	1.120	1.000	1.120
In-Process Volume [veh/h]	0	26	0	0	124	0	0	0	0	0	0	62
Site-Generated Trips [veh/h]	0	55	0	0	172	2	0	0	0	0	0	161
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1193	608	0	2254	2	0	0	0	827	0	936
Peak Hour Factor	1.000	0.910	0.910	1.000	0.910	0.910	0.910	0.910	0.910	0.910	1.000	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	328	167	0	619	1	0	0	0	227	0	257
Total Analysis Volume [veh/h]	0	1311	668	0	2477	2	0	0	0	909	0	1029
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	45	0	0	45	0	0	0	0	75	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	41	41		71	71
g / C, Green / Cycle	0.34	0.34		0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.27	0.38		0.27	0.67
s, saturation flow rate [veh/h]	4903	6538		3329	1530
c, Capacity [veh/h]	1675	2234		1970	905
d1, Uniform Delay [s]	35.49	39.50		13.76	24.50
k, delay calibration	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	3.73	56.18		0.17	75.07
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.78	1.11		0.46	1.14
d, Delay for Lane Group [s/veh]	39.22	95.68		13.93	99.57
Lane Group LOS	D	F		B	F
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	11.95	24.88		6.75	42.66
50th-Percentile Queue Length [ft/ln]	298.68	622.04		168.82	1066.42
95th-Percentile Queue Length [veh/ln]	17.62	35.37		11.01	59.17
95th-Percentile Queue Length [ft/ln]	440.39	884.28		275.36	1479.15

Movement, Approach, & Intersection Results

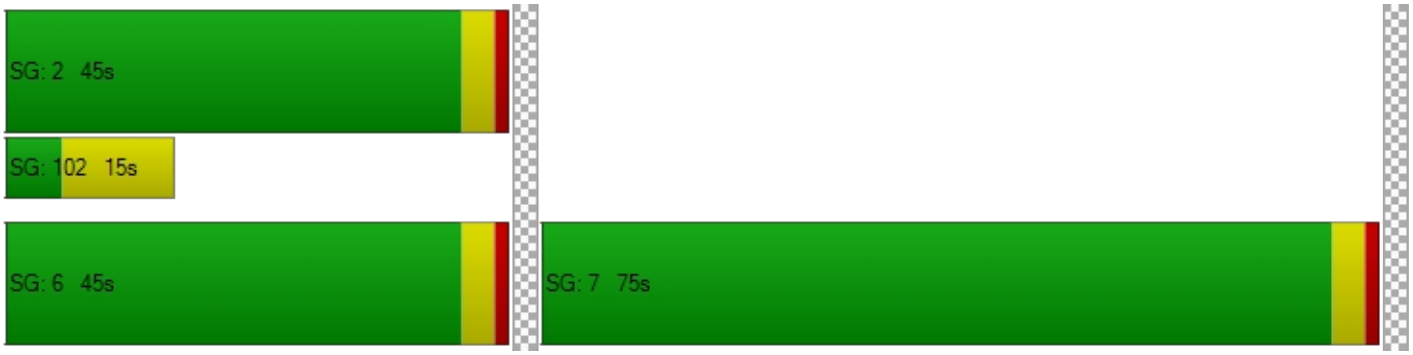
d_M, Delay for Movement [s/veh]	0.00	39.22	0.00	0.00	95.68	0.00	0.00	0.00	0.00	13.93	0.00	99.57
Movement LOS		D			F					B		F
d_A, Approach Delay [s/veh]	39.22			95.68			0.00			59.40		
Approach LOS	D			F			A			E		
d_I, Intersection Delay [s/veh]	70.47											
Intersection LOS	E											
Intersection V/C	1.051											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	683	0	1183
d_b, Bicycle Delay [s]	26.00	26.00	60.00	10.00
l_b,int, Bicycle LOS Score for Intersection	2.281	2.581	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.602

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	654	272	0	983	466	0	0	0	363	0	448
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.000	1.120
In-Process Volume [veh/h]	0	4	0	0	32	0	0	0	0	0	0	26
Site-Generated Trips [veh/h]	0	9	0	0	35	0	0	0	0	0	0	40
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	745	272	0	1168	466	0	0	0	407	0	568
Peak Hour Factor	1.000	0.960	0.868	1.000	0.960	1.000	1.000	1.000	1.000	0.960	1.000	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	194	78	0	304	117	0	0	0	106	0	148
Total Analysis Volume [veh/h]	0	776	313	0	1217	466	0	0	0	424	0	592
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	48	0	0	48	0	0	0	0	72	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	78	78		34	34
g / C, Green / Cycle	0.65	0.65		0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.16	0.36		0.25	0.22
s, saturation flow rate [veh/h]	4903	3427		1714	2708
c, Capacity [veh/h]	3202	2238		480	759
d1, Uniform Delay [s]	8.58	11.19		41.30	39.78
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.18	0.95		5.52	1.79
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.54		0.88	0.78
d, Delay for Lane Group [s/veh]	8.76	12.15		46.82	41.57
Lane Group LOS	A	B		D	D
Critical Lane Group	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	2.71	8.46		12.64	8.19
50th-Percentile Queue Length [ft/ln]	67.79	211.48		316.07	204.87
95th-Percentile Queue Length [veh/ln]	4.88	13.23		18.47	12.89
95th-Percentile Queue Length [ft/ln]	122.03	330.72		461.85	322.24

Movement, Approach, & Intersection Results

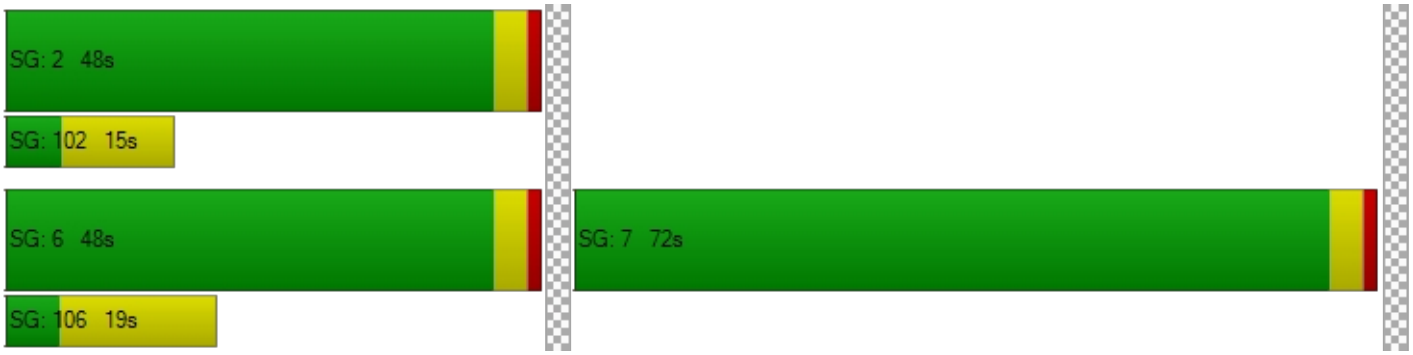
d_M, Delay for Movement [s/veh]	0.00	8.76	0.00	0.00	12.15	0.00	0.00	0.00	0.00	46.82	0.00	41.57
Movement LOS		A			B					D		D
d_A, Approach Delay [s/veh]	8.76			12.15			0.00			43.76		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	21.95											
Intersection LOS	C											
Intersection V/C	0.602											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.394
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	733	0	1133
d_b, Bicycle Delay [s]	24.07	24.07	60.00	11.27
l_b,int, Bicycle LOS Score for Intersection	1.986	2.564	4.132	1.560
Bicycle LOS	A	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	30.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1074	381	0	966	238	308	0	671	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	0	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	0	0	0	99	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1216	381	0	1088	238	407	0	671	0	0	0
Peak Hour Factor	1.000	0.927	1.000	1.000	0.927	1.000	0.927	1.000	0.927	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	328	95	0	293	60	110	0	181	0	0	0
Total Analysis Volume [veh/h]	0	1312	381	0	1174	238	439	0	724	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	19	0	0	19	0	101	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	52	52	60	60	
g / C, Green / Cycle	0.43	0.43	0.50	0.50	
(v / s)_i Volume / Saturation Flow Rate	0.27	0.34	0.13	0.47	
s, saturation flow rate [veh/h]	4903	3427	3329	1530	
c, Capacity [veh/h]	2120	1482	1668	767	
d1, Uniform Delay [s]	26.40	29.41	17.21	28.35	
k, delay calibration	0.50	0.50	0.11	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.37	4.43	0.08	9.57	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.62	0.79	0.26	0.94	
d, Delay for Lane Group [s/veh]	27.77	33.84	17.29	37.92	
Lane Group LOS	C	C	B	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.83	15.21	3.50	20.97	
50th-Percentile Queue Length [ft/ln]	245.76	380.23	87.54	524.16	
95th-Percentile Queue Length [veh/ln]	14.97	21.60	6.30	28.48	
95th-Percentile Queue Length [ft/ln]	374.31	540.12	157.58	711.90	

Movement, Approach, & Intersection Results

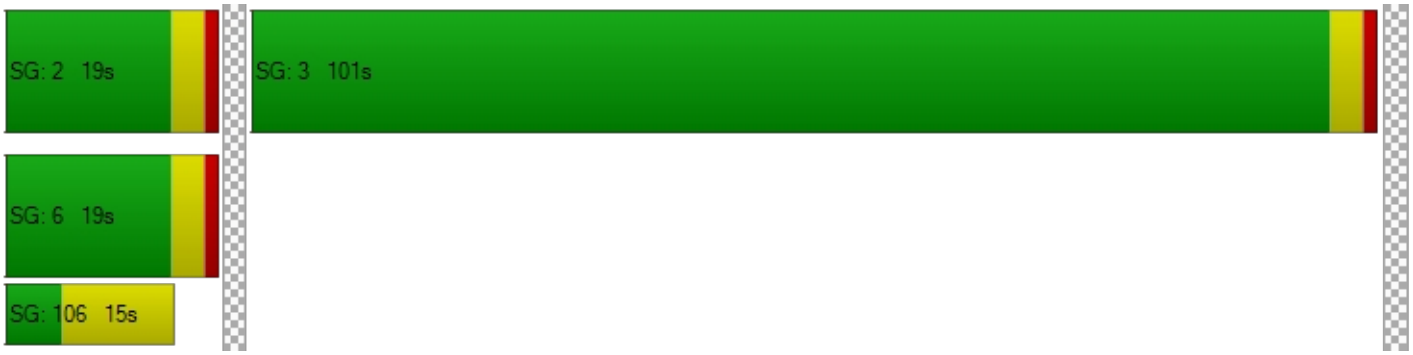
d_M, Delay for Movement [s/veh]	0.00	27.77	0.00	0.00	33.84	0.00	17.29	0.00	37.92	0.00	0.00	0.00
Movement LOS		C			C		B		D			
d_A, Approach Delay [s/veh]	27.77			33.84			30.13			0.00		
Approach LOS	C			C			C			A		
d_I, Intersection Delay [s/veh]	30.48											
Intersection LOS	C											
Intersection V/C	0.816											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1617	0
d_b, Bicycle Delay [s]	45.94	45.94	2.20	60.00
l_b,int, Bicycle LOS Score for Intersection	2.281	2.528	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	46.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.918

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1234	483	460	1488	0	401	6	617	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	21	0	92	32	0	5	0	0	0	0	0
Site-Generated Trips [veh/h]	0	46	0	167	5	0	8	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1449	541	774	1704	0	462	7	691	0	0	0
Peak Hour Factor	1.000	0.914	0.914	0.914	0.914	1.000	0.914	0.914	0.914	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	396	148	212	466	0	126	2	189	0	0	0
Total Analysis Volume [veh/h]	0	1585	592	847	1864	0	505	8	756	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	49	0	34	83	0	0	37	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	45	45	30	79	33	33	33	
g / C, Green / Cycle	0.38	0.38	0.25	0.66	0.28	0.28	0.28	
(v / s)_i Volume / Saturation Flow Rate	0.32	0.39	0.25	0.38	0.25	0.27	0.28	
s, saturation flow rate [veh/h]	4903	1530	3329	4903	1714	1567	1530	
c, Capacity [veh/h]	1839	574	832	3228	471	431	421	
d1, Uniform Delay [s]	34.63	37.50	45.00	11.30	41.87	43.20	43.50	
k, delay calibration	0.50	0.50	0.11	0.50	0.38	0.44	0.46	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	5.61	45.99	19.14	0.76	18.16	36.42	43.38	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.86	1.03	1.02	0.58	0.90	0.98	1.01	
d, Delay for Lane Group [s/veh]	40.24	83.49	64.14	12.06	60.03	79.62	86.88	
Lane Group LOS	D	F	F	B	E	E	F	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	14.97	23.81	14.48	8.75	14.33	16.69	17.42	
50th-Percentile Queue Length [ft/ln]	374.20	595.17	362.08	218.80	358.2	417.2	435.5	
95th-Percentile Queue Length [veh/ln]	21.31	32.53	20.94	13.60	20.54	23.39	24.35	
95th-Percentile Queue Length [ft/ln]	532.82	813.15	523.50	340.10	513.4	584.7	608.7	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	40.24	83.49	64.14	12.06	0.00	63.21	79.62	83.68	0.00	0.00	0.00
Movement LOS		D	F	F	B		E	E	F			
d_A, Approach Delay [s/veh]	52.00			28.33			75.51			0.00		
Approach LOS	D			C			E			A		
d_I, Intersection Delay [s/veh]	46.42											
Intersection LOS	D											
Intersection V/C	0.918											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.456	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	1317	550	0
d_b, Bicycle Delay [s]	23.44	7.00	31.54	60.00
l_b,int, Bicycle LOS Score for Intersection	2.757	3.051	3.653	4.132
Bicycle LOS	C	C	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.787

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	651	332	534	851	0	304	8	427	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	4	0	26	6	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	35	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	742	372	659	959	0	340	9	478	0	0	0
Peak Hour Factor	1.000	0.964	0.964	0.964	0.964	1.000	0.964	0.964	0.964	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	192	96	171	249	0	88	2	124	0	0	0
Total Analysis Volume [veh/h]	0	770	386	684	995	0	353	9	496	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	9	0	32	41	0	0	79	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	39	39	27	69	43	43	
g / C, Green / Cycle	0.32	0.32	0.22	0.58	0.36	0.36	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.25	0.21	0.29	0.11	0.33	
s, saturation flow rate [veh/h]	3427	1530	3329	3427	3329	1534	
c, Capacity [veh/h]	1104	493	740	1979	1185	546	
d1, Uniform Delay [s]	35.57	36.89	45.68	15.09	27.85	37.12	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.12	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.67	11.80	5.54	0.92	0.14	7.82	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.70	0.78	0.92	0.50	0.30	0.93	
d, Delay for Lane Group [s/veh]	39.24	48.69	51.23	16.01	27.99	44.94	
Lane Group LOS	D	D	D	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	10.35	11.79	10.49	8.10	3.69	15.19	
50th-Percentile Queue Length [ft/ln]	258.69	294.69	262.22	202.42	92.36	379.64	
95th-Percentile Queue Length [veh/ln]	15.62	17.42	15.80	12.76	6.65	21.58	
95th-Percentile Queue Length [ft/ln]	390.58	435.46	395.00	319.09	166.25	539.41	

Movement, Approach, & Intersection Results

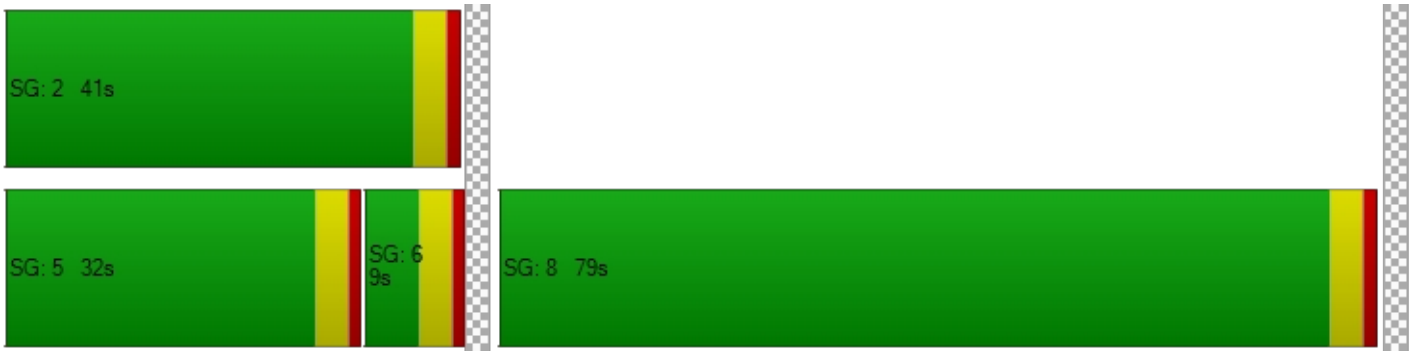
d_M, Delay for Movement [s/veh]	0.00	39.24	48.69	51.23	16.01	0.00	27.99	44.94	44.94	0.00	0.00	0.00
Movement LOS		D	D	D	B		C	D	D			
d_A, Approach Delay [s/veh]	42.40			30.35			37.97			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	35.89											
Intersection LOS	D											
Intersection V/C	0.787											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	617	1250	0
d_b, Bicycle Delay [s]	55.10	28.70	8.44	60.00
l_b,int, Bicycle LOS Score for Intersection	2.195	2.945	2.975	4.132
Bicycle LOS	B	C	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.783

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	420	718	357	500	741	821	855	0	501	428	0	550
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.000	1.120
In-Process Volume [veh/h]	0	4	0	13	6	0	0	0	0	0	0	7
Site-Generated Trips [veh/h]	0	9	0	12	0	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	470	817	400	585	836	920	958	0	561	479	0	635
Peak Hour Factor	0.955	0.955	0.955	0.955	0.955	0.955	0.955	1.000	0.955	0.955	1.000	0.955
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	123	214	105	153	219	241	251	0	147	125	0	166
Total Analysis Volume [veh/h]	492	855	419	613	875	963	1003	0	587	502	0	665
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	62	0	0	62	0	58	0	0	58	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	72	72	72	72	40	40
g / C, Green / Cycle	0.60	0.60	0.60	0.60	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.39	0.17	0.48	0.18	0.30	0.15
s, saturation flow rate [veh/h]	1250	4903	1274	4903	3329	3329
c, Capacity [veh/h]	663	2947	677	2947	1106	1106
d1, Uniform Delay [s]	26.54	11.57	30.73	11.63	38.28	31.50
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.37	0.25	17.88	0.26	3.17	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.29	0.91	0.30	0.91	0.45
d, Delay for Lane Group [s/veh]	33.91	11.82	48.61	11.88	41.46	31.79
Lane Group LOS	C	B	D	B	D	C
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.50	3.66	10.12	3.76	14.41	5.78
50th-Percentile Queue Length [ft/ln]	162.57	91.40	252.92	94.01	360.16	144.42
95th-Percentile Queue Length [veh/ln]	10.69	6.58	15.33	6.77	20.63	9.72
95th-Percentile Queue Length [ft/ln]	267.13	164.53	383.33	169.23	515.78	242.96

Movement, Approach, & Intersection Results

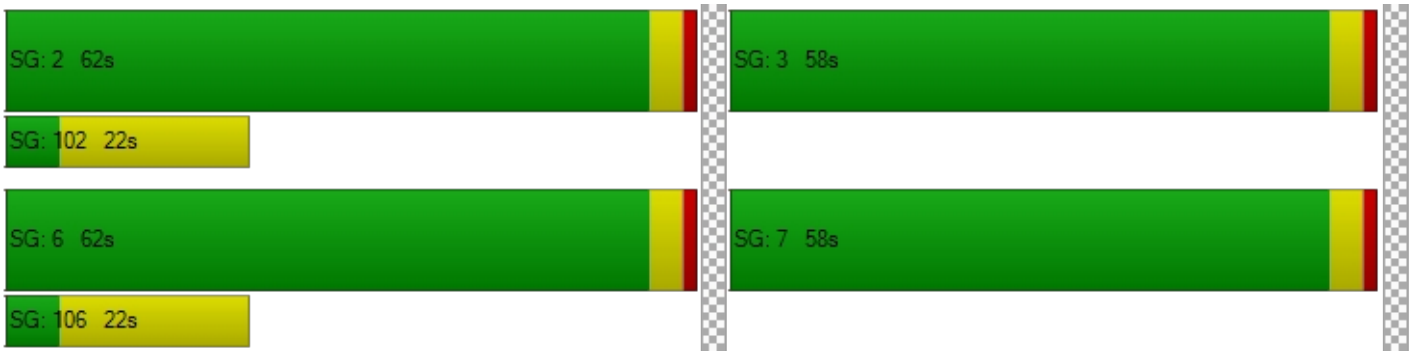
d_M, Delay for Movement [s/veh]	33.91	11.82	0.00	48.61	11.88	0.00	41.46	0.00	0.00	31.79	0.00	0.00
Movement LOS	C	B		D	B		D			C		
d_A, Approach Delay [s/veh]	19.89			27.01			41.46			31.79		
Approach LOS	B			C			D			C		
d_I, Intersection Delay [s/veh]	28.69											
Intersection LOS	C											
Intersection V/C	0.783											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.306	3.405
Crosswalk LOS	F	F	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	967	900	900
d_b, Bicycle Delay [s]	16.02	16.02	18.15	18.15
l_b,int, Bicycle LOS Score for Intersection	2.300	2.378	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	176	333	80	108	705	218	77	409	118	156	1102	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	4	4	0	0	0	4	0	6	6	6
Site-Generated Trips [veh/h]	0	0	9	9	0	0	0	9	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	373	103	134	790	244	86	471	132	181	1240	121
Peak Hour Factor	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858	0.858
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	57	109	30	39	230	71	25	137	38	53	361	35
Total Analysis Volume [veh/h]	230	435	120	156	921	284	100	549	154	211	1445	141
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	31	0	12	29	0	12	55	0	22	65	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	33	33	8	31	31	8	46	46	17	55	55
g / C, Green / Cycle	0.08	0.28	0.28	0.06	0.26	0.26	0.07	0.39	0.39	0.14	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.07	0.09	0.08	0.05	0.19	0.19	0.06	0.16	0.10	0.12	0.42	0.09
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	277	1361	425	210	1261	393	114	1327	592	238	1575	703
d1, Uniform Delay [s]	54.16	34.37	33.99	55.27	40.77	40.65	55.50	26.84	25.06	50.71	30.31	19.31
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.28	0.62	1.66	5.15	3.75	10.92	18.04	0.21	0.23	10.44	2.57	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.32	0.28	0.74	0.73	0.72	0.88	0.41	0.26	0.88	0.92	0.20
d, Delay for Lane Group [s/veh]	60.44	34.99	35.65	60.42	44.52	51.57	73.54	27.05	25.29	61.15	32.88	19.45
Lane Group LOS	E	C	D	E	D	D	E	C	C	E	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.66	3.45	2.95	2.47	8.70	8.82	3.57	5.77	3.04	6.91	19.49	2.38
50th-Percentile Queue Length [ft/ln]	91.51	86.19	73.83	61.77	217.5	220.4	89.25	144.3	76.06	172.6	487.1	59.50
95th-Percentile Queue Length [veh/ln]	6.59	6.21	5.32	4.45	13.54	13.69	6.43	9.71	5.48	11.22	26.73	4.28
95th-Percentile Queue Length [ft/ln]	164.7	155.1	132.9	111.1	338.4	342.1	160.6	242.8	136.9	280.4	668.1	107.1

Movement, Approach, & Intersection Results

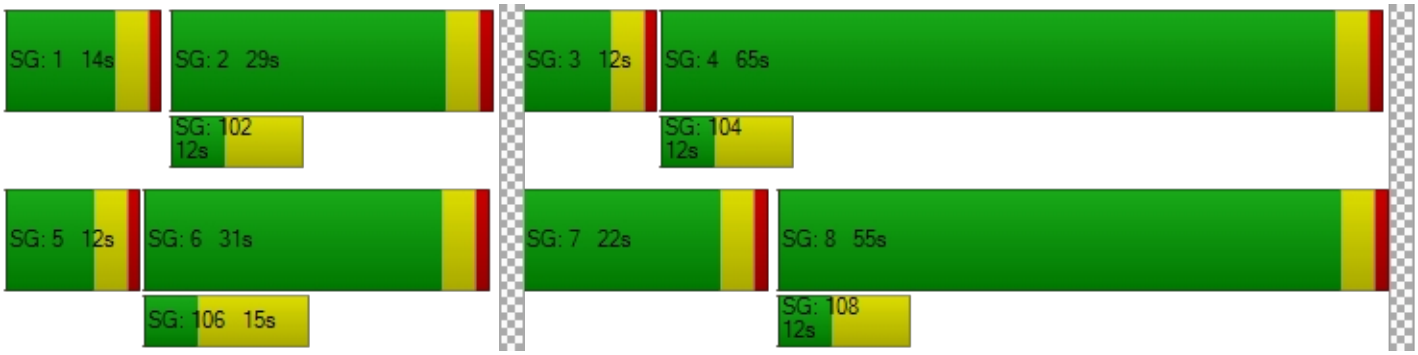
d_M, Delay for Movement [s/veh]	60.44	34.99	35.65	60.42	44.52	51.57	73.54	27.05	25.29	61.15	32.88	19.45
Movement LOS	E	C	D	E	D	D	E	C	C	E	C	B
d_A, Approach Delay [s/veh]	42.55			47.81			32.50			35.14		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	39.55											
Intersection LOS	D											
Intersection V/C	0.737											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.089	3.085	2.917	2.894
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	450	417	850	1017
d_b, Bicycle Delay [s]	36.04	37.60	19.84	14.50
l_b,int, Bicycle LOS Score for Intersection	1.991	2.308	2.222	3.042
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	37.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.731

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	170	66	105	390	270	118	333	69	166	1013	134
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	12	0	0	18	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	27	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	190	74	118	437	302	132	412	77	186	1153	150
Peak Hour Factor	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	56	22	35	129	89	39	121	23	55	340	44
Total Analysis Volume [veh/h]	65	224	87	139	515	356	156	486	91	219	1360	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	33	0	15	38	38	16	55	0	17	56	56
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	31	31	11	36	52	12	52	52	10	50	65
g / C, Green / Cycle	0.05	0.26	0.26	0.09	0.30	0.43	0.10	0.44	0.44	0.08	0.42	0.54
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.06	0.08	0.15	0.23	0.09	0.16	0.17	0.07	0.40	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1703	3329	3427	1530
c, Capacity [veh/h]	82	875	391	157	1025	661	171	784	742	279	1438	833
d1, Uniform Delay [s]	56.51	35.59	35.27	53.87	34.70	25.20	53.47	22.87	22.89	53.90	33.51	14.07
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.17	0.71	1.31	14.76	1.76	3.12	16.34	0.30	0.32	4.81	4.05	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.26	0.22	0.88	0.50	0.54	0.91	0.38	0.38	0.78	0.95	0.21
d, Delay for Lane Group [s/veh]	71.68	36.29	36.58	68.64	36.46	28.32	69.81	23.17	23.21	58.70	37.56	14.20
Lane Group LOS	E	D	D	E	D	C	E	C	C	E	D	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.30	2.71	2.17	4.79	6.46	8.01	5.43	5.70	5.42	3.43	19.37	2.49
50th-Percentile Queue Length [ft/ln]	57.41	67.85	54.14	119.7	161.3	200.3	135.7	142.5	135.4	85.75	484.3	62.28
95th-Percentile Queue Length [veh/ln]	4.13	4.88	3.90	8.38	10.62	12.65	9.25	9.62	9.24	6.17	26.59	4.48
95th-Percentile Queue Length [ft/ln]	103.3	122.1	97.46	209.4	265.5	316.3	231.3	240.4	230.9	154.3	664.7	112.1

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.68	36.29	36.58	68.64	36.46	28.32	69.81	23.19	23.21	58.70	37.56	14.20
Movement LOS	E	D	D	E	D	C	E	C	C	E	D	B
d_A, Approach Delay [s/veh]	42.48			38.02			33.11			37.84		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	37.44											
Intersection LOS	D											
Intersection V/C	0.731											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.663	2.723	2.805	2.953
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	567	850	867
d_b, Bicycle Delay [s]	34.50	30.82	19.84	19.27
l_b,int, Bicycle LOS Score for Intersection	1.870	2.393	2.164	3.008
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	37.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	28	937	55	409	1110	522	407	220	42	53	258	351
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	17	0	0	26	6	4	0	0	0	0	0
Site-Generated Trips [veh/h]	0	37	0	0	5	0	9	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	1103	62	458	1274	591	469	246	47	59	289	393
Peak Hour Factor	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	307	17	128	355	165	131	68	13	16	80	109
Total Analysis Volume [veh/h]	35	1228	69	510	1419	658	522	274	52	66	322	438
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	14	33	0	22	41	41	22	56	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	3	51	51	18	65	87	18	31	31	4	17	39
g / C, Green / Cycle	0.03	0.42	0.42	0.15	0.54	0.73	0.15	0.26	0.26	0.04	0.14	0.33
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.25	0.15	0.29	0.43	0.16	0.09	0.09	0.02	0.09	0.29
s, saturation flow rate [veh/h]	1714	3427	1751	3329	4903	1530	3329	1800	1701	3329	3427	1530
c, Capacity [veh/h]	51	1451	741	499	2666	1113	499	461	436	124	491	500
d1, Uniform Delay [s]	57.68	26.62	26.62	51.00	17.57	7.84	51.00	36.60	36.60	56.75	48.60	38.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.46	1.78	3.45	24.30	0.77	2.31	31.88	0.48	0.51	3.55	1.49	15.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.59	0.59	1.02	0.53	0.59	1.05	0.36	0.36	0.53	0.66	0.88
d, Delay for Lane Group [s/veh]	73.14	28.40	30.07	75.30	18.34	10.15	82.88	37.08	37.11	60.30	50.09	53.11
Lane Group LOS	E	C	C	F	B	B	F	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.27	9.71	10.27	9.16	8.38	7.87	9.69	4.11	3.89	1.04	4.66	14.09
50th-Percentile Queue Length [ft/ln]	31.77	242.8	256.8	229.0	209.5	196.7	242.1	102.7	97.26	26.11	116.5	352.1
95th-Percentile Queue Length [veh/ln]	2.29	14.82	15.53	14.26	13.13	12.47	15.09	7.39	7.00	1.88	8.21	20.24
95th-Percentile Queue Length [ft/ln]	57.18	370.5	388.2	356.5	328.2	311.7	377.3	184.8	175.0	47.00	205.1	506.0

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.14	28.90	30.07	75.30	18.34	10.15	82.88	37.09	37.11	60.30	50.09	53.11
Movement LOS	E	C	C	F	B	B	F	D	D	E	D	D
d_A, Approach Delay [s/veh]	30.12			27.49			65.28			52.51		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	37.54											
Intersection LOS	D											
Intersection V/C	0.737											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.090	3.447	2.771	2.843
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	617	867	650
d_b, Bicycle Delay [s]	34.50	28.70	19.27	27.34
l_b,int, Bicycle LOS Score for Intersection	2.292	2.982	2.259	2.241
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	605.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	75.638

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	36	762	11	114	720	331	245	39	80	9	21	66
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	0	14	6	6	4	0	0	0	0	9
Site-Generated Trips [veh/h]	0	9	0	5	0	0	9	0	0	0	0	19
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	866	12	147	812	377	287	44	90	10	24	102
Peak Hour Factor	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	237	3	40	222	103	79	12	25	3	7	28
Total Analysis Volume [veh/h]	44	949	13	161	889	413	314	48	99	11	26	112
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	19	0	9	19	0	0	92	0	0	92	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	15	15	5	16	16	88	88	88	88
g / C, Green / Cycle	0.03	0.13	0.13	0.04	0.13	0.13	0.73	0.73	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.03	0.18	0.18	0.09	0.26	0.27	75.34	0.06	0.37	0.07
s, saturation flow rate [veh/h]	1714	3427	1788	1714	3427	1530	5	1530	99	1530
c, Capacity [veh/h]	56	433	226	71	465	208	60	1120	111	1120
d1, Uniform Delay [s]	57.65	52.42	52.42	57.50	51.86	51.86	59.30	4.61	33.18	4.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.58	219.0	229.8	573.9	418.5	462.3	2321.66	0.03	1.73	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	1.46	1.46	2.25	1.91	1.99	6.08	0.09	0.33	0.10
d, Delay for Lane Group [s/veh]	79.23	271.4	282.2	631.4	470.4	514.2	2380.95	4.64	34.90	4.69
Lane Group LOS	E	F	F	F	F	F	F	A	C	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.66	19.69	21.22	13.55	34.00	32.88	40.21	0.65	0.91	0.74
50th-Percentile Queue Length [ft/ln]	41.49	492.2	530.4	338.8	850.0	822.0	1005.24	16.21	22.71	18.51
95th-Percentile Queue Length [veh/ln]	2.99	31.00	33.12	22.54	53.51	52.18	72.38	1.17	1.64	1.33
95th-Percentile Queue Length [ft/ln]	74.68	775.0	828.0	563.4	1337.	1304.	1809.44	29.18	40.88	33.32

Movement, Approach, & Intersection Results

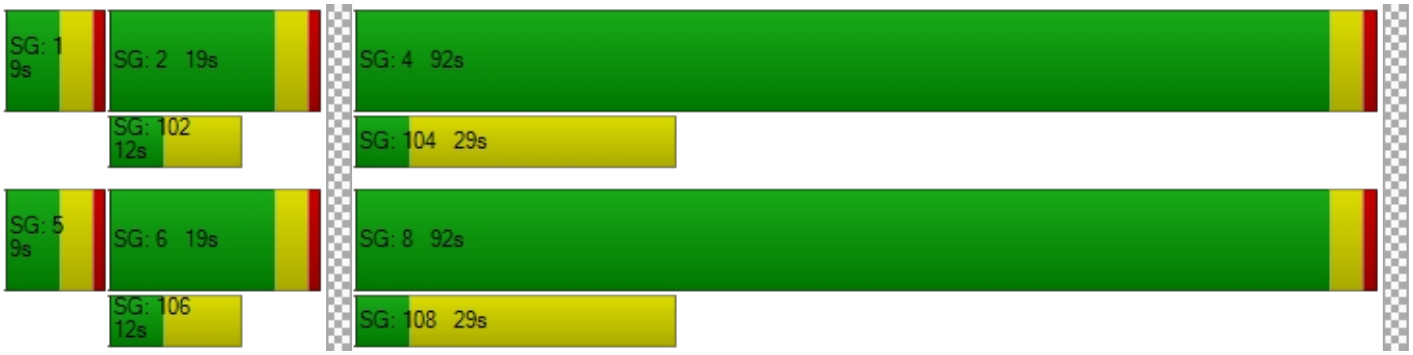
d_M, Delay for Movement [s/veh]	79.23	275.0	282.2	631.4	470.4	514.2	2380.	2380.	4.64	34.90	34.90	4.69
Movement LOS	E	F	F	F	F	F	F	F	A	C	C	A
d_A, Approach Delay [s/veh]	266.60			500.51			1870.64			12.19		
Approach LOS	F			F			F			B		
d_I, Intersection Delay [s/veh]	605.60											
Intersection LOS	F											
Intersection V/C	75.638											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.904	3.451	2.262	2.076
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1467	1467
d_b, Bicycle Delay [s]	45.94	45.94	4.27	4.27
l_b,int, Bicycle LOS Score for Intersection	2.113	2.364	2.320	1.805
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	36.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.394

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	246	13	0	0	41	317	148	0	161	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	246	13	0	0	41	317	148	0	161	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	62	3	0	0	10	79	37	0	40	0	0	0
Total Analysis Volume [veh/h]	246	13	0	0	41	317	148	0	161	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	40	40	0	24	24	24	0	33	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	93	93	0	74	92	11	11	11	0	0
g / C, Green / Cycle	0.16	0.78	0.78	0.00	0.61	0.77	0.09	0.09	0.09	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.15	0.00	0.00	0.00	0.01	0.21	0.04	0.04	0.06	0.00	0.00
s, saturation flow rate [veh/h]	1687	3373	1772	1687	3373	1506	1687	1687	2665	1687	1772
c, Capacity [veh/h]	276	2617	1374	1	2067	1159	151	151	239	1	1
d1, Uniform Delay [s]	49.13	3.03	3.03	0.00	9.11	4.03	52.00	52.00	52.92	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.59	0.00	0.00	0.00	0.02	0.58	2.43	2.43	3.28	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.00	0.00	0.00	0.02	0.27	0.49	0.49	0.67	0.00	0.00
d, Delay for Lane Group [s/veh]	58.72	3.03	3.03	0.00	9.13	4.62	54.44	54.44	56.20	0.00	0.00
Lane Group LOS	E	A	A	A	A	A	D	D	E	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.93	0.02	0.02	0.00	0.21	2.11	2.23	2.23	2.46	0.00	0.00
50th-Percentile Queue Length [ft/ln]	198.3	0.51	0.55	0.00	5.32	52.81	55.70	55.70	61.55	0.00	0.00
95th-Percentile Queue Length [veh/ln]	12.55	0.04	0.04	0.00	0.38	3.80	4.01	4.01	4.43	0.00	0.00
95th-Percentile Queue Length [ft/ln]	313.8	0.91	1.00	0.00	9.57	95.06	100.2	100.2	110.8	0.00	0.00

Movement, Approach, & Intersection Results

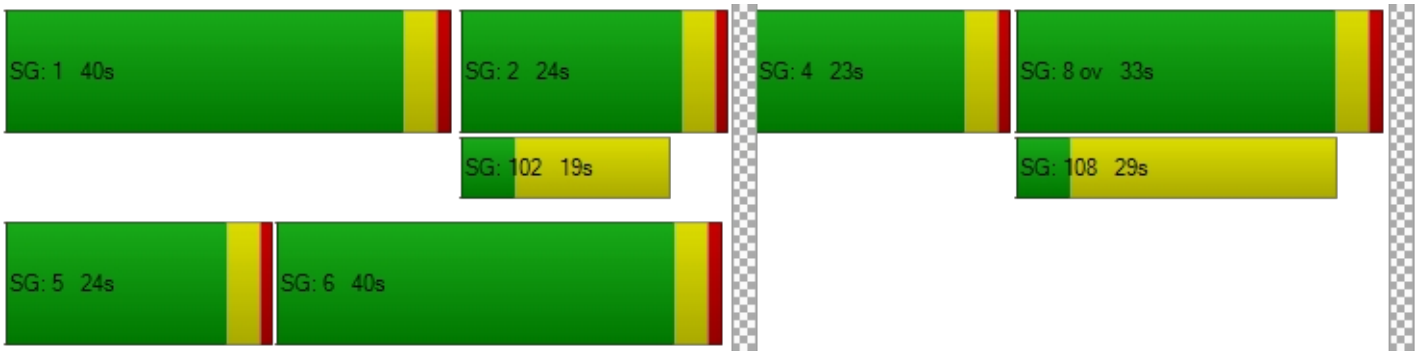
d_M, Delay for Movement [s/veh]	58.72	3.03	3.03	0.00	9.13	4.62	54.44	54.44	56.20	0.00	0.00	0.00
Movement LOS	E	A	A	A	A	A	D	D	E	A	A	A
d_A, Approach Delay [s/veh]	55.92			5.13			55.35			0.00		
Approach LOS	E			A			E			A		
d_I, Intersection Delay [s/veh]	36.10											
Intersection LOS	D											
Intersection V/C	0.394											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.673	0.000	2.610	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	333	483	317
d_b, Bicycle Delay [s]	29.40	41.67	34.50	42.50
l_b,int, Bicycle LOS Score for Intersection	1.702	1.855	2.069	1.560
Bicycle LOS	A	A	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 998543: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	99	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	99	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	25	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	99	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Level Of Service Report
Intersection 998552: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Crosswalk	Yes		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Level Of Service Report
Intersection 998555: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Left	Thru	Left	Thru	Right	Left	Thru	Right	Thru	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Speedway Commerce Center

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Report File: K:\...\6 OY 2027 CUM Plus Phases 1 and 2 PM.pdf

Scenario 6 OY 2027 CUM Plus Phases 1 and 2 PM
1/13/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.698	37.6	D
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.675	27.4	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.463	16.9	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.711	28.1	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.761	31.7	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.502	14.6	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.405	34.9	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.721	40.5	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	EB Left	0.872	56.2	E
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	SB Left	0.482	40.0	D
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.361	15.8	B
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.501	34.2	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.816	43.8	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.507	43.0	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.580	40.3	D
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.556	35.9	D
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.565	44.4	D

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.941	27.7	C
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.637	22.8	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	NB Left	0.807	71.3	E
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.770	48.4	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	6.211	3,016.9	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.857	60.0	E
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	SB Left	0.786	45.9	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.785	42.8	D
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.999	93.9	F
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.627	24.1	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.762	46.6	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.606	37.1	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.926	43.3	D
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Left	1.005	96.1	F
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.588	54.9	F
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.957	88.9	F
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.885	43.0	D
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	EB Thru	1.125	63.1	F
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.605	32.0	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	EB Left	0.657	45.1	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.523	26.4	C

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	1.106	135.9	F
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	EB Thru	1.700	203.5	F
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	EB Thru	1.418	125.2	F
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.579	32.5	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	SB Left	0.639	34.6	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Right	1.059	87.5	F
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	WB Left	0.683	37.9	D
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.689	39.3	D
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	EB Thru	1.195	179.1	F
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.733	22.5	C
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Left	1.032	85.8	F
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	WB Left	0.543	35.1	D
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	NB Thru	0.552	29.2	C
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.565	33.5	C
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	WB Left	0.786	45.0	D
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	EB Thru	0.362	10.2	B
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.651	36.0	D
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	NB Right	0.933	61.3	E
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	NB Right	1.005	63.1	E
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.528	16.2	B
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Left	1.710	518.3	F

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.839	52.8	D
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	SB Left	0.914	62.0	E
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.594	19.1	B
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	WB Right	0.996	59.3	E
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Right	0.597	20.1	C
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.608	19.6	B
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	EB Right	0.900	50.7	D
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	EB Right	0.771	33.5	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	EB Left	1.164	75.2	E
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	WB Left	0.808	44.1	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	SB Left	0.755	41.0	D
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.708	38.2	D
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	43.372	605.6	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition	NB Left	0.579	37.1	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	37.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	302	571	0	0	461	146	0	0	0	287	0	135
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	15	5	0	0	8	0	0	0	0	26	0	0
Site-Generated Trips [veh/h]	56	12	0	0	12	0	0	0	0	130	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	409	657	0	0	536	164	0	0	0	477	0	151
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	108	173	0	0	141	43	0	0	0	126	0	40
Total Analysis Volume [veh/h]	431	692	0	0	564	173	0	0	0	502	0	159
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	43	71	0	0	28	0	0	0	0	0	49	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	32	75	38	38		37	37
g / C, Green / Cycle	0.27	0.62	0.32	0.32		0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.25	0.20	0.14	0.15		0.29	0.10
s, saturation flow rate [veh/h]	1714	3427	3427	1601		1714	1530
c, Capacity [veh/h]	461	2127	1092	510		536	478
d1, Uniform Delay [s]	42.87	10.81	32.50	32.89		40.09	31.64
k, delay calibration	0.29	0.50	0.50	0.50		0.30	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	19.81	0.41	1.34	3.23		18.31	0.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.33	0.45	0.48		0.94	0.33
d, Delay for Lane Group [s/veh]	62.68	11.22	33.84	36.12		58.40	32.04
Lane Group LOS	E	B	C	D		E	C
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	14.91	4.35	5.89	6.21		16.95	3.61
50th-Percentile Queue Length [ft/ln]	372.83	108.72	147.14	155.19		423.66	90.21
95th-Percentile Queue Length [veh/ln]	21.25	7.77	9.86	10.29		23.70	6.50
95th-Percentile Queue Length [ft/ln]	531.16	194.23	246.60	257.34		592.44	162.38

Movement, Approach, & Intersection Results

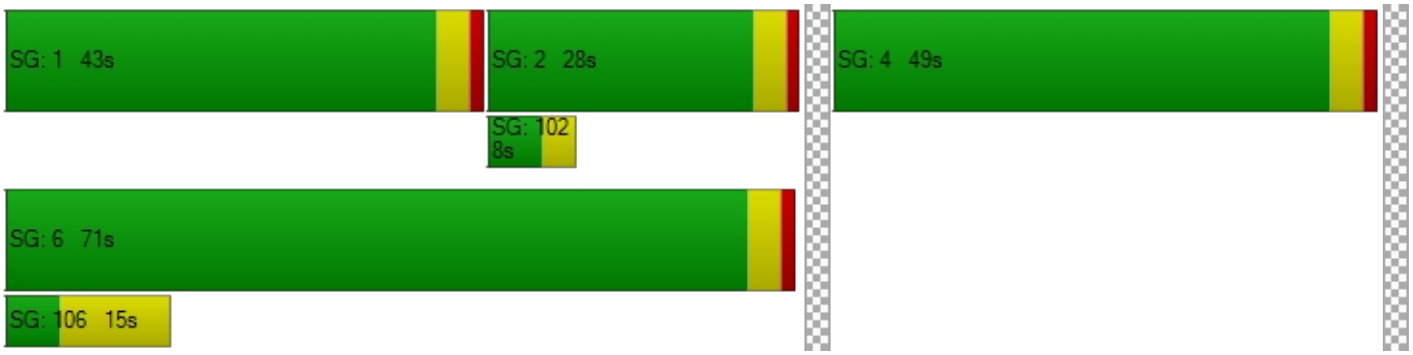
d_M, Delay for Movement [s/veh]	62.68	11.22	0.00	0.00	34.14	36.12	0.00	0.00	0.00	58.40	58.40	32.04
Movement LOS	E	B			C	D				E	E	C
d_A, Approach Delay [s/veh]	30.97			34.60			0.00			52.06		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	37.56											
Intersection LOS	D											
Intersection V/C	0.698											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.028	2.170
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1117	400	0	750
d_b, Bicycle Delay [s]	11.70	38.40	60.00	23.44
l_b,int, Bicycle LOS Score for Intersection	2.486	1.965	4.132	2.650
Bicycle LOS	B	A	D	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	27.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	323	1038	0	0	732	395	0	0	0	341	0	332
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	0	5	0	0	8	0	0	0	0	7	0	0
Site-Generated Trips [veh/h]	0	12	0	0	12	0	0	0	0	12	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	362	1180	0	0	840	442	0	0	0	401	0	372
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	95	311	0	0	221	116	0	0	0	106	0	98
Total Analysis Volume [veh/h]	381	1242	0	0	884	465	0	0	0	422	0	392
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	26	56	0	0	30	0	0	0	0	0	64	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	16	78	58	58		34	34	34
g / C, Green / Cycle	0.13	0.65	0.48	0.48		0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.11	0.36	0.26	0.30		0.12	0.12	0.26
s, saturation flow rate [veh/h]	3329	3427	3427	1530		1714	1714	1530
c, Capacity [veh/h]	447	2230	1656	739		484	484	432
d1, Uniform Delay [s]	50.77	11.47	21.60	23.03		35.22	35.22	41.53
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	4.67	1.01	1.24	4.03		0.62	0.62	7.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.56	0.53	0.63		0.44	0.44	0.91
d, Delay for Lane Group [s/veh]	55.44	12.48	22.84	27.06		35.84	35.84	48.96
Lane Group LOS	E	B	C	C		D	D	D
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.88	8.83	8.82	10.40		5.15	5.15	11.98
50th-Percentile Queue Length [ft/ln]	146.95	220.85	220.55	260.07		128.6	128.6	299.5
95th-Percentile Queue Length [veh/ln]	9.85	13.71	13.69	15.69		8.87	8.87	17.66
95th-Percentile Queue Length [ft/ln]	246.35	342.71	342.33	392.31		221.6	221.6	441.4

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.44	12.48	0.00	0.00	22.84	27.06	0.00	0.00	0.00	35.84	35.84	48.96
Movement LOS	E	B			C	C				D	D	D
d_A, Approach Delay [s/veh]	22.57			24.30			0.00			42.16		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	27.40											
Intersection LOS	C											
Intersection V/C	0.675											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.143	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	433	0	1000
d_b, Bicycle Delay [s]	19.27	36.82	60.00	15.00
l_b,int, Bicycle LOS Score for Intersection	2.899	2.673	4.132	2.903
Bicycle LOS	C	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.463

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1132	0	0	1172	0	0	0	0	297	0	400
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.120	1.120
In-Process Volume [veh/h]	0	5	0	0	8	0	0	0	0	4	0	0
Site-Generated Trips [veh/h]	0	12	0	0	12	0	0	0	0	7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1285	0	0	1333	0	0	0	0	344	0	448
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	338	0	0	351	0	0	0	0	91	0	118
Total Analysis Volume [veh/h]	0	1353	0	0	1403	0	0	0	0	362	0	472
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	47	0	0	47	0	0	0	0	0	73	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	87	87		25	25	25
g / C, Green / Cycle	0.73	0.73		0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.28	0.29		0.17	0.17	0.18
s, saturation flow rate [veh/h]	4903	4903		1714	1576	1530
c, Capacity [veh/h]	3556	3556		357	328	318
d1, Uniform Delay [s]	6.25	6.34		45.22	45.60	45.74
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.31	0.33		4.32	5.77	6.41
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.39		0.81	0.84	0.85
d, Delay for Lane Group [s/veh]	6.56	6.67		49.54	51.37	52.15
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.99	4.20		8.56	8.38	8.32
50th-Percentile Queue Length [ft/ln]	99.80	104.99		214.0	209.5	208.1
95th-Percentile Queue Length [veh/ln]	7.19	7.56		13.36	13.13	13.06
95th-Percentile Queue Length [ft/ln]	179.64	188.98		333.9	328.2	326.4

Movement, Approach, & Intersection Results

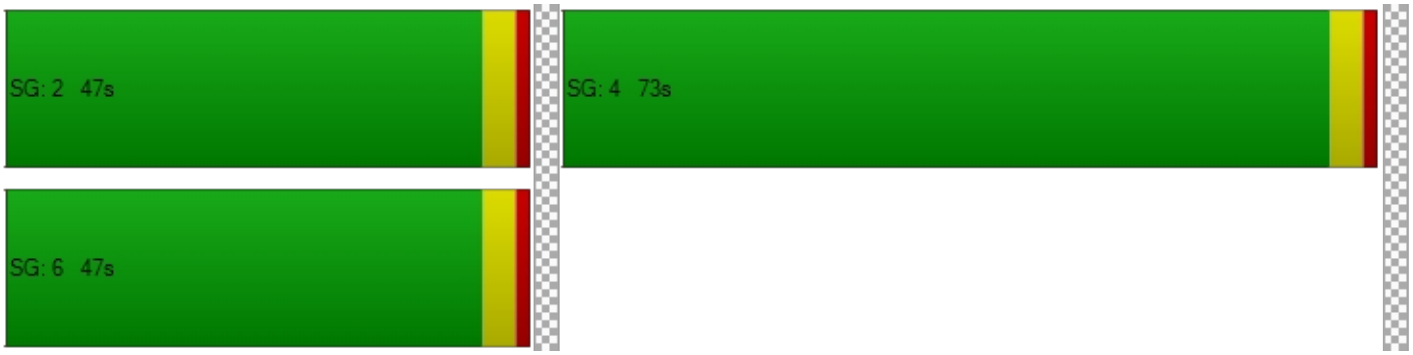
d_M, Delay for Movement [s/veh]	0.00	6.56	0.00	0.00	6.67	0.00	0.00	0.00	0.00	49.95	51.37	51.83
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	6.56			6.67			0.00			50.99		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	16.93											
Intersection LOS	B											
Intersection V/C	0.463											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	717	0	1150
d_b, Bicycle Delay [s]	24.70	24.70	60.00	10.84
l_b,int, Bicycle LOS Score for Intersection	2.304	2.331	4.132	2.936
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	687	307	72	673	0	193	2	359	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	20	22	0	34	0	0	0	16	0	0	0
Site-Generated Trips [veh/h]	0	68	107	0	142	0	0	0	70	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	857	473	81	930	0	216	2	488	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	226	124	21	245	0	57	1	128	0	0	0
Total Analysis Volume [veh/h]	0	902	498	85	979	0	227	2	514	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	44	0	11	55	0	0	65	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	58	58	7	69	43	43	
g / C, Green / Cycle	0.48	0.48	0.06	0.57	0.36	0.36	
(v / s)_i Volume / Saturation Flow Rate	0.26	0.33	0.05	0.29	0.13	0.34	
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1715	1530	
c, Capacity [veh/h]	1654	738	100	1968	616	550	
d1, Uniform Delay [s]	21.81	23.83	55.98	15.23	28.43	37.10	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.22	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.30	4.89	17.50	0.90	0.37	13.94	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.55	0.67	0.85	0.50	0.37	0.94	
d, Delay for Lane Group [s/veh]	23.11	28.72	73.48	16.14	28.81	51.04	
Lane Group LOS	C	C	E	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.08	11.60	3.04	7.99	4.95	16.44	
50th-Percentile Queue Length [ft/ln]	227.08	289.99	75.89	199.69	123.77	411.00	
95th-Percentile Queue Length [veh/ln]	14.03	17.19	5.46	12.62	8.60	23.09	
95th-Percentile Queue Length [ft/ln]	350.64	429.63	136.59	315.56	214.99	577.24	

Movement, Approach, & Intersection Results

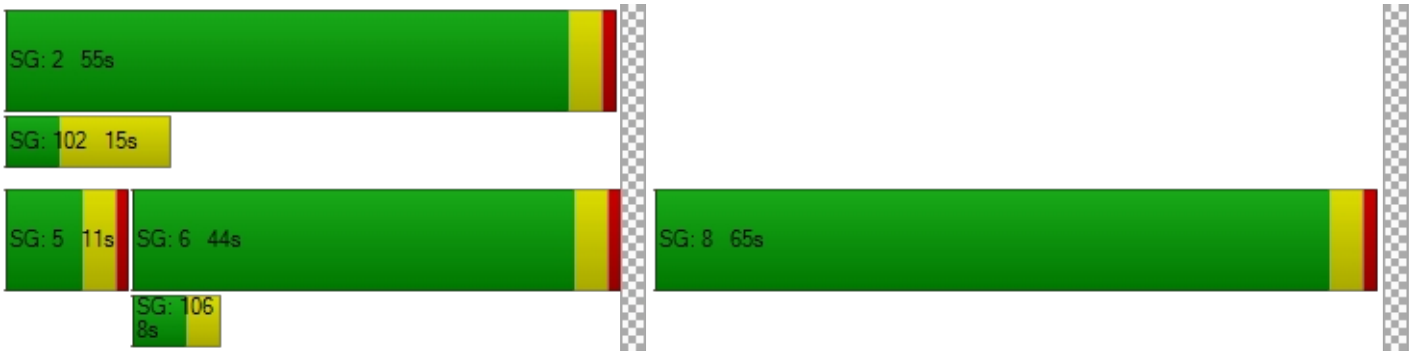
d_M, Delay for Movement [s/veh]	0.00	23.11	28.72	73.48	16.14	0.00	28.81	28.81	51.04	0.00	0.00	0.00
Movement LOS		C	C	E	B		C	C	D			
d_A, Approach Delay [s/veh]	25.10			20.72			44.19			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	28.07											
Intersection LOS	C											
Intersection V/C	0.711											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.197	2.009
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	850	1017	0
d_b, Bicycle Delay [s]	26.67	19.84	14.50	60.00
l_b,int, Bicycle LOS Score for Intersection	2.330	2.437	2.786	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1043	269	204	682	0	496	3	344	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	5	7	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	12	0	24	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1185	320	228	803	0	556	3	385	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	312	84	60	211	0	146	1	101	0	0	0
Total Analysis Volume [veh/h]	0	1247	337	240	845	0	585	3	405	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	65	0	14	79	0	0	41	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	69	69	10	83	29	29	29	
g / C, Green / Cycle	0.57	0.57	0.08	0.69	0.24	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.44	0.47	0.07	0.25	0.19	0.20	0.22	
s, saturation flow rate [veh/h]	1800	1674	3329	3427	1714	1670	1530	
c, Capacity [veh/h]	1029	957	277	2360	420	409	375	
d1, Uniform Delay [s]	19.64	20.87	54.33	7.72	42.41	42.68	43.67	
k, delay calibration	0.50	0.50	0.11	0.50	0.18	0.19	0.24	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	5.54	8.14	7.95	0.42	5.51	6.74	13.77	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.77	0.83	0.87	0.36	0.79	0.81	0.88	
d, Delay for Lane Group [s/veh]	25.18	29.01	62.28	8.15	47.92	49.42	57.44	
Lane Group LOS	C	C	E	A	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	17.65	19.24	3.88	4.33	9.80	9.98	10.86	
50th-Percentile Queue Length [ft/ln]	441.24	480.99	97.12	108.22	244.9	249.4	271.4	
95th-Percentile Queue Length [veh/ln]	24.54	26.43	6.99	7.74	14.93	15.16	16.26	
95th-Percentile Queue Length [ft/ln]	613.49	660.82	174.82	193.52	373.2	378.9	406.5	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	26.58	29.01	62.28	8.15	0.00	48.57	49.42	55.97	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	E			
d_A, Approach Delay [s/veh]	27.09			20.12			51.59			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	31.67											
Intersection LOS	C											
Intersection V/C	0.761											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.388	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1250	617	0
d_b, Bicycle Delay [s]	14.50	8.44	28.70	60.00
l_b,int, Bicycle LOS Score for Intersection	2.866	2.455	3.198	4.132
Bicycle LOS	C	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.502

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1417	643	0	1189	41	193	0	409	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.000	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	5	0	0	12	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	6	0	19	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1604	726	0	1363	41	216	0	458	0	0	0
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	422	191	0	359	11	57	0	121	0	0	0
Total Analysis Volume [veh/h]	0	1688	764	0	1435	43	227	0	482	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	80	0	0	80	0	0	40	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	90	90	22	22	22	
g / C, Green / Cycle	0.75	0.75	0.18	0.18	0.18	
(v / s)_i Volume / Saturation Flow Rate	0.34	0.29	0.13	0.16	0.16	
s, saturation flow rate [veh/h]	4903	4903	1714	1530	1530	
c, Capacity [veh/h]	3668	3668	318	284	284	
d1, Uniform Delay [s]	5.81	5.39	45.90	47.26	47.26	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.42	0.32	2.99	7.03	7.03	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.46	0.39	0.71	0.85	0.85	
d, Delay for Lane Group [s/veh]	6.23	5.70	48.89	54.30	54.30	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	Yes	No	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	4.85	3.82	6.62	7.50	7.50	
50th-Percentile Queue Length [ft/ln]	121.32	95.49	165.5	187.6	187.6	
95th-Percentile Queue Length [veh/ln]	8.47	6.88	10.84	12.00	12.00	
95th-Percentile Queue Length [ft/ln]	211.64	171.88	271.0	299.9	299.9	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.23	0.00	0.00	5.70	0.00	48.89	54.30	54.30	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	6.23			5.70			52.57			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	14.60											
Intersection LOS	B											
Intersection V/C	0.502											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.319	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1267	1267	600	0
d_b, Bicycle Delay [s]	8.07	8.07	29.40	60.00
l_b,int, Bicycle LOS Score for Intersection	2.488	2.349	2.729	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.405

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	26	384	87	100	386	54	65	324	60	68	185	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	430	97	112	432	60	73	363	67	76	207	92
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	113	26	29	114	16	19	96	18	20	54	24
Total Analysis Volume [veh/h]	31	453	102	118	455	63	77	382	71	80	218	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	35	0	17	33	0	42	55	0	13	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	69	69	10	75	75	7	18	18	7	18	18
g / C, Green / Cycle	0.03	0.57	0.57	0.08	0.63	0.63	0.06	0.15	0.15	0.06	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.16	0.07	0.15	0.15	0.04	0.13	0.13	0.05	0.09	0.09
s, saturation flow rate [veh/h]	1714	1800	1687	1714	1800	1725	1714	1800	1704	1714	1800	1618
c, Capacity [veh/h]	47	1030	965	143	1130	1083	101	275	260	100	274	247
d1, Uniform Delay [s]	57.78	13.06	13.09	54.14	9.74	9.75	55.64	49.43	49.51	55.78	47.40	47.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.29	0.67	0.72	11.29	0.48	0.51	11.18	6.87	7.68	13.22	2.05	2.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.28	0.28	0.83	0.23	0.23	0.76	0.84	0.85	0.80	0.59	0.62
d, Delay for Lane Group [s/veh]	72.06	13.73	13.81	65.43	10.23	10.26	66.81	56.30	57.19	69.00	49.45	50.07
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.12	4.04	3.85	3.95	3.09	2.98	2.61	7.26	7.02	2.76	4.70	4.42
50th-Percentile Queue Length [ft/ln]	28.01	101.0	96.15	98.87	77.23	74.59	65.31	181.5	175.3	69.01	117.5	110.6
95th-Percentile Queue Length [veh/ln]	2.02	7.27	6.92	7.12	5.56	5.37	4.70	11.68	11.36	4.97	8.26	7.87
95th-Percentile Queue Length [ft/ln]	50.42	181.8	173.0	177.9	139.0	134.2	117.5	292.1	283.9	124.2	206.4	196.8

Movement, Approach, & Intersection Results

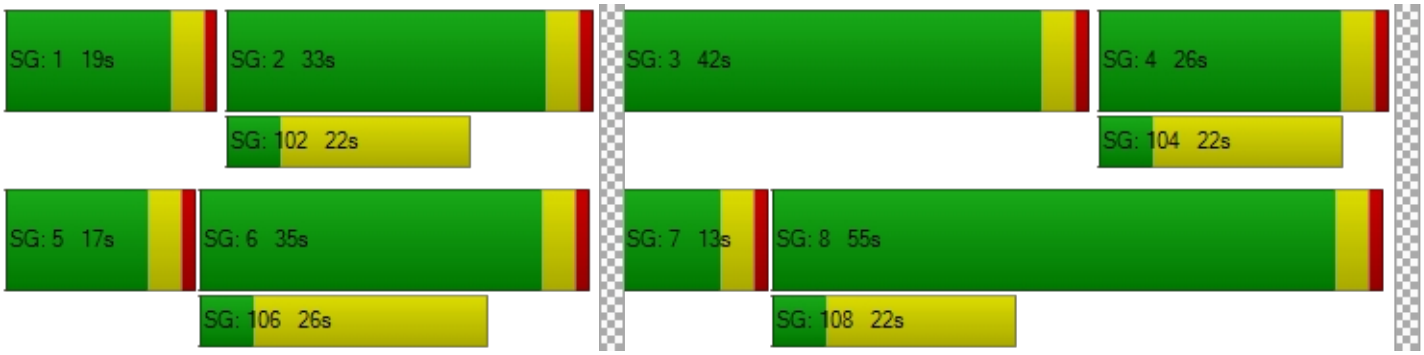
d_M, Delay for Movement [s/veh]	72.06	13.76	13.81	65.43	10.24	10.26	66.81	56.65	57.19	69.00	49.61	50.07
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	16.85			20.48			58.20			53.65		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	34.90											
Intersection LOS	C											
Intersection V/C	0.405											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.548	2.561	2.479	2.630
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	483	850	367
d_b, Bicycle Delay [s]	33.00	34.50	19.84	40.02
l_b,int, Bicycle LOS Score for Intersection	2.043	2.084	1.997	1.885
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.721

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	62	750	75	294	625	106	192	300	54	124	296	363
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	12	0	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	0	24	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	876	84	329	739	119	215	336	60	139	332	407
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	231	22	87	194	31	57	88	16	37	87	107
Total Analysis Volume [veh/h]	73	922	88	346	778	125	226	354	63	146	349	428
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	26	0	19	30	0	13	48	0	27	62	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	44	44	14	52	52	9	33	33	12	37	37
g / C, Green / Cycle	0.05	0.37	0.37	0.12	0.43	0.43	0.08	0.28	0.28	0.10	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.04	0.27	0.06	0.10	0.23	0.08	0.07	0.10	0.04	0.09	0.19	0.28
s, saturation flow rate [veh/h]	1714	3427	1530	3329	3427	1530	3329	3427	1530	1714	1800	1530
c, Capacity [veh/h]	93	1260	562	398	1484	662	250	951	424	175	548	466
d1, Uniform Delay [s]	56.05	32.82	25.46	51.90	24.96	21.01	55.08	34.94	32.68	52.88	36.01	40.30
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.33	3.78	0.59	5.89	1.33	0.63	11.67	0.24	0.16	9.88	1.24	10.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.73	0.16	0.87	0.52	0.19	0.91	0.37	0.15	0.83	0.64	0.92
d, Delay for Lane Group [s/veh]	69.38	36.60	26.05	57.79	26.29	21.64	66.75	35.19	32.84	62.75	37.25	50.82
Lane Group LOS	E	D	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.53	12.13	1.79	5.43	8.33	2.29	3.79	4.22	1.41	4.80	8.98	13.43
50th-Percentile Queue Length [ft/ln]	63.23	303.3	44.78	135.8	208.2	57.37	94.83	105.3	35.28	119.9	224.4	335.6
95th-Percentile Queue Length [veh/ln]	4.55	17.85	3.22	9.26	13.06	4.13	6.83	7.58	2.54	8.39	13.89	19.44
95th-Percentile Queue Length [ft/ln]	113.8	446.1	80.60	231.4	326.5	103.2	170.6	189.5	63.51	209.7	347.3	485.8

Movement, Approach, & Intersection Results

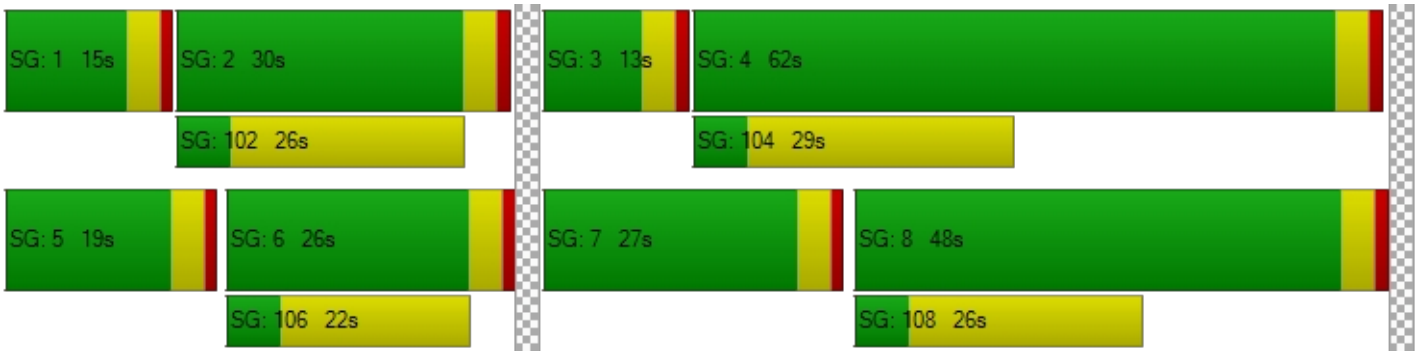
d_M, Delay for Movement [s/veh]	69.38	36.60	26.05	57.79	26.29	21.64	66.75	35.19	32.84	62.75	37.25	50.82
Movement LOS	E	D	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	37.95			34.55			46.05			47.57		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	40.48											
Intersection LOS	D											
Intersection V/C	0.721											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.804	3.003	2.775	2.746
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	433	733	967
d_b, Bicycle Delay [s]	40.02	36.82	24.07	16.02
l_b,int, Bicycle LOS Score for Intersection	2.453	2.590	2.090	3.083
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	56.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	59	1316	65	357	973	241	426	251	51	69	171	354
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	8	0	0	12	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	18	0	0	19	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	1500	73	400	1121	270	477	281	57	77	192	396
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	395	19	105	295	71	126	74	15	20	51	104
Total Analysis Volume [veh/h]	69	1579	77	421	1180	284	502	296	60	81	202	417
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	40	0	19	37	0	21	40	0	21	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	38	38	15	48	48	17	47	47	5	34	34
g / C, Green / Cycle	0.04	0.31	0.31	0.13	0.40	0.40	0.14	0.39	0.39	0.04	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.02	0.32	0.05	0.13	0.24	0.19	0.15	0.09	0.04	0.02	0.06	0.27
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	128	1533	478	416	1958	611	472	1334	596	132	985	440
d1, Uniform Delay [s]	56.66	41.24	29.84	52.50	28.51	26.58	51.50	24.49	23.29	56.71	32.39	41.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.39
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.52	30.98	0.72	23.42	1.38	2.53	39.08	0.08	0.07	4.55	0.10	27.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	1.03	0.16	1.01	0.60	0.46	1.06	0.22	0.10	0.61	0.21	0.95
d, Delay for Lane Group [s/veh]	60.18	72.22	30.56	75.92	29.89	29.11	90.58	24.58	23.36	61.27	32.49	69.07
Lane Group LOS	E	F	C	F	C	C	F	C	C	E	C	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.09	19.29	1.72	7.60	9.12	6.40	9.63	2.84	1.10	1.29	2.25	15.28
50th-Percentile Queue Length [ft/ln]	27.26	482.2	42.98	190.0	228.0	160.0	240.7	71.09	27.56	32.33	56.35	382.0
95th-Percentile Queue Length [veh/ln]	1.96	27.01	3.09	12.19	14.07	10.55	15.13	5.12	1.98	2.33	4.06	21.69
95th-Percentile Queue Length [ft/ln]	49.08	675.1	77.37	304.6	351.8	263.7	378.2	127.9	49.61	58.19	101.4	542.3

Movement, Approach, & Intersection Results

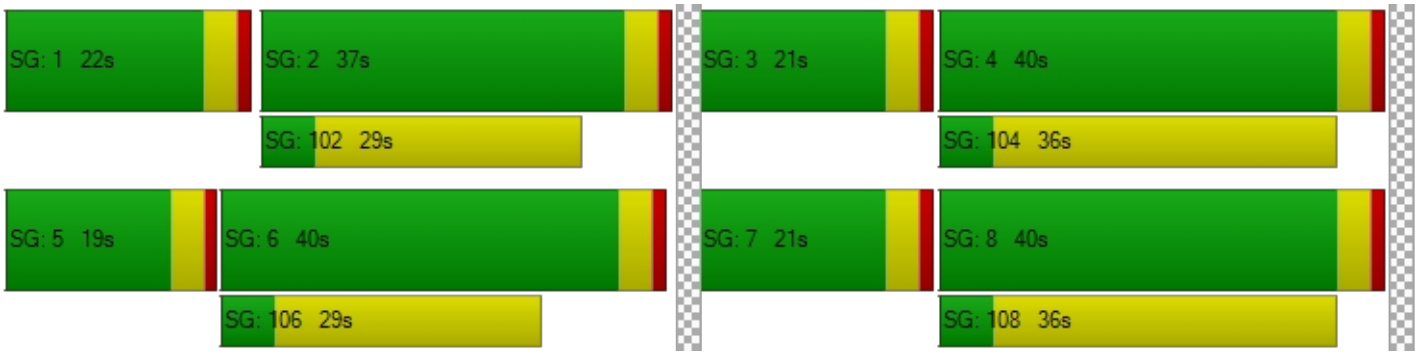
d_M, Delay for Movement [s/veh]	60.18	72.22	30.56	75.92	29.89	29.11	90.58	24.58	23.36	61.27	32.49	69.07
Movement LOS	E	F	C	F	C	C	F	C	C	E	C	E
d_A, Approach Delay [s/veh]	69.88			40.05			63.11			57.61		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	56.22											
Intersection LOS	E											
Intersection V/C	0.872											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.194	3.339	2.806	2.817
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	550	600	600
d_b, Bicycle Delay [s]	29.40	31.54	29.40	29.40
l_b,int, Bicycle LOS Score for Intersection	2.508	2.596	2.267	2.137
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	40.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.482

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	102	163	206	49	94	61	74	991	115	128	620	46
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	5	5	0	0	8	0	0	0	8	0	0	0
Site-Generated Trips [veh/h]	12	12	0	0	12	0	0	0	12	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	200	231	55	125	68	83	1110	149	143	694	52
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	34	53	61	14	33	18	22	292	39	38	183	14
Total Analysis Volume [veh/h]	138	211	243	58	132	72	87	1168	157	151	731	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	36	36	11	31	0	14	60	0	13	59	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	54	67	5	53	53	8	35	35	9	37	37
g / C, Green / Cycle	0.06	0.45	0.56	0.04	0.44	0.44	0.06	0.30	0.30	0.08	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.04	0.12	0.16	0.03	0.06	0.06	0.05	0.26	0.26	0.05	0.22	0.22
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1595	1714	3427	1693	3329	1800	1756
c, Capacity [veh/h]	195	816	859	74	788	699	109	1012	500	250	552	539
d1, Uniform Delay [s]	55.49	20.31	13.71	56.86	20.12	20.20	55.44	40.21	40.21	53.78	37.02	37.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.14	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.70	0.77	0.82	16.32	0.35	0.42	12.50	2.61	6.25	2.35	1.79	1.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.26	0.28	0.78	0.13	0.14	0.80	0.88	0.88	0.60	0.72	0.72
d, Delay for Lane Group [s/veh]	60.19	21.08	14.53	73.17	20.47	20.63	67.93	42.82	46.46	56.13	38.82	38.86
Lane Group LOS	E	C	B	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.18	3.84	3.58	2.08	1.84	1.75	2.97	12.70	13.05	2.29	10.61	10.35
50th-Percentile Queue Length [ft/ln]	54.48	95.96	89.55	51.93	46.04	43.86	74.37	317.4	326.3	57.30	265.1	258.8
95th-Percentile Queue Length [veh/ln]	3.92	6.91	6.45	3.74	3.32	3.16	5.35	18.54	18.98	4.13	15.95	15.63
95th-Percentile Queue Length [ft/ln]	98.07	172.7	161.2	93.47	82.88	78.95	133.8	463.5	474.4	103.1	398.6	390.7

Movement, Approach, & Intersection Results

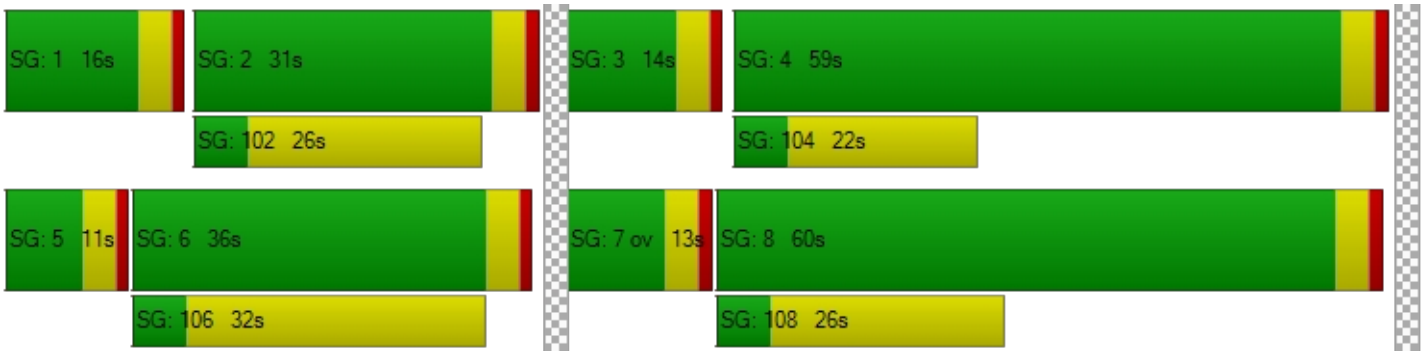
d_M, Delay for Movement [s/veh]	60.19	21.08	14.53	73.17	20.50	20.63	67.93	43.70	46.46	56.13	38.84	38.86
Movement LOS	E	C	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	27.51			32.20			45.50			41.62		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.95											
Intersection LOS	D											
Intersection V/C	0.482											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.636	2.435	2.850	3.034
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	450	933	917
d_b, Bicycle Delay [s]	32.27	36.04	17.07	17.60
l_b,int, Bicycle LOS Score for Intersection	2.536	1.776	2.336	2.333
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	15.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.361

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	258	0	250	0	1047	169	0	558	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.000	1.120	1.120	1.000	1.120	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	37	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	326	0	280	0	1173	189	0	625	0
Peak Hour Factor	1.000	1.000	1.000	0.950	1.000	0.950	1.000	0.950	0.950	1.000	0.950	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	86	0	74	0	309	50	0	164	0
Total Analysis Volume [veh/h]	0	0	0	343	0	295	0	1235	199	0	658	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Split	Permi	Split	Permi	Permi	Unsig	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	45	0	0	0	75	0	0	75	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		17	17	95	95
g / C, Green / Cycle		0.14	0.14	0.80	0.80
(v / s)_i Volume / Saturation Flow Rate		0.10	0.11	0.25	0.13
s, saturation flow rate [veh/h]		3329	2708	4903	4903
c, Capacity [veh/h]		461	375	3897	3897
d1, Uniform Delay [s]		49.63	49.96	3.38	2.92
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.39	3.66	0.21	0.09
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.74	0.79	0.32	0.17
d, Delay for Lane Group [s/veh]		52.02	53.63	3.59	3.01
Lane Group LOS		D	D	A	A
Critical Lane Group		No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		5.10	4.47	2.24	1.03
50th-Percentile Queue Length [ft/ln]		127.42	111.78	56.01	25.74
95th-Percentile Queue Length [veh/ln]		8.80	7.94	4.03	1.85
95th-Percentile Queue Length [ft/ln]		219.99	198.47	100.81	46.33

Movement, Approach, & Intersection Results

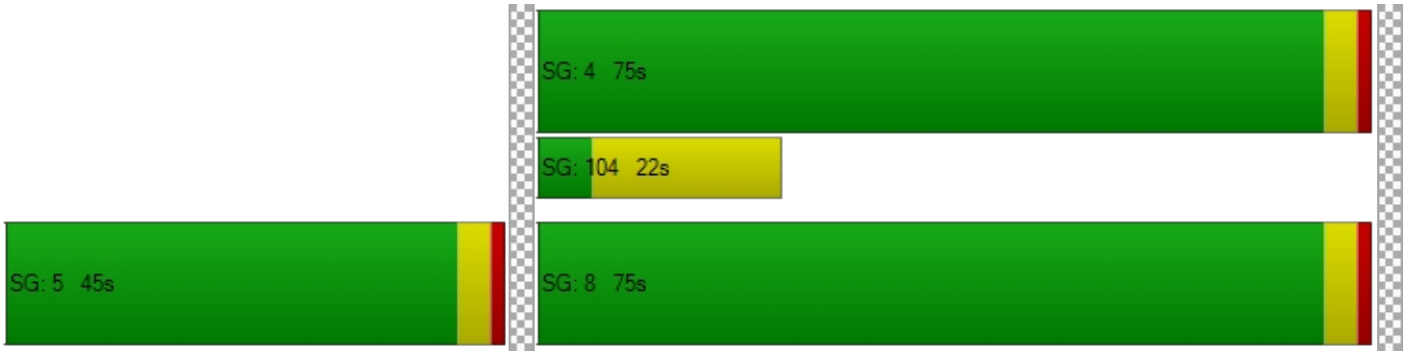
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	52.02	0.00	53.63	0.00	3.59	0.00	0.00	3.01	0.00
Movement LOS				D		D		A			A	
d_A, Approach Delay [s/veh]	0.00			52.77			3.59			3.01		
Approach LOS	A			D			A			A		
d_I, Intersection Delay [s/veh]	15.84											
Intersection LOS	B											
Intersection V/C	0.361											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.440	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	683	1183	1183
d_b, Bicycle Delay [s]	60.00	26.00	10.00	10.00
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.239	1.922
Bicycle LOS	D	A	B	A

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.501

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	276	0	514	0	0	0	439	912	0	0	798	162
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.000	1.000	1.000	1.120	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	37	0	0	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	309	0	576	0	0	0	492	1058	0	0	894	215
Peak Hour Factor	0.950	0.950	0.950	1.000	1.000	1.000	0.950	0.950	1.000	1.000	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	81	0	152	0	0	0	129	278	0	0	235	57
Total Analysis Volume [veh/h]	325	0	606	0	0	0	518	1114	0	0	941	226
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Unsig
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	30	0	0	0	0	62	90	0	0	28	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	65	65	65		22	47	22
g / C, Green / Cycle	0.54	0.54	0.54		0.18	0.40	0.18
(v / s)_i Volume / Saturation Flow Rate	0.18	0.20	0.20		0.16	0.23	0.14
s, saturation flow rate [veh/h]	1714	1536	1530		3329	4903	6538
c, Capacity [veh/h]	920	824	821		606	1944	1184
d1, Uniform Delay [s]	15.77	16.11	16.12		47.53	28.27	47.01
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	1.01	1.30	1.31		3.56	0.27	1.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.37	0.38		0.85	0.57	0.80
d, Delay for Lane Group [s/veh]	16.78	17.41	17.43		51.09	28.54	48.27
Lane Group LOS	B	B	B		D	C	D
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.08	5.13	5.13		7.79	8.34	6.81
50th-Percentile Queue Length [ft/ln]	127.1	128.2	128.3		194.64	208.53	170.31
95th-Percentile Queue Length [veh/ln]	8.78	8.85	8.85		12.36	13.08	11.09
95th-Percentile Queue Length [ft/ln]	219.5	221.1	221.2		309.04	326.94	277.33

Movement, Approach, & Intersection Results

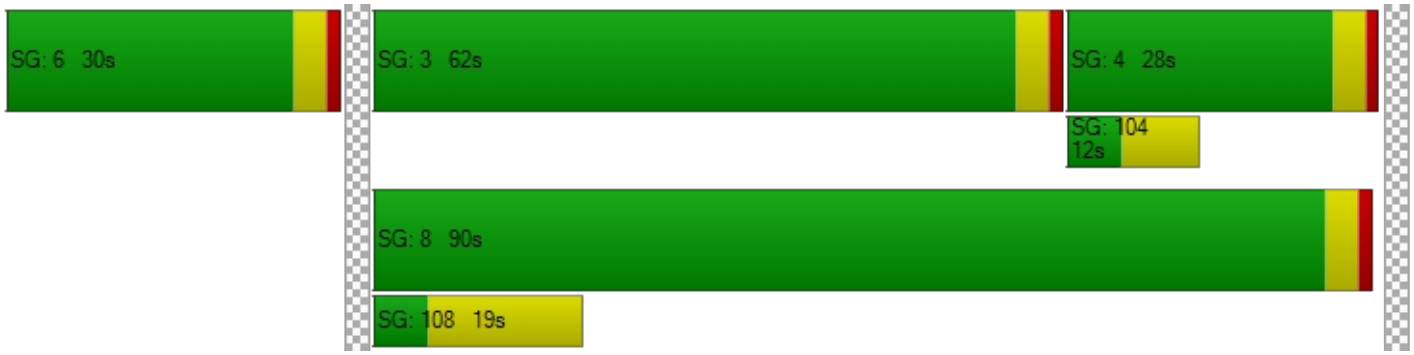
d_M, Delay for Movement [s/veh]	16.81	17.41	17.42	0.00	0.00	0.00	51.09	28.54	0.00	0.00	48.27	0.00
Movement LOS	B	B	B				D	C			D	
d_A, Approach Delay [s/veh]	17.20			0.00			35.70			48.27		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	34.16											
Intersection LOS	C											
Intersection V/C	0.501											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.373	1.983	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	0	1433	400
d_b, Bicycle Delay [s]	36.82	60.00	4.82	38.40
l_b,int, Bicycle LOS Score for Intersection	3.096	4.132	2.457	1.948
Bicycle LOS	C	D	B	A

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	43.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	154	926	338	107	435	86	305	1060	81	292	590	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	42	39	0	50	0	0	0	0	63	0	0
Site-Generated Trips [veh/h]	34	175	111	0	212	0	0	0	37	113	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	206	1254	529	120	749	96	342	1187	128	503	661	68
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	54	330	139	32	197	25	90	312	34	132	174	18
Total Analysis Volume [veh/h]	217	1320	557	126	788	101	360	1249	135	529	696	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	47	0	9	40	0	24	40	0	24	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	45	45	5	40	40	15	34	34	20	39	39
g / C, Green / Cycle	0.08	0.38	0.38	0.04	0.34	0.34	0.13	0.28	0.28	0.17	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.07	0.27	0.36	0.04	0.16	0.07	0.11	0.25	0.09	0.16	0.14	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	274	1846	576	139	1647	514	425	1382	431	555	1574	491
d1, Uniform Delay [s]	54.07	31.92	36.68	57.27	31.52	28.33	51.20	41.52	33.94	49.54	32.24	29.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.17	2.40	30.20	19.02	1.00	0.85	4.76	2.50	0.41	9.78	0.20	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.72	0.97	0.91	0.48	0.20	0.85	0.90	0.31	0.95	0.44	0.15
d, Delay for Lane Group [s/veh]	59.24	34.32	66.88	76.29	32.52	29.18	55.96	44.02	34.35	59.32	32.44	29.17
Lane Group LOS	E	C	E	E	C	C	E	D	C	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.41	11.19	20.51	2.27	6.17	2.20	5.57	12.08	3.17	8.58	5.37	1.51
50th-Percentile Queue Length [ft/ln]	85.34	279.6	512.6	56.73	154.3	55.06	139.2	302.0	79.17	214.5	134.1	37.75
95th-Percentile Queue Length [veh/ln]	6.14	16.67	27.93	4.08	10.25	3.96	9.44	17.78	5.70	13.39	9.17	2.72
95th-Percentile Queue Length [ft/ln]	153.6	416.7	698.3	102.1	256.2	99.11	236.0	444.5	142.5	334.6	229.1	67.96

Movement, Approach, & Intersection Results

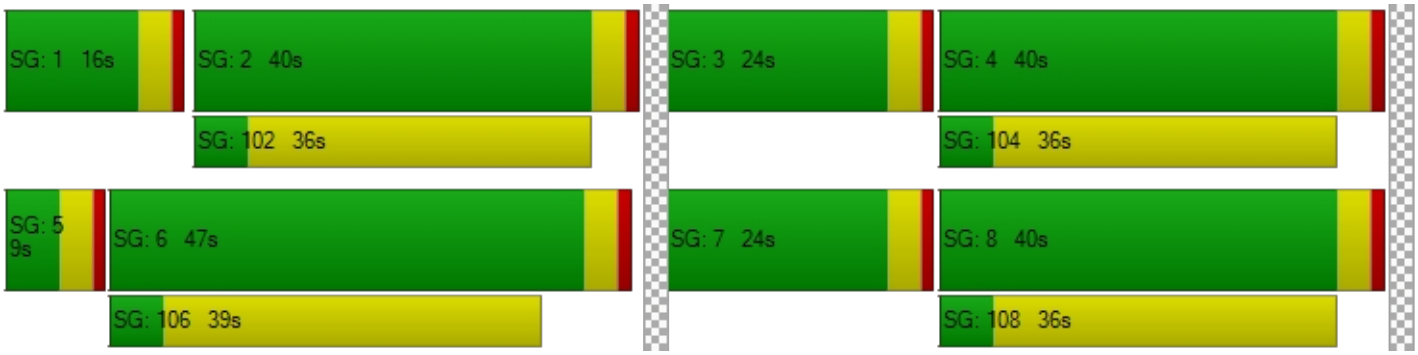
d_M, Delay for Movement [s/veh]	59.24	34.32	66.88	76.29	32.52	29.18	55.96	44.02	34.35	59.32	32.44	29.17
Movement LOS	E	C	E	E	C	C	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	45.57			37.62			45.73			43.22		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.81											
Intersection LOS	D											
Intersection V/C	0.816											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.249	3.164	3.338	3.297
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	600	600	600
d_b, Bicycle Delay [s]	24.70	29.40	29.40	29.40
l_b,int, Bicycle LOS Score for Intersection	2.711	2.118	2.519	2.273
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	43.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.507

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	94	250	24	131	191	90	211	979	73	65	552	121
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	33	0	0	54	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	82	0	0	85	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	280	27	147	214	101	236	1211	82	73	757	136
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	74	7	39	56	27	62	319	22	19	199	36
Total Analysis Volume [veh/h]	111	295	28	155	225	106	248	1275	86	77	797	143
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	36	0	17	40	0	37	56	0	11	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	46	46	13	50	50	20	38	38	7	26	26
g / C, Green / Cycle	0.08	0.38	0.38	0.11	0.41	0.41	0.16	0.32	0.32	0.06	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.02	0.09	0.10	0.10	0.14	0.26	0.06	0.05	0.18	0.19
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1772	1585	1714	4903	1506	1687	3427	1664
c, Capacity [veh/h]	129	1316	588	180	734	656	281	1571	482	96	733	356
d1, Uniform Delay [s]	54.89	24.91	23.19	52.82	22.81	22.88	49.06	37.45	29.39	55.90	45.47	45.54
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.30	0.39	0.15	11.22	0.75	0.87	9.00	1.05	0.17	13.98	3.15	8.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.22	0.05	0.86	0.24	0.24	0.88	0.81	0.18	0.80	0.86	0.87
d, Delay for Lane Group [s/veh]	70.19	25.30	23.34	64.04	23.56	23.75	58.06	38.50	29.57	69.88	48.62	53.74
Lane Group LOS	E	C	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.86	2.92	0.53	5.15	3.33	3.09	7.96	11.52	1.83	2.68	9.34	9.65
50th-Percentile Queue Length [ft/ln]	96.59	72.91	13.19	128.8	83.24	77.14	198.9	288.0	45.71	66.93	233.5	241.1
95th-Percentile Queue Length [veh/ln]	6.95	5.25	0.95	8.88	5.99	5.55	12.58	17.09	3.29	4.82	14.36	14.74
95th-Percentile Queue Length [ft/ln]	173.8	131.2	23.75	221.9	149.8	138.8	314.5	427.1	82.28	120.4	358.9	368.5

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.19	25.30	23.34	64.04	23.60	23.75	58.06	38.50	29.57	69.88	49.68	53.74
Movement LOS	E	C	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	36.66			36.53			41.04			51.78		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.97											
Intersection LOS	D											
Intersection V/C	0.507											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.602	2.659	3.149	3.042
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	867	433
d_b, Bicycle Delay [s]	32.27	29.40	19.27	36.82
l_b,int, Bicycle LOS Score for Intersection	1.918	1.961	2.445	2.119
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	40.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	95	607	69	127	443	106	299	720	115	160	526	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	2	2	0	0	15	10	18	0	1	30	0
Site-Generated Trips [veh/h]	0	2	18	0	0	24	23	48	0	16	49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	684	97	142	496	158	368	872	129	196	668	65
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	180	26	37	131	42	97	229	34	52	176	17
Total Analysis Volume [veh/h]	112	720	102	149	522	166	387	918	136	206	703	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	17	40	0	20	43	0	30	46	0	14	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	10	54	54	12	57	57	17	28	28	9	21	37
g / C, Green / Cycle	0.08	0.45	0.45	0.10	0.48	0.48	0.14	0.23	0.23	0.08	0.17	0.31
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.23	0.09	0.15	0.11	0.12	0.19	0.09	0.06	0.14	0.04
s, saturation flow rate [veh/h]	1714	1800	1723	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	137	815	780	177	1631	728	459	1143	357	259	848	473
d1, Uniform Delay [s]	54.35	23.44	23.44	52.86	19.44	18.48	50.47	43.42	38.74	54.39	47.90	29.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.26	2.32	2.43	10.32	0.52	0.73	4.30	1.37	0.67	5.50	2.16	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.52	0.52	0.84	0.32	0.23	0.84	0.80	0.38	0.80	0.83	0.14
d, Delay for Lane Group [s/veh]	65.61	25.76	25.87	63.18	19.95	19.21	54.77	44.79	39.41	59.89	50.06	30.08
Lane Group LOS	E	C	C	E	B	B	D	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.76	8.93	8.57	4.92	4.60	2.86	5.94	8.69	3.45	3.26	6.92	1.45
50th-Percentile Queue Length [ft/ln]	93.96	223.2	214.2	122.8	115.0	71.48	148.4	217.2	86.35	81.41	173.0	36.29
95th-Percentile Queue Length [veh/ln]	6.77	13.83	13.37	8.55	8.12	5.15	9.93	13.52	6.22	5.86	11.24	2.61
95th-Percentile Queue Length [ft/ln]	169.1	345.7	334.2	213.7	203.0	128.6	248.3	338.0	155.4	146.5	280.9	65.32

Movement, Approach, & Intersection Results

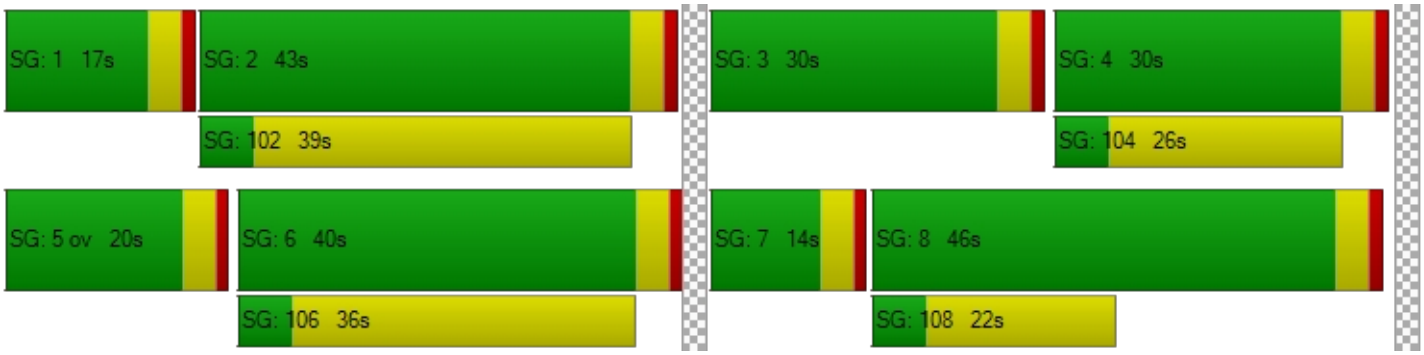
d_M, Delay for Movement [s/veh]	65.61	25.81	25.87	63.18	19.95	19.21	54.77	44.79	39.41	59.89	50.06	30.08
Movement LOS	E	C	C	E	B	B	D	D	D	E	D	C
d_A, Approach Delay [s/veh]	30.59			27.50			46.96			50.74		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	40.30											
Intersection LOS	D											
Intersection V/C	0.580											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.666	2.795	3.127	3.191
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	650	700	433
d_b, Bicycle Delay [s]	29.40	27.34	25.35	36.82
l_b,int, Bicycle LOS Score for Intersection	2.330	2.250	2.352	2.097
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	104	974	61	226	510	55	136	597	90	92	640	235
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	0	0	6	14	9	5	0	0	8	0
Site-Generated Trips [veh/h]	0	5	0	0	6	25	25	12	0	0	12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	1100	68	253	583	101	186	686	101	103	737	263
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	31	289	18	67	153	27	49	181	27	27	194	69
Total Analysis Volume [veh/h]	122	1158	72	266	614	106	196	722	106	108	776	277
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	40	0	17	43	0	13	54	0	9	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	57	57	12	63	63	9	30	30	5	26	26
g / C, Green / Cycle	0.05	0.48	0.48	0.10	0.52	0.52	0.07	0.25	0.25	0.04	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.05	0.08	0.18	0.07	0.06	0.15	0.07	0.03	0.16	0.18
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	176	2346	732	321	1789	799	248	1227	383	139	1066	333
d1, Uniform Delay [s]	55.87	21.36	17.12	53.25	16.70	14.73	54.61	39.56	36.25	56.95	43.66	44.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.81	0.75	0.27	5.51	0.52	0.34	5.58	0.45	0.39	9.04	0.97	5.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.49	0.10	0.83	0.34	0.13	0.79	0.59	0.28	0.78	0.73	0.83
d, Delay for Lane Group [s/veh]	60.68	22.11	17.39	58.76	17.23	15.08	60.19	40.01	36.64	65.99	44.63	50.32
Lane Group LOS	E	C	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.93	7.48	1.15	4.18	5.00	1.56	3.10	6.29	2.56	1.80	7.23	8.36
50th-Percentile Queue Length [ft/ln]	48.36	187.0	28.72	104.5	125.1	39.02	77.61	157.3	64.02	44.90	180.7	208.8
95th-Percentile Queue Length [veh/ln]	3.48	11.97	2.07	7.53	8.67	2.81	5.59	10.41	4.61	3.23	11.64	13.10
95th-Percentile Queue Length [ft/ln]	87.06	299.1	51.70	188.2	216.8	70.23	139.7	260.2	115.2	80.82	291.0	327.3

Movement, Approach, & Intersection Results

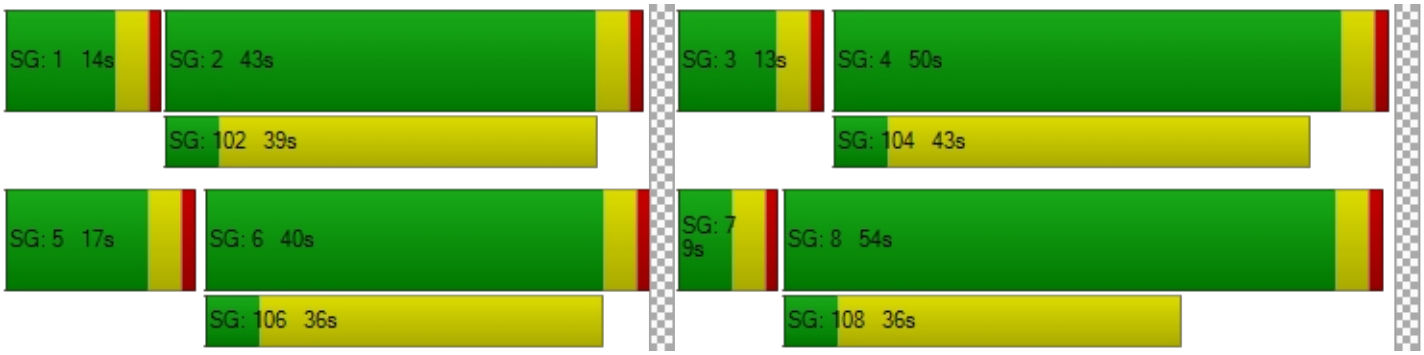
d_M, Delay for Movement [s/veh]	60.68	22.11	17.39	58.76	17.23	15.08	60.19	40.01	36.64	65.99	44.63	50.32
Movement LOS	E	C	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	25.34			28.20			43.53			47.98		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.89											
Intersection LOS	D											
Intersection V/C	0.556											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.101	3.325	3.179	3.105
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	650	833	767
d_b, Bicycle Delay [s]	29.40	27.34	20.42	22.82
l_b,int, Bicycle LOS Score for Intersection	2.303	2.373	2.123	2.198
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	44.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.565

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	133	256	98	23	224	93	137	439	167	42	256	30
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	10	0	0	16	0	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	24	2	0	24	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	321	112	26	291	104	153	492	187	50	287	34
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	39	84	29	7	77	27	40	129	49	13	76	9
Total Analysis Volume [veh/h]	157	338	118	27	306	109	161	518	197	53	302	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	17	26	0	14	23	23	0	50	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	49	49	3	40	40	35	35	16	16
g / C, Green / Cycle	0.11	0.41	0.41	0.03	0.33	0.33	0.29	0.29	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.09	0.13	0.13	0.02	0.09	0.07	0.27	0.27	0.12	0.12
s, saturation flow rate [veh/h]	1714	1800	1644	1714	3427	1530	1770	1508	1777	1584
c, Capacity [veh/h]	182	739	675	44	1131	505	519	442	244	217
d1, Uniform Delay [s]	52.76	24.00	24.05	57.87	29.58	29.00	40.89	40.90	50.54	50.59
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.27	1.15	1.28	13.10	0.59	0.98	8.90	10.24	7.86	9.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.32	0.32	0.61	0.27	0.22	0.91	0.91	0.85	0.85
d, Delay for Lane Group [s/veh]	64.03	25.15	25.32	70.97	30.16	29.98	49.79	51.14	58.40	59.66
Lane Group LOS	E	C	C	E	C	C	D	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.22	4.80	4.47	0.97	3.36	2.42	14.62	12.63	6.57	5.97
50th-Percentile Queue Length [ft/ln]	130.5	120.0	111.6	24.30	83.95	60.46	365.58	315.85	164.14	149.23
95th-Percentile Queue Length [veh/ln]	8.97	8.40	7.93	1.75	6.04	4.35	20.89	18.46	10.77	9.98
95th-Percentile Queue Length [ft/ln]	224.1	209.9	198.3	43.75	151.1	108.8	522.37	461.58	269.20	249.40

Movement, Approach, & Intersection Results

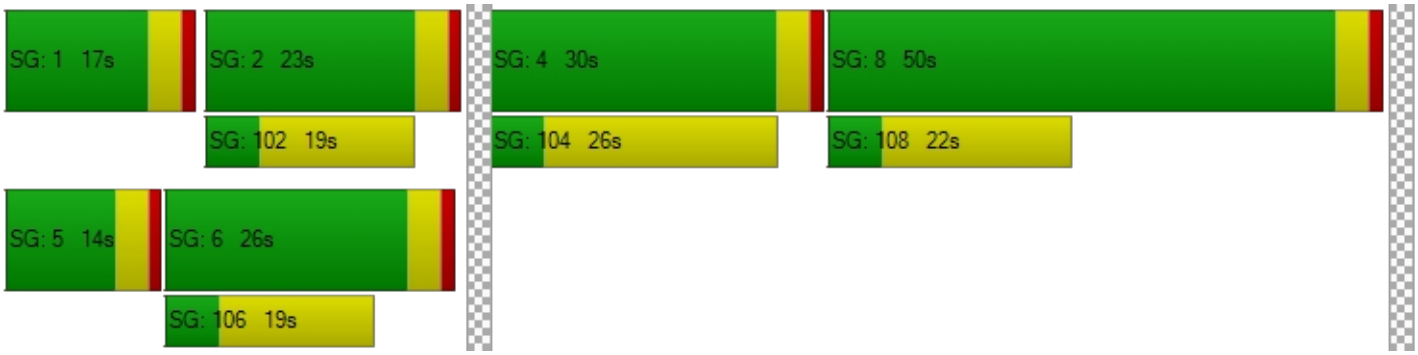
d_M, Delay for Movement [s/veh]	64.03	25.20	25.32	70.97	30.16	29.98	49.79	50.33	51.14	58.40	59.02	59.66
Movement LOS	E	C	C	E	C	C	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	35.17			32.61			50.41			58.99		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	44.44											
Intersection LOS	D											
Intersection V/C	0.565											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.543	2.627	2.498	2.403
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	317	767	433
d_b, Bicycle Delay [s]	40.02	42.50	22.82	36.82
l_b,int, Bicycle LOS Score for Intersection	2.065	1.924	2.282	1.882
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.941

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	167	0	536	0	1898	934	0	1348	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.000	1.120	1.120	1.000	1.120	1.000
In-Process Volume [veh/h]	0	0	0	42	0	0	0	16	0	0	16	0
Site-Generated Trips [veh/h]	0	0	0	137	0	0	0	40	0	0	41	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	366	0	600	0	2182	1046	0	1567	0
Peak Hour Factor	1.000	1.000	1.000	0.950	1.000	0.950	1.000	0.950	0.950	1.000	0.950	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	96	0	158	0	574	275	0	412	0
Total Analysis Volume [veh/h]	0	0	0	385	0	632	0	2297	1101	0	1649	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	31	0	0	0	89	0	0	89	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		27	27	27	85	85	85
g / C, Green / Cycle		0.23	0.23	0.23	0.71	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate		0.20	0.22	0.22	0.47	0.72	0.34
s, saturation flow rate [veh/h]		1714	1553	1530	4903	1530	4903
c, Capacity [veh/h]		386	349	344	3473	1084	3473
d1, Uniform Delay [s]		44.92	46.10	46.30	9.60	17.50	7.69
k, delay calibration		0.30	0.36	0.37	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		15.65	34.02	37.97	1.01	31.37	0.47
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.88	0.97	0.98	0.66	1.02	0.47
d, Delay for Lane Group [s/veh]		60.57	80.12	84.27	10.61	48.87	8.16
Lane Group LOS		E	F	F	B	F	A
Critical Lane Group		No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		11.37	13.25	13.63	10.17	34.85	5.81
50th-Percentile Queue Length [ft/ln]		284.3	331.3	340.6	254.34	871.28	145.34
95th-Percentile Queue Length [veh/ln]		16.91	19.22	19.68	15.40	45.19	9.77
95th-Percentile Queue Length [ft/ln]		422.6	480.6	491.9	385.11	1129.79	244.20

Movement, Approach, & Intersection Results

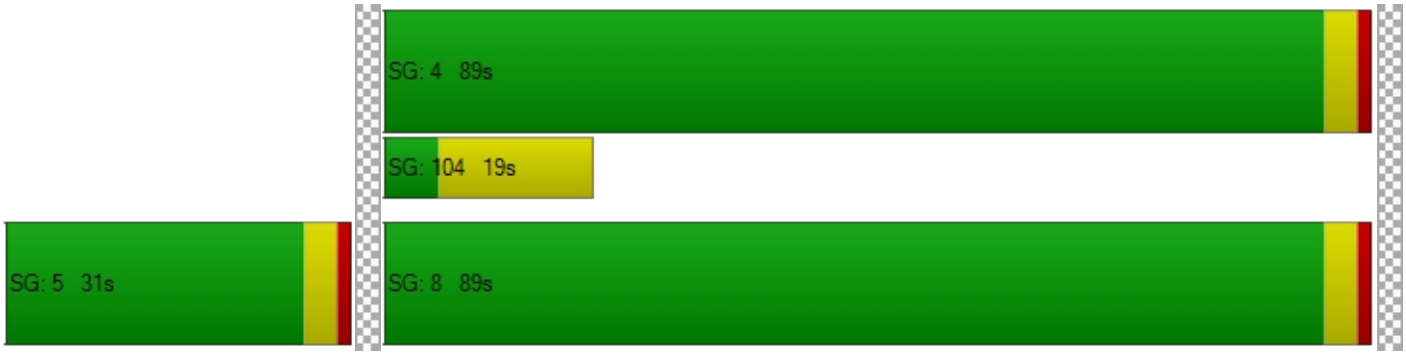
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	62.91	0.00	82.35	0.00	10.61	48.87	0.00	8.16	0.00
Movement LOS				E		F		B	F		A	
d_A, Approach Delay [s/veh]	0.00			74.99			23.01			8.16		
Approach LOS	A			E			C			A		
d_I, Intersection Delay [s/veh]	27.69											
Intersection LOS	C											
Intersection V/C	0.941											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.394	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	450	1417	1417
d_b, Bicycle Delay [s]	60.00	36.04	5.10	5.10
l_b,int, Bicycle LOS Score for Intersection	4.132	3.238	3.429	2.467
Bicycle LOS	D	C	C	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.637

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	731	0	465	0	0	0	0	1092	0	0	1114	292
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.120	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	58	0	0	16	35
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	177	0	0	41	117
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	819	0	521	0	0	0	0	1458	0	0	1305	479
Peak Hour Factor	0.950	1.000	0.950	1.000	1.000	1.000	1.000	0.950	1.000	1.000	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	216	0	137	0	0	0	0	384	0	0	343	126
Total Analysis Volume [veh/h]	862	0	548	0	0	0	0	1535	0	0	1374	504
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	67	0	0	0	0	0	0	53	0	0	53	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	41	41	41		71	71	71
g / C, Green / Cycle	0.34	0.34	0.34		0.59	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.27	0.28	0.31		0.31	0.28	0.33
s, saturation flow rate [veh/h]	1714	1681	1530		4903	4903	1530
c, Capacity [veh/h]	590	579	527		2888	2888	901
d1, Uniform Delay [s]	35.53	35.80	37.23		14.76	14.08	15.12
k, delay calibration	0.11	0.12	0.16		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.61	3.13	7.81		0.70	0.56	2.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.81	0.89		0.53	0.48	0.56
d, Delay for Lane Group [s/veh]	38.15	38.93	45.04		15.46	14.65	17.62
Lane Group LOS	D	D	D		B	B	B
Critical Lane Group	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	12.73	12.90	14.03		8.23	7.02	8.74
50th-Percentile Queue Length [ft/ln]	318.2	322.4	350.7		205.63	175.41	218.40
95th-Percentile Queue Length [veh/ln]	18.58	18.79	20.17		12.93	11.36	13.58
95th-Percentile Queue Length [ft/ln]	464.5	469.7	504.3		323.21	284.01	339.58

Movement, Approach, & Intersection Results

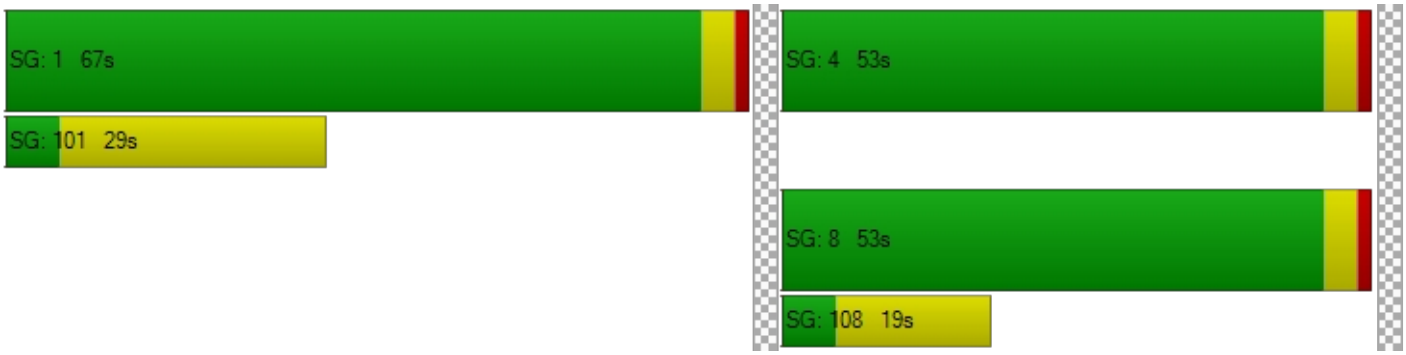
d_M, Delay for Movement [s/veh]	38.50	0.00	44.17	0.00	0.00	0.00	0.00	15.46	0.00	0.00	14.65	17.62
Movement LOS	D		D					B			B	B
d_A, Approach Delay [s/veh]	40.71			0.00			15.46			15.45		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	22.84											
Intersection LOS	C											
Intersection V/C	0.637											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.490	0.000	0.000	3.161
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	0	817	817
d_b, Bicycle Delay [s]	13.54	60.00	21.00	21.00
l_b,int, Bicycle LOS Score for Intersection	3.886	4.132	2.404	2.593
Bicycle LOS	D	D	B	B

Sequence

Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	71.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.807

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	260	348	189	62	209	155	236	931	176	104	748	47
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	51	10	0	0	17	0	0	0	58	1	0	0
Site-Generated Trips [veh/h]	158	26	2	0	26	0	0	0	177	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	500	426	214	69	277	174	264	1043	432	119	838	53
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	132	112	56	18	73	46	69	274	114	31	221	14
Total Analysis Volume [veh/h]	526	448	225	73	292	183	278	1098	455	125	882	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	37	61	0	12	36	0	13	38	38	9	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	58	58	7	32	32	9	34	71	5	30	30
g / C, Green / Cycle	0.28	0.49	0.49	0.05	0.27	0.27	0.08	0.28	0.59	0.04	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.31	0.25	0.15	0.04	0.14	0.14	0.08	0.32	0.30	0.04	0.26	0.04
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1574	3329	3427	1530	3329	3427	1530
c, Capacity [veh/h]	471	876	744	94	480	420	250	971	905	139	857	383
d1, Uniform Delay [s]	43.50	21.06	18.54	55.95	37.48	37.63	55.50	43.00	14.24	57.25	45.00	35.03
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.13	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	76.99	2.13	1.04	12.48	4.02	4.82	63.35	62.88	1.99	18.15	22.56	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.12	0.51	0.30	0.77	0.52	0.53	1.11	1.13	0.50	0.90	1.03	0.15
d, Delay for Lane Group [s/veh]	120.4	23.19	19.59	68.43	41.50	42.46	118.8	105.8	16.23	75.40	67.56	35.21
Lane Group LOS	F	C	B	E	D	D	F	F	B	E	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	23.92	8.99	3.96	2.51	6.81	6.21	5.97	22.71	7.45	2.24	15.32	1.30
50th-Percentile Queue Length [ft/ln]	598.0	224.7	99.08	62.77	170.3	155.1	149.2	567.7	186.1	55.92	382.9	32.60
95th-Percentile Queue Length [veh/ln]	34.12	13.91	7.13	4.52	11.09	10.29	10.32	32.85	11.92	4.03	22.11	2.35
95th-Percentile Queue Length [ft/ln]	853.0	347.7	178.3	112.9	277.3	257.2	258.1	821.3	298.0	100.6	552.7	58.68

Movement, Approach, & Intersection Results

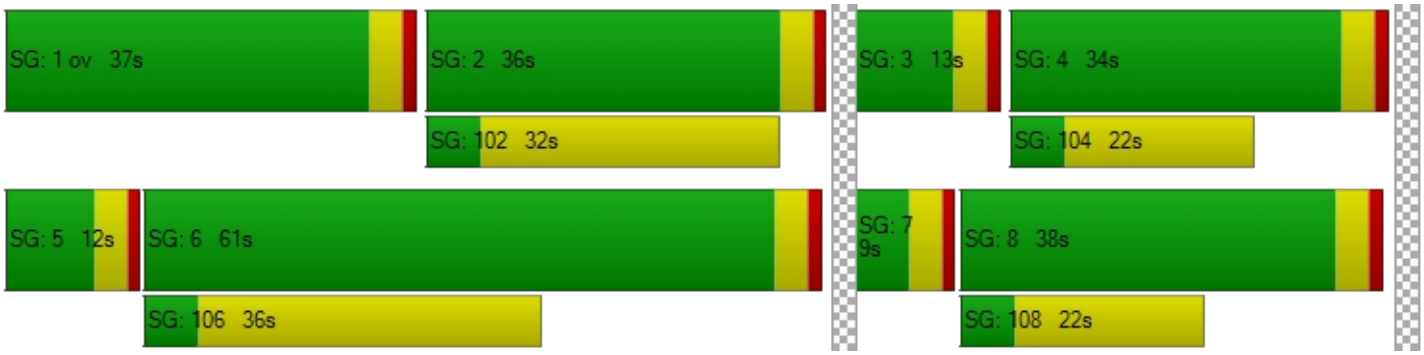
d_M, Delay for Movement [s/veh]	120.4	23.19	19.59	68.43	41.64	42.46	118.8	105.8	16.23	75.40	67.56	35.21
Movement LOS	F	C	B	E	D	D	F	F	B	E	F	D
d_A, Approach Delay [s/veh]	65.20			45.48			85.57			66.78		
Approach LOS	E			D			F			E		
d_I, Intersection Delay [s/veh]	71.27											
Intersection LOS	E											
Intersection V/C	0.807											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.719	2.574	3.158	3.131
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	533	567	500
d_b, Bicycle Delay [s]	16.54	32.27	30.82	33.75
l_b,int, Bicycle LOS Score for Intersection	3.538	2.012	3.070	2.437
Bicycle LOS	D	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	48.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	276	828	230	281	634	195	247	860	100	135	567	123
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	87	26	0	120	1	0	0	0	36	0	0
Site-Generated Trips [veh/h]	0	345	57	0	387	2	2	0	0	57	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	309	1359	341	315	1217	221	279	963	112	244	635	138
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	81	358	90	83	320	58	73	253	29	64	167	36
Total Analysis Volume [veh/h]	325	1431	359	332	1281	233	294	1014	118	257	668	145
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	26	40	0	26	40	40	14	40	0	14	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	22	43	43	22	43	57	10	29	29	10	29	55
g / C, Green / Cycle	0.18	0.36	0.36	0.18	0.36	0.48	0.08	0.24	0.24	0.08	0.24	0.46
(v / s)_i Volume / Saturation Flow Rate	0.19	0.29	0.23	0.19	0.26	0.15	0.09	0.21	0.08	0.08	0.14	0.09
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	314	1760	549	314	1760	728	277	1182	369	277	1182	700
d1, Uniform Delay [s]	49.00	34.82	32.22	49.00	33.38	19.47	55.00	43.56	37.44	54.63	40.01	19.49
k, delay calibration	0.27	0.50	0.50	0.29	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	46.61	4.24	5.96	54.09	2.68	1.16	42.58	1.93	0.50	12.74	0.43	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.81	0.65	1.06	0.73	0.32	1.06	0.86	0.32	0.93	0.57	0.21
d, Delay for Lane Group [s/veh]	95.61	39.06	38.18	103.0	36.06	20.63	97.58	45.49	37.94	67.37	40.43	19.63
Lane Group LOS	F	D	D	F	D	C	F	D	D	E	D	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.44	13.12	9.57	14.09	11.11	4.24	5.83	9.77	2.92	4.34	5.83	2.47
50th-Percentile Queue Length [ft/ln]	335.8	328.1	239.1	352.2	277.6	105.9	145.7	244.3	73.00	108.6	145.7	61.64
95th-Percentile Queue Length [veh/ln]	19.79	19.07	14.64	20.82	16.57	7.62	9.98	14.90	5.26	7.76	9.79	4.44
95th-Percentile Queue Length [ft/ln]	494.7	476.6	366.0	520.6	414.2	190.4	249.5	372.5	131.4	194.0	244.7	110.9

Movement, Approach, & Intersection Results

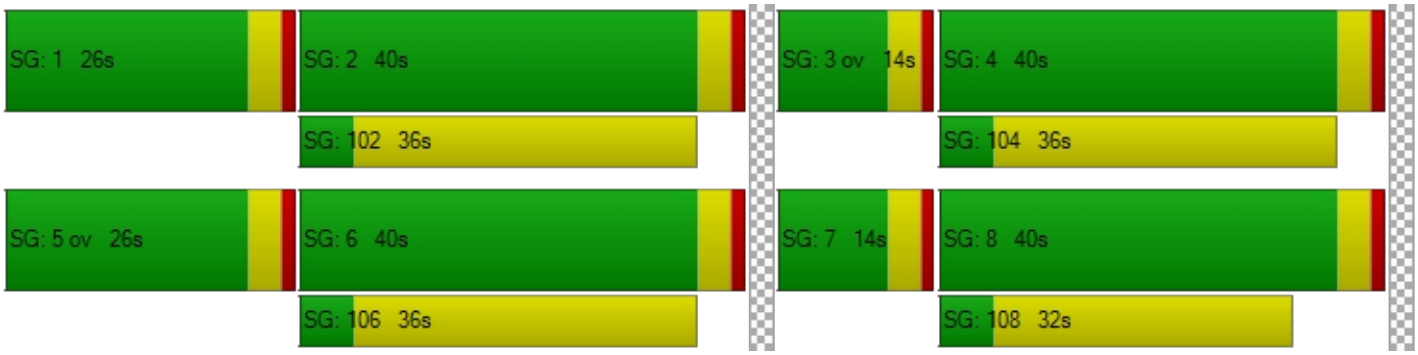
d_M, Delay for Movement [s/veh]	95.61	39.06	38.18	103.0	36.06	20.63	97.58	45.49	37.94	67.37	40.43	19.63
Movement LOS	F	D	D	F	D	C	F	D	D	E	D	B
d_A, Approach Delay [s/veh]	47.60			46.17			55.60			44.08		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	48.38											
Intersection LOS	D											
Intersection V/C	0.770											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.200	3.267	3.152	3.165
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	600	600
d_b, Bicycle Delay [s]	29.40	29.40	29.40	29.40
l_b,int, Bicycle LOS Score for Intersection	2.723	2.575	2.344	2.148
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	3,016.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	6.211

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	60	0	118	0	0	0	0	1326	54	104	760	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	1	0	0	0	0	26	0	1	36	0
Site-Generated Trips [veh/h]	0	0	17	0	0	0	0	57	0	16	57	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	0	150	0	0	0	0	1568	60	133	944	0
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	18	0	39	0	0	0	0	413	16	35	248	0
Total Analysis Volume [veh/h]	71	0	158	0	0	0	0	1651	63	140	994	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	6.21	0.00	0.52	0.00	0.00	0.00	0.00	0.02	0.00	0.37	0.01	0.00
d_M, Delay for Movement [s/veh]	3016.	3091.	2713.	351.6	413.3	11.87	10.11	0.00	0.00	20.22	0.00	0.00
Movement LOS	F	F	F	F	F	B	B	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	27.49	27.49	27.49	0.00	0.00	0.00	0.00	0.00	0.00	1.69	0.00	0.00
95th-Percentile Queue Length [ft/ln]	687.3	687.3	687.3	0.00	0.00	0.00	0.00	0.00	0.00	42.27	0.00	0.00
d_A, Approach Delay [s/veh]	2807.77			258.95			0.00			2.50		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	209.88											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	60.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	138	673	87	131	551	71	256	837	177	287	553	119
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	0	0	1	0	0	21	0	0	28	0
Site-Generated Trips [veh/h]	0	20	0	0	16	0	0	45	0	0	45	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	778	97	147	634	80	287	1003	198	321	692	133
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	41	205	26	39	167	21	76	264	52	84	182	35
Total Analysis Volume [veh/h]	163	819	102	155	667	84	302	1056	208	338	728	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	37	0	15	36	0	29	40	0	28	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	33	33	11	32	32	23	36	36	24	37	37
g / C, Green / Cycle	0.10	0.28	0.28	0.09	0.27	0.27	0.19	0.30	0.30	0.20	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.10	0.26	0.26	0.09	0.21	0.21	0.18	0.31	0.14	0.20	0.21	0.09
s, saturation flow rate [veh/h]	1714	1800	1731	1714	1800	1730	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	171	495	476	157	480	461	330	1028	459	343	1055	471
d1, Uniform Delay [s]	53.71	42.66	42.67	54.43	40.98	40.99	47.52	42.00	34.03	47.83	36.51	31.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.23	0.11	0.11	0.30	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.00	29.43	30.26	30.22	12.94	13.41	18.71	20.65	0.70	34.06	0.82	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.95	0.95	0.99	0.80	0.80	0.92	1.03	0.45	0.99	0.69	0.30
d, Delay for Lane Group [s/veh]	75.71	72.09	72.93	84.64	53.93	54.40	66.23	62.65	34.73	81.89	37.32	32.00
Lane Group LOS	E	E	E	F	D	D	E	F	C	F	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.93	17.56	17.01	5.99	12.21	11.80	10.53	17.97	5.01	13.26	9.44	3.15
50th-Percentile Queue Length [ft/ln]	148.3	439.0	425.1	149.6	305.2	295.0	263.3	449.1	125.3	331.4	236.0	78.84
95th-Percentile Queue Length [veh/ln]	9.93	24.43	23.77	10.00	17.94	17.43	15.86	25.35	8.68	19.23	14.48	5.68
95th-Percentile Queue Length [ft/ln]	248.1	610.8	594.2	250.0	448.5	435.8	396.4	633.7	217.0	480.6	362.0	141.9

Movement, Approach, & Intersection Results

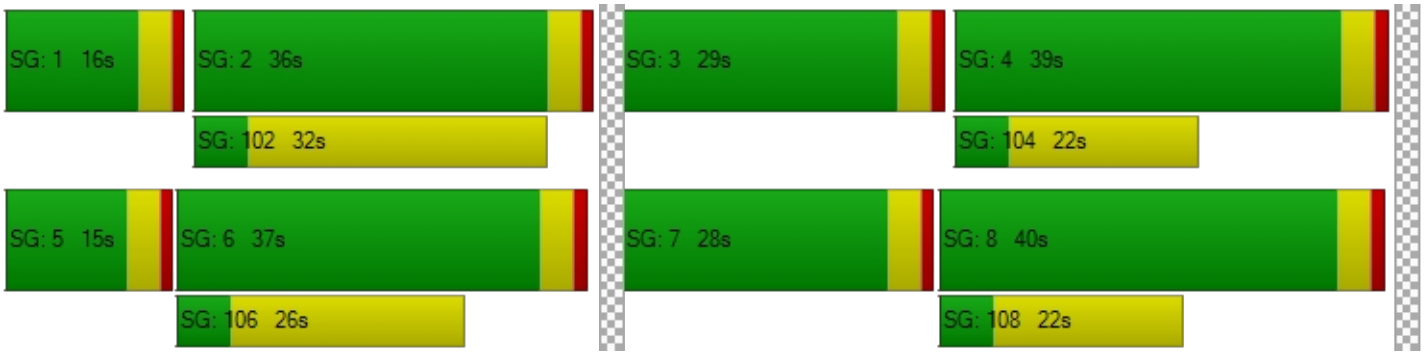
d_M, Delay for Movement [s/veh]	75.71	72.45	72.93	84.64	54.13	54.40	66.23	62.65	34.73	81.89	37.32	32.00
Movement LOS	E	E	E	F	D	D	E	F	C	F	D	C
d_A, Approach Delay [s/veh]	72.99			59.37			59.63			49.20		
Approach LOS	E			E			E			D		
d_I, Intersection Delay [s/veh]	59.98											
Intersection LOS	E											
Intersection V/C	0.857											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.763	2.738	2.881	2.877
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	533	600	583
d_b, Bicycle Delay [s]	31.54	32.27	29.40	30.10
l_b,int, Bicycle LOS Score for Intersection	2.454	2.307	2.852	2.555
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	45.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	103	798	135	153	488	119	200	689	134	200	501	162
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	7	3	0	10	5	3	13	0	1	15	0
Site-Generated Trips [veh/h]	0	25	17	0	25	9	9	24	0	16	24	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	926	171	171	582	147	236	809	150	241	600	181
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	30	244	45	45	153	39	62	213	39	63	158	48
Total Analysis Volume [veh/h]	121	975	180	180	613	155	248	852	158	254	632	191
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	41	0	18	44	0	25	37	0	24	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	38	38	14	42	42	19	32	32	20	32	32
g / C, Green / Cycle	0.09	0.32	0.32	0.12	0.35	0.35	0.16	0.27	0.27	0.16	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.07	0.28	0.12	0.11	0.18	0.10	0.14	0.25	0.10	0.15	0.18	0.12
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	146	1098	490	200	1205	538	276	914	408	279	921	411
d1, Uniform Delay [s]	54.00	38.74	31.41	52.31	30.73	28.08	49.39	42.93	35.97	49.36	39.33	36.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.14	0.11	0.11	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.05	10.73	2.12	13.47	1.54	1.35	12.84	5.00	0.60	14.50	0.92	0.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.89	0.37	0.90	0.51	0.29	0.90	0.93	0.39	0.91	0.69	0.46
d, Delay for Lane Group [s/veh]	65.04	49.47	33.53	65.78	32.26	29.42	62.23	47.92	36.57	63.86	40.25	37.47
Lane Group LOS	E	D	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.04	15.10	4.32	6.09	7.24	3.43	8.26	12.86	3.87	8.59	8.44	4.78
50th-Percentile Queue Length [ft/ln]	101.1	377.5	107.9	152.2	181.0	85.71	206.5	321.4	96.68	214.6	210.9	119.5
95th-Percentile Queue Length [veh/ln]	7.28	21.47	7.73	10.14	11.65	6.17	12.98	18.74	6.96	13.39	13.20	8.37
95th-Percentile Queue Length [ft/ln]	182.0	536.8	193.2	253.4	291.3	154.2	324.4	468.4	174.0	334.8	330.0	209.1

Movement, Approach, & Intersection Results

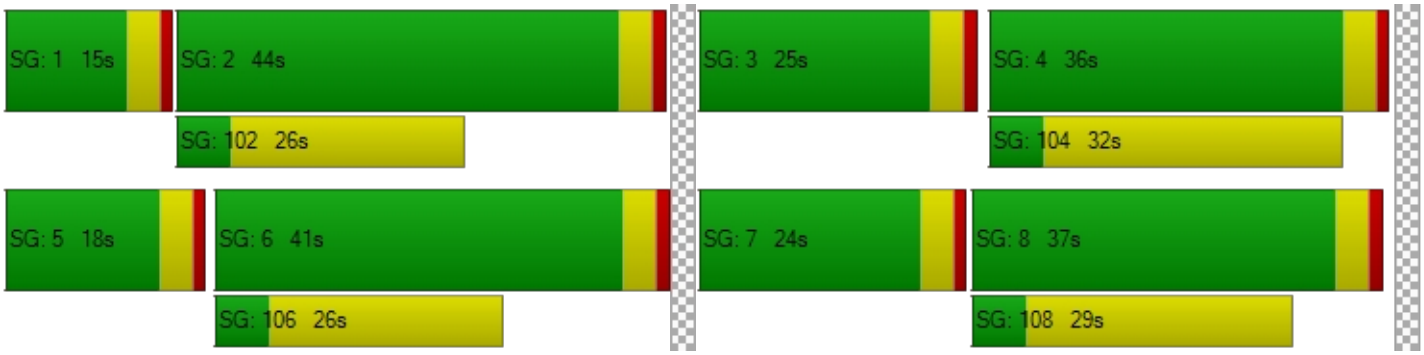
d_M, Delay for Movement [s/veh]	65.04	49.47	33.53	65.78	32.26	29.42	62.23	47.92	36.57	63.86	40.25	37.47
Movement LOS	E	D	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	48.70			38.16			49.32			45.32		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.88											
Intersection LOS	D											
Intersection V/C	0.786											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.930	3.029	2.820	2.840
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	667	550	533
d_b, Bicycle Delay [s]	28.70	26.67	31.54	32.27
l_b,int, Bicycle LOS Score for Intersection	2.612	2.342	2.597	2.448
Bicycle LOS	B	B	B	B

Sequence

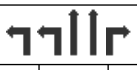
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	42.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	163	520	116	127	235	114	349	622	387	100	360	144
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	15	61	0	0	76	0	0	0	24	0	0	0
Site-Generated Trips [veh/h]	36	186	0	0	205	0	0	0	36	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	234	829	130	142	544	128	391	697	493	112	403	161
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	62	218	34	37	143	34	103	183	130	29	106	42
Total Analysis Volume [veh/h]	246	873	137	149	573	135	412	734	519	118	424	169
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	30	30	16	30	30	26	65	65	9	48	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	35	44	12	35	56	17	52	68	5	40	40
g / C, Green / Cycle	0.10	0.29	0.37	0.10	0.29	0.47	0.15	0.43	0.57	0.04	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.07	0.25	0.09	0.09	0.17	0.09	0.12	0.41	0.34	0.04	0.17	0.17
s, saturation flow rate [veh/h]	3329	3427	1530	1714	3427	1530	3329	1800	1530	3329	1800	1628
c, Capacity [veh/h]	333	999	561	171	999	721	487	780	867	139	592	536
d1, Uniform Delay [s]	52.48	40.42	26.45	53.23	36.17	18.42	49.91	32.50	17.03	57.13	32.64	32.69
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.32	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.22	10.55	1.04	12.44	2.40	0.57	4.15	15.14	3.04	13.33	0.72	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.87	0.24	0.87	0.57	0.19	0.85	0.94	0.60	0.85	0.52	0.53
d, Delay for Lane Group [s/veh]	55.70	50.97	27.49	65.67	38.57	18.99	54.06	47.64	20.07	70.46	33.36	33.50
Lane Group LOS	E	D	C	E	D	B	D	D	C	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.75	13.61	2.90	5.02	7.46	2.30	6.30	23.11	9.81	2.03	7.41	6.78
50th-Percentile Queue Length [ft/ln]	93.75	340.1	72.62	125.4	186.6	57.56	157.4	577.7	245.2	50.86	185.3	169.4
95th-Percentile Queue Length [veh/ln]	6.75	19.66	5.23	8.69	11.95	4.14	10.42	30.99	14.94	3.66	11.88	11.04
95th-Percentile Queue Length [ft/ln]	168.7	491.3	130.7	217.2	298.6	103.6	260.3	774.8	373.6	91.54	297.0	276.1

Movement, Approach, & Intersection Results

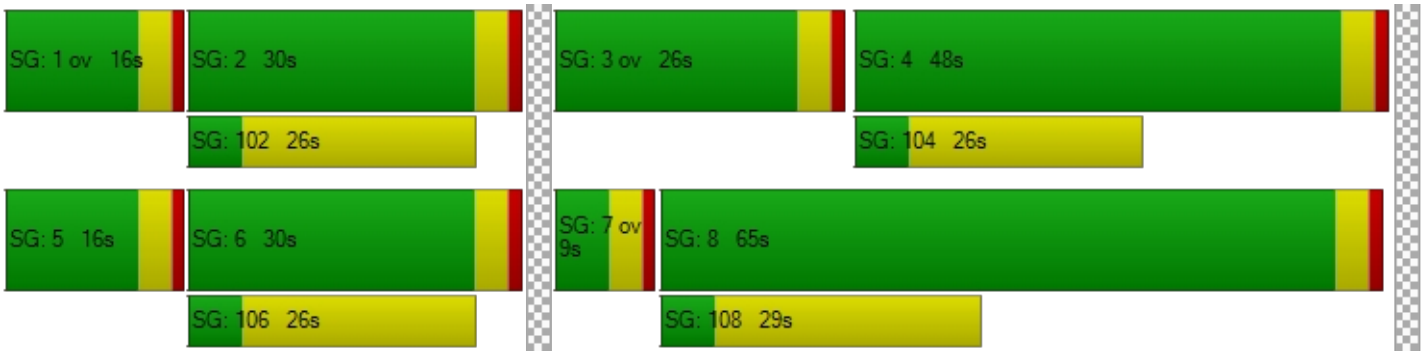
d_M, Delay for Movement [s/veh]	55.70	50.97	27.49	65.67	38.57	18.99	54.06	47.64	20.07	70.46	33.40	33.50
Movement LOS	E	D	C	E	D	B	D	D	C	E	C	C
d_A, Approach Delay [s/veh]	49.33			40.20			40.64			39.57		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.82											
Intersection LOS	D											
Intersection V/C	0.785											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.953	2.844	2.953	2.749
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	1017	733
d_b, Bicycle Delay [s]	36.82	36.82	14.50	24.07
l_b,int, Bicycle LOS Score for Intersection	2.596	2.267	4.307	2.146
Bicycle LOS	B	B	E	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	93.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.999

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	138	1069	219	69	777	93	84	606	98	116	542	59
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	113	18	0	156	0	0	0	0	30	0	0
Site-Generated Trips [veh/h]	0	402	50	0	444	0	0	0	0	50	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	1712	313	77	1470	104	94	679	110	210	607	66
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	41	451	82	20	387	27	25	179	29	55	160	17
Total Analysis Volume [veh/h]	163	1802	329	81	1547	109	99	715	116	221	639	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	48	0	9	43	0	21	45	0	18	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	44	44	5	39	39	9	41	41	14	46	46
g / C, Green / Cycle	0.08	0.37	0.37	0.04	0.33	0.33	0.07	0.34	0.34	0.12	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.10	0.42	0.43	0.05	0.32	0.32	0.06	0.40	0.08	0.13	0.36	0.05
s, saturation flow rate [veh/h]	1714	3427	1664	1714	3427	1740	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	143	1257	610	71	1114	566	124	615	523	200	695	590
d1, Uniform Delay [s]	55.00	38.00	38.00	57.50	40.22	40.25	54.79	39.50	28.14	53.00	35.08	23.69
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.41	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	80.76	69.94	89.64	90.87	23.75	34.76	11.01	90.16	0.21	62.68	16.64	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.14	1.13	1.16	1.13	0.99	0.99	0.80	1.16	0.22	1.11	0.92	0.12
d, Delay for Lane Group [s/veh]	135.7	107.9	127.6	148.3	63.97	75.01	65.80	129.6	28.35	115.6	51.72	23.78
Lane Group LOS	F	F	F	F	E	E	E	F	C	F	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.52	30.29	32.74	3.97	19.52	21.58	3.33	33.21	2.42	9.50	20.62	1.28
50th-Percentile Queue Length [ft/ln]	187.9	757.2	818.6	99.23	487.9	539.4	83.17	830.1	60.58	237.3	515.4	32.10
95th-Percentile Queue Length [veh/ln]	12.56	42.73	46.50	7.14	26.76	29.20	5.99	47.03	4.36	15.15	28.07	2.31
95th-Percentile Queue Length [ft/ln]	314.0	1068.	1162.	178.6	669.0	729.8	149.7	1175.	109.0	378.6	701.6	57.78

Movement, Approach, & Intersection Results

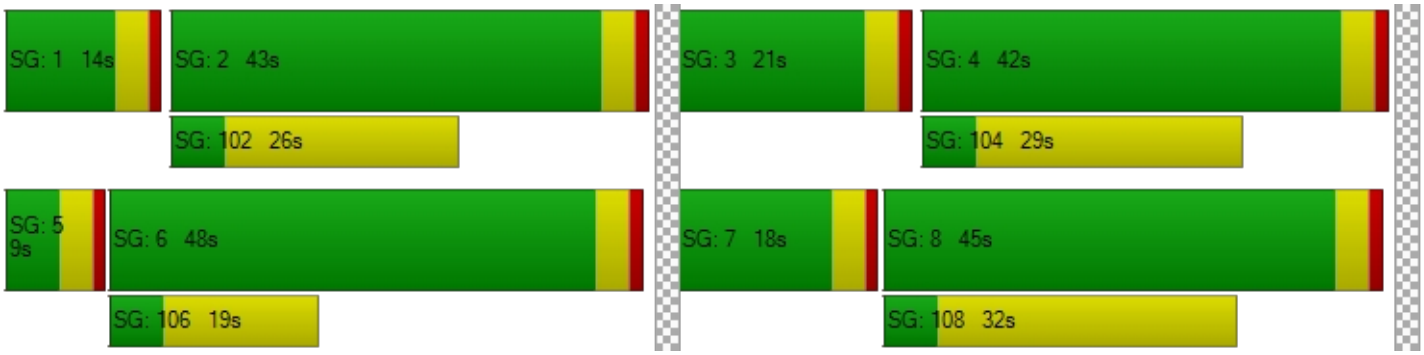
d_M, Delay for Movement [s/veh]	135.7	112.0	127.6	148.3	67.17	75.01	65.80	129.6	28.35	115.6	51.72	23.78
Movement LOS	F	F	F	F	E	E	E	F	C	F	D	C
d_A, Approach Delay [s/veh]	116.00			71.45			110.22			64.86		
Approach LOS	F			E			F			E		
d_I, Intersection Delay [s/veh]	93.88											
Intersection LOS	F											
Intersection V/C	0.999											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.250	3.125	2.767	2.647
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	650	683	633
d_b, Bicycle Delay [s]	24.07	27.34	26.00	28.02
l_b,int, Bicycle LOS Score for Intersection	2.821	2.515	3.094	3.092
Bicycle LOS	C	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	24.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	96	151	218	18	141	22	31	636	65	90	429	27
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	1	2	0	1	0	0	18	0	3	30	0
Site-Generated Trips [veh/h]	0	17	3	0	16	0	0	50	0	3	50	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	187	249	20	175	25	35	780	73	107	560	30
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	49	66	5	46	7	9	205	19	28	147	8
Total Analysis Volume [veh/h]	114	197	262	21	184	26	37	821	77	113	589	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	33	0	0	33	0	0	87	0	0	87	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	72	72	72	72	72	72
g / C, Green / Cycle	0.33	0.33	0.33	0.33	0.33	0.33	0.60	0.60	0.60	0.60	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.17	0.02	0.10	0.02	0.05	0.46	0.05	0.18	0.33	0.02
s, saturation flow rate [veh/h]	1190	1800	1530	947	1800	1530	816	1800	1530	630	1800	1530
c, Capacity [veh/h]	367	595	506	299	595	506	354	1085	922	191	1085	922
d1, Uniform Delay [s]	36.53	30.19	32.44	34.31	29.95	27.35	25.73	17.41	9.97	45.79	14.07	9.67
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.22	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.19	1.49	3.76	0.45	1.35	0.19	0.13	2.23	0.04	2.88	0.42	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.33	0.52	0.07	0.31	0.05	0.10	0.76	0.08	0.59	0.54	0.03
d, Delay for Lane Group [s/veh]	38.72	31.68	36.20	34.76	31.30	27.54	25.86	19.64	10.01	48.67	14.50	9.69
Lane Group LOS	D	C	D	C	C	C	C	B	B	D	B	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.98	4.54	6.66	0.51	4.20	0.54	0.73	16.34	0.85	3.39	9.21	0.34
50th-Percentile Queue Length [ft/ln]	74.39	113.4	166.6	12.77	105.0	13.51	18.21	408.4	21.28	84.79	230.3	8.58
95th-Percentile Queue Length [veh/ln]	5.36	8.03	10.90	0.92	7.56	0.97	1.31	22.97	1.53	6.10	14.19	0.62
95th-Percentile Queue Length [ft/ln]	133.9	200.8	272.4	22.98	189.0	24.32	32.77	574.2	38.31	152.6	354.8	15.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.72	31.68	36.20	34.76	31.30	27.54	25.86	19.64	10.01	48.67	14.50	9.69
Movement LOS	D	C	D	C	C	C	C	B	B	D	B	A
d_A, Approach Delay [s/veh]	35.15			31.19			19.10			19.55		
Approach LOS	D			C			B			B		
d_I, Intersection Delay [s/veh]	24.08											
Intersection LOS	C											
Intersection V/C	0.627											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.538	2.320	2.714	2.703
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	483	1383	1383
d_b, Bicycle Delay [s]	34.50	34.50	5.70	5.70
l_b,int, Bicycle LOS Score for Intersection	2.505	1.941	3.102	2.771
Bicycle LOS	B	A	C	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	46.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.762

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	175	861	169	138	729	67	78	565	168	144	309	92
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	4	2	0	1	0	0	10	0	3	17	0
Site-Generated Trips [veh/h]	0	20	3	0	16	0	0	29	0	3	29	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	196	988	194	155	833	75	87	672	188	167	392	103
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	52	260	51	41	219	20	23	177	49	44	103	27
Total Analysis Volume [veh/h]	206	1040	204	163	877	79	92	707	198	176	413	108
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	51	0	17	44	0	12	34	0	18	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	50	50	13	46	46	8	27	27	14	33	33
g / C, Green / Cycle	0.14	0.41	0.41	0.11	0.39	0.39	0.07	0.23	0.23	0.12	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.12	0.35	0.36	0.10	0.27	0.27	0.05	0.21	0.13	0.10	0.23	0.07
s, saturation flow rate [veh/h]	1714	1800	1699	1714	1800	1748	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	234	746	705	186	696	676	114	778	347	200	499	424
d1, Uniform Delay [s]	50.86	31.79	32.03	52.72	30.90	30.91	55.26	45.16	41.17	52.17	40.66	33.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.28	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.34	11.78	13.28	12.29	5.71	5.88	12.59	4.47	1.47	11.72	8.80	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.85	0.86	0.88	0.70	0.70	0.81	0.91	0.57	0.88	0.83	0.25
d, Delay for Lane Group [s/veh]	61.20	43.57	45.30	65.00	36.61	36.79	67.86	49.64	42.65	63.89	49.46	34.02
Lane Group LOS	E	D	D	E	D	D	E	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.74	18.78	18.35	5.47	12.75	12.42	3.14	10.68	5.35	5.86	12.59	2.50
50th-Percentile Queue Length [ft/ln]	168.4	469.5	458.7	136.7	318.7	310.6	78.58	266.9	133.6	146.5	314.6	62.53
95th-Percentile Queue Length [veh/ln]	11.00	25.89	25.38	9.30	18.60	18.21	5.66	16.03	9.14	9.83	18.41	4.50
95th-Percentile Queue Length [ft/ln]	274.8	647.1	634.4	232.5	465.0	455.1	141.4	400.8	228.4	245.7	460.1	112.5

Movement, Approach, & Intersection Results

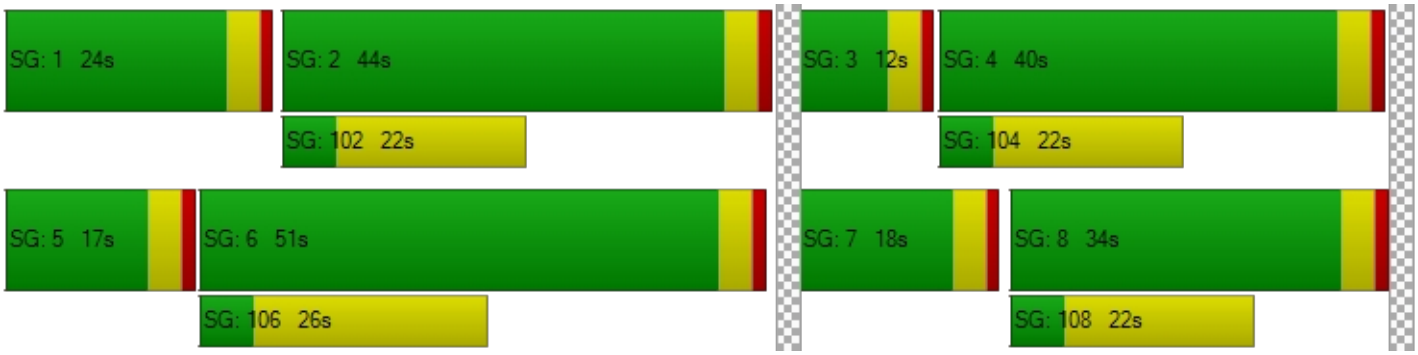
d_M, Delay for Movement [s/veh]	61.20	44.24	45.30	65.00	36.69	36.79	67.86	49.64	42.65	63.89	49.46	34.02
Movement LOS	E	D	D	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	46.80			40.82			49.93			50.71		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	46.60											
Intersection LOS	D											
Intersection V/C	0.762											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.842	2.775	2.646	2.756
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	667	500	600
d_b, Bicycle Delay [s]	22.20	26.67	33.75	29.40
l_b,int, Bicycle LOS Score for Intersection	2.756	2.483	2.382	2.710
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	37.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.606

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	85	770	56	108	507	77	101	475	89	64	311	53
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	10	2	0	11	0	0	3	0	3	5	0
Site-Generated Trips [veh/h]	0	42	3	0	41	0	0	9	0	3	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	914	68	121	620	86	113	544	100	78	362	59
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	25	241	18	32	163	23	30	143	26	21	95	16
Total Analysis Volume [veh/h]	100	962	72	127	653	91	119	573	105	82	381	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	44	0	15	36	0	24	50	0	11	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	60	60	11	62	62	10	26	26	7	23	23
g / C, Green / Cycle	0.07	0.50	0.50	0.09	0.52	0.52	0.08	0.22	0.22	0.06	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.06	0.29	0.29	0.07	0.21	0.21	0.07	0.19	0.19	0.05	0.13	0.13
s, saturation flow rate [veh/h]	1714	1800	1756	1714	1800	1724	1714	1800	1704	1714	1800	1714
c, Capacity [veh/h]	126	903	881	152	930	891	146	393	372	100	344	328
d1, Uniform Delay [s]	54.71	21.00	21.01	53.85	17.76	17.76	53.94	45.46	45.47	55.88	44.88	44.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.76	2.71	2.78	11.48	1.33	1.39	10.30	6.78	7.21	14.96	2.13	2.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.58	0.58	0.84	0.41	0.41	0.81	0.89	0.89	0.82	0.66	0.66
d, Delay for Lane Group [s/veh]	65.47	23.71	23.79	65.33	19.09	19.15	64.24	52.24	52.68	70.83	47.00	47.24
Lane Group LOS	E	C	C	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.35	10.79	10.56	4.26	6.70	6.43	3.95	10.74	10.23	2.87	6.42	6.20
50th-Percentile Queue Length [ft/ln]	83.78	269.8	263.9	106.3	167.4	160.8	98.77	268.5	255.8	71.76	160.4	154.9
95th-Percentile Queue Length [veh/ln]	6.03	16.18	15.89	7.64	10.94	10.60	7.11	16.12	15.48	5.17	10.57	10.28
95th-Percentile Queue Length [ft/ln]	150.8	404.5	397.2	190.9	273.6	264.8	177.7	402.8	387.0	129.1	264.3	256.9

Movement, Approach, & Intersection Results

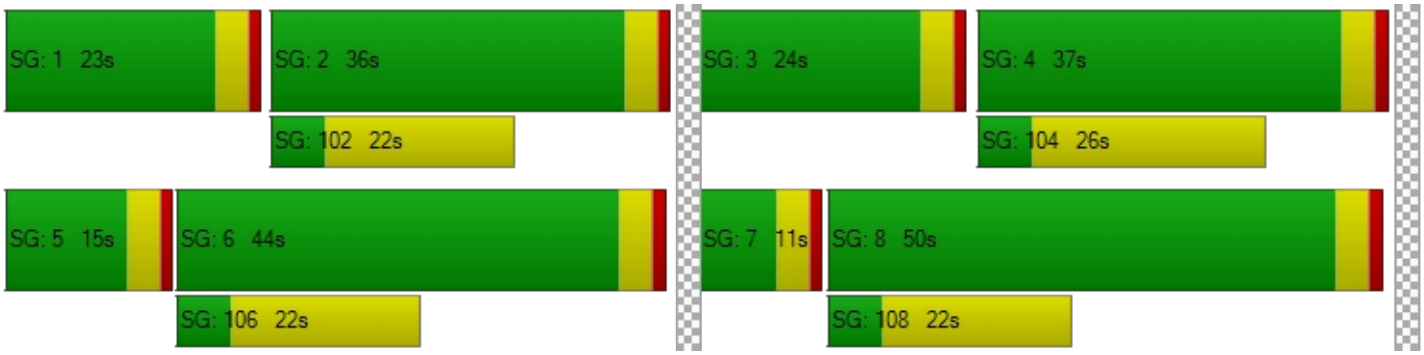
d_M, Delay for Movement [s/veh]	65.47	23.74	23.79	65.33	19.12	19.15	64.24	52.41	52.68	70.83	47.10	47.24
Movement LOS	E	C	C	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	27.43			25.86			54.21			50.82		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.13											
Intersection LOS	D											
Intersection V/C	0.606											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.700	2.795	2.582	2.568
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	533	767	550
d_b, Bicycle Delay [s]	26.67	32.27	22.82	31.54
l_b,int, Bicycle LOS Score for Intersection	2.495	2.278	2.217	1.993
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	43.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.926

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	664	283	196	515	0	0	0	0	201	0	88
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	76	0	0	100	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	222	0	0	241	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1042	317	220	918	0	0	0	0	225	0	99
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	274	83	58	242	0	0	0	0	59	0	26
Total Analysis Volume [veh/h]	0	1097	334	232	966	0	0	0	0	237	0	104
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	17	74	0	20	77	0	0	26	0	0	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	70	70	16	86	86	22	22	22	22
g / C, Green / Cycle	0.00	0.58	0.58	0.13	0.72	0.72	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.61	0.22	0.14	0.54	0.00	0.00	0.00	0.18	0.07
s, saturation flow rate [veh/h]	1714	1800	1530	1714	1800	1530	1638	1530	1309	1530
c, Capacity [veh/h]	1	1050	893	229	1288	1095	330	281	300	281
d1, Uniform Delay [s]	0.00	25.00	13.33	52.00	10.46	0.00	0.00	0.00	49.88	42.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	40.19	1.20	32.20	4.04	0.00	0.00	0.00	10.13	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	1.04	0.37	1.02	0.75	0.00	0.00	0.00	0.79	0.37
d, Delay for Lane Group [s/veh]	0.00	65.19	14.53	84.20	14.50	0.00	0.00	0.00	60.01	43.75
Lane Group LOS	A	F	B	F	B	A	A	A	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	39.46	5.00	8.90	15.15	0.00	0.00	0.00	7.91	2.78
50th-Percentile Queue Length [ft/ln]	0.00	986.3	124.9	222.5	378.8	0.00	0.00	0.00	197.66	69.48
95th-Percentile Queue Length [veh/ln]	0.00	51.67	8.67	13.89	21.54	0.00	0.00	0.00	12.52	5.00
95th-Percentile Queue Length [ft/ln]	0.00	1291.	216.6	347.1	538.4	0.00	0.00	0.00	312.94	125.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	65.19	14.53	84.20	14.50	0.00	0.00	0.00	0.00	60.01	60.01	43.75
Movement LOS	A	F	B	F	B	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	53.37			28.00			0.00			55.05		
Approach LOS	D			C			A			E		
d_I, Intersection Delay [s/veh]	43.33											
Intersection LOS	D											
Intersection V/C	0.926											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.166	0.000	1.955	2.250
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1167	1217	367	367
d_b, Bicycle Delay [s]	10.42	9.20	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	3.921	3.536	1.560	2.122
Bicycle LOS	D	D	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	96.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.005

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	143	1366	112	38	688	56	87	141	294	122	67	73
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	131	0	0	186	0	0	0	0	2	0	0
Site-Generated Trips [veh/h]	0	452	0	0	494	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	2113	125	43	1451	63	97	158	329	139	75	82
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	556	33	11	382	17	26	42	87	37	20	22
Total Analysis Volume [veh/h]	168	2224	132	45	1527	66	102	166	346	146	79	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	67	0	10	61	0	10	29	0	14	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	65	65	4	57	57	6	25	25	10	29
g / C, Green / Cycle	0.10	0.54	0.54	0.03	0.48	0.48	0.05	0.21	0.21	0.08	0.24
(v / s)_i Volume / Saturation Flow Rate	0.10	0.65	0.67	0.03	0.45	0.04	0.06	0.09	0.23	0.09	0.10
s, saturation flow rate [veh/h]	1714	1800	1765	1714	3427	1530	1714	1800	1530	1714	1648
c, Capacity [veh/h]	171	973	955	59	1628	727	86	375	319	143	398
d1, Uniform Delay [s]	53.88	27.55	27.55	57.48	29.83	17.28	57.00	41.42	47.50	55.00	38.34
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.38	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	27.45	104.2	114.4	18.64	11.77	0.25	108.0	0.82	68.95	40.68	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	1.21	1.23	0.77	0.94	0.09	1.19	0.44	1.09	1.02	0.41
d, Delay for Lane Group [s/veh]	81.33	131.7	142.0	76.11	41.59	17.53	165.0	42.25	116.4	95.68	39.03
Lane Group LOS	F	F	F	E	D	B	F	D	F	F	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	6.36	54.48	56.14	1.66	22.79	1.06	5.17	4.38	15.57	5.93	4.18
50th-Percentile Queue Length [ft/ln]	158.9	1361.	1403.	41.47	569.6	26.45	129.2	109.5	389.2	148.17	104.55
95th-Percentile Queue Length [veh/ln]	10.49	76.90	80.01	2.99	30.62	1.90	9.30	7.82	23.02	10.00	7.53
95th-Percentile Queue Length [ft/ln]	262.3	1922.	2000.	74.64	765.4	47.61	232.5	195.4	575.6	249.88	188.20

Movement, Approach, & Intersection Results

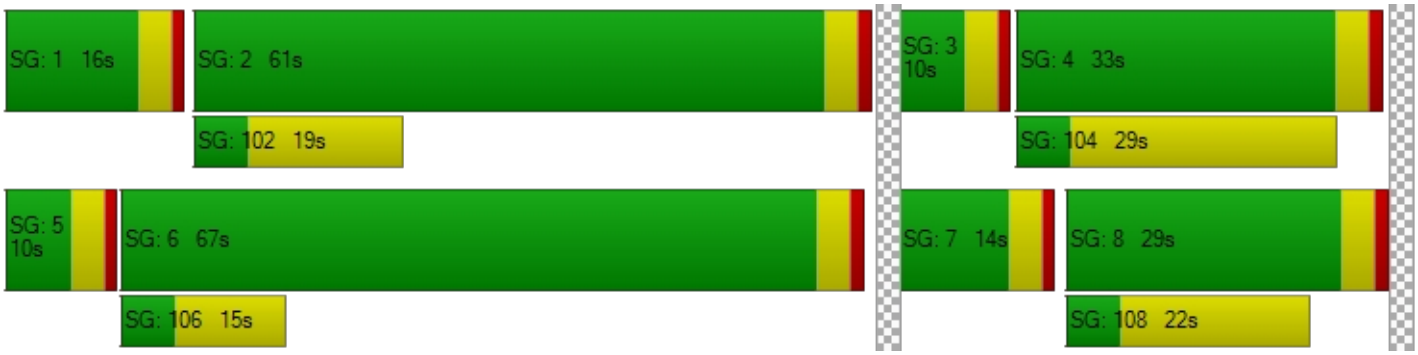
d_M, Delay for Movement [s/veh]	81.33	136.5	142.0	76.11	41.59	17.53	165.0	42.25	116.4	95.68	39.03	39.03
Movement LOS	F	F	F	E	D	B	F	D	F	F	D	D
d_A, Approach Delay [s/veh]	133.19			41.57			104.45			65.62		
Approach LOS	F			D			F			E		
d_I, Intersection Delay [s/veh]	96.09											
Intersection LOS	F											
Intersection V/C	1.005											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.206	3.173	2.372	2.168
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	950	417	483
d_b, Bicycle Delay [s]	13.54	16.54	37.60	34.50
l_b,int, Bicycle LOS Score for Intersection	3.642	2.911	2.573	2.073
Bicycle LOS	D	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	54.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.588

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	88	400	0	0	314	39	80	0	165	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.120	1.120	1.000	1.000	1.120	1.120	1.120	1.000	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	3	0	0	2	2	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	0	0	19	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	471	0	0	373	46	90	0	185	0	0	0
Peak Hour Factor	0.950	0.950	1.000	1.000	0.950	0.950	0.950	1.000	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	124	0	0	98	12	24	0	49	0	0	0
Total Analysis Volume [veh/h]	104	496	0	0	393	48	95	0	195	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.00	0.00	0.00	0.00	0.00	0.59	0.00	0.30	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.51	0.00	0.00	0.00	0.00	0.00	54.94	0.00	13.07	0.00	0.00	0.00
Movement LOS	A	A			A	A	F		B			
95th-Percentile Queue Length [veh/ln]	0.30	0.30	0.00	0.00	0.00	0.00	3.11	0.00	1.28	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	7.59	7.59	0.00	0.00	0.00	0.00	77.86	0.00	32.12	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1.47			0.00			26.78			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	6.50											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	88.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.957

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	907	60	95	571	0	5	0	30	191	0	49
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	88	100	0	0	0	0	0	9	0	76
Site-Generated Trips [veh/h]	0	0	172	241	0	0	0	0	0	134	0	222
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1016	327	447	640	0	6	0	34	357	0	353
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	267	86	118	168	0	2	0	9	94	0	93
Total Analysis Volume [veh/h]	0	1069	344	471	674	0	6	0	36	376	0	372
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	55	48	0	33	26	0	0	9	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	45	45	29	74	74	4	4	26	26
g / C, Green / Cycle	0.00	0.38	0.38	0.24	0.62	0.62	0.03	0.03	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.00	0.41	0.41	0.27	0.19	0.19	0.00	0.03	0.22	0.24
s, saturation flow rate [veh/h]	1714	1800	1653	1714	1800	1800	1714	1392	1687	1530
c, Capacity [veh/h]	1	678	622	414	1111	1111	55	44	366	332
d1, Uniform Delay [s]	0.00	37.42	37.42	45.50	10.82	10.82	56.43	57.72	47.00	47.00
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.37	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	57.65	65.37	87.12	0.70	0.70	0.87	28.04	48.06	83.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	1.08	1.10	1.14	0.30	0.30	0.11	0.81	1.03	1.12
d, Delay for Lane Group [s/veh]	0.00	95.06	102.7	132.6	11.52	11.52	57.30	85.77	95.06	130.33
Lane Group LOS	A	F	F	F	B	B	E	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.00	30.30	29.16	22.26	4.31	4.31	0.19	1.43	15.72	17.50
50th-Percentile Queue Length [ft/ln]	0.00	757.4	728.9	556.4	107.6	107.6	4.75	35.81	392.99	437.57
95th-Percentile Queue Length [veh/ln]	0.00	41.48	40.53	32.25	7.71	7.71	0.34	2.58	22.58	25.91
95th-Percentile Queue Length [ft/ln]	0.00	1036.	1013.	806.2	192.7	192.7	8.56	64.45	564.44	647.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	97.51	102.7	132.6	11.52	11.52	57.30	71.53	85.77	95.06	95.06	130.3
Movement LOS	A	F	F	F	B	B	E	E	F	F	F	F
d_A, Approach Delay [s/veh]	98.79			61.33			81.70			112.60		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	88.85											
Intersection LOS	F											
Intersection V/C	0.957											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	367	83	433
d_b, Bicycle Delay [s]	24.07	40.02	55.10	36.82
l_b,int, Bicycle LOS Score for Intersection	2.725	2.504	1.594	2.794
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	43.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.885

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	1	1458	200	199	841	1	0	1	0	107	0	206
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	452	28	0	494	0	0	0	0	28	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1910	228	223	1335	1	0	1	0	135	0	231
Peak Hour Factor	0.946	0.946	0.946	0.950	0.946	0.950	0.950	0.950	0.946	0.946	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	505	60	59	353	0	0	0	0	36	0	61
Total Analysis Volume [veh/h]	1	2019	241	235	1411	1	0	1	0	143	0	243
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	57	0	18	66	0	28	30	0	15	17	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	69	69	14	83	83	0	10	11	21
g / C, Green / Cycle	0.00	0.57	0.57	0.12	0.69	0.69	0.00	0.08	0.09	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.59	0.16	0.14	0.41	0.00	0.00	0.00	0.08	0.16
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1714	1530
c, Capacity [veh/h]	2	1967	878	200	2362	1054	1	152	157	269
d1, Uniform Delay [s]	59.86	25.57	12.93	53.00	9.86	5.81	0.00	50.32	54.01	48.46
k, delay calibration	0.11	0.50	0.50	0.12	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	81.55	27.41	0.77	91.18	1.12	0.00	0.00	0.02	17.48	10.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	1.03	0.27	1.18	0.60	0.00	0.00	0.01	0.91	0.90
d, Delay for Lane Group [s/veh]	141.4	52.98	13.71	144.1	10.99	5.81	0.00	50.33	71.49	59.30
Lane Group LOS	F	F	B	F	B	A	A	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.09	33.64	3.43	11.08	9.36	0.01	0.00	0.03	5.04	7.91
50th-Percentile Queue Length [ft/ln]	2.16	841.0	85.79	276.9	233.8	0.20	0.00	0.71	125.92	197.68
95th-Percentile Queue Length [veh/ln]	0.16	44.14	6.18	17.63	14.37	0.01	0.00	0.05	8.72	12.52
95th-Percentile Queue Length [ft/ln]	3.89	1103.	154.4	440.6	359.2	0.36	0.00	1.28	217.94	312.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	141.4	52.98	13.71	144.1	10.99	5.81	0.00	50.33	50.33	71.49	59.30	59.30
Movement LOS	F	F	B	F	B	A	A	D	D	E	E	E
d_A, Approach Delay [s/veh]	48.83			29.99			50.33			63.81		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	42.95											
Intersection LOS	D											
Intersection V/C	0.885											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.141	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	883	1033	433	217
d_b, Bicycle Delay [s]	18.70	14.02	36.82	47.70
I_b,int, Bicycle LOS Score for Intersection	3.425	2.918	1.561	2.197
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	63.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.125

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	30	215	48	118	172	40	129	224	33	32	148	129
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	3	0	0	2	0	0	10	0	0	17	0
Site-Generated Trips [veh/h]	0	20	0	0	19	0	0	28	0	0	28	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	264	54	132	214	45	144	289	37	36	211	144
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	69	14	35	56	12	38	76	10	9	56	38
Total Analysis Volume [veh/h]	36	278	57	139	225	47	152	304	39	38	222	152
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	394	428	411	456	449	389	425
Degree of Utilization, x	0.80	0.13	1.01	1.12	0.09	0.67	0.36

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.96	0.46	12.70	16.62	0.28	4.67	1.60
95th-Percentile Queue Length [ft]	173.90	11.39	317.39	415.48	7.11	116.63	39.92
Approach Delay [s/veh]	35.30		77.83	104.44		23.87	
Approach LOS	E		F	F		C	
Intersection Delay [s/veh]	63.12						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	32.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.605

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	45	922	34	78	735	100	139	250	53	29	195	136
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	6	1	0	4	0	0	10	0	1	17	0
Site-Generated Trips [veh/h]	0	23	1	0	19	0	0	28	0	1	28	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	1062	40	87	846	112	156	318	59	34	263	152
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	279	11	23	223	29	41	84	16	9	69	40
Total Analysis Volume [veh/h]	53	1118	42	92	891	118	164	335	62	36	277	160
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	59	0	13	62	0	20	35	0	13	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	64	64	8	68	68	13	28	28	4	18	18
g / C, Green / Cycle	0.04	0.54	0.54	0.07	0.56	0.56	0.11	0.23	0.23	0.03	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.03	0.32	0.32	0.05	0.29	0.29	0.10	0.10	0.04	0.02	0.13	0.13
s, saturation flow rate [veh/h]	1714	1800	1777	1714	1800	1727	1714	3427	1530	1714	1800	1585
c, Capacity [veh/h]	68	966	954	114	1015	974	191	798	356	52	274	241
d1, Uniform Delay [s]	57.12	19.07	19.07	55.23	16.00	16.00	52.39	39.13	36.80	57.60	49.42	49.66
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.47	2.80	2.84	12.34	1.81	1.89	10.63	0.35	0.23	14.78	6.65	8.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.60	0.60	0.81	0.51	0.51	0.86	0.42	0.17	0.69	0.84	0.86
d, Delay for Lane Group [s/veh]	74.58	21.87	21.91	67.58	17.81	17.89	63.02	39.48	37.03	72.38	56.07	58.56
Lane Group LOS	E	C	C	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.92	11.58	11.45	3.14	8.90	8.57	5.41	4.25	1.49	1.30	7.16	6.68
50th-Percentile Queue Length [ft/ln]	48.06	289.4	286.3	78.41	222.4	214.1	135.3	106.2	37.21	32.45	179.1	166.9
95th-Percentile Queue Length [veh/ln]	3.46	17.16	17.00	5.65	13.79	13.37	9.23	7.63	2.68	2.34	11.55	10.92
95th-Percentile Queue Length [ft/ln]	86.51	428.9	425.1	141.1	344.7	334.2	230.7	190.7	66.98	58.41	288.8	272.9

Movement, Approach, & Intersection Results

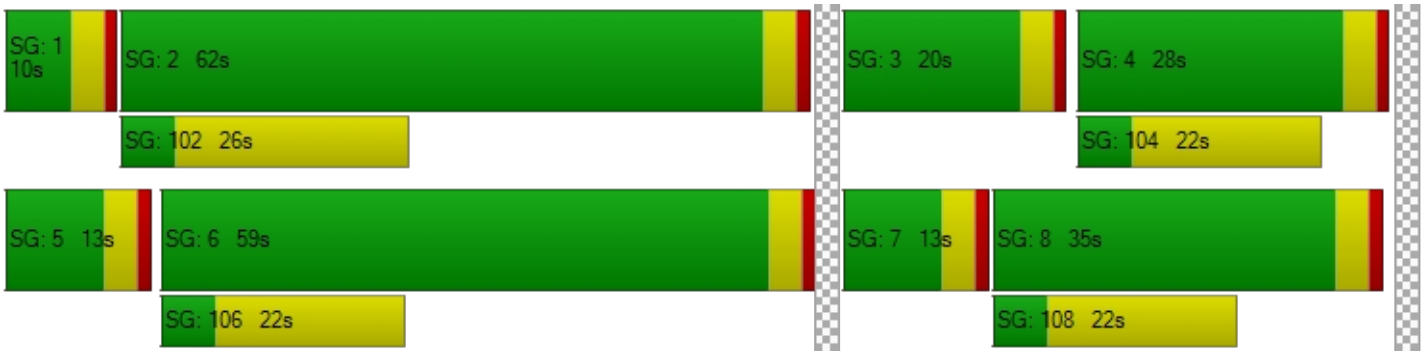
d_M, Delay for Movement [s/veh]	74.58	21.89	21.91	67.58	17.84	17.89	63.02	39.48	37.03	72.38	56.51	58.56
Movement LOS	E	C	C	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	24.19			22.00			46.09			58.41		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	31.98											
Intersection LOS	C											
Intersection V/C	0.605											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.744	2.881	2.632	2.621
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	967	517	400
d_b, Bicycle Delay [s]	17.60	16.02	33.00	38.40
l_b,int, Bicycle LOS Score for Intersection	2.560	2.468	2.022	1.950
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	45.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	113	833	164	64	696	56	75	453	101	111	270	46
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	4	5	0	0	5	17	12	5	2	0	8	0
Site-Generated Trips [veh/h]	7	5	0	0	5	51	52	12	7	0	12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	943	184	72	790	131	148	524	122	124	322	52
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	36	248	48	19	208	34	39	138	32	33	85	14
Total Analysis Volume [veh/h]	145	993	194	76	832	138	156	552	128	131	339	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	61	0	13	56	0	16	31	0	15	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	44	44	7	39	39	12	42	42	11	41	41
g / C, Green / Cycle	0.10	0.37	0.37	0.06	0.33	0.33	0.10	0.35	0.35	0.09	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.08	0.34	0.34	0.04	0.28	0.28	0.09	0.20	0.20	0.08	0.11	0.11
s, saturation flow rate [veh/h]	1714	1800	1699	1714	1800	1712	1714	1800	1684	1714	1800	1714
c, Capacity [veh/h]	172	664	627	97	586	557	171	630	590	156	613	584
d1, Uniform Delay [s]	53.06	36.08	36.22	55.85	37.70	37.70	53.47	31.49	31.50	53.71	29.35	29.39
k, delay calibration	0.11	0.24	0.24	0.11	0.18	0.18	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.61	10.84	12.21	12.59	5.73	6.02	16.34	3.53	3.78	11.46	1.42	1.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.92	0.92	0.78	0.85	0.85	0.91	0.56	0.56	0.84	0.33	0.33
d, Delay for Lane Group [s/veh]	63.67	46.91	48.43	68.44	43.43	43.72	69.81	35.02	35.28	65.16	30.77	30.90
Lane Group LOS	E	D	D	E	D	D	E	D	D	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.80	18.68	18.06	2.61	14.40	13.74	5.43	8.80	8.29	4.39	4.55	4.40
50th-Percentile Queue Length [ft/ln]	120.0	467.0	451.4	65.32	360.0	343.6	135.7	219.9	207.1	109.6	113.7	109.9
95th-Percentile Queue Length [veh/ln]	8.40	25.77	25.03	4.70	20.62	19.82	9.25	13.66	13.01	7.82	8.05	7.83
95th-Percentile Queue Length [ft/ln]	209.9	644.2	625.7	117.5	515.6	495.6	231.3	341.5	325.1	195.4	201.2	195.8

Movement, Approach, & Intersection Results

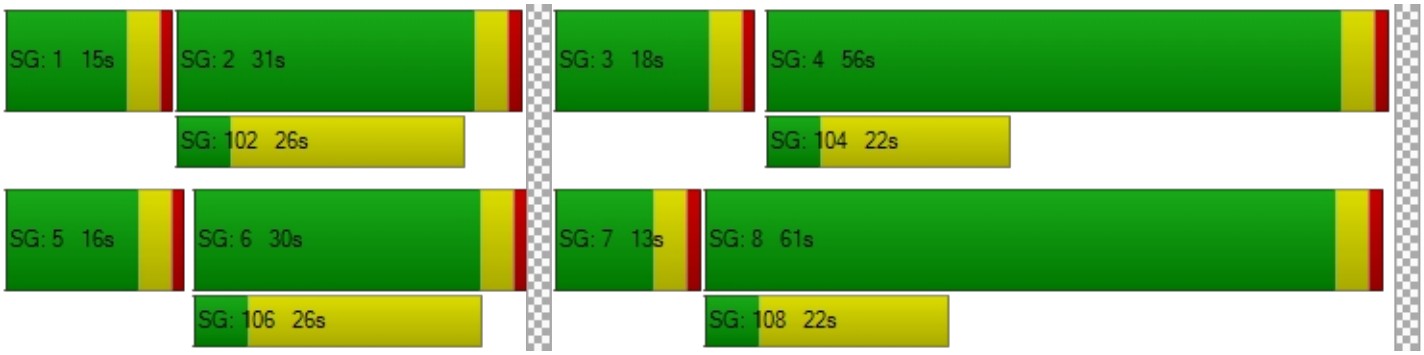
d_M, Delay for Movement [s/veh]	63.67	47.50	48.43	68.44	43.55	43.72	69.81	35.12	35.28	65.16	30.82	30.90
Movement LOS	E	D	D	E	D	D	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	49.39			45.38			41.62			39.40		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.13											
Intersection LOS	D											
Intersection V/C	0.657											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.862	2.834	2.599	2.578
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	867	450	433
d_b, Bicycle Delay [s]	16.54	19.27	36.04	36.82
l_b,int, Bicycle LOS Score for Intersection	2.659	2.423	2.249	1.993
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	26.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.523

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	18	868	69	34	681	106	136	178	9	42	83	20
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	2	0	0	4	1	5	9	0	10	2	0
Site-Generated Trips [veh/h]	0	2	0	0	4	16	22	43	0	10	32	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	976	77	38	771	136	179	251	10	67	127	22
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	257	20	10	203	36	47	66	3	18	33	6
Total Analysis Volume [veh/h]	21	1027	81	40	812	143	188	264	11	71	134	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	36	0	9	33	0	49	64	0	11	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	74	74	4	75	75	15	20	20	6	11	11
g / C, Green / Cycle	0.02	0.62	0.62	0.03	0.63	0.63	0.13	0.17	0.17	0.05	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.01	0.31	0.31	0.02	0.27	0.27	0.11	0.15	0.01	0.04	0.07	0.02
s, saturation flow rate [veh/h]	1714	1800	1754	1714	1800	1707	1714	1800	1530	1714	1800	1530
c, Capacity [veh/h]	37	1108	1079	53	1125	1067	220	303	258	90	166	141
d1, Uniform Delay [s]	58.18	12.90	12.90	57.71	11.61	11.61	51.22	48.63	41.80	56.22	53.40	50.18
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.41	1.66	1.70	19.60	1.23	1.30	9.19	7.68	0.07	14.38	8.80	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.51	0.51	0.76	0.44	0.44	0.86	0.87	0.04	0.79	0.81	0.16
d, Delay for Lane Group [s/veh]	71.59	14.55	14.60	77.31	12.84	12.91	60.42	56.31	41.87	70.60	62.20	50.71
Lane Group LOS	E	B	B	E	B	B	E	E	D	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.77	8.59	8.39	1.49	6.85	6.51	6.09	8.34	0.28	2.48	4.37	0.66
50th-Percentile Queue Length [ft/ln]	19.21	214.7	209.8	37.31	171.1	162.8	152.2	208.4	7.01	62.10	109.2	16.51
95th-Percentile Queue Length [veh/ln]	1.38	13.40	13.14	2.69	11.14	10.70	10.14	13.07	0.50	4.47	7.80	1.19
95th-Percentile Queue Length [ft/ln]	34.58	334.9	328.5	67.16	278.4	267.5	253.4	326.8	12.61	111.7	194.9	29.71

Movement, Approach, & Intersection Results

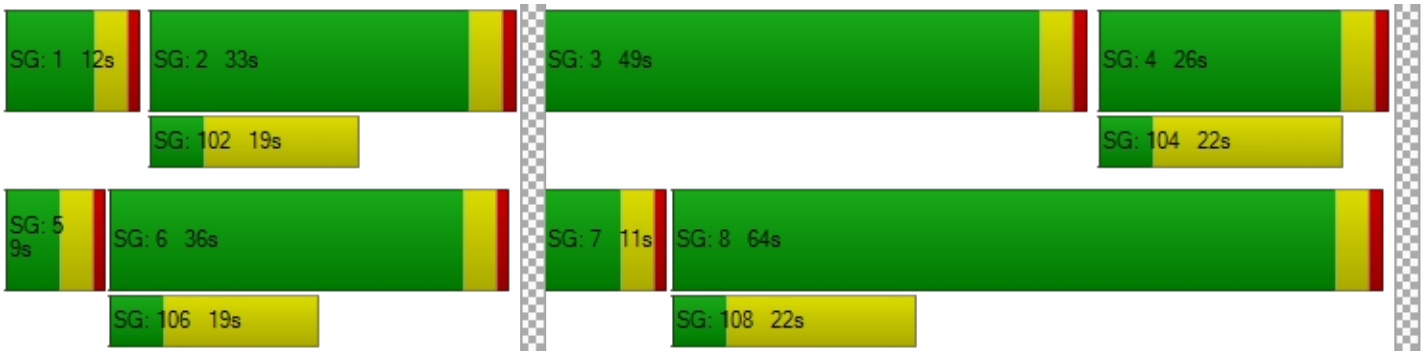
d_M, Delay for Movement [s/veh]	71.59	14.58	14.60	77.31	12.87	12.91	60.42	56.31	41.87	70.60	62.20	50.71
Movement LOS	E	B	B	E	B	B	E	E	D	E	E	D
d_A, Approach Delay [s/veh]	15.64			15.46			57.64			63.65		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	26.37											
Intersection LOS	C											
Intersection V/C	0.523											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.710	2.751	2.332	2.296
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	483	1000	367
d_b, Bicycle Delay [s]	32.27	34.50	15.00	40.02
l_b,int, Bicycle LOS Score for Intersection	2.491	2.380	2.324	1.936
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	135.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.106

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	16	1461	163	160	882	2	5	2	5	165	0	124
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.120	1.120	1.120	1.000
In-Process Volume [veh/h]	144	0	0	0	0	0	0	106	93	0	116	0
Site-Generated Trips [veh/h]	295	275	0	69	229	66	52	235	284	0	224	69
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	457	1736	183	229	1111	68	57	343	383	185	340	193
Peak Hour Factor	0.950	0.972	0.950	0.972	0.972	0.972	0.972	0.950	0.950	0.950	0.950	0.972
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	120	447	48	59	286	17	15	90	101	49	89	50
Total Analysis Volume [veh/h]	481	1786	193	236	1143	70	59	361	403	195	358	199
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	27	43	0	20	36	0	19	43	0	14	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	39	39	16	32	32	5	39	10	44
g / C, Green / Cycle	0.19	0.33	0.33	0.13	0.27	0.27	0.04	0.33	0.08	0.36
(v / s)_i Volume / Saturation Flow Rate	0.28	0.38	0.39	0.14	0.23	0.05	0.03	0.46	0.11	0.33
s, saturation flow rate [veh/h]	1714	3427	1713	1714	4903	1530	1714	1647	1714	1693
c, Capacity [veh/h]	329	1114	557	229	1308	408	77	535	143	615
d1, Uniform Delay [s]	48.50	40.50	40.50	52.00	42.07	33.81	56.67	40.50	55.00	36.25
k, delay calibration	0.50	0.50	0.50	0.12	0.50	0.50	0.11	0.50	0.11	0.40
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	224.8	88.64	107.5	37.93	8.34	0.91	14.37	203.04	173.87	16.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.46	1.18	1.20	1.03	0.87	0.17	0.76	1.43	1.37	0.91
d, Delay for Lane Group [s/veh]	273.3	129.1	148.0	89.93	50.41	34.73	71.04	243.54	228.87	52.37
Lane Group LOS	F	F	F	F	D	C	E	F	F	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	30.30	29.90	32.81	9.27	11.72	1.68	2.08	45.74	11.21	17.96
50th-Percentile Queue Length [ft/ln]	757.4	747.4	820.3	231.6	293.0	42.12	51.95	1143.42	280.30	449.08
95th-Percentile Queue Length [veh/ln]	46.50	42.99	47.31	14.46	17.34	3.03	3.74	69.09	18.43	24.91
95th-Percentile Queue Length [ft/ln]	1162.	1074.	1182.	361.5	433.3	75.82	93.52	1727.13	460.80	622.85

Movement, Approach, & Intersection Results

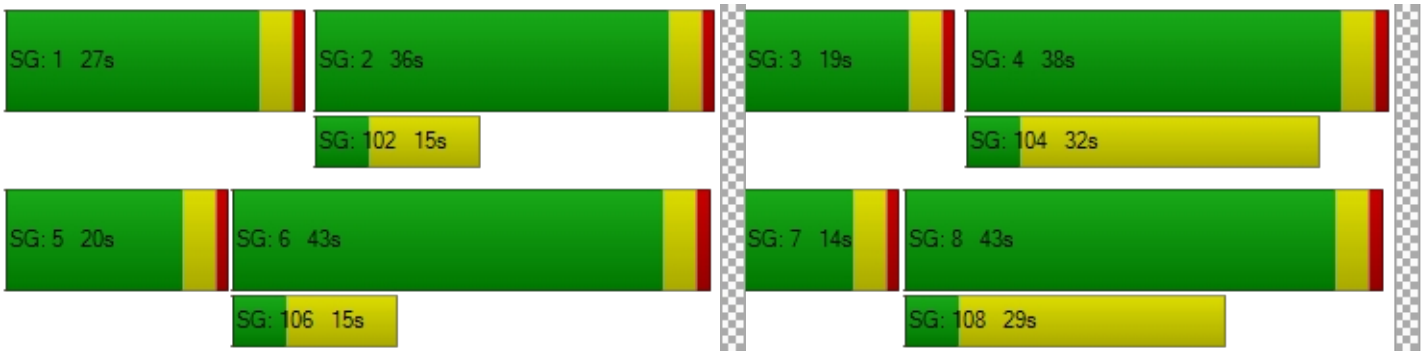
d_M, Delay for Movement [s/veh]	273.3	134.1	148.0	89.93	50.41	34.73	71.04	243.5	243.5	228.8	52.37	52.37
Movement LOS	F	F	F	F	D	C	E	F	F	F	D	D
d_A, Approach Delay [s/veh]	162.48			56.09			231.17			98.14		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	135.86											
Intersection LOS	F											
Intersection V/C	1.106											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.194	3.322	2.518	2.457
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	533	650	567
d_b, Bicycle Delay [s]	27.34	32.27	27.34	30.82
l_b,int, Bicycle LOS Score for Intersection	2.913	2.357	2.918	2.800
Bicycle LOS	C	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	203.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.700

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	15	213	12	34	162	31	62	171	22	10	113	42
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	8	0	0	0	0	2	3	135	6	0	144	0
Site-Generated Trips [veh/h]	12	0	0	0	0	19	20	246	14	0	238	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	239	13	38	181	56	92	573	45	11	509	47
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	63	3	10	48	15	24	151	12	3	134	12
Total Analysis Volume [veh/h]	39	252	14	40	191	59	97	603	47	12	536	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	409	409	747	597
Degree of Utilization, x	0.75	0.71	1.70	1.35

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.03	5.38	44.73	27.60
95th-Percentile Queue Length [ft]	150.69	134.62	1118.15	689.96
Approach Delay [s/veh]	33.60	30.66	345.17	196.95
Approach LOS	D	D	F	F
Intersection Delay [s/veh]	203.49			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	125.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.418

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	33	51	48	20	4	12	42	7	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	37	57	54	22	4	13	47	8	1
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	10	15	14	6	1	3	12	2	0
Total Analysis Volume [veh/h]	0	39	60	57	23	4	14	49	8	1
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	434	409
Degree of Utilization, x	0.41	0.19

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.98	0.67
95th-Percentile Queue Length [ft]	49.43	16.86
Approach Delay [s/veh]	16.95	13.81
Approach LOS	C	B
Intersection Delay [s/veh]	125.22	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	39	2	143	22	4	12	39	142	7	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	13	115	0	0	0	0	132	0	0
Site-Generated Trips [veh/h]	0	65	152	0	0	0	0	162	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	80	427	25	4	13	44	453	8	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	21	112	7	1	3	12	119	2	2
Total Analysis Volume [veh/h]	46	84	449	26	4	14	46	477	8	6
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	609	551
Degree of Utilization, x	1.42	1.28

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	30.03	23.81
95th-Percentile Queue Length [ft]	750.77	595.32
Approach Delay [s/veh]	224.41	168.79
Approach LOS	F	F
Intersection Delay [s/veh]	125.22	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	3	16	240	40	0	5	39	95	31	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	3	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	48	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	18	269	45	0	6	44	106	86	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	71	12	0	2	12	28	23	2
Total Analysis Volume [veh/h]	3	19	283	47	0	6	46	112	91	8
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	413	381	418
Degree of Utilization, x	0.85	0.43	0.24

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.30	2.11	0.91
95th-Percentile Queue Length [ft]	207.39	52.72	22.76
Approach Delay [s/veh]	45.20	17.19	
Approach LOS	E	C	
Intersection Delay [s/veh]	125.22		
Intersection LOS	F		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.579

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	50	874	82	66	634	13	20	165	39	57	148	63
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	49	0	0	0	0	14	2	54	60	0	69	0
Site-Generated Trips [veh/h]	42	0	0	0	0	14	2	109	41	0	106	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	979	92	74	710	43	26	348	145	64	341	71
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	39	258	24	19	187	11	7	92	38	17	90	19
Total Analysis Volume [veh/h]	155	1031	97	78	747	45	27	366	153	67	359	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	47	0	11	34	0	9	37	0	25	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	68	68	7	62	62	3	23	23	6	26	26
g / C, Green / Cycle	0.11	0.57	0.57	0.06	0.52	0.52	0.02	0.19	0.19	0.05	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.09	0.32	0.32	0.05	0.22	0.22	0.02	0.11	0.10	0.04	0.20	0.05
s, saturation flow rate [veh/h]	1714	1800	1746	1714	1800	1764	1714	3427	1530	1714	1800	1530
c, Capacity [veh/h]	183	1016	986	98	927	908	43	663	296	88	396	337
d1, Uniform Delay [s]	52.62	16.67	16.69	55.89	18.16	18.16	57.95	43.70	43.37	56.17	45.60	38.38
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.17	2.25	2.34	13.62	1.47	1.50	14.25	0.72	1.40	12.38	8.00	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.56	0.56	0.80	0.43	0.43	0.63	0.55	0.52	0.76	0.91	0.22
d, Delay for Lane Group [s/veh]	62.79	18.92	19.03	69.51	19.63	19.66	72.20	44.42	44.77	68.55	53.60	38.72
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.10	10.36	10.12	2.70	7.20	7.06	0.98	4.98	4.19	2.31	11.25	1.85
50th-Percentile Queue Length [ft/ln]	127.5	259.1	253.0	67.57	179.9	176.6	24.55	124.5	104.8	57.73	281.2	46.37
95th-Percentile Queue Length [veh/ln]	8.81	15.64	15.34	4.87	11.60	11.42	1.77	8.64	7.55	4.16	16.75	3.34
95th-Percentile Queue Length [ft/ln]	220.1	391.1	383.4	121.6	289.9	285.5	44.20	216.0	188.6	103.9	418.8	83.47

Movement, Approach, & Intersection Results

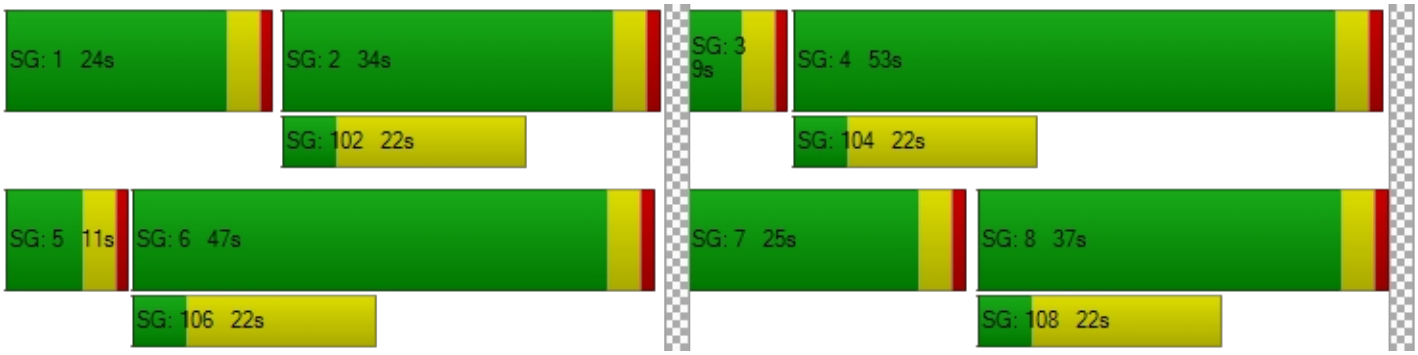
d_M, Delay for Movement [s/veh]	62.79	18.97	19.03	69.51	19.64	19.66	72.20	44.42	44.77	68.55	53.60	38.72
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	24.27			24.11			45.89			53.37		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	32.47											
Intersection LOS	C											
Intersection V/C	0.579											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.754	2.706	2.531	2.637
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	500	550	817
d_b, Bicycle Delay [s]	24.70	33.75	31.54	21.00
l_b,int, Bicycle LOS Score for Intersection	2.618	2.277	2.010	2.386
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	34.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	68	1025	112	64	785	62	76	231	66	117	164	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	35	0	0	0	0	9	8	5	30	0	8	0
Site-Generated Trips [veh/h]	44	0	0	0	0	10	10	12	46	0	12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	1148	125	72	879	88	103	276	150	131	204	65
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	41	302	33	19	231	23	27	73	39	34	54	17
Total Analysis Volume [veh/h]	163	1208	132	76	925	93	108	291	158	138	215	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	57	0	11	44	0	22	36	0	16	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	67	67	7	61	61	9	19	19	11	21	21
g / C, Green / Cycle	0.11	0.56	0.56	0.06	0.50	0.50	0.08	0.16	0.16	0.10	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.10	0.38	0.38	0.04	0.29	0.29	0.06	0.13	0.13	0.08	0.08	0.08
s, saturation flow rate [veh/h]	1714	1800	1739	1714	1800	1743	1714	1800	1592	1714	1800	1655
c, Capacity [veh/h]	191	1008	974	95	907	879	134	281	248	163	311	286
d1, Uniform Delay [s]	52.34	18.64	18.76	55.98	20.70	20.70	54.41	49.19	49.35	53.43	44.67	44.78
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.19	3.59	3.82	13.80	2.59	2.68	10.68	6.68	8.40	11.31	1.10	1.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.67	0.68	0.80	0.57	0.57	0.81	0.84	0.86	0.85	0.47	0.48
d, Delay for Lane Group [s/veh]	62.53	22.23	22.58	69.79	23.29	23.38	65.09	55.87	57.76	64.75	45.77	46.03
Lane Group LOS	E	C	C	E	C	C	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.36	13.81	13.61	2.64	10.54	10.23	3.61	7.38	6.80	4.61	4.00	3.80
50th-Percentile Queue Length [ft/ln]	133.9	345.3	340.2	66.00	263.4	255.7	90.21	184.4	169.8	115.1	100.1	94.99
95th-Percentile Queue Length [veh/ln]	9.15	19.91	19.66	4.75	15.86	15.48	6.50	11.83	11.07	8.13	7.21	6.84
95th-Percentile Queue Length [ft/ln]	228.8	497.6	491.5	118.8	396.5	386.9	162.3	295.8	276.7	203.1	180.2	170.9

Movement, Approach, & Intersection Results

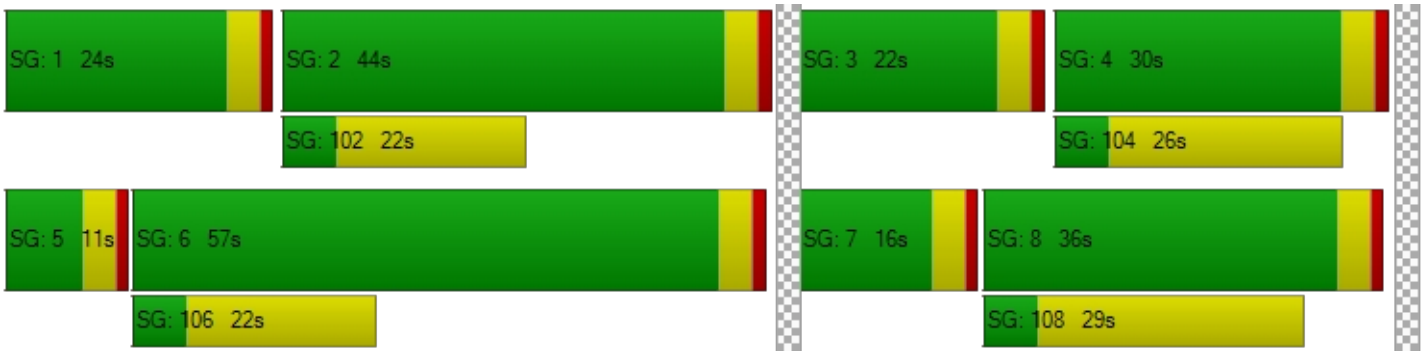
d_M, Delay for Movement [s/veh]	62.53	22.38	22.58	69.79	23.33	23.38	65.09	56.23	57.76	64.75	45.85	46.03
Movement LOS	E	C	C	E	C	C	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	26.76			26.56			58.38			52.07		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	34.61											
Intersection LOS	C											
Intersection V/C	0.639											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.989	2.871	2.516	2.494
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	883	667	533	433
d_b, Bicycle Delay [s]	18.70	26.67	32.27	36.82
l_b,int, Bicycle LOS Score for Intersection	2.800	2.462	2.019	1.907
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	87.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.059

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	119	208	360	107	282	534	817	1020	94	152	605	306
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	8	0	0	5	51
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	12	0	0	12	216
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	233	403	120	316	598	915	1162	105	170	695	610
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	35	61	106	32	83	157	241	306	28	45	183	161
Total Analysis Volume [veh/h]	140	245	424	126	333	629	963	1223	111	179	732	642
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	31	0	12	30	0	32	65	0	12	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	27	27	8	26	26	26	28	61	61	8	41	41
g / C, Green / Cycle	0.08	0.23	0.23	0.07	0.22	0.22	0.22	0.23	0.51	0.51	0.07	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.08	0.07	0.28	0.07	0.19	0.21	0.21	0.29	0.25	0.07	0.05	0.15	0.42
s, saturation flow rate [veh/h]	1714	3427	1530	171	180	153	153	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	129	771	344	114	390	332	332	777	2492	778	222	1675	523
d1, Uniform Delay [s]	55.50	38.81	46.50	56.0	45.1	46.3	46.3	46.00	19.32	15.64	55.24	30.57	39.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.14	0.11	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	63.38	1.08	127.0	70.1	20.5	37.9	37.9	111.1	0.15	0.08	6.78	0.18	118.6
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.09	0.32	1.23	1.10	0.85	0.95	0.95	1.24	0.49	0.14	0.81	0.44	1.23
d, Delay for Lane Group [s/veh]	118.8	39.90	173.5	126.	65.7	84.3	84.3	157.1	19.47	15.72	62.01	30.75	158.1
Lane Group LOS	F	D	F	F	E	F	F	F	B	B	E	C	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.15	3.14	22.34	5.68	11.7	12.6	12.6	23.48	7.37	1.63	2.88	5.49	32.37
50th-Percentile Queue Length [ft/ln]	153.7	78.59	558.5	142.	292.	317.	317.	586.9	184.2	40.86	71.97	137.3	809.2
95th-Percentile Queue Length [veh/ln]	10.50	5.66	33.52	9.89	17.3	18.5	18.5	35.16	11.82	2.94	5.18	9.34	47.32
95th-Percentile Queue Length [ft/ln]	262.5	141.4	837.9	247.	433.	463.	463.	879.0	295.5	73.54	129.5	233.4	1183.

Movement, Approach, & Intersection Results

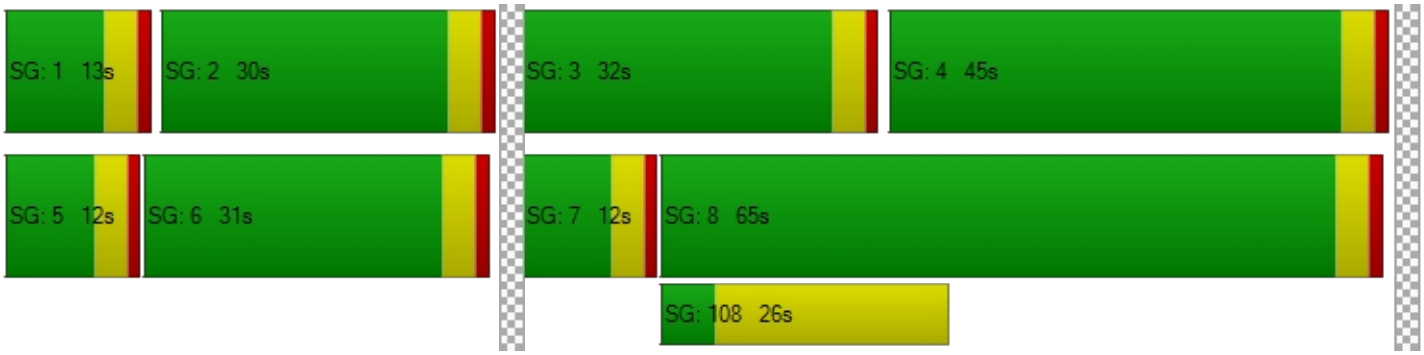
d_M, Delay for Movement [s/veh]	118.8	39.90	173.5	126.1	65.72	84.31	157.1	19.47	15.72	62.01	30.75	158.1
Movement LOS	F	D	F	F	E	F	F	B	B	E	C	F
d_A, Approach Delay [s/veh]	123.62			83.47			77.01			87.03		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	87.50											
Intersection LOS	F											
Intersection V/C	1.059											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.701	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	450	433	1017	683
d_b, Bicycle Delay [s]	36.04	36.82	14.50	26.00
l_b,int, Bicycle LOS Score for Intersection	2.227	2.457	2.823	2.414
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	37.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.683

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	74	48	43	114	42	359	674	752	63	37	631	140
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	51	0	0	0	8	0	0	56	0
Site-Generated Trips [veh/h]	0	0	0	237	0	0	0	12	0	0	228	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	54	48	416	47	402	755	862	71	41	991	157
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	22	14	13	109	12	106	199	227	19	11	261	41
Total Analysis Volume [veh/h]	87	57	51	438	49	423	795	907	75	43	1043	165
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	29	0	28	23	0	35	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	8	22	22	22	32	70	70	4	42	42
g / C, Green / Cycle	0.07	0.07	0.07	0.18	0.18	0.18	0.27	0.58	0.58	0.03	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.03	0.14	0.14	0.16	0.24	0.18	0.05	0.03	0.24	0.24
s, saturation flow rate [veh/h]	1714	1800	1536	1714	1731	2708	3329	4903	1530	1714	3427	1677
c, Capacity [veh/h]	120	126	108	307	310	486	888	2864	894	57	1201	588
d1, Uniform Delay [s]	54.64	53.53	53.70	47.09	47.03	47.89	42.39	12.74	10.92	57.54	33.16	33.17
k, delay calibration	0.11	0.11	0.11	0.13	0.13	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.93	2.40	3.36	5.57	5.23	4.97	3.50	0.29	0.18	18.51	3.05	6.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.44	0.49	0.79	0.79	0.87	0.90	0.32	0.08	0.76	0.67	0.68
d, Delay for Lane Group [s/veh]	62.57	55.92	57.06	52.65	52.27	52.86	45.89	13.03	11.10	76.05	36.20	39.30
Lane Group LOS	E	E	E	D	D	D	D	B	B	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.84	1.70	1.63	7.41	7.40	6.47	11.69	4.14	0.91	1.59	10.47	10.77
50th-Percentile Queue Length [ft/ln]	71.05	42.45	40.63	185.2	184.8	161.7	292.2	103.5	22.75	39.65	261.7	269.2
95th-Percentile Queue Length [veh/ln]	5.12	3.06	2.93	11.88	11.86	10.64	17.30	7.46	1.64	2.86	15.78	16.15
95th-Percentile Queue Length [ft/ln]	127.8	76.41	73.13	296.8	296.3	266.0	432.3	186.4	40.95	71.38	394.4	403.7

Movement, Approach, & Intersection Results

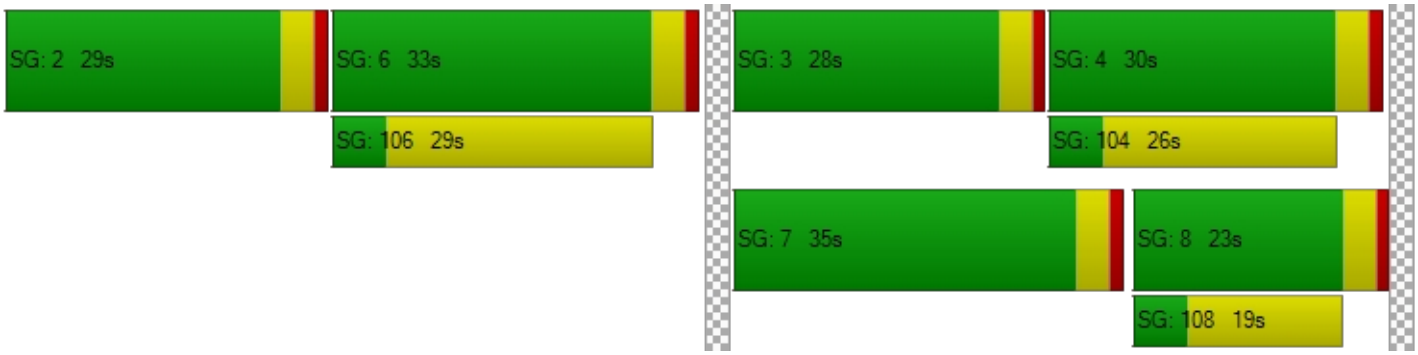
d_M, Delay for Movement [s/veh]	62.57	55.95	57.06	52.48	52.27	52.86	45.89	13.03	11.10	76.05	36.89	39.30
Movement LOS	E	E	E	D	D	D	D	B	B	E	D	D
d_A, Approach Delay [s/veh]	59.19			52.64			27.65			38.56		
Approach LOS	E			D			C			D		
d_I, Intersection Delay [s/veh]	37.94											
Intersection LOS	D											
Intersection V/C	0.683											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.235	2.781	0.000	2.978
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	417	317	433
d_b, Bicycle Delay [s]	34.50	37.60	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.720	3.061	2.537	2.248
Bicycle LOS	A	C	B	B

Sequence

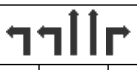
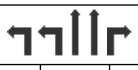
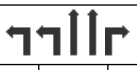
Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	39.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.689

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	158	754	90	148	608	171	182	575	229	108	268	65
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	10	6	0	2	2	35	24	0	9	54	35
Site-Generated Trips [veh/h]	0	153	16	0	115	7	7	242	0	20	221	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	177	1007	123	166	798	201	246	910	256	150	575	108
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	47	265	32	44	210	53	65	239	67	39	151	28
Total Analysis Volume [veh/h]	186	1060	129	175	840	212	259	958	269	158	605	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Unsig	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	46	0	12	45	0	16	51	0	11	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	52	8	51	51	11	37	37	7	33	33
g / C, Green / Cycle	0.07	0.43	0.07	0.43	0.43	0.09	0.31	0.31	0.06	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.06	0.31	0.05	0.25	0.14	0.08	0.28	0.18	0.05	0.21	0.21
s, saturation flow rate [veh/h]	3329	3427	3329	3427	1530	3329	3427	1530	3329	1800	1702
c, Capacity [veh/h]	239	1473	222	1455	650	313	1069	477	194	497	470
d1, Uniform Delay [s]	54.75	28.26	55.17	26.32	23.07	53.41	39.42	34.46	55.86	39.53	39.54
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.41	3.07	6.14	1.68	1.34	5.58	2.95	1.05	7.98	3.02	3.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.72	0.79	0.58	0.33	0.83	0.90	0.56	0.81	0.74	0.74
d, Delay for Lane Group [s/veh]	60.17	31.32	61.30	28.00	24.40	58.99	42.36	35.50	63.84	42.55	42.73
Lane Group LOS	E	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.94	12.99	2.80	9.39	4.25	4.08	13.78	6.69	2.58	10.30	9.77
50th-Percentile Queue Length [ft/ln]	73.59	324.67	69.90	234.8	106.1	101.9	344.5	167.2	64.48	257.3	244.1
95th-Percentile Queue Length [veh/ln]	5.30	18.90	5.03	14.42	7.63	7.34	19.87	10.93	4.64	15.56	14.89
95th-Percentile Queue Length [ft/ln]	132.46	472.42	125.8	360.5	190.6	183.5	496.6	273.2	116.0	388.9	372.2

Movement, Approach, & Intersection Results

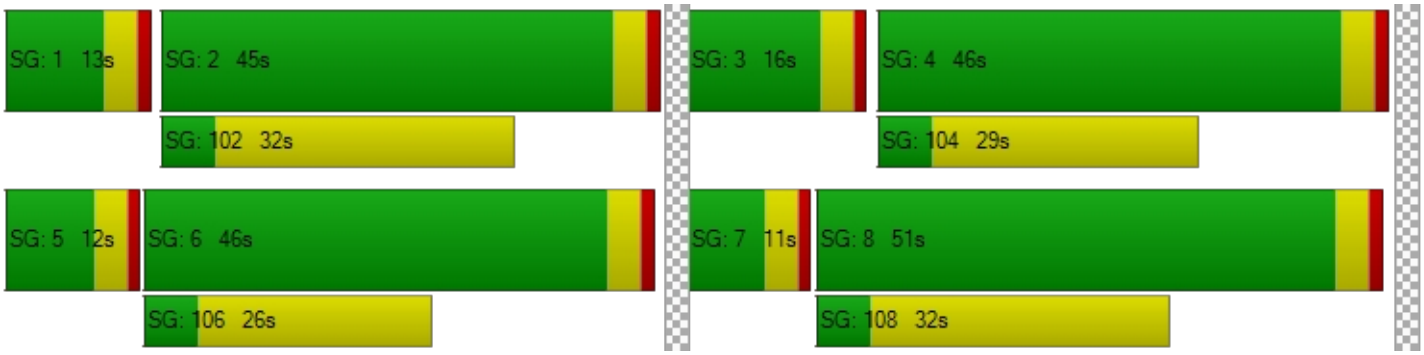
d_M, Delay for Movement [s/veh]	60.17	31.32	0.00	61.30	28.00	24.40	58.99	42.36	35.50	63.84	42.62	42.73
Movement LOS	E	C		E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	35.63			32.13			44.02			46.46		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.28											
Intersection LOS	D											
Intersection V/C	0.689											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.047	2.980	3.044	2.795
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	683	783	700
d_b, Bicycle Delay [s]	25.35	26.00	22.20	25.35
l_b,int, Bicycle LOS Score for Intersection	2.588	2.572	2.786	2.283
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	179.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.195

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	46	3	492	3	0	1	0	791	45	140	261	2
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	35	0	61	0	0	0	0	29	0	90	64	0
Site-Generated Trips [veh/h]	0	0	195	0	0	0	0	258	0	200	241	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	3	807	3	0	1	0	1173	50	447	597	2
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	23	1	212	1	0	0	0	309	13	118	157	1
Total Analysis Volume [veh/h]	92	3	849	3	0	1	0	1235	53	471	628	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	48	0	9	48	0	9	35	0	28	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	53	53	48	53	0	31	31	24	55	55
g / C, Green / Cycle	0.44	0.44	0.40	0.44	0.00	0.26	0.26	0.20	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.55	0.01	0.00	0.36	0.03	0.27	0.18	0.18
s, saturation flow rate [veh/h]	1439	1488	1530	716	1714	3427	1530	1714	1800	1798
c, Capacity [veh/h]	667	773	614	407	0	881	393	346	826	825
d1, Uniform Delay [s]	19.40	19.33	35.93	18.85	0.00	44.57	34.30	47.90	21.30	21.30
k, delay calibration	0.13	0.17	0.50	0.11	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.06	182.4	0.01	0.00	187.4	0.71	180.5	1.34	1.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.07	1.38	0.01	0.00	1.40	0.13	1.36	0.38	0.38
d, Delay for Lane Group [s/veh]	19.45	19.38	218.4	18.86	0.00	232.0	35.01	228.4	22.64	22.64
Lane Group LOS	B	B	F	B	A	F	D	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.73	0.83	48.60	0.06	0.00	35.92	1.28	27.63	6.10	6.09
50th-Percentile Queue Length [ft/ln]	18.36	20.79	1215.	1.60	0.00	897.9	31.95	690.8	152.4	152.3
95th-Percentile Queue Length [veh/ln]	1.32	1.50	73.04	0.12	0.00	54.30	2.30	41.92	10.15	10.14
95th-Percentile Queue Length [ft/ln]	33.05	37.43	1826.	2.89	0.00	1357.	57.51	1047.	253.7	253.5

Movement, Approach, & Intersection Results

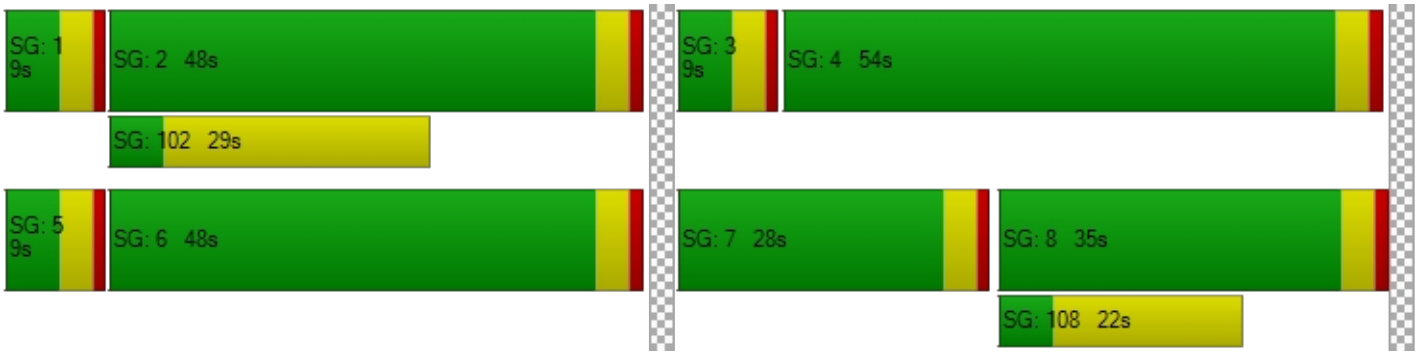
d_M, Delay for Movement [s/veh]	19.45	19.38	218.4	18.86	18.86	18.86	0.00	232.0	35.01	228.4	22.64	22.64
Movement LOS	B	B	F	B	B	B	A	F	D	F	C	C
d_A, Approach Delay [s/veh]	198.37			18.86			223.94			110.70		
Approach LOS	F			B			F			F		
d_I, Intersection Delay [s/veh]	179.10											
Intersection LOS	F											
Intersection V/C	1.195											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.601	0.000	3.024	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	883	883	517	833
d_b, Bicycle Delay [s]	18.70	18.70	33.00	20.42
l_b,int, Bicycle LOS Score for Intersection	3.117	1.566	2.622	2.468
Bicycle LOS	C	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	22.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	1295	400	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.0000	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	153	0	82	1	0
Site-Generated Trips [veh/h]	0	346	316	137	95	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	499	316	1669	544	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	131	83	439	143	0
Total Analysis Volume [veh/h]	0	525	333	1757	573	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.73	0.33	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	139.36	22.52	10.42	0.00	0.00	0.00
Movement LOS	F	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	6.48	6.48	1.48	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	161.96	161.96	37.01	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	22.52		1.66		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.80					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	85.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.032

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	1021	140	76	775	225	468	667	302	75	184	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	130	0	10	159	1	82	0	0	0	0	18
Site-Generated Trips [veh/h]	0	375	0	58	359	95	137	0	0	0	0	59
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	1649	157	153	1386	348	743	747	338	84	206	142
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	434	41	40	365	92	196	197	89	22	54	37
Total Analysis Volume [veh/h]	77	1736	165	161	1459	366	782	786	356	88	217	149
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	33	0	13	36	36	38	54	0	20	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	45	45	9	48	86	34	42	8	16	16
g / C, Green / Cycle	0.05	0.38	0.38	0.08	0.40	0.72	0.28	0.35	0.06	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.04	0.37	0.37	0.09	0.30	0.24	0.46	0.23	0.05	0.11	0.11
s, saturation flow rate [veh/h]	1714	3427	1721	1714	4903	1530	1714	3427	1714	1800	1563
c, Capacity [veh/h]	86	1287	647	129	1964	1097	486	1203	112	239	207
d1, Uniform Delay [s]	56.70	37.05	37.17	55.50	30.69	6.30	43.00	32.80	55.28	50.53	50.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	25.68	20.98	32.28	126.9	2.59	0.82	283.96	0.61	11.55	6.28	8.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.98	0.99	1.25	0.74	0.33	1.61	0.65	0.79	0.81	0.84
d, Delay for Lane Group [s/veh]	82.38	58.02	69.45	182.4	33.28	7.12	326.96	33.41	66.82	56.81	59.36
Lane Group LOS	F	E	E	F	C	A	F	C	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.93	21.66	23.95	8.42	12.29	3.39	52.55	9.67	2.98	6.03	5.58
50th-Percentile Queue Length [ft/ln]	73.30	541.6	598.7	210.4	307.3	84.68	1313.68	241.65	74.57	150.6	139.5
95th-Percentile Queue Length [veh/ln]	5.28	29.30	31.98	14.13	18.05	6.10	80.94	14.76	5.37	10.05	9.46
95th-Percentile Queue Length [ft/ln]	131.9	732.4	799.4	353.3	451.1	152.4	2023.47	369.12	134.2	251.3	236.3

Movement, Approach, & Intersection Results

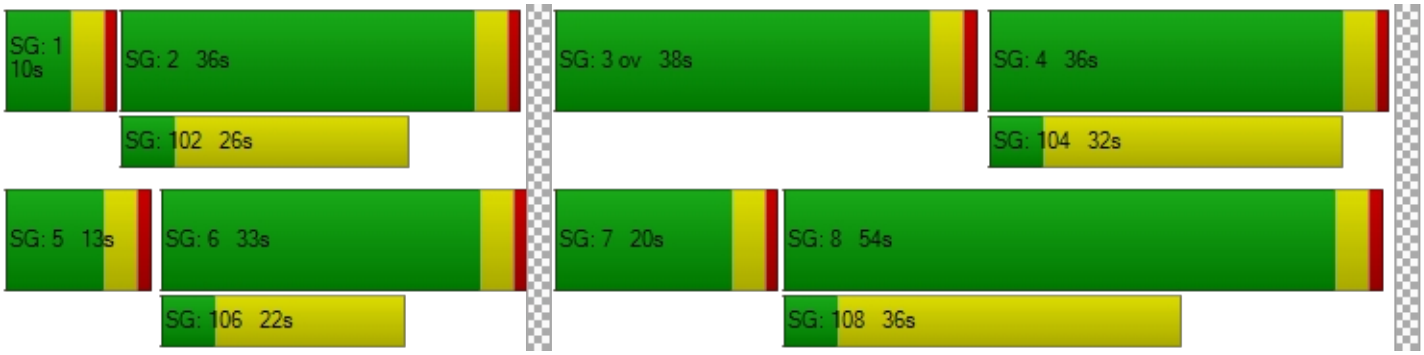
d_M, Delay for Movement [s/veh]	82.38	61.14	69.45	182.4	33.28	7.12	326.9	33.41	0.00	66.82	57.10	59.36
Movement LOS	F	E	E	F	C	A	F	C		E	E	E
d_A, Approach Delay [s/veh]	62.66			40.55			179.81			59.73		
Approach LOS	E			D			F			E		
d_I, Intersection Delay [s/veh]	85.79											
Intersection LOS	F											
Intersection V/C	1.032											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.246	3.308	2.830	2.620
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	533	833	533
d_b, Bicycle Delay [s]	34.50	32.27	20.42	32.27
l_b,int, Bicycle LOS Score for Intersection	2.648	2.652	2.853	1.934
Bicycle LOS	B	B	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	35.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.543

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	17	158	25	39	100	35	68	546	12	13	227	35
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	1	0	0	0	5	0	0	10	0
Site-Generated Trips [veh/h]	0	0	0	2	0	0	0	46	0	0	47	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	177	28	47	112	39	76	663	13	15	311	39
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	5	47	7	12	29	10	20	174	3	4	82	10
Total Analysis Volume [veh/h]	20	186	29	49	118	41	80	698	14	16	327	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	23	0	0	23	0	81	88	0	9	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	56	56	7	50	2	45	45
g / C, Green / Cycle	0.47	0.47	0.06	0.42	0.02	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.14	0.13	0.05	0.40	0.01	0.18	0.03
s, saturation flow rate [veh/h]	1721	1581	1714	1794	1714	1800	1530
c, Capacity [veh/h]	835	774	105	747	30	671	570
d1, Uniform Delay [s]	19.74	19.45	55.46	33.85	58.49	28.85	24.26
k, delay calibration	0.50	0.50	0.11	0.14	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	0.85	10.73	9.20	14.32	0.55	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.27	0.76	0.95	0.54	0.49	0.07
d, Delay for Lane Group [s/veh]	20.59	20.30	66.19	43.06	72.81	29.40	24.31
Lane Group LOS	C	C	E	D	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.24	3.71	2.70	21.46	0.60	7.30	0.77
50th-Percentile Queue Length [ft/ln]	105.99	92.78	67.48	536.54	15.01	182.3	19.17
95th-Percentile Queue Length [veh/ln]	7.62	6.68	4.86	29.06	1.08	11.72	1.38
95th-Percentile Queue Length [ft/ln]	190.41	167.01	121.46	726.48	27.03	293.1	34.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.59	20.59	20.59	20.30	20.30	20.30	66.19	43.06	43.06	72.81	29.40	24.31
Movement LOS	C	C	C	C	C	C	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	20.59			20.30			45.39			30.67		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	35.08											
Intersection LOS	D											
Intersection V/C	0.543											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	1.917	1.981	2.462	0.000
Crosswalk LOS	A	A	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	1400	200
d_b, Bicycle Delay [s]	42.50	42.50	5.40	48.60
l_b,int, Bicycle LOS Score for Intersection	1.947	1.903	2.866	2.193
Bicycle LOS	A	A	C	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.552

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	5	19	54	26	3	0	14	23	8	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	9	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	58	60	29	3	0	16	26	9	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	15	16	8	1	0	4	7	2	3
Total Analysis Volume [veh/h]	6	61	63	31	3	0	17	27	9	14
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	14	14
g / C, Green / Cycle	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.10	0.04
s, saturation flow rate [veh/h]	1586	1578
c, Capacity [veh/h]	228	222
d1, Uniform Delay [s]	52.03	48.69
k, delay calibration	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	4.22	0.75
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.30
d, Delay for Lane Group [s/veh]	56.26	49.44
Lane Group LOS	E	D
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	5.12	1.90
50th-Percentile Queue Length [ft/ln]	127.93	47.43
95th-Percentile Queue Length [veh/ln]	8.83	3.42
95th-Percentile Queue Length [ft/ln]	220.67	85.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.26	56.26	56.26	56.26	56.26	49.44	49.44	49.44	49.44	49.44
Movement LOS	E	E	E	E	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	56.26					49.44				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	29.17									
Intersection LOS	C									
Intersection V/C	0.552									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.896	1.986
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250
d_b, Bicycle Delay [s]	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.725	1.619
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	8	128	402	18	1	6	12	184	18	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	6	0	0	0	1	0	0
Site-Generated Trips [veh/h]	0	0	19	29	0	0	0	19	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	143	469	55	1	7	13	226	20	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	38	123	14	0	2	3	59	5	3
Total Analysis Volume [veh/h]	9	151	494	58	1	7	14	238	21	11
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	57	0	0	9	0	57	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	76	70	76	66	66
g / C, Green / Cycle	0.63	0.58	0.63	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.13	0.31	0.02	0.13	0.02
s, saturation flow rate [veh/h]	1188	1767	920	1800	1530
c, Capacity [veh/h]	756	1024	491	993	844
d1, Uniform Delay [s]	9.25	15.45	10.78	13.89	12.31
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.64	2.05	0.04	0.57	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.54	0.04	0.24	0.04
d, Delay for Lane Group [s/veh]	9.89	17.49	10.82	14.46	12.40
Lane Group LOS	A	B	B	B	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.77	9.52	0.20	3.46	0.41
50th-Percentile Queue Length [ft/ln]	44.32	238.10	5.06	86.52	10.33
95th-Percentile Queue Length [veh/ln]	3.19	14.59	0.36	6.23	0.74
95th-Percentile Queue Length [ft/ln]	79.78	364.63	9.10	155.74	18.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.89	9.89	17.49	17.49	17.49	10.82	10.82	14.46	12.40	12.40
Movement LOS	A	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	15.79					13.97				
Approach LOS	B					B				
d_I, Intersection Delay [s/veh]	29.17									
Intersection LOS	C									
Intersection V/C	0.552									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.449	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	883	883
d_b, Bicycle Delay [s]	18.70	18.70
l_b,int, Bicycle LOS Score for Intersection	2.485	1.999
Bicycle LOS	B	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	7	16	152	12	4	4	7	52	62	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	18	170	13	4	4	8	58	69	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	5	45	3	1	1	2	15	18	1
Total Analysis Volume [veh/h]	8	19	179	14	4	4	8	61	73	2
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0					0				
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	35	0	0	0	0	35	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	18	18
g / C, Green / Cycle	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.13	0.04	0.05
s, saturation flow rate [veh/h]	1719	1669	1530
c, Capacity [veh/h]	289	283	227
d1, Uniform Delay [s]	49.92	45.35	45.75
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	4.45	0.48	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.26	0.33
d, Delay for Lane Group [s/veh]	54.37	45.82	46.59
Lane Group LOS	D	D	D
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.93	1.98	2.07
50th-Percentile Queue Length [ft/ln]	173.16	49.49	51.66
95th-Percentile Queue Length [veh/ln]	11.24	3.56	3.72
95th-Percentile Queue Length [ft/ln]	281.07	89.09	92.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.37	54.37	54.37	54.37	54.37	45.82	45.82	45.82	46.59	46.59
Movement LOS	D	D	D	D	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	54.37					46.21				
Approach LOS	D					D				
d_I, Intersection Delay [s/veh]	29.17									
Intersection LOS	C									
Intersection V/C	0.552									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.997	2.278
Crosswalk LOS	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	517
d_b, Bicycle Delay [s]	33.00	33.00
l_b,int, Bicycle LOS Score for Intersection	1.875	1.794
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.565

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	173	956	47	48	575	25	53	305	64	44	212	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	37	0	10	50	0	0	0	0	0	1	12
Site-Generated Trips [veh/h]	0	12	0	29	12	0	0	19	0	0	19	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	194	1120	53	93	706	28	59	361	72	49	257	122
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	295	14	24	186	7	16	95	19	13	68	32
Total Analysis Volume [veh/h]	204	1179	56	98	743	29	62	380	76	52	271	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	38	67	0	14	43	0	11	29	0	10	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	73	73	8	65	65	6	18	18	5	17	17
g / C, Green / Cycle	0.14	0.61	0.61	0.07	0.54	0.54	0.05	0.15	0.15	0.04	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.12	0.35	0.35	0.06	0.22	0.22	0.04	0.13	0.13	0.03	0.12	0.12
s, saturation flow rate [veh/h]	1714	1800	1771	1714	1800	1776	1714	1800	1698	1714	1800	1610
c, Capacity [veh/h]	236	1090	1073	121	970	957	79	273	257	66	260	232
d1, Uniform Delay [s]	50.66	14.24	14.26	54.98	16.27	16.27	56.65	49.61	49.70	57.19	49.66	49.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.21	2.16	2.21	12.05	1.23	1.25	15.57	7.50	8.50	18.04	5.61	7.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.57	0.57	0.81	0.40	0.40	0.79	0.85	0.87	0.78	0.80	0.82
d, Delay for Lane Group [s/veh]	59.87	16.40	16.48	67.03	17.51	17.52	72.23	57.11	58.20	75.22	55.27	57.06
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.60	10.37	10.28	3.33	6.51	6.43	2.20	7.38	7.12	1.90	6.42	6.04
50th-Percentile Queue Length [ft/ln]	164.9	259.3	256.9	83.14	162.6	160.6	55.04	184.3	178.0	47.40	160.5	150.9
95th-Percentile Queue Length [veh/ln]	10.81	15.66	15.54	5.99	10.69	10.58	3.96	11.83	11.50	3.41	10.58	10.07
95th-Percentile Queue Length [ft/ln]	270.2	391.4	388.4	149.6	267.2	264.6	99.06	295.7	287.4	85.32	264.4	251.6

Movement, Approach, & Intersection Results

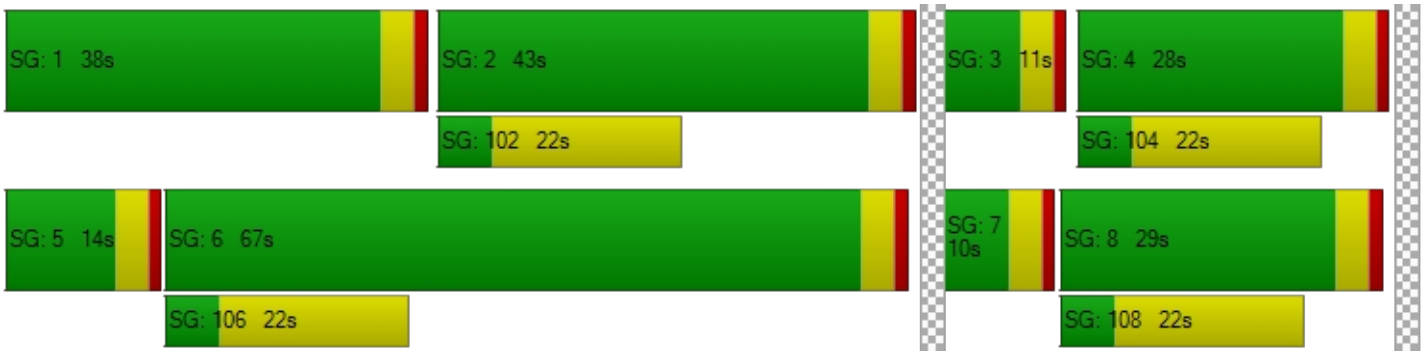
d_M, Delay for Movement [s/veh]	59.87	16.44	16.48	67.03	17.51	17.52	72.23	57.53	58.20	75.22	55.69	57.06
Movement LOS	E	B	B	E	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	22.60			23.09			59.39			58.33		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	33.46											
Intersection LOS	C											
Intersection V/C	0.565											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.766	2.752	2.514	2.628
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	650	417	400
d_b, Bicycle Delay [s]	13.54	27.34	37.60	38.40
l_b,int, Bicycle LOS Score for Intersection	2.747	2.277	1.987	1.932
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	45.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	182	958	368	67	880	54	92	340	135	232	281	75
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	2	21	0	4	21	0	0	1	3	0	2	6
Site-Generated Trips [veh/h]	19	22	0	10	24	0	0	2	17	0	2	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	225	1116	412	89	1031	60	103	384	171	260	319	100
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	59	294	108	23	271	16	27	101	45	68	84	26
Total Analysis Volume [veh/h]	237	1175	434	94	1085	63	108	404	180	274	336	105
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	50	0	11	40	0	29	36	0	23	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	55	55	7	45	45	9	23	23	19	33	33
g / C, Green / Cycle	0.14	0.46	0.46	0.06	0.37	0.37	0.08	0.19	0.19	0.16	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.14	0.34	0.28	0.05	0.32	0.04	0.06	0.17	0.17	0.16	0.13	0.13
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1615	1714	1800	1655
c, Capacity [veh/h]	243	1564	698	100	1278	571	136	349	313	271	491	452
d1, Uniform Delay [s]	51.30	26.99	24.76	56.29	34.52	24.60	54.29	47.01	47.10	50.50	36.36	36.39
k, delay calibration	0.12	0.50	0.50	0.11	0.50	0.50	0.11	0.19	0.19	0.19	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.33	3.38	4.14	29.25	7.16	0.39	10.01	11.60	13.61	35.67	0.69	0.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.75	0.62	0.94	0.85	0.11	0.79	0.88	0.89	1.01	0.47	0.47
d, Delay for Lane Group [s/veh]	74.62	30.37	28.90	85.54	41.68	25.00	64.30	58.61	60.71	86.17	37.05	37.15
Lane Group LOS	E	C	C	F	D	C	E	E	E	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.65	14.35	10.03	3.65	15.57	1.25	3.59	9.99	9.22	10.81	5.70	5.28
50th-Percentile Queue Length [ft/ln]	216.2	358.8	250.7	91.18	389.2	31.14	89.64	249.7	230.5	270.1	142.4	132.0
95th-Percentile Queue Length [veh/ln]	13.47	20.57	15.23	6.57	22.04	2.24	6.45	15.17	14.20	16.27	9.61	9.05
95th-Percentile Queue Length [ft/ln]	336.8	514.1	380.6	164.1	550.9	56.04	161.3	379.3	355.0	406.8	240.2	226.2

Movement, Approach, & Intersection Results

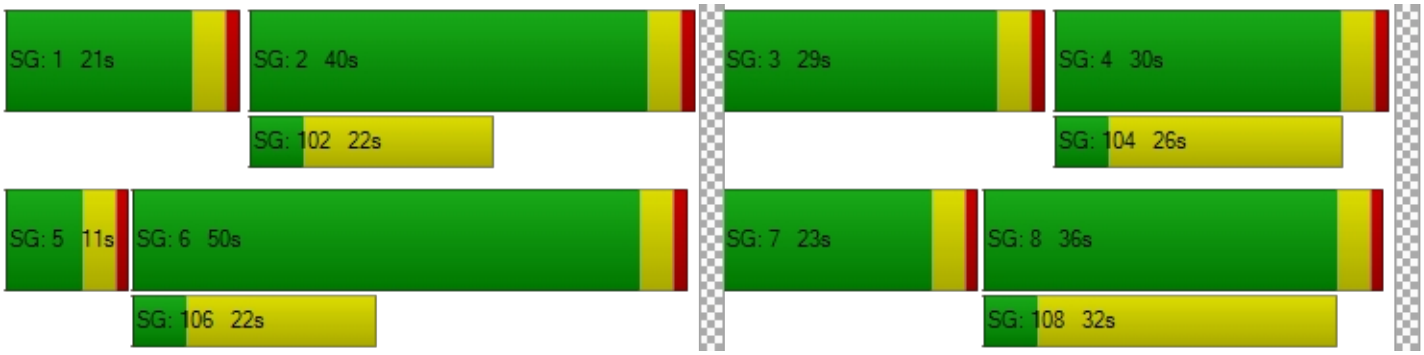
d_M, Delay for Movement [s/veh]	74.62	30.37	28.90	85.54	41.68	25.00	64.30	59.11	60.71	86.17	37.08	37.15
Movement LOS	E	C	C	F	D	C	E	E	E	F	D	D
d_A, Approach Delay [s/veh]	35.70			44.15			60.34			55.90		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	45.04											
Intersection LOS	D											
Intersection V/C	0.786											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.153	2.895	2.574	2.636
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	600	533	433
d_b, Bicycle Delay [s]	22.82	29.40	32.27	36.82
l_b,int, Bicycle LOS Score for Intersection	3.083	2.584	2.131	2.149
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.362

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	164	64	4	101	23	42	130	1	7	77	12
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	184	72	4	113	26	47	146	1	8	86	13
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	48	19	1	30	7	12	38	0	2	23	3
Total Analysis Volume [veh/h]	0	194	76	4	119	27	49	154	1	8	91	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	746	711	677	611	700
Degree of Utilization, x	0.36	0.21	0.30	0.16	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.66	0.79	1.27	0.58	0.06
95th-Percentile Queue Length [ft]	41.42	19.82	31.66	14.38	1.53
Approach Delay [s/veh]	10.54	9.41	10.59	9.51	
Approach LOS	B	A	B	A	
Intersection Delay [s/veh]	10.17				
Intersection LOS	B				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	36.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.651

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	257	937	121	64	940	30	75	256	340	136	91	88
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	16	0	0	11	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	169	0	0	135	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	1234	136	72	1199	34	84	287	381	152	102	99
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	76	325	36	19	316	9	22	76	100	40	27	26
Total Analysis Volume [veh/h]	303	1299	143	76	1262	36	88	302	401	160	107	104
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	42	0	10	36	0	19	57	0	11	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	57	57	6	51	51	8	34	34	7	33	33
g / C, Green / Cycle	0.10	0.47	0.47	0.05	0.42	0.42	0.06	0.29	0.29	0.06	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.09	0.28	0.28	0.04	0.25	0.25	0.05	0.09	0.26	0.05	0.03	0.07
s, saturation flow rate [veh/h]	3329	3427	1710	1714	3427	1775	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	333	1619	808	86	1448	750	113	980	437	194	954	426
d1, Uniform Delay [s]	53.47	23.21	23.22	56.66	26.67	26.67	55.20	33.56	41.47	55.89	32.25	33.52
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.16	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.57	1.61	3.21	24.10	1.78	3.40	11.04	0.18	11.43	8.46	0.05	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.59	0.59	0.89	0.59	0.59	0.78	0.31	0.92	0.82	0.11	0.24
d, Delay for Lane Group [s/veh]	63.03	24.82	26.44	80.77	28.44	30.07	66.25	33.73	52.90	64.36	32.30	33.81
Lane Group LOS	E	C	C	F	C	C	E	C	D	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.96	10.17	10.54	2.86	9.68	10.36	2.97	3.49	12.76	2.62	1.18	2.40
50th-Percentile Queue Length [ft/ln]	124.0	254.3	263.5	71.57	241.8	258.9	74.24	87.26	319.1	65.60	29.38	59.89
95th-Percentile Queue Length [veh/ln]	8.61	15.41	15.86	5.15	14.78	15.64	5.34	6.28	18.62	4.72	2.12	4.31
95th-Percentile Queue Length [ft/ln]	215.3	385.1	396.6	128.8	369.4	390.9	133.6	157.0	465.5	118.0	52.88	107.8

Movement, Approach, & Intersection Results

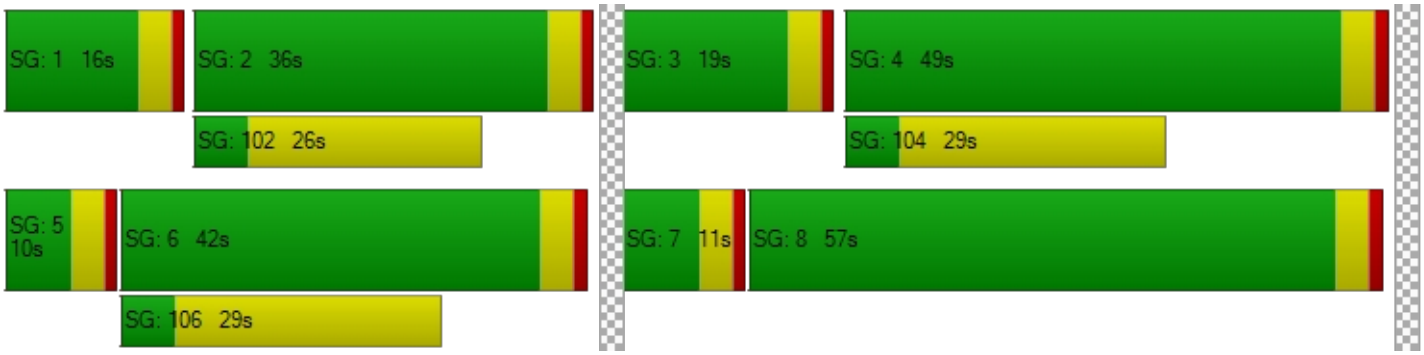
d_M, Delay for Movement [s/veh]	63.03	25.24	26.44	80.77	28.97	30.07	66.25	33.73	52.90	64.36	32.30	33.81
Movement LOS	E	C	C	F	C	C	E	C	D	E	C	C
d_A, Approach Delay [s/veh]	31.90			31.86			47.07			46.55		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.96											
Intersection LOS	D											
Intersection V/C	0.651											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	3.008	2.669	2.733
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	533	883	750
d_b, Bicycle Delay [s]	28.02	32.27	18.70	23.44
l_b,int, Bicycle LOS Score for Intersection	2.519	2.315	2.212	1.866
Bicycle LOS	B	B	B	A

Sequence

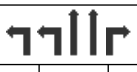
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	61.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.933

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	32	371	673	11	254	25	40	443	23	718	443	71
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	96	0	0	90	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	195	0	0	200	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	707	754	12	574	28	45	496	26	804	496	80
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	186	198	3	151	7	12	131	7	212	131	21
Total Analysis Volume [veh/h]	38	744	794	13	604	29	47	522	27	846	522	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	56	0	9	44	0	13	22	0	33	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	55	55	2	53	53	4	18	18	29	43	43
g / C, Green / Cycle	0.03	0.46	0.46	0.01	0.44	0.44	0.03	0.15	0.15	0.24	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.01	0.41	0.52	0.01	0.18	0.18	0.03	0.15	0.02	0.25	0.15	0.05
s, saturation flow rate [veh/h]	3329	1800	1530	1714	1800	1771	1714	3427	1530	3329	3427	1530
c, Capacity [veh/h]	103	828	704	25	800	787	60	514	230	805	1222	546
d1, Uniform Delay [s]	57.01	29.81	32.39	58.67	22.52	22.53	57.44	51.00	44.13	45.50	29.30	26.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.22	14.56	74.86	14.89	1.48	1.51	19.32	22.38	0.23	30.65	0.24	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.90	1.13	0.51	0.40	0.40	0.78	1.02	0.12	1.05	0.43	0.15
d, Delay for Lane Group [s/veh]	59.23	44.37	107.2	73.57	24.01	24.05	76.75	73.38	44.35	76.15	29.54	26.41
Lane Group LOS	E	D	F	E	C	C	E	F	D	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.60	22.51	34.34	0.50	6.38	6.30	1.74	9.29	0.71	15.30	5.75	1.67
50th-Percentile Queue Length [ft/ln]	14.93	562.7	858.5	12.45	159.5	157.5	43.45	232.3	17.85	382.6	143.8	41.73
95th-Percentile Queue Length [veh/ln]	1.08	30.29	48.00	0.90	10.53	10.42	3.13	14.40	1.28	22.35	9.69	3.00
95th-Percentile Queue Length [ft/ln]	26.88	757.2	1200.	22.40	263.1	260.4	78.20	359.8	32.12	558.8	242.2	75.11

Movement, Approach, & Intersection Results

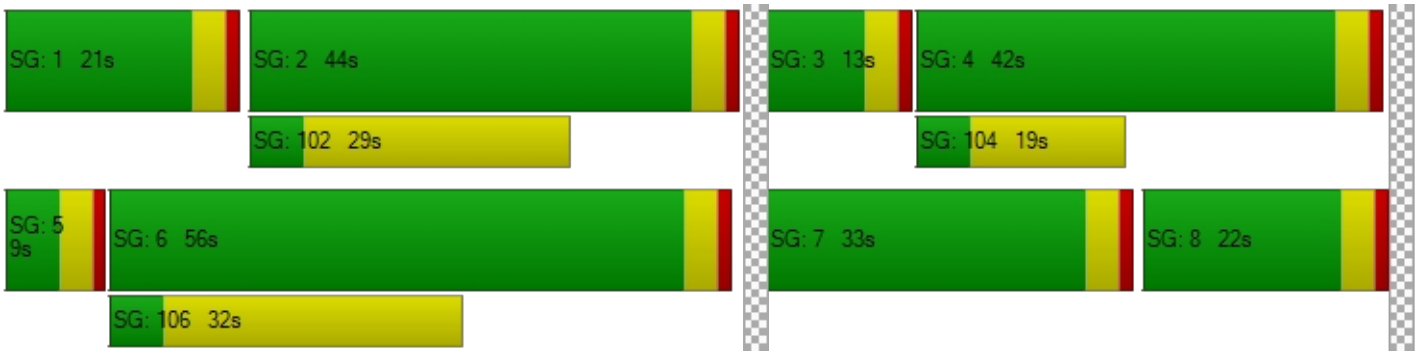
d_M, Delay for Movement [s/veh]	59.23	44.37	107.2	73.57	24.03	24.05	76.75	73.38	44.35	76.15	29.54	26.41
Movement LOS	E	D	F	E	C	C	E	F	D	F	C	C
d_A, Approach Delay [s/veh]	76.41			25.02			72.33			56.52		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	61.30											
Intersection LOS	E											
Intersection V/C	0.933											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.517	2.774	3.080
Crosswalk LOS	F	B	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	667	300	633
d_b, Bicycle Delay [s]	19.27	26.67	43.35	28.02
l_b,int, Bicycle LOS Score for Intersection	4.160	2.093	2.051	2.758
Bicycle LOS	D	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	63.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.005

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	247	951	696	98	948	67	178	452	354	395	240	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	129	0	2	157	0	0	0	0	0	0	1
Site-Generated Trips [veh/h]	0	313	0	65	295	0	0	0	0	0	0	62
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	277	1507	780	177	1514	75	199	506	396	442	269	155
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	73	397	205	47	398	20	52	133	104	116	71	41
Total Analysis Volume [veh/h]	292	1586	821	186	1594	79	209	533	417	465	283	163
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	18	44	0	16	42	0	24	41	41	19	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	55	55	12	53	53	10	22	40	15	28	28
g / C, Green / Cycle	0.12	0.46	0.46	0.10	0.44	0.44	0.08	0.19	0.34	0.13	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.09	0.46	0.54	0.11	0.33	0.05	0.06	0.16	0.27	0.14	0.13	0.13
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1582
c, Capacity [veh/h]	388	1558	696	171	2148	670	274	641	516	416	413	363
d1, Uniform Delay [s]	51.32	32.72	32.72	54.00	28.08	19.98	53.91	46.96	36.25	52.50	41.01	41.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.95	27.36	95.49	57.51	2.37	0.36	4.37	2.89	12.84	60.59	1.26	1.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	1.02	1.18	1.09	0.74	0.12	0.76	0.83	0.81	1.12	0.57	0.57
d, Delay for Lane Group [s/veh]	54.27	60.08	128.2	111.5	30.45	20.34	58.28	49.85	49.10	113.0	42.27	42.45
Lane Group LOS	D	F	F	F	C	C	E	D	D	F	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.41	27.76	37.95	7.90	12.94	1.39	3.26	7.90	12.86	9.75	6.37	5.62
50th-Percentile Queue Length [ft/ln]	110.2	693.8	948.6	197.5	323.4	34.65	81.43	197.5	321.5	243.7	159.3	140.5
95th-Percentile Queue Length [veh/ln]	7.85	36.90	54.03	12.90	18.84	2.49	5.86	12.51	18.74	15.57	10.52	9.51
95th-Percentile Queue Length [ft/ln]	196.3	922.5	1350.	322.6	470.9	62.37	146.5	312.8	468.5	389.1	262.8	237.7

Movement, Approach, & Intersection Results

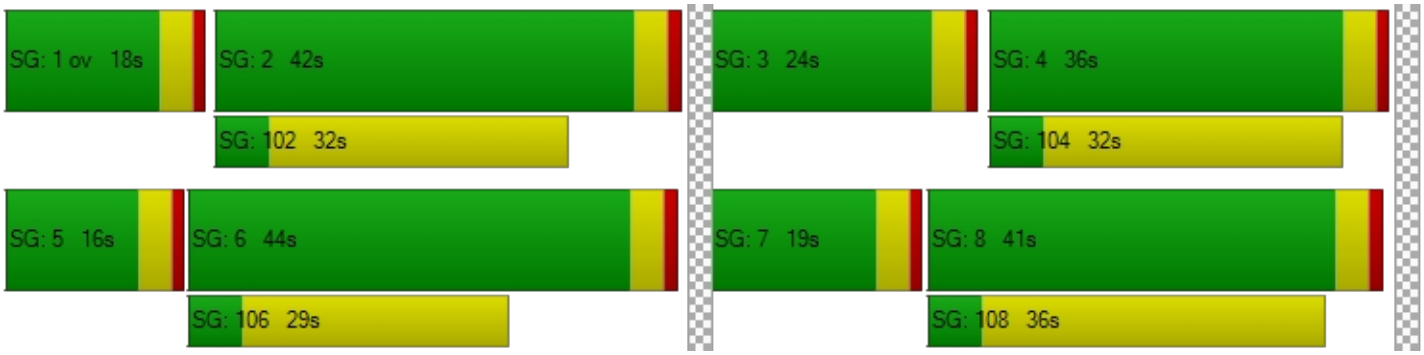
d_M, Delay for Movement [s/veh]	54.27	60.08	128.2	111.5	30.45	20.34	58.28	49.85	49.10	113.0	42.30	42.45
Movement LOS	D	F	F	F	C	C	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	80.18			38.13			51.10			78.46		
Approach LOS	F			D			D			E		
d_I, Intersection Delay [s/veh]	63.06											
Intersection LOS	E											
Intersection V/C	1.005											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.425	3.206	2.962	2.951
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	633	617	533
d_b, Bicycle Delay [s]	26.67	28.02	28.70	32.27
l_b,int, Bicycle LOS Score for Intersection	3.786	2.582	2.516	2.311
Bicycle LOS	D	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.528

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	15	5	4	23	3	46	4	21	43	157	1081	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	2	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	65	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	6	4	26	3	52	4	24	48	176	1278	17
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	4	2	1	7	1	14	1	6	13	46	336	4
Total Analysis Volume [veh/h]	18	6	4	27	3	55	4	25	51	185	1345	18
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	Permi
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	88	82	82
g / C, Green / Cycle	0.07	0.07	0.73	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.03	0.06	0.28	0.38	0.38
s, saturation flow rate [veh/h]	1655	1446	844	1800	1792
c, Capacity [veh/h]	157	153	621	1229	1223
d1, Uniform Delay [s]	53.59	55.08	6.21	9.74	9.75
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.33	3.33	1.77	1.81	1.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.57	0.38	0.56	0.56
d, Delay for Lane Group [s/veh]	54.91	58.41	7.98	11.55	11.58
Lane Group LOS	D	E	A	B	B
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.65	2.74	1.98	9.07	9.06
50th-Percentile Queue Length [ft/ln]	41.36	68.46	49.48	226.83	226.57
95th-Percentile Queue Length [veh/ln]	2.98	4.93	3.56	14.01	14.00
95th-Percentile Queue Length [ft/ln]	74.45	123.23	89.07	350.33	349.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.91	54.91	54.91	54.91	58.41	58.41	58.41	58.41	7.98	7.98	11.57	11.58
Movement LOS	D	D	D	D	E	E	E	E	A	A	B	B
d_A, Approach Delay [s/veh]	54.91				58.41				11.04			
Approach LOS	D				E				B			
d_I, Intersection Delay [s/veh]	16.15											
Intersection LOS	B											
Intersection V/C	0.528											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.777	0.000	2.883
Crosswalk LOS	A	F	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	467
d_b, Bicycle Delay [s]	45.94	45.94	35.27
l_b,int, Bicycle LOS Score for Intersection	1.606	1.612	2.726
Bicycle LOS	A	A	B

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	10	487	53	23	5	6	94	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
In-Process Volume [veh/h]	0	1	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	62	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	608	59	26	6	7	105	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	160	16	7	2	2	28	1
Total Analysis Volume [veh/h]	12	640	62	27	6	7	111	2
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_di, Inbound Pedestrian Volume crossing the leg [ped/h]	0				0			
v_co, Outbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ci, Inbound Pedestrian Volume along the leg [ped/h]	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	32	0	0	0	60	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	76	76	76	12
g / C, Green / Cycle	0.01	0.63	0.63	0.63	0.10
(v / s)_i Volume / Saturation Flow Rate	0.01	0.14	0.21	0.06	0.08
s, saturation flow rate [veh/h]	1714	1800	1800	1530	1551
c, Capacity [veh/h]	24	1141	1141	970	154
d1, Uniform Delay [s]	58.75	9.37	10.23	8.54	52.99
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.32	0.45	0.80	0.19	10.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.22	0.34	0.09	0.82
d, Delay for Lane Group [s/veh]	74.06	9.83	11.03	8.73	63.15
Lane Group LOS	E	A	B	A	E
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.46	2.91	4.81	0.93	4.16
50th-Percentile Queue Length [ft/ln]	11.60	72.72	120.17	23.24	104.01
95th-Percentile Queue Length [veh/ln]	0.84	5.24	8.40	1.67	7.49
95th-Percentile Queue Length [ft/ln]	20.89	130.89	210.07	41.82	187.21

Movement, Approach, & Intersection Results

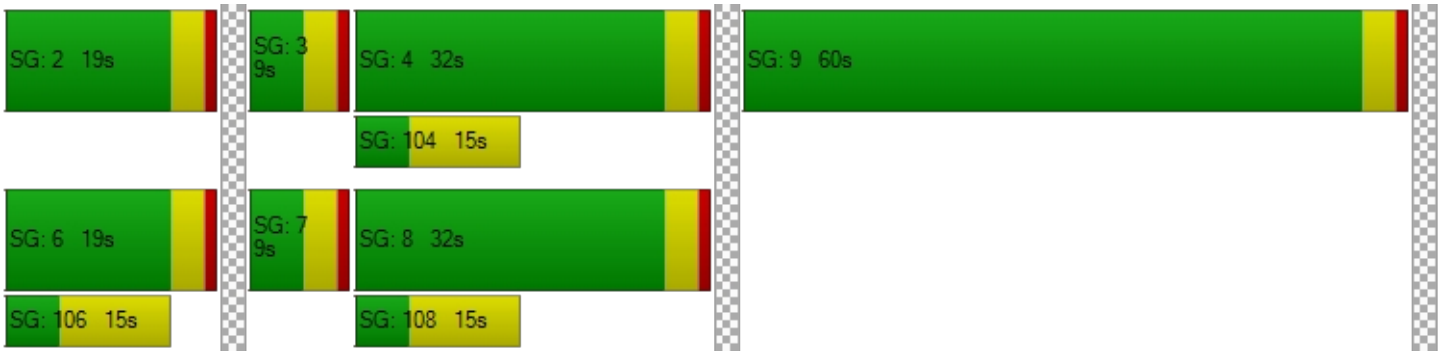
d_M, Delay for Movement [s/veh]	74.06	10.55	11.03	8.73	63.15	63.15	63.15	63.15
Movement LOS	E	B	B	A	E	E	E	E
d_A, Approach Delay [s/veh]	11.36				63.15			
Approach LOS	B				E			
d_I, Intersection Delay [s/veh]	16.15							
Intersection LOS	B							
Intersection V/C	0.528							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.199
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	933
d_b, Bicycle Delay [s]	35.27	17.07
l_b,int, Bicycle LOS Score for Intersection	2.149	1.764
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	518.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.710

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	4	2	18	74	0	20	117	1003	7	7	509	125
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	2	0	0	1	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	65	0	0	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	2	20	83	0	22	131	1190	8	8	633	140
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	1	5	22	0	6	34	313	2	2	167	37
Total Analysis Volume [veh/h]	4	2	21	87	0	23	138	1253	8	8	666	147
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

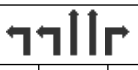
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.07	0.05	1.71	0.00	0.04	0.17	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	111.2	136.1	21.95	518.3	558.2	11.24	10.26	0.00	0.00	11.54	0.00	0.00
Movement LOS	F	F	C	F	F	B	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.82	0.82	0.82	8.40	8.40	0.12	0.60	0.00	0.00	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	20.42	20.42	20.42	209.9	209.9	2.99	15.01	0.00	0.00	1.09	0.00	0.00
d_A, Approach Delay [s/veh]	43.65			412.28			1.01			0.11		
Approach LOS	E			F			A			A		
d_I, Intersection Delay [s/veh]	20.38											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	52.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	553	970	285	96	540	41	70	663	405	158	753	183
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	34	0	0	50	0	0	2	0	0	1	3
Site-Generated Trips [veh/h]	62	12	0	0	12	0	0	0	65	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	681	1132	319	108	667	46	78	745	519	177	844	208
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	179	298	84	28	176	12	21	196	137	47	222	55
Total Analysis Volume [veh/h]	717	1192	336	114	702	48	82	784	546	186	888	219
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	30	51	0	12	33	0	9	46	0	11	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	47	47	8	29	29	5	42	42	7	44	44
g / C, Green / Cycle	0.22	0.39	0.39	0.07	0.24	0.24	0.04	0.35	0.35	0.06	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.22	0.35	0.22	0.07	0.21	0.21	0.02	0.23	0.36	0.06	0.32	0.32
s, saturation flow rate [veh/h]	3329	3427	1530	1714	1800	1760	3329	3427	1530	3329	1800	1679
c, Capacity [veh/h]	721	1342	599	114	435	425	132	1200	536	194	664	619
d1, Uniform Delay [s]	46.92	34.05	28.45	55.99	43.71	43.72	56.74	32.87	39.00	56.35	35.01	35.13
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.48	0.11	0.36	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.24	9.02	3.76	38.52	20.69	21.09	4.71	0.61	43.10	21.38	10.36	11.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	0.89	0.56	1.00	0.87	0.87	0.62	0.65	1.02	0.96	0.86	0.87
d, Delay for Lane Group [s/veh]	61.16	43.06	32.21	94.51	64.41	64.81	61.44	33.48	82.10	77.73	45.38	46.73
Lane Group LOS	E	D	C	F	E	E	E	C	F	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.04	17.58	8.12	4.67	13.26	13.01	1.31	9.65	21.89	3.38	17.08	16.29
50th-Percentile Queue Length [ft/ln]	300.9	439.4	202.8	116.7	331.4	325.3	32.78	241.2	547.1	84.61	426.9	407.3
95th-Percentile Queue Length [veh/ln]	17.73	24.45	12.79	8.21	19.23	18.93	2.36	14.74	29.96	6.09	23.85	22.91
95th-Percentile Queue Length [ft/ln]	443.2	611.3	319.6	205.3	480.7	473.2	59.00	368.5	749.0	152.3	596.3	572.8

Movement, Approach, & Intersection Results

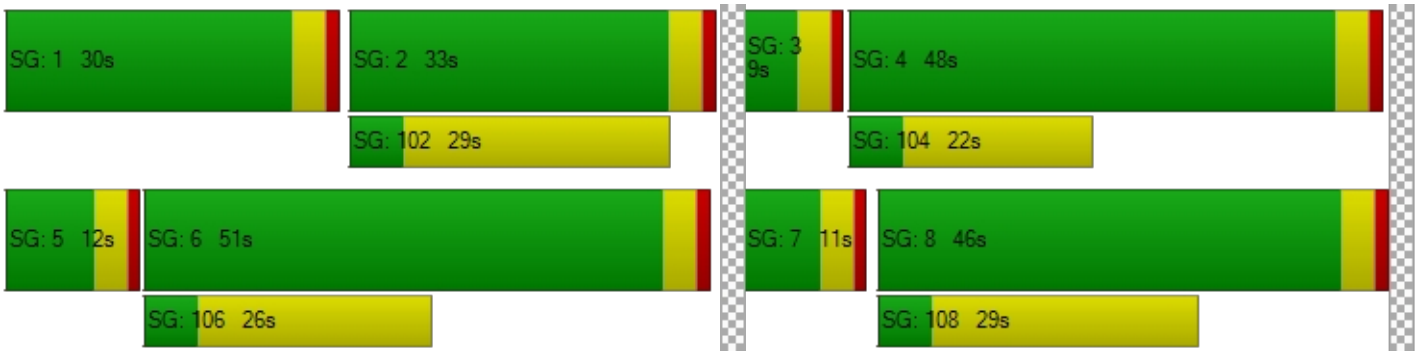
d_M, Delay for Movement [s/veh]	61.16	43.06	32.21	94.51	64.59	64.81	61.44	33.48	82.10	77.73	45.86	46.73
Movement LOS	E	D	C	F	E	E	E	C	F	E	D	D
d_A, Approach Delay [s/veh]	47.22			68.55			53.91			50.59		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	52.76											
Intersection LOS	D											
Intersection V/C	0.839											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.122	2.775	3.036	3.049
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	483	700	733
d_b, Bicycle Delay [s]	22.20	34.50	25.35	24.07
l_b,int, Bicycle LOS Score for Intersection	3.412	2.272	2.725	2.626
Bicycle LOS	C	B	B	B

Sequence

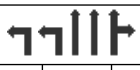
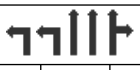
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	62.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.914

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	236	1176	727	154	1201	87	267	863	219	633	638	106
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	4	15	0	5	18	0	0	0	2	0	0	8
Site-Generated Trips [veh/h]	0	29	0	12	29	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	268	1361	814	189	1392	97	299	967	247	709	715	139
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	71	358	214	50	366	26	79	254	65	187	188	37
Total Analysis Volume [veh/h]	282	1433	857	199	1465	102	315	1018	260	746	753	146
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	14	40	40	10	36	0	34	43	0	27	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	10	41	68	6	37	37	14	34	34	23	43	53
g / C, Green / Cycle	0.08	0.34	0.57	0.05	0.31	0.31	0.12	0.28	0.28	0.19	0.36	0.44
(v / s)_i Volume / Saturation Flow Rate	0.08	0.29	0.56	0.06	0.30	0.30	0.09	0.25	0.25	0.22	0.22	0.05
s, saturation flow rate [veh/h]	3329	4903	1530	3329	3427	1741	3329	3427	1619	3329	3427	2708
c, Capacity [veh/h]	277	1682	869	166	1061	539	389	966	456	638	1223	1192
d1, Uniform Delay [s]	55.00	36.59	25.45	57.00	41.02	41.05	51.68	41.42	41.44	48.50	31.82	19.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.30	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.30	5.67	27.34	100.4	22.92	34.12	4.05	3.31	15.54	80.11	0.51	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.02	0.85	0.99	1.20	0.98	0.98	0.81	0.90	0.90	1.17	0.62	0.12
d, Delay for Lane Group [s/veh]	84.30	42.26	52.79	157.4	63.94	75.17	55.73	44.73	56.97	128.6	32.33	19.93
Lane Group LOS	F	D	D	F	E	E	E	D	E	F	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.32	13.72	29.03	4.84	18.37	20.37	4.84	12.67	13.54	16.60	9.03	1.22
50th-Percentile Queue Length [ft/ln]	132.9	342.8	725.7	121.1	459.3	509.3	121.0	316.8	338.4	414.8	225.8	30.60
95th-Percentile Queue Length [veh/ln]	9.15	19.79	37.86	8.72	25.40	27.78	8.45	18.51	19.57	25.14	13.96	2.20
95th-Percentile Queue Length [ft/ln]	228.7	494.7	946.6	218.0	635.1	694.4	211.2	462.8	489.3	628.5	349.0	55.07

Movement, Approach, & Intersection Results

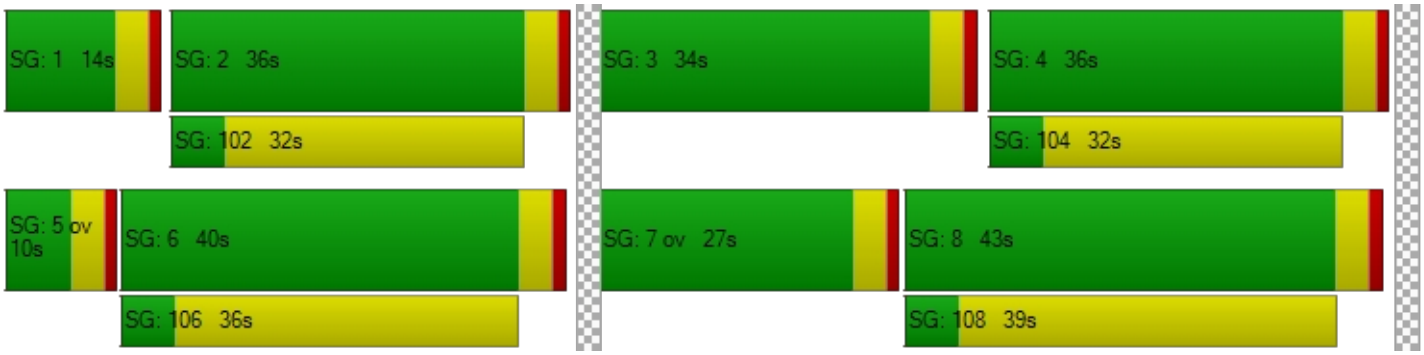
d_M, Delay for Movement [s/veh]	84.30	42.26	52.79	157.4	67.21	75.17	55.73	46.54	56.97	128.6	32.33	19.93
Movement LOS	F	D	D	F	E	E	E	D	E	F	C	B
d_A, Approach Delay [s/veh]	50.38			77.84			50.06			74.89		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	62.03											
Intersection LOS	E											
Intersection V/C	0.914											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.473	3.187	3.073	3.267
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	533	650	533
d_b, Bicycle Delay [s]	29.40	32.27	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.974	2.531	2.436	2.917
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.594

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	986	622	0	1033	422	0	0	0	347	0	432
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.120	1.000	1.000	1.000	1.120	1.000	1.120
In-Process Volume [veh/h]	0	16	0	0	5	6	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	169	0	0	12	123	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1289	622	0	1174	602	0	0	0	389	0	484
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	339	164	0	309	158	0	0	0	102	0	127
Total Analysis Volume [veh/h]	0	1357	655	0	1236	634	0	0	0	409	0	509
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	68	0	0	68	0	0	0	0	52	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	85	85		27	27	27
g / C, Green / Cycle	0.71	0.71		0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.40	0.25		0.18	0.19	0.20
s, saturation flow rate [veh/h]	3427	4903		1714	1585	1530
c, Capacity [veh/h]	2414	3453		393	363	351
d1, Uniform Delay [s]	8.69	7.02		43.54	44.15	44.44
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.95	0.29		3.60	5.24	6.33
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.36		0.79	0.84	0.86
d, Delay for Lane Group [s/veh]	9.64	7.31		47.15	49.39	50.77
Lane Group LOS	A	A		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.12	3.92		9.05	9.16	9.23
50th-Percentile Queue Length [ft/ln]	203.08	98.00		226.3	228.8	230.6
95th-Percentile Queue Length [veh/ln]	12.80	7.06		13.99	14.12	14.21
95th-Percentile Queue Length [ft/ln]	319.93	176.39		349.7	352.9	355.2

Movement, Approach, & Intersection Results

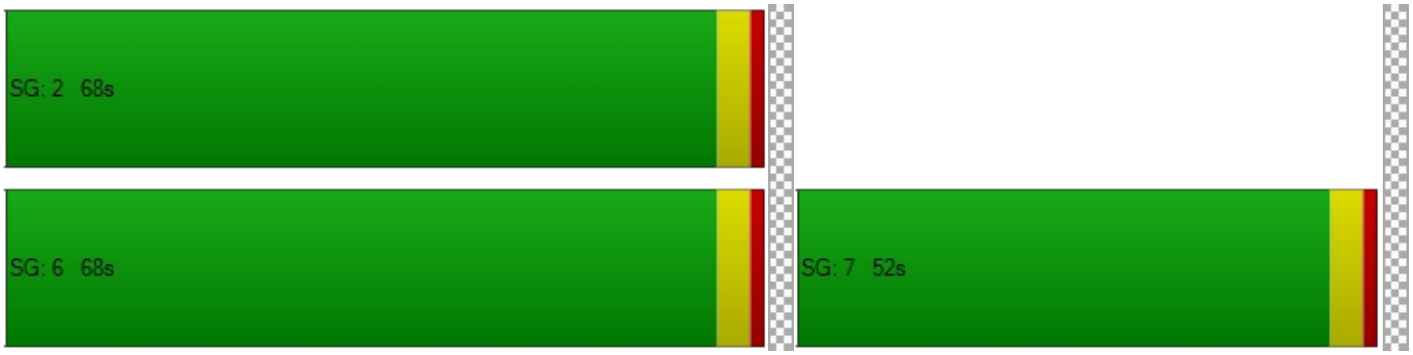
d_M, Delay for Movement [s/veh]	0.00	9.64	0.00	0.00	7.31	0.00	0.00	0.00	0.00	47.70	0.00	50.22
Movement LOS		A			A					D		D
d_A, Approach Delay [s/veh]	9.64			7.31			0.00			49.09		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	19.13											
Intersection LOS	B											
Intersection V/C	0.594											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1067	1067	0	800
d_b, Bicycle Delay [s]	13.07	13.07	60.00	21.60
l_b,int, Bicycle LOS Score for Intersection	2.679	2.239	4.132	3.074
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	59.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.996

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1339	389	0	1805	0	0	0	0	518	0	492
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.120	1.000	1.120	1.120	1.120	1.120	1.120	1.120	1.000	1.120
In-Process Volume [veh/h]	0	47	0	0	150	0	0	0	0	0	0	82
Site-Generated Trips [veh/h]	0	72	0	0	282	12	0	0	0	0	0	240
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1619	436	0	2454	12	0	0	0	580	0	873
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	0.950	0.950	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	426	115	0	646	3	0	0	0	153	0	230
Total Analysis Volume [veh/h]	0	1704	459	0	2583	13	0	0	0	611	0	919
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	49	0	0	49	0	0	0	0	71	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	45	45		67	67
g / C, Green / Cycle	0.38	0.38		0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.35	0.40		0.18	0.60
s, saturation flow rate [veh/h]	4903	6538		3329	1530
c, Capacity [veh/h]	1839	2452		1859	854
d1, Uniform Delay [s]	35.92	37.50		14.34	26.50
k, delay calibration	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	9.59	34.28		0.10	53.26
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.93	1.05		0.33	1.08
d, Delay for Lane Group [s/veh]	45.51	71.78		14.44	79.76
Lane Group LOS	D	F		B	F
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	17.26	23.44		4.46	35.53
50th-Percentile Queue Length [ft/ln]	431.46	585.92		111.40	888.37
95th-Percentile Queue Length [veh/ln]	24.07	32.54		7.92	48.10
95th-Percentile Queue Length [ft/ln]	601.79	813.53		197.94	1202.44

Movement, Approach, & Intersection Results

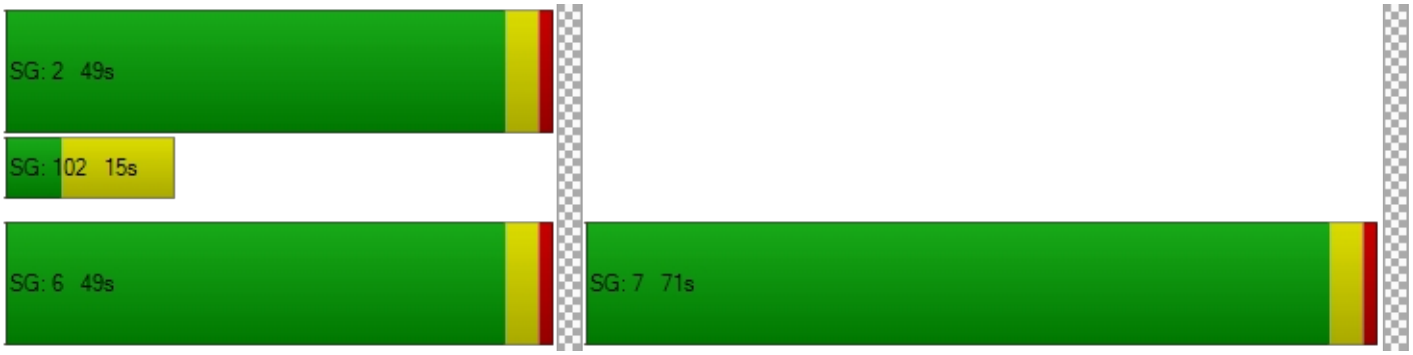
d_M, Delay for Movement [s/veh]	0.00	45.51	0.00	0.00	71.78	0.00	0.00	0.00	0.00	14.44	0.00	79.76
Movement LOS		D			F					B		F
d_A, Approach Delay [s/veh]	45.51			71.78			0.00			53.67		
Approach LOS	D			E			A			D		
d_I, Intersection Delay [s/veh]	59.32											
Intersection LOS	E											
Intersection V/C	0.996											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	750	0	1117
d_b, Bicycle Delay [s]	23.44	23.44	60.00	11.70
I_b,int, Bicycle LOS Score for Intersection	2.497	2.625	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	20.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.597

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1075	256	0	892	474	0	0	0	240	0	498
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.120	1.000	1.120
In-Process Volume [veh/h]	0	8	0	0	50	0	0	0	0	0	0	26
Site-Generated Trips [veh/h]	0	12	0	0	77	0	0	0	0	0	0	62
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1224	256	0	1126	474	0	0	0	269	0	646
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	1.000	1.000	1.000	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	322	67	0	296	125	0	0	0	71	0	170
Total Analysis Volume [veh/h]	0	1288	269	0	1185	499	0	0	0	283	0	680
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	46	0	0	46	0	0	0	0	74	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	78	78		34	34
g / C, Green / Cycle	0.65	0.65		0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.26	0.35		0.17	0.25
s, saturation flow rate [veh/h]	4903	3427		1714	2708
c, Capacity [veh/h]	3186	2227		486	768
d1, Uniform Delay [s]	9.98	11.25		36.88	41.12
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.38	0.92		1.11	3.65
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.53		0.58	0.89
d, Delay for Lane Group [s/veh]	10.37	12.17		37.99	44.77
Lane Group LOS	B	B		D	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	5.22	8.22		7.28	9.93
50th-Percentile Queue Length [ft/ln]	130.41	205.52		181.88	248.34
95th-Percentile Queue Length [veh/ln]	8.96	12.92		11.70	15.10
95th-Percentile Queue Length [ft/ln]	224.06	323.07		292.47	377.57

Movement, Approach, & Intersection Results

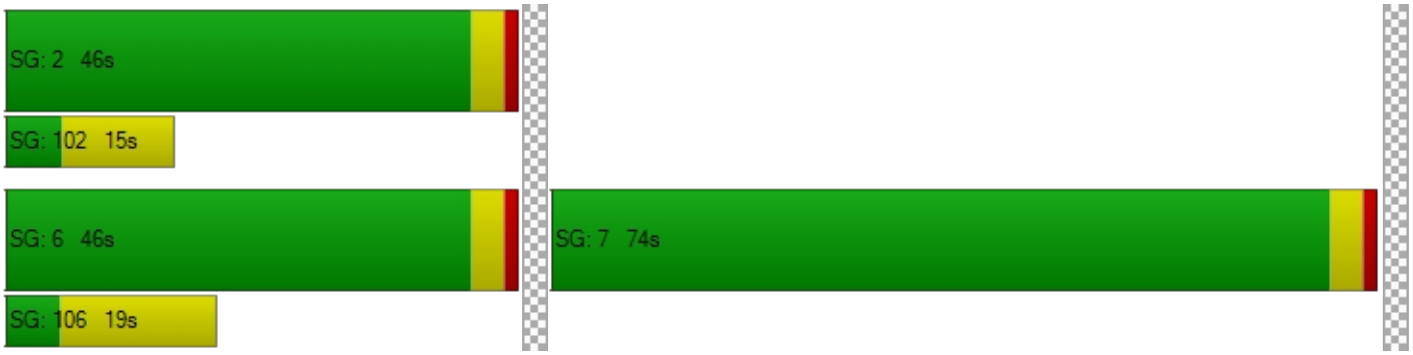
d_M, Delay for Movement [s/veh]	0.00	10.37	0.00	0.00	12.17	0.00	0.00	0.00	0.00	37.99	0.00	44.77
Movement LOS		B			B					D		D
d_A, Approach Delay [s/veh]	10.37			12.17			0.00			42.78		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	20.07											
Intersection LOS	C											
Intersection V/C	0.597											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.381
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	700	0	1167
d_b, Bicycle Delay [s]	25.35	25.35	60.00	10.42
l_b,int, Bicycle LOS Score for Intersection	2.268	2.537	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.608

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1287	562	0	969	394	298	0	392	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.120	1.000	1.000	1.120	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	8	0	0	5	0	8	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	12	0	157	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1461	562	0	1102	394	463	0	392	0	0	0
Peak Hour Factor	1.000	0.950	0.950	1.000	0.950	0.950	0.950	1.000	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	384	148	0	290	104	122	0	103	0	0	0
Total Analysis Volume [veh/h]	0	1538	592	0	1160	415	487	0	413	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	34	0	0	34	0	86	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	76	76	36	36	
g / C, Green / Cycle	0.63	0.63	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.31	0.34	0.15	0.27	
s, saturation flow rate [veh/h]	4903	3427	3329	1530	
c, Capacity [veh/h]	3102	2169	1001	460	
d1, Uniform Delay [s]	11.79	12.23	34.38	40.20	
k, delay calibration	0.50	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.57	0.95	0.37	6.52	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.50	0.53	0.49	0.90	
d, Delay for Lane Group [s/veh]	12.36	13.18	34.75	46.72	
Lane Group LOS	B	B	C	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	7.13	8.47	5.89	12.41	
50th-Percentile Queue Length [ft/ln]	178.32	211.67	147.15	310.14	
95th-Percentile Queue Length [veh/ln]	11.51	13.24	9.86	18.18	
95th-Percentile Queue Length [ft/ln]	287.82	330.97	246.62	454.55	

Movement, Approach, & Intersection Results

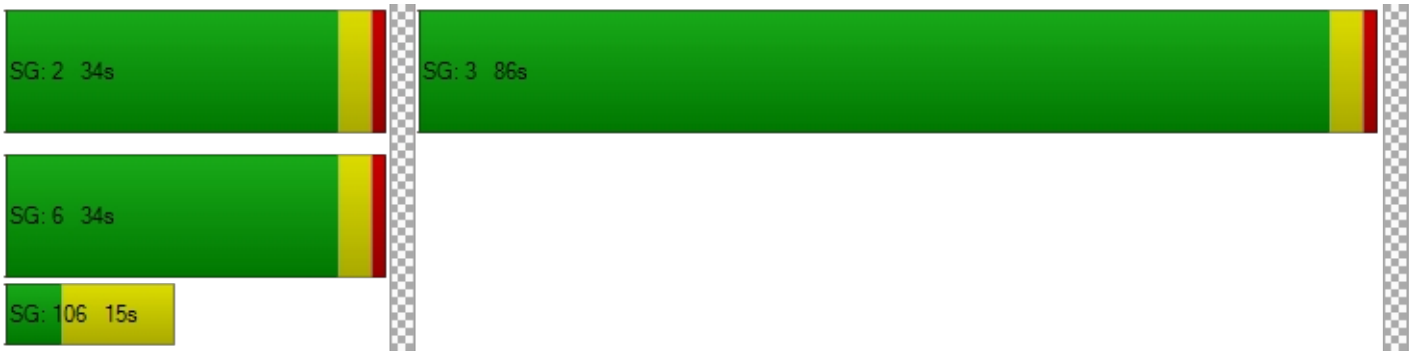
d_M, Delay for Movement [s/veh]	0.00	12.36	0.00	0.00	13.18	0.00	34.75	0.00	46.72	0.00	0.00	0.00
Movement LOS		B			B		C		D			
d_A, Approach Delay [s/veh]	12.36			13.18			40.24			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	19.60											
Intersection LOS	B											
Intersection V/C	0.608											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	500	1367	0
d_b, Bicycle Delay [s]	33.75	33.75	6.02	60.00
l_b,int, Bicycle LOS Score for Intersection	2.406	2.517	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	50.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.900

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1236	419	513	1182	0	509	43	548	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	39	0	123	28	0	7	0	0	0	0	0
Site-Generated Trips [veh/h]	0	60	0	222	60	0	10	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1483	469	920	1412	0	587	48	614	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	390	123	242	372	0	154	13	162	0	0	0
Total Analysis Volume [veh/h]	0	1561	494	968	1486	0	618	51	646	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	43	0	39	82	0	0	38	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	39	39	35	78	34	34	34	
g / C, Green / Cycle	0.33	0.33	0.29	0.65	0.28	0.28	0.28	
(v / s)_i Volume / Saturation Flow Rate	0.32	0.32	0.29	0.30	0.26	0.27	0.29	
s, saturation flow rate [veh/h]	4903	1530	3329	4903	1714	1630	1530	
c, Capacity [veh/h]	1594	497	971	3187	486	462	434	
d1, Uniform Delay [s]	40.11	40.37	42.45	10.55	41.40	42.15	43.00	
k, delay calibration	0.50	0.50	0.11	0.50	0.38	0.42	0.46	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	18.19	38.78	12.73	0.49	18.53	27.57	44.49	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.98	0.99	1.00	0.47	0.90	0.95	1.01	
d, Delay for Lane Group [s/veh]	58.29	79.16	55.17	11.04	59.93	69.72	87.49	
Lane Group LOS	E	E	E	B	E	E	F	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	17.66	19.67	15.86	6.39	14.87	16.13	18.06	
50th-Percentile Queue Length [ft/ln]	441.44	491.70	396.53	159.68	371.7	403.2	451.5	
95th-Percentile Queue Length [veh/ln]	24.55	26.94	22.39	10.53	21.19	22.72	25.21	
95th-Percentile Queue Length [ft/ln]	613.72	673.53	559.81	263.30	529.8	567.9	630.2	

Movement, Approach, & Intersection Results

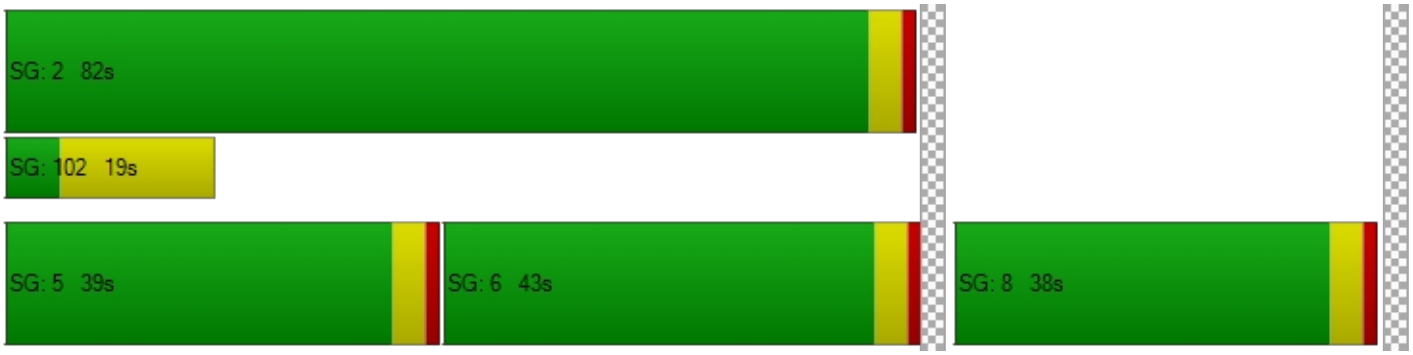
d_M, Delay for Movement [s/veh]	0.00	58.29	79.16	55.17	11.04	0.00	62.78	69.72	81.78	0.00	0.00	0.00
Movement LOS		E	E	E	B		E	E	F			
d_A, Approach Delay [s/veh]	63.31			28.45			72.38			0.00		
Approach LOS	E			C			E			A		
d_I, Intersection Delay [s/veh]	50.67											
Intersection LOS	D											
Intersection V/C	0.900											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.467	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	1300	567	0
d_b, Bicycle Delay [s]	27.34	7.35	30.82	60.00
I_b,int, Bicycle LOS Score for Intersection	2.690	2.909	3.729	4.132
Bicycle LOS	B	C	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.771

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	893	509	501	647	0	451	7	212	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.000	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.120	1.000	1.000	1.000
In-Process Volume [veh/h]	0	8	0	45	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	65	12	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1020	570	671	742	0	505	8	237	0	0	0
Peak Hour Factor	1.000	0.950	0.950	0.950	0.950	1.000	0.950	0.950	0.950	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	268	150	177	195	0	133	2	62	0	0	0
Total Analysis Volume [veh/h]	0	1074	600	706	781	0	532	8	249	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	40	0	50	90	0	0	30	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	57	57	29	89	23	23	
g / C, Green / Cycle	0.47	0.47	0.24	0.74	0.19	0.19	
(v / s)_i Volume / Saturation Flow Rate	0.31	0.39	0.21	0.23	0.16	0.17	
s, saturation flow rate [veh/h]	3427	1530	3329	3427	3329	1537	
c, Capacity [veh/h]	1612	720	799	2549	631	291	
d1, Uniform Delay [s]	24.51	27.69	43.97	5.10	46.91	47.32	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.21	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.20	10.94	3.45	0.31	3.17	14.96	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.83	0.88	0.31	0.84	0.88	
d, Delay for Lane Group [s/veh]	26.71	38.64	47.42	5.41	50.08	62.29	
Lane Group LOS	C	D	D	A	D	E	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	12.02	16.74	10.45	2.97	7.92	8.66	
50th-Percentile Queue Length [ft/ln]	300.57	418.53	261.20	74.19	197.99	216.50	
95th-Percentile Queue Length [veh/ln]	17.71	23.45	15.75	5.34	12.53	13.49	
95th-Percentile Queue Length [ft/ln]	442.73	586.28	393.73	133.53	313.37	337.15	

Movement, Approach, & Intersection Results

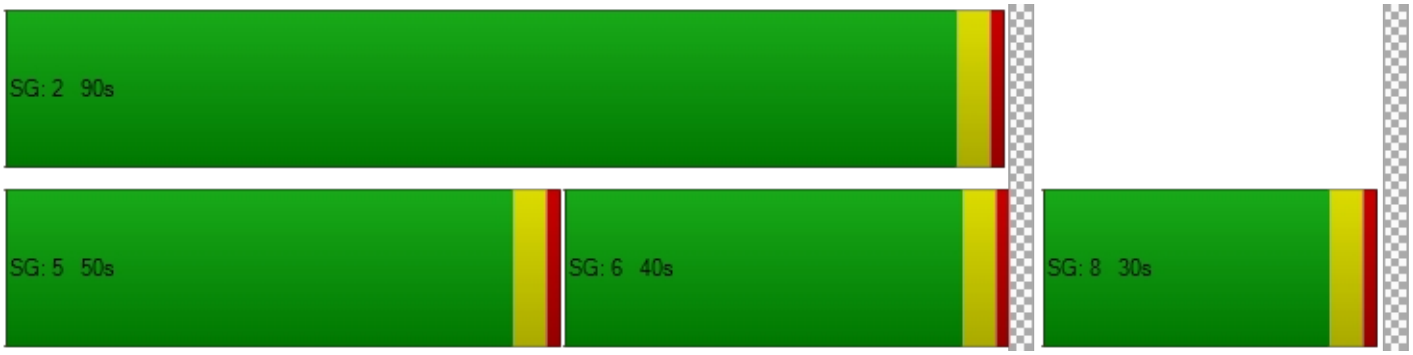
d_M, Delay for Movement [s/veh]	0.00	26.71	38.64	47.42	5.41	0.00	50.08	62.29	62.29	0.00	0.00	0.00
Movement LOS		C	D	D	A		D	E	E			
d_A, Approach Delay [s/veh]	30.99			25.36			54.05			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	33.47											
Intersection LOS	C											
Intersection V/C	0.771											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	1433	433	0
d_b, Bicycle Delay [s]	29.40	4.82	36.82	60.00
l_b,int, Bicycle LOS Score for Intersection	2.480	2.786	2.861	4.132
Bicycle LOS	B	C	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	75.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.164

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	100.0
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	512	1223	467	480	861	796	914	0	457	463	0	566
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.000	1.120	1.120	1.000	1.120
In-Process Volume [veh/h]	0	8	0	16	5	0	0	0	0	0	0	11
Site-Generated Trips [veh/h]	0	12	0	17	12	0	0	0	0	0	0	17
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	573	1390	523	571	981	892	1024	0	512	519	0	662
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	1.000	0.950	0.950	1.000	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	151	366	138	150	258	235	269	0	135	137	0	174
Total Analysis Volume [veh/h]	603	1463	551	601	1033	939	1078	0	539	546	0	697
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	87	0	0	87	0	33	0	0	33	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	83	83	83	83	29	29
g / C, Green / Cycle	0.69	0.69	0.69	0.69	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.56	0.30	0.84	0.21	0.32	0.16
s, saturation flow rate [veh/h]	1077	4903	715	4903	3329	3329
c, Capacity [veh/h]	700	3391	451	3391	805	805
d1, Uniform Delay [s]	22.48	8.13	31.61	7.23	45.50	41.27
k, delay calibration	0.50	0.50	0.50	0.50	0.19	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.22	0.40	164.86	0.23	156.27	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.43	1.33	0.30	1.34	0.68
d, Delay for Lane Group [s/veh]	35.70	8.53	196.47	7.46	201.77	42.29
Lane Group LOS	D	A	F	A	F	D
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.58	5.27	17.17	3.30	29.34	7.43
50th-Percentile Queue Length [ft/ln]	214.51	131.63	429.36	82.46	733.52	185.65
95th-Percentile Queue Length [veh/ln]	13.38	9.03	28.98	5.94	44.34	11.90
95th-Percentile Queue Length [ft/ln]	334.61	225.71	724.44	148.42	1108.59	297.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.70	8.53	0.00	196.4	7.46	0.00	201.7	0.00	0.00	42.29	0.00	0.00
Movement LOS	D	A		F	A		F			D		
d_A, Approach Delay [s/veh]	16.46			76.98			201.77			42.29		
Approach LOS	B			E			F			D		
d_I, Intersection Delay [s/veh]	75.20											
Intersection LOS	E											
Intersection V/C	1.164											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.501	3.394
Crosswalk LOS	F	F	D	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1383	1383	483	483
d_b, Bicycle Delay [s]	5.70	5.70	34.50	34.50
l_b,int, Bicycle LOS Score for Intersection	2.696	2.458	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	44.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.808

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	174	1468	329	62	520	118	237	979	186	107	541	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	8	8	0	0	0	8	0	5	5	5
Site-Generated Trips [veh/h]	0	0	12	12	0	0	0	12	0	12	12	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	1644	388	89	582	132	265	1116	208	137	623	131
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	433	102	23	153	35	70	294	55	36	164	34
Total Analysis Volume [veh/h]	205	1731	408	94	613	139	279	1175	219	144	656	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	37	48	0	9	20	0	35	48	0	15	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	45	45	5	40	40	22	43	43	11	33	33
g / C, Green / Cycle	0.08	0.37	0.37	0.04	0.33	0.33	0.18	0.36	0.36	0.09	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.06	0.35	0.27	0.03	0.13	0.09	0.16	0.34	0.14	0.08	0.19	0.09
s, saturation flow rate [veh/h]	3329	4903	1530	3329	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	274	1832	572	139	1632	509	309	1233	550	157	930	415
d1, Uniform Delay [s]	53.85	36.40	32.11	56.71	30.51	29.37	48.17	37.42	28.70	54.04	39.40	35.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.18	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.07	11.53	7.43	5.67	0.66	1.32	14.69	5.14	0.47	18.26	0.99	0.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.95	0.71	0.68	0.38	0.27	0.90	0.95	0.40	0.92	0.71	0.33
d, Delay for Lane Group [s/veh]	57.92	47.93	39.54	62.38	31.18	30.69	62.87	42.56	29.17	72.30	40.39	35.48
Lane Group LOS	E	D	D	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.18	18.01	11.19	1.51	4.62	3.14	9.41	17.38	4.79	5.10	8.81	3.30
50th-Percentile Queue Length [ft/ln]	79.58	450.1	279.8	37.87	115.3	78.58	235.1	434.4	119.7	127.5	220.2	82.50
95th-Percentile Queue Length [veh/ln]	5.73	24.97	16.68	2.73	8.14	5.66	14.44	24.22	8.38	8.81	13.68	5.94
95th-Percentile Queue Length [ft/ln]	143.2	624.1	416.9	68.17	203.4	141.4	360.9	605.4	209.4	220.2	341.9	148.5

Movement, Approach, & Intersection Results

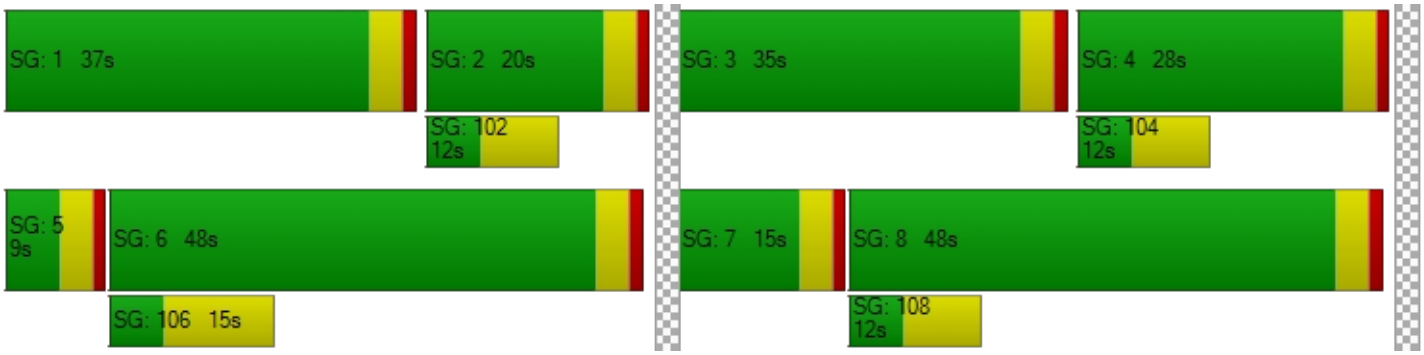
d_M, Delay for Movement [s/veh]	57.92	47.93	39.54	62.38	31.18	30.69	62.87	42.56	29.17	72.30	40.39	35.48
Movement LOS	E	D	D	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	47.34			34.56			44.19			44.57		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	44.12											
Intersection LOS	D											
Intersection V/C	0.808											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.224	3.189	2.902	2.893
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	267	733	400
d_b, Bicycle Delay [s]	24.07	45.07	24.07	38.40
l_b,int, Bicycle LOS Score for Intersection	2.849	2.025	2.940	2.333
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	41.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	55	791	257	87	219	179	347	879	21	68	490	173
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	0	0	0	0	0	0	24	0	0	15	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	36	0	0	36	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	886	288	97	245	200	389	1044	24	76	600	194
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	233	76	26	64	53	102	275	6	20	158	51
Total Analysis Volume [veh/h]	65	933	303	102	258	211	409	1099	25	80	632	204
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	23	37	0	12	26	26	41	62	0	9	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	40	40	8	42	77	31	51	51	5	25	37
g / C, Green / Cycle	0.05	0.33	0.33	0.07	0.35	0.64	0.26	0.43	0.43	0.04	0.21	0.31
(v / s)_i Volume / Saturation Flow Rate	0.04	0.27	0.20	0.06	0.08	0.14	0.24	0.31	0.31	0.02	0.18	0.13
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	1714	1800	1786	3329	3427	1530
c, Capacity [veh/h]	86	1141	509	114	1198	981	443	771	765	129	716	473
d1, Uniform Delay [s]	56.30	36.69	33.30	55.57	27.44	8.96	43.35	28.54	28.58	56.80	46.05	33.07
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.29	0.20	0.21	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.88	6.56	5.05	19.99	0.41	0.50	18.60	2.54	2.59	4.76	3.83	0.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.82	0.59	0.89	0.22	0.22	0.92	0.73	0.73	0.62	0.88	0.43
d, Delay for Lane Group [s/veh]	69.18	43.25	38.35	75.56	27.86	9.46	61.95	31.08	31.17	61.56	49.87	33.70
Lane Group LOS	E	D	D	E	C	A	E	C	C	E	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.25	13.44	8.03	3.70	2.69	2.35	14.02	13.81	13.76	1.28	9.48	4.83
50th-Percentile Queue Length [ft/ln]	56.31	336.1	200.6	92.40	67.17	58.80	350.4	345.1	344.0	32.01	237.0	120.6
95th-Percentile Queue Length [veh/ln]	4.05	19.46	12.67	6.65	4.84	4.23	20.16	19.90	19.85	2.30	14.53	8.43
95th-Percentile Queue Length [ft/ln]	101.3	486.4	316.8	166.3	120.9	105.8	504.0	497.5	496.1	57.62	363.2	210.7

Movement, Approach, & Intersection Results

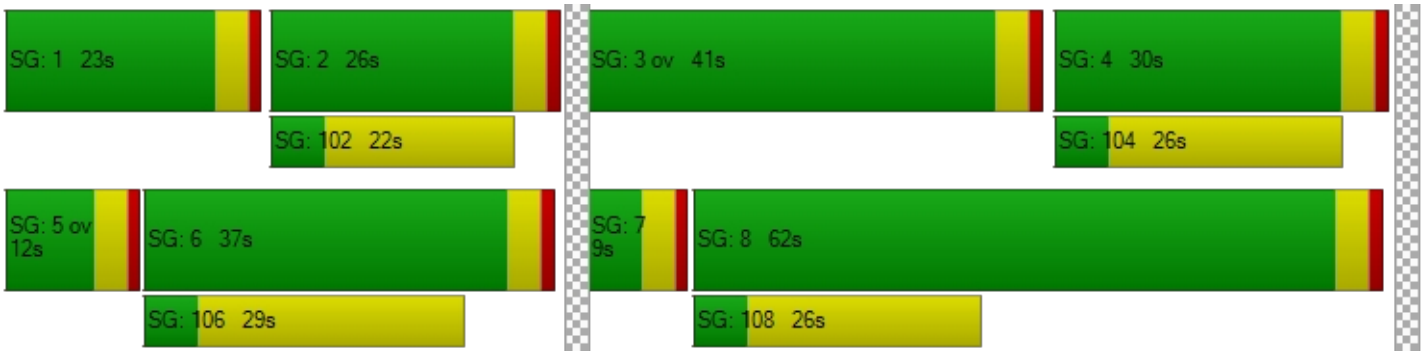
d_M, Delay for Movement [s/veh]	69.18	43.25	38.35	75.56	27.86	9.46	61.95	31.13	31.17	61.56	49.87	33.70
Movement LOS	E	D	D	E	C	A	E	C	C	E	D	C
d_A, Approach Delay [s/veh]	43.41			29.58			39.35			47.29		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	40.96											
Intersection LOS	D											
Intersection V/C	0.755											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.739	2.812	2.791	2.946
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	367	967	433
d_b, Bicycle Delay [s]	31.54	40.02	16.02	36.82
l_b,int, Bicycle LOS Score for Intersection	2.633	2.031	2.824	2.315
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	38.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	35	857	66	377	983	405	440	672	84	60	177	364
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	31	0	0	23	5	8	0	0	0	0	0
Site-Generated Trips [veh/h]	0	48	0	0	48	12	12	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1039	74	422	1172	471	513	753	94	67	198	408
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	273	19	111	308	124	135	198	25	18	52	107
Total Analysis Volume [veh/h]	41	1094	78	444	1234	496	540	793	99	71	208	429
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	9	33	0	20	44	44	24	58	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	4	50	50	16	62	86	20	34	34	5	18	38
g / C, Green / Cycle	0.03	0.42	0.42	0.13	0.52	0.72	0.17	0.28	0.28	0.04	0.15	0.32
(v / s)_i Volume / Saturation Flow Rate	0.02	0.23	0.23	0.13	0.25	0.32	0.16	0.25	0.25	0.02	0.06	0.28
s, saturation flow rate [veh/h]	1714	3427	1739	3329	4903	1530	3329	1800	1731	3329	3427	1530
c, Capacity [veh/h]	54	1422	722	444	2535	1097	555	505	486	126	520	487
d1, Uniform Delay [s]	57.67	26.56	26.57	52.00	18.71	7.11	49.73	41.50	41.62	56.75	45.97	38.74
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.14	0.14	0.11	0.11	0.36
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.60	1.51	2.97	19.92	0.67	1.35	12.50	7.25	8.20	3.90	0.50	15.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.55	0.55	1.00	0.49	0.45	0.97	0.90	0.90	0.56	0.40	0.88
d, Delay for Lane Group [s/veh]	77.27	28.07	29.53	71.92	19.38	8.46	62.24	48.76	49.82	60.65	46.46	54.01
Lane Group LOS	E	C	C	F	B	A	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.53	8.64	9.07	7.89	7.41	5.20	8.99	13.79	13.53	1.13	2.85	13.90
50th-Percentile Queue Length [ft/ln]	38.20	216.0	226.8	197.1	185.2	130.0	224.6	344.7	338.2	28.18	71.23	347.5
95th-Percentile Queue Length [veh/ln]	2.75	13.46	14.01	12.49	11.88	8.94	13.90	19.88	19.56	2.03	5.13	20.02
95th-Percentile Queue Length [ft/ln]	68.76	336.5	350.3	312.3	296.8	223.5	347.5	497.0	489.1	50.72	128.2	500.4

Movement, Approach, & Intersection Results

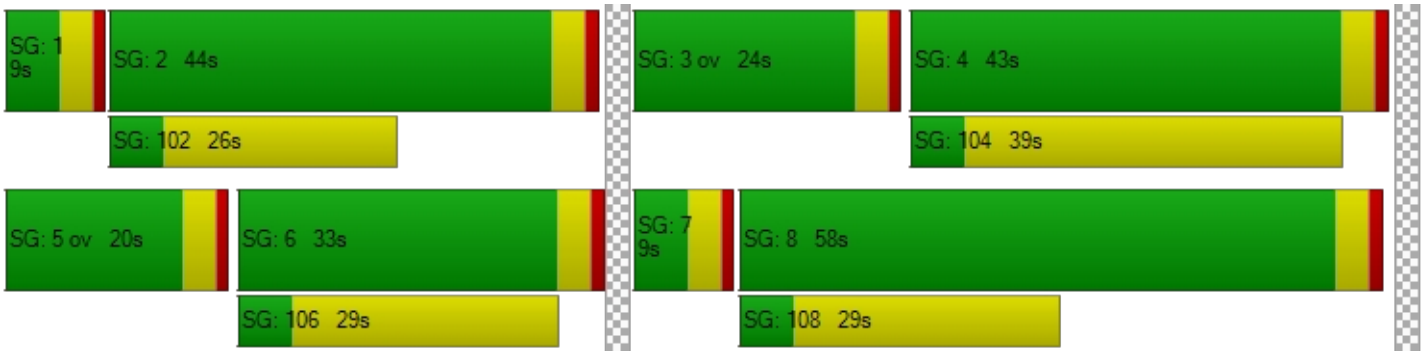
d_M, Delay for Movement [s/veh]	77.27	28.50	29.53	71.92	19.38	8.46	62.24	49.21	49.82	60.65	46.46	54.01
Movement LOS	E	C	C	F	B	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	30.21			27.62			54.16			52.46		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.25											
Intersection LOS	D											
Intersection V/C	0.708											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.060	3.395	2.822	2.891
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	667	900	650
d_b, Bicycle Delay [s]	34.50	26.67	18.15	27.34
l_b,int, Bicycle LOS Score for Intersection	2.227	2.755	2.741	2.144
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	605.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	43.372

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	8	601	29	67	890	130	243	49	30	13	21	83
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
In-Process Volume [veh/h]	0	8	0	13	5	5	8	0	0	0	0	15
Site-Generated Trips [veh/h]	0	12	0	24	12	12	12	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	693	32	112	1014	163	292	55	34	15	24	132
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	182	8	29	267	43	77	14	9	4	6	35
Total Analysis Volume [veh/h]	9	729	34	118	1067	172	307	58	36	16	25	139
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	12	12	5	16	16	91	91	91	91
g / C, Green / Cycle	0.01	0.10	0.10	0.04	0.13	0.13	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.01	0.15	0.15	0.07	0.24	0.24	43.12	0.02	0.64	0.09
s, saturation flow rate [veh/h]	1714	3427	1759	1714	3427	1675	8	1530	64	1530
c, Capacity [veh/h]	19	348	179	71	454	222	62	1158	90	1158
d1, Uniform Delay [s]	59.02	53.91	53.91	57.50	52.05	52.05	55.25	3.64	35.67	3.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.36	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.41	216.2	232.3	306.6	383.5	392.3	2249.34	0.01	11.43	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	1.45	1.45	1.65	1.83	1.83	5.92	0.03	0.45	0.12
d, Delay for Lane Group [s/veh]	77.43	270.1	286.2	364.1	435.6	444.4	2304.59	3.65	47.10	3.95
Lane Group LOS	E	F	F	F	F	F	F	A	D	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.37	15.70	16.92	8.25	31.00	30.84	40.39	0.20	1.29	0.81
50th-Percentile Queue Length [ft/ln]	9.17	392.5	422.9	206.2	774.9	771.0	1009.73	4.88	32.17	20.23
95th-Percentile Queue Length [veh/ln]	0.66	25.14	26.86	14.38	48.83	48.61	72.70	0.35	2.32	1.46
95th-Percentile Queue Length [ft/ln]	16.51	628.4	671.5	359.5	1220.	1215.	1817.52	8.78	57.90	36.42

Movement, Approach, & Intersection Results

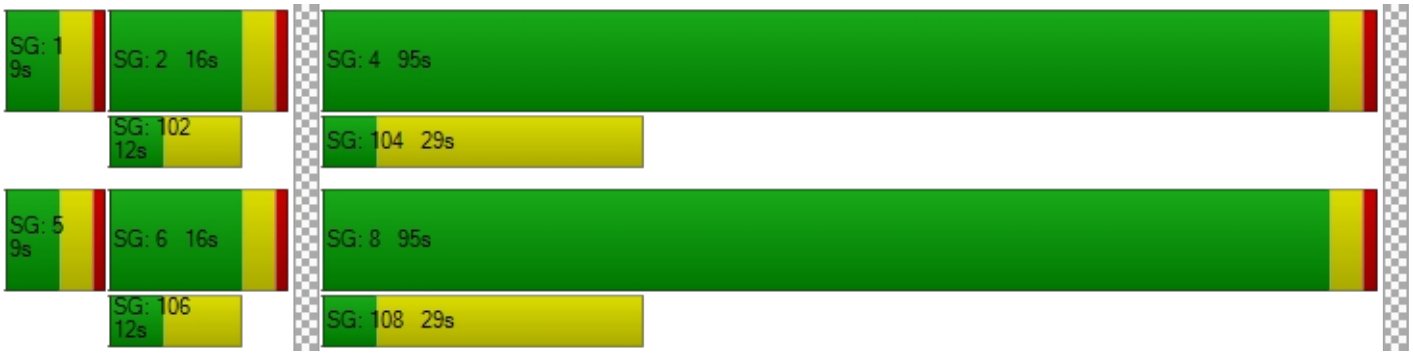
d_M, Delay for Movement [s/veh]	77.43	275.1	286.2	364.1	437.5	444.4	2304.	2304.	3.65	47.10	47.10	3.95
Movement LOS	E	F	F	F	F	F	F	F	A	D	D	A
d_A, Approach Delay [s/veh]	273.30			432.05			2098.02			13.78		
Approach LOS	F			F			F			B		
d_I, Intersection Delay [s/veh]	605.56											
Intersection LOS	F											
Intersection V/C	43.372											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.895	3.399	2.153	2.082
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	1.984	2.306	2.221	1.857
Bicycle LOS	A	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	37.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.579

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	344	52	0	0	66	456	428	0	298	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	344	52	0	0	66	456	428	0	298	0	0	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	86	13	0	0	17	114	107	0	75	0	0	0
Total Analysis Volume [veh/h]	344	52	0	0	66	456	428	0	298	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	55	69	0	9	23	23	0	33	0	0	9	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	84	84	0	57	85	20	20	20	0	0
g / C, Green / Cycle	0.22	0.70	0.70	0.00	0.48	0.71	0.16	0.16	0.16	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.20	0.01	0.01	0.00	0.02	0.30	0.13	0.13	0.11	0.00	0.00
s, saturation flow rate [veh/h]	1687	3373	1772	1687	3373	1506	1687	1687	2665	1687	1772
c, Capacity [veh/h]	376	2365	1242	1	1615	1070	278	278	439	1	1
d1, Uniform Delay [s]	45.53	5.41	5.41	0.00	16.63	7.21	47.93	47.93	47.12	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.03	0.01	0.02	0.00	0.05	1.24	4.48	4.48	1.84	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.01	0.01	0.00	0.04	0.43	0.77	0.77	0.68	0.00	0.00
d, Delay for Lane Group [s/veh]	54.55	5.42	5.43	0.00	16.68	8.45	52.41	52.41	48.96	0.00	0.00
Lane Group LOS	D	A	A	A	B	A	D	D	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	10.89	0.13	0.14	0.00	0.50	4.79	6.46	6.46	4.30	0.00	0.00
50th-Percentile Queue Length [ft/ln]	272.3	3.13	3.38	0.00	12.45	119.7	161.5	161.5	107.4	0.00	0.00
95th-Percentile Queue Length [veh/ln]	16.31	0.23	0.24	0.00	0.90	8.38	10.63	10.63	7.70	0.00	0.00
95th-Percentile Queue Length [ft/ln]	407.6	5.64	6.08	0.00	22.41	209.5	265.7	265.7	192.5	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.55	5.43	5.43	0.00	16.68	8.45	52.41	52.41	48.96	0.00	0.00	0.00
Movement LOS	D	A	A	A	B	A	D	D	D	A	A	A
d_A, Approach Delay [s/veh]	48.10			9.49			50.99			0.00		
Approach LOS	D			A			D			A		
d_I, Intersection Delay [s/veh]	37.12											
Intersection LOS	D											
Intersection V/C	0.579											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.715	0.000	2.716	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1083	317	483	83
d_b, Bicycle Delay [s]	12.60	42.50	34.50	55.10
l_b,int, Bicycle LOS Score for Intersection	1.777	1.990	2.758	1.560
Bicycle LOS	A	A	C	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-6

INTERSECTION ANALYSIS
WORKSHEETS –
HORIZON YEAR 2040

Speedway Commerce Center

Vistro File: K:\...\Speedway CC AM.vistro
Report File: K:\...\7 HY 2040 AM.pdf

Scenario 7 HY 2040 AM
5/3/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.596	29.1	C
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.657	28.3	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.454	19.4	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.604	25.2	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.727	29.0	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.498	18.6	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	SB Left	0.465	33.6	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.632	37.9	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	WB Left	0.665	35.2	D
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.816	60.2	E
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Thru	0.699	26.7	C
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	NB Right	0.584	27.7	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.741	38.5	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.498	39.0	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.928	54.0	D
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	EB Left	0.591	33.6	C
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.600	45.9	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.893	31.4	C
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.634	24.4	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	NB Left	0.785	42.6	D
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	WB Left	0.744	49.7	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	8.079	3,717.8	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.766	48.3	D
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	NB Left	0.740	44.0	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	NB Left	0.917	72.4	E
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.805	48.3	D
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.576	25.4	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.843	57.6	E
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	SB Left	0.612	35.7	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.728	24.7	C
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.769	37.6	D
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.653	90.2	F
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.521	18.5	B
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.649	29.2	C
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	WB Thru	1.285	93.4	F
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.589	30.4	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	NB Left	0.605	40.1	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.676	31.7	C
			HCM 6th				

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.605	33.1	C
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	SB Thru	1.147	95.9	F
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	SB Thru	1.538	150.1	F
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.588	34.0	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	NB Left	0.629	30.9	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Left	0.763	43.9	D
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	SB Right	0.606	49.3	D
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.607	35.2	D
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	EB Left	0.507	30.5	C
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.328	16.2	C
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.630	36.3	D
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	EB Left	0.548	32.5	C
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	SWB Thru	0.666	40.2	D
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.647	38.6	D
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	NB Left	0.704	30.8	C
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	WB Left	1.588	147.2	F
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.535	31.3	C
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	SB Left	0.481	32.5	C
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.739	43.8	D
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.660	37.3	D
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Thru	16.416	10,000.0	F

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Right	0.881	61.3	E
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	NB Left	0.736	34.9	C
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.585	23.2	C
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	SB Thru	0.845	32.5	C
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.566	21.1	C
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.846	30.9	C
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	EB Right	0.804	34.3	C
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.746	33.5	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	SB Left	0.789	28.9	C
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	EB Left	0.657	37.1	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	SB Left	0.893	88.7	F
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.670	32.0	C
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	32.708	662.1	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition		0.000	0.0	A
998543	New Intersection	Unknown	?		?	?	?
998552	New Intersection	Unknown	?		?	?	?
998555	New Intersection	Unknown	?		?	?	?

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	29.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	200	489	0	0	917	224	0	0	0	420	4	331
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	200	489	0	0	917	224	0	0	0	420	4	331
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	129	0	0	241	59	0	0	0	111	1	87
Total Analysis Volume [veh/h]	211	515	0	0	965	236	0	0	0	442	4	348
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	21	53	0	0	32	0	0	0	0	0	67	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	16	79	59	59		33	33
g / C, Green / Cycle	0.13	0.66	0.50	0.50		0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.12	0.14	0.22	0.23		0.25	0.22
s, saturation flow rate [veh/h]	1810	3618	3618	1721		1810	1615
c, Capacity [veh/h]	239	2386	1788	851		496	442
d1, Uniform Delay [s]	51.19	8.11	19.70	19.99		41.99	40.34
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	10.40	0.21	0.81	1.87		6.20	3.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.22	0.45	0.47		0.90	0.79
d, Delay for Lane Group [s/veh]	61.59	8.32	20.51	21.85		48.19	43.48
Lane Group LOS	E	A	C	C		D	D
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	6.91	2.60	7.37	7.71		13.49	9.86
50th-Percentile Queue Length [ft/ln]	172.82	65.07	184.26	192.87		337.18	246.40
95th-Percentile Queue Length [veh/ln]	11.22	4.68	11.82	12.27		19.51	15.00
95th-Percentile Queue Length [ft/ln]	280.62	117.12	295.56	306.74		487.75	375.12

Movement, Approach, & Intersection Results

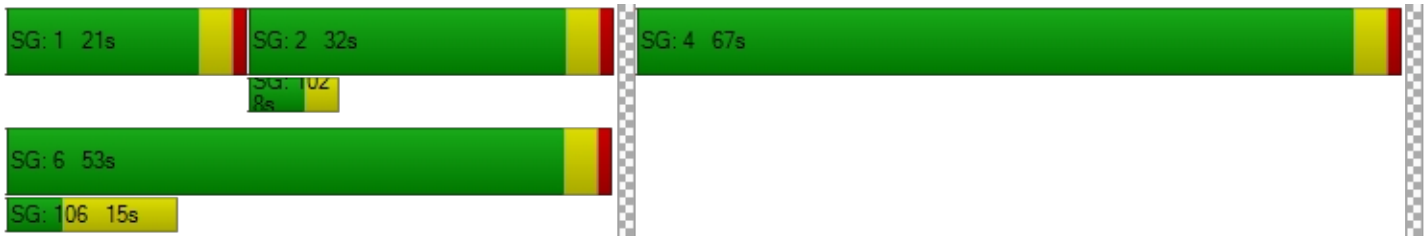
d_M, Delay for Movement [s/veh]	61.59	8.32	0.00	0.00	20.74	21.85	0.00	0.00	0.00	48.19	48.19	43.48
Movement LOS	E	A			C	C				D	D	D
d_A, Approach Delay [s/veh]	23.80			20.96			0.00			46.13		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	29.06											
Intersection LOS	C											
Intersection V/C	0.596											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.878	2.213
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	467	0	1050
d_b, Bicycle Delay [s]	21.00	35.27	60.00	13.54
l_b,int, Bicycle LOS Score for Intersection	2.159	2.220	4.132	2.870
Bicycle LOS	B	B	D	C

Sequence

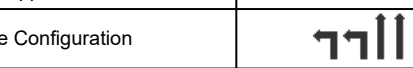
Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	338	1029	0	0	925	398	0	0	0	477	1	439
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	338	1029	0	0	925	398	0	0	0	477	1	439
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	271	0	0	243	105	0	0	0	126	0	116
Total Analysis Volume [veh/h]	356	1083	0	0	974	419	0	0	0	502	1	462
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	21	49	0	0	28	0	0	0	0	0	71	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	14	74	56	56		38	38	38
g / C, Green / Cycle	0.12	0.62	0.47	0.47		0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.10	0.30	0.27	0.26		0.14	0.14	0.29
s, saturation flow rate [veh/h]	3514	3618	3618	1615		1810	1810	1615
c, Capacity [veh/h]	419	2238	1686	753		569	569	508
d1, Uniform Delay [s]	51.79	12.45	23.40	23.09		32.74	32.74	39.48
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	4.88	0.75	1.45	2.96		0.54	0.54	6.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.48	0.58	0.56		0.44	0.44	0.91
d, Delay for Lane Group [s/veh]	56.67	13.20	24.85	26.05		33.28	33.28	46.09
Lane Group LOS	E	B	C	C		C	C	D
Critical Lane Group	Yes	No	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.53	7.82	10.26	9.04		5.92	5.92	13.86
50th-Percentile Queue Length [ft/ln]	138.23	195.40	256.55	226.06		148.01	148.01	346.50
95th-Percentile Queue Length [veh/ln]	9.39	12.40	15.52	13.97		9.91	9.91	19.97
95th-Percentile Queue Length [ft/ln]	234.64	310.02	387.89	349.35		247.77	247.77	499.14

Movement, Approach, & Intersection Results

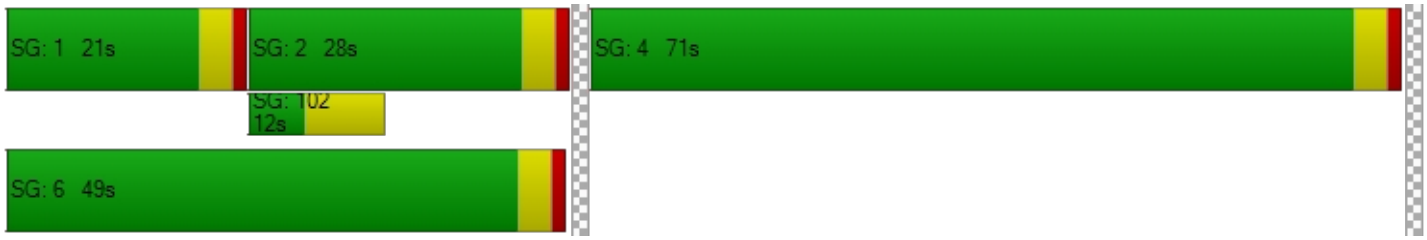
d_M, Delay for Movement [s/veh]	56.67	13.20	0.00	0.00	24.85	26.05	0.00	0.00	0.00	33.28	33.28	46.09
Movement LOS	E	B			C	C				C	C	D
d_A, Approach Delay [s/veh]	23.95			25.21			0.00			39.41		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	28.34											
Intersection LOS	C											
Intersection V/C	0.657											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.108	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	400	0	1117
d_b, Bicycle Delay [s]	23.44	38.40	60.00	11.70
l_b,int, Bicycle LOS Score for Intersection	2.747	2.709	4.132	3.152
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.454

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1006	0	0	1212	0	0	0	0	580	0	373
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1006	0	0	1212	0	0	0	0	580	0	373
Peak Hour Factor	1.0000	0.9500	1.0000	1.0000	0.9500	1.0000	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	265	0	0	319	0	0	0	0	153	0	98
Total Analysis Volume [veh/h]	0	1059	0	0	1276	0	0	0	0	611	0	393
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	65	0	0	65	0	0	0	0	0	55	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	83	83		29	29	29
g / C, Green / Cycle	0.69	0.69		0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.20	0.25		0.18	0.19	0.21
s, saturation flow rate [veh/h]	5176	5176		1810	1772	1615
c, Capacity [veh/h]	3590	3590		434	425	387
d1, Uniform Delay [s]	7.08	7.47		42.56	42.77	43.76
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	0.28		2.95	3.29	5.87
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.36		0.77	0.79	0.86
d, Delay for Lane Group [s/veh]	7.29	7.75		45.51	46.06	49.63
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.31	4.21		9.59	9.67	10.12
50th-Percentile Queue Length [ft/ln]	82.71	105.28		239.74	241.67	253.11
95th-Percentile Queue Length [veh/ln]	5.96	7.58		14.67	14.77	15.34
95th-Percentile Queue Length [ft/ln]	148.88	189.42		366.71	369.15	383.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.29	0.00	0.00	7.75	0.00	0.00	0.00	0.00	45.76	46.06	49.10
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	7.29			7.75			0.00			47.07		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	19.42											
Intersection LOS	B											
Intersection V/C	0.454											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1017	0	850
d_b, Bicycle Delay [s]	14.50	14.50	60.00	19.84
l_b,int, Bicycle LOS Score for Intersection	2.142	2.261	4.132	3.216
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.604

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	533	379	228	981	0	253	7	344	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	533	379	228	981	0	253	7	344	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	140	100	60	258	0	67	2	91	0	0	0
Total Analysis Volume [veh/h]	0	561	399	240	1033	0	266	7	362	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	41	0	24	65	0	0	55	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	60	60	18	82	30	30	
g / C, Green / Cycle	0.50	0.50	0.15	0.69	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	0.16	0.25	0.13	0.29	0.15	0.22	
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1812	1615	
c, Capacity [veh/h]	1819	812	268	2476	451	402	
d1, Uniform Delay [s]	17.56	19.70	50.18	8.37	39.85	43.62	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.44	2.12	10.12	0.52	1.31	7.84	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.31	0.49	0.89	0.42	0.61	0.90	
d, Delay for Lane Group [s/veh]	18.00	21.83	60.30	8.89	41.16	51.46	
Lane Group LOS	B	C	E	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	4.65	7.72	7.81	5.68	7.29	11.22	
50th-Percentile Queue Length [ft/ln]	116.19	192.99	195.33	142.09	182.28	280.52	
95th-Percentile Queue Length [veh/ln]	8.18	12.28	12.40	9.59	11.72	16.71	
95th-Percentile Queue Length [ft/ln]	204.58	306.90	309.94	239.84	292.99	417.87	

Movement, Approach, & Intersection Results

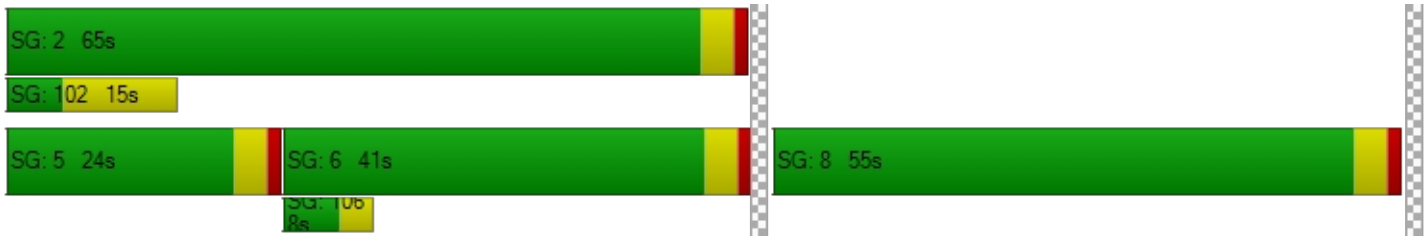
d_M, Delay for Movement [s/veh]	0.00	18.00	21.83	60.30	8.89	0.00	41.16	41.16	51.46	0.00	0.00	0.00
Movement LOS		B	C	E	A		D	D	D			
d_A, Approach Delay [s/veh]	19.59			18.58			47.03			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	25.22											
Intersection LOS	C											
Intersection V/C	0.604											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.162	2.068
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	1017	850	0
d_b, Bicycle Delay [s]	28.70	14.50	19.84	60.00
l_b,int, Bicycle LOS Score for Intersection	2.088	2.610	2.607	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	29.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	921	464	338	1052	0	460	0	450	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	921	464	338	1052	0	460	0	450	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	242	122	89	277	0	121	0	118	0	0	0
Total Analysis Volume [veh/h]	0	969	488	356	1107	0	484	0	474	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	52	0	19	71	0	0	49	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	67	67	14	85	27	27	27	
g / C, Green / Cycle	0.55	0.55	0.12	0.71	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.38	0.43	0.10	0.31	0.18	0.19	0.20	
s, saturation flow rate [veh/h]	1900	1699	3514	3618	1810	1709	1615	
c, Capacity [veh/h]	1053	941	413	2550	414	391	369	
d1, Uniform Delay [s]	19.35	20.89	52.00	7.53	43.40	43.92	44.47	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.74	6.17	5.44	0.54	3.14	4.25	6.12	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.69	0.77	0.86	0.43	0.78	0.82	0.86	
d, Delay for Lane Group [s/veh]	23.09	27.06	57.45	8.07	46.54	48.16	50.59	
Lane Group LOS	C	C	E	A	D	D	D	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	15.22	16.86	5.57	5.72	9.26	9.44	9.68	
50th-Percentile Queue Length [ft/ln]	380.44	421.43	139.21	142.99	231.62	235.93	242.03	
95th-Percentile Queue Length [veh/ln]	21.62	23.59	9.44	9.64	14.26	14.48	14.78	
95th-Percentile Queue Length [ft/ln]	540.38	589.77	235.95	241.04	356.41	361.88	369.60	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	24.08	27.06	57.45	8.07	0.00	47.09	48.16	49.79	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	D			
d_A, Approach Delay [s/veh]	25.07			20.09			48.43			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	28.96											
Intersection LOS	C											
Intersection V/C	0.727											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.380	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	1117	750	0
d_b, Bicycle Delay [s]	21.60	11.70	23.44	60.00
l_b,int, Bicycle LOS Score for Intersection	2.762	2.767	3.140	4.132
Bicycle LOS	C	C	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.498

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1066	899	0	1454	26	299	0	619	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1066	899	0	1454	26	299	0	619	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	281	237	0	383	7	79	0	163	0	0	0
Total Analysis Volume [veh/h]	0	1122	946	0	1531	26	315	0	652	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	67	0	0	67	0	0	53	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	84	84	28	28	28	
g / C, Green / Cycle	0.70	0.70	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.30	0.17	0.20	0.20	
s, saturation flow rate [veh/h]	5176	5176	1810	1615	1615	
c, Capacity [veh/h]	3617	3617	424	379	379	
d1, Uniform Delay [s]	6.94	7.72	42.58	44.06	44.06	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.22	0.36	2.59	5.83	5.83	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.31	0.42	0.74	0.86	0.86	
d, Delay for Lane Group [s/veh]	7.17	8.09	45.17	49.89	49.89	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	3.48	5.29	8.95	9.87	9.87	
50th-Percentile Queue Length [ft/ln]	86.93	132.14	223.70	246.73	246.73	
95th-Percentile Queue Length [veh/ln]	6.26	9.06	13.85	15.02	15.02	
95th-Percentile Queue Length [ft/ln]	156.47	226.40	346.35	375.53	375.53	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.17	0.00	0.00	8.09	0.00	45.17	49.89	49.89	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	7.17			8.09			48.35			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	18.56											
Intersection LOS	B											
Intersection V/C	0.498											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.382	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	1050	817	0
d_b, Bicycle Delay [s]	13.54	13.54	21.00	60.00
l_b,int, Bicycle LOS Score for Intersection	2.177	2.402	3.155	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.465

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	74	727	109	62	632	110	131	237	118	149	323	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	727	109	62	632	110	131	237	118	149	323	68
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	191	29	16	166	29	34	62	31	39	85	18
Total Analysis Volume [veh/h]	78	765	115	65	665	116	138	249	124	157	340	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	49	0	11	44	0	19	26	0	34	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	71	71	6	70	70	11	15	15	12	17	17
g / C, Green / Cycle	0.06	0.59	0.59	0.05	0.58	0.58	0.09	0.13	0.13	0.10	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.24	0.04	0.21	0.21	0.08	0.10	0.11	0.09	0.11	0.11
s, saturation flow rate [veh/h]	1810	1900	1814	1810	1900	1803	1810	1900	1692	1810	1900	1787
c, Capacity [veh/h]	100	1120	1069	84	1103	1046	166	241	214	189	265	249
d1, Uniform Delay [s]	55.94	13.26	13.26	56.60	13.39	13.40	53.59	51.00	51.14	52.71	50.01	50.08
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.09	1.08	1.13	14.04	0.93	0.98	10.23	6.42	8.05	9.12	5.49	6.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.40	0.40	0.78	0.36	0.36	0.83	0.81	0.83	0.83	0.80	0.81
d, Delay for Lane Group [s/veh]	68.03	14.33	14.38	70.64	14.32	14.38	63.82	57.41	59.20	61.83	55.50	56.17
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.67	6.70	6.41	2.28	5.91	5.63	4.56	6.13	5.70	5.12	6.54	6.26
50th-Percentile Queue Length [ft/ln]	66.72	167.46	160.29	56.90	147.81	140.78	114.11	153.20	142.45	127.92	163.49	156.49
95th-Percentile Queue Length [veh/ln]	4.80	10.94	10.56	4.10	9.90	9.52	8.07	10.19	9.61	8.83	10.73	10.36
95th-Percentile Queue Length [ft/ln]	120.09	273.58	264.11	102.42	247.50	238.07	201.70	254.69	240.32	220.66	268.34	259.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.03	14.35	14.38	70.64	14.34	14.38	63.82	57.80	59.20	61.83	55.75	56.17
Movement LOS	E	B	B	E	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	18.73			18.67			59.76			57.48		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	33.63											
Intersection LOS	C											
Intersection V/C	0.465											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.686	2.670	2.519	2.630
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	667	367	617
d_b, Bicycle Delay [s]	23.44	26.67	40.02	28.70
l_b,int, Bicycle LOS Score for Intersection	2.350	2.258	1.981	2.029
Bicycle LOS	B	B	A	B

Sequence

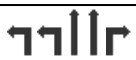
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	37.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.632

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	102	825	99	428	1064	189	241	269	59	114	315	294
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	825	99	428	1064	189	241	269	59	114	315	294
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	217	26	113	280	50	63	71	16	30	83	77
Total Analysis Volume [veh/h]	107	868	104	451	1120	199	254	283	62	120	332	309
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	38	0	23	48	0	15	37	0	22	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	50	50	17	59	59	11	27	27	10	26	26
g / C, Green / Cycle	0.07	0.42	0.42	0.15	0.49	0.49	0.09	0.22	0.22	0.08	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.06	0.13	0.31	0.12	0.07	0.08	0.04	0.07	0.17	0.19
s, saturation flow rate [veh/h]	1810	3618	1615	3514	3618	1615	3514	3618	1615	1810	1900	1615
c, Capacity [veh/h]	132	1509	674	511	1771	791	310	800	357	150	411	349
d1, Uniform Delay [s]	54.82	26.82	21.79	50.28	22.64	17.83	53.78	39.48	37.84	54.04	44.68	45.60
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.21	1.60	0.49	5.23	1.73	0.76	5.38	0.27	0.23	9.35	3.83	9.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.58	0.15	0.88	0.63	0.25	0.82	0.35	0.17	0.80	0.81	0.89
d, Delay for Lane Group [s/veh]	66.03	28.42	22.27	55.51	24.37	18.59	59.16	39.74	38.07	63.38	48.51	55.05
Lane Group LOS	E	C	C	E	C	B	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.60	9.77	1.93	7.00	11.87	3.37	4.00	3.57	1.51	3.95	9.80	9.81
50th-Percentile Queue Length [ft/ln]	89.93	244.19	48.18	174.91	296.69	84.24	99.95	89.28	37.75	98.78	244.93	245.18
95th-Percentile Queue Length [veh/ln]	6.48	14.89	3.47	11.33	17.52	6.06	7.20	6.43	2.72	7.11	14.93	14.94
95th-Percentile Queue Length [ft/ln]	161.88	372.33	86.73	283.35	437.93	151.62	179.91	160.70	67.96	177.80	373.26	373.58

Movement, Approach, & Intersection Results

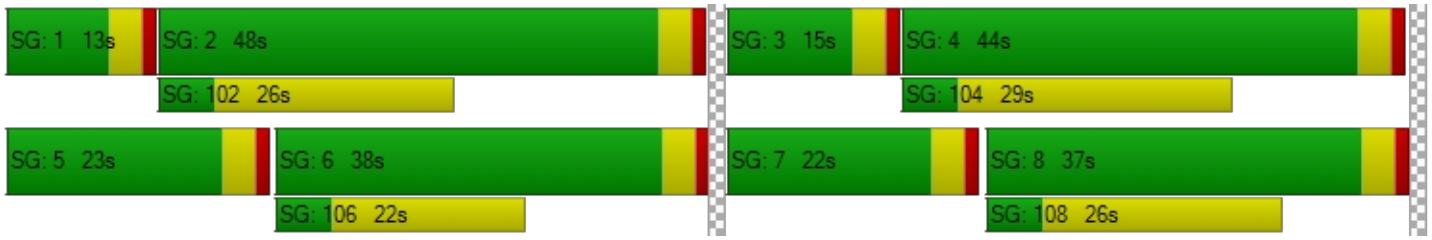
d_M, Delay for Movement [s/veh]	66.03	28.42	22.27	55.51	24.37	18.59	59.16	39.74	38.07	63.38	48.51	55.05
Movement LOS	E	C	C	E	C	B	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	31.56			31.65			47.81			53.51		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.88											
Intersection LOS	D											
Intersection V/C	0.632											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.855	3.055	2.781	2.728
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	733	550	667
d_b, Bicycle Delay [s]	30.82	24.07	31.54	26.67
l_b,int, Bicycle LOS Score for Intersection	2.450	3.020	2.054	2.815
Bicycle LOS	B	C	B	C

Sequence

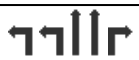
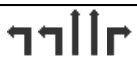
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	35.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.665

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	339	1082	67	245	1340	492	326	362	270	23	395	223
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	339	1082	67	245	1340	492	326	362	270	23	395	223
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	285	18	64	353	129	86	95	71	6	104	59
Total Analysis Volume [veh/h]	357	1139	71	258	1411	518	343	381	284	24	416	235
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	35	0	20	33	0	21	56	0	9	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	59	59	11	55	55	14	32	32	3	21	21
g / C, Green / Cycle	0.12	0.49	0.49	0.09	0.46	0.46	0.12	0.26	0.26	0.02	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.10	0.22	0.04	0.07	0.27	0.32	0.10	0.11	0.18	0.01	0.11	0.15
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	422	2524	788	323	2378	742	406	955	426	82	621	277
d1, Uniform Delay [s]	51.72	20.19	16.47	53.40	24.10	25.80	52.01	36.34	39.45	57.64	46.53	48.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.76	0.59	0.23	4.56	1.10	5.39	4.86	0.27	1.80	1.97	1.26	7.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.45	0.09	0.80	0.59	0.70	0.84	0.40	0.67	0.29	0.67	0.85
d, Delay for Lane Group [s/veh]	56.48	20.78	16.70	57.96	25.19	31.19	56.87	36.61	41.25	59.61	47.79	55.30
Lane Group LOS	E	C	B	E	C	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.53	7.03	1.10	4.02	10.01	12.63	5.33	4.65	7.68	0.38	5.93	7.35
50th-Percentile Queue Length [ft/ln]	138.37	175.82	27.54	100.46	250.25	315.79	133.24	116.24	192.00	9.52	148.13	183.82
95th-Percentile Queue Length [veh/ln]	9.39	11.38	1.98	7.23	15.20	18.46	9.12	8.19	12.22	0.69	9.92	11.80
95th-Percentile Queue Length [ft/ln]	234.83	284.55	49.57	180.82	379.96	461.51	227.89	204.64	305.62	17.14	247.93	295.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.48	20.78	16.70	57.96	25.19	31.19	56.87	36.61	41.25	59.61	47.79	55.30
Movement LOS	E	C	B	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	28.73			30.48			44.81			50.83		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.16											
Intersection LOS	D											
Intersection V/C	0.665											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.220	3.287	2.929	2.802
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	483	867	667
d_b, Bicycle Delay [s]	33.00	34.50	19.27	26.67
l_b,int, Bicycle LOS Score for Intersection	2.421	2.762	2.391	2.116
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	60.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	133	306	134	165	344	288	120	649	113	291	1377	266
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	306	134	165	344	288	120	649	113	291	1377	266
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	81	35	43	91	76	32	171	30	77	362	70
Total Analysis Volume [veh/h]	140	322	141	174	362	303	126	683	119	306	1449	280
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	36	36	15	41	0	12	51	0	18	57	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	32	49	11	37	37	8	48	48	13	53	53
g / C, Green / Cycle	0.05	0.27	0.40	0.09	0.31	0.31	0.07	0.40	0.40	0.10	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.04	0.17	0.09	0.10	0.19	0.19	0.07	0.15	0.15	0.09	0.46	0.48
s, saturation flow rate [veh/h]	3514	1900	1615	1810	1900	1618	1810	3618	1760	3514	1900	1797
c, Capacity [veh/h]	176	507	655	166	586	499	121	1457	709	371	839	794
d1, Uniform Delay [s]	56.40	38.85	23.23	54.50	35.39	35.41	56.00	25.14	25.18	52.58	33.50	33.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.49	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.98	5.98	0.75	46.07	4.73	5.56	50.20	0.16	0.33	4.66	38.87	58.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.64	0.22	1.05	0.61	0.61	1.04	0.37	0.37	0.82	1.03	1.09
d, Delay for Lane Group [s/veh]	64.38	44.83	23.98	100.57	40.11	40.97	106.20	25.30	25.51	57.24	72.37	92.44
Lane Group LOS	E	D	C	F	D	D	F	C	C	E	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.29	9.20	2.76	7.13	9.69	8.39	5.33	5.40	5.35	4.76	32.70	35.35
50th-Percentile Queue Length [ft/ln]	57.33	230.01	68.89	178.13	242.23	209.79	133.26	135.04	133.76	118.92	817.47	883.87
95th-Percentile Queue Length [veh/ln]	4.13	14.17	4.96	11.71	14.79	13.14	9.24	9.21	9.14	8.33	43.07	48.08
95th-Percentile Queue Length [ft/ln]	103.19	354.37	124.00	292.68	369.85	328.56	231.06	230.33	228.59	208.34	1076.63	1202.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.38	44.83	23.98	100.57	40.12	40.97	106.20	25.34	25.51	57.24	80.47	92.44
Movement LOS	E	D	C	F	D	D	F	C	C	E	F	F
d_A, Approach Delay [s/veh]	44.49			52.96			36.34			78.62		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	60.15											
Intersection LOS	E											
Intersection V/C	0.816											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.694	2.621	2.926	3.110
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	617	783	883
d_b, Bicycle Delay [s]	32.27	28.70	22.20	18.70
l_b,int, Bicycle LOS Score for Intersection	2.555	2.252	2.070	3.238
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	26.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	411	0	1297	0	1088	264	0	1060	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	411	0	1297	0	1088	264	0	1060	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	108	0	341	0	286	69	0	279	0
Total Analysis Volume [veh/h]	0	0	0	433	0	1365	0	1145	278	0	1116	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	94	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		64	64	48	48
g / C, Green / Cycle		0.54	0.54	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate		0.12	0.48	0.22	0.22
s, saturation flow rate [veh/h]		3514	2859	5176	5176
c, Capacity [veh/h]		1886	1534	2053	2053
d1, Uniform Delay [s]		14.69	24.64	28.05	27.85
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.06	1.97	1.10	1.04
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.23	0.89	0.56	0.54
d, Delay for Lane Group [s/veh]		14.75	26.61	29.15	28.89
Lane Group LOS		B	C	C	C
Critical Lane Group		No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.12	16.83	8.65	8.37
50th-Percentile Queue Length [ft/ln]		77.94	420.64	216.30	209.19
95th-Percentile Queue Length [veh/ln]		5.61	23.55	13.48	13.11
95th-Percentile Queue Length [ft/ln]		140.29	588.82	336.90	327.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	14.75	0.00	26.61	0.00	29.15	0.00	0.00	28.89	0.00
Movement LOS				B		C		C			C	
d_A, Approach Delay [s/veh]	0.00			23.75			29.15			28.89		
Approach LOS	A			C			C			C		
d_I, Intersection Delay [s/veh]	26.69											
Intersection LOS	C											
Intersection V/C	0.699											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.666	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1500	367	367
d_b, Bicycle Delay [s]	60.00	3.75	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.189	2.173
Bicycle LOS	D	A	B	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	363	3	427	0	0	0	396	652	0	0	1954	219
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	363	3	427	0	0	0	396	652	0	0	1954	219
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	96	1	112	0	0	0	104	172	0	0	514	58
Total Analysis Volume [veh/h]	382	3	449	0	0	0	417	686	0	0	2057	231
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	23	0	0	0	0	60	97	0	0	37	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	27		17	85	64
g / C, Green / Cycle	0.22	0.22	0.22		0.14	0.71	0.53
(v / s)_i Volume / Saturation Flow Rate	0.16	0.16	0.17		0.12	0.13	0.30
s, saturation flow rate [veh/h]	1810	1680	1615		3514	5176	6901
c, Capacity [veh/h]	406	377	363		501	3668	3677
d1, Uniform Delay [s]	42.88	43.18	43.34		50.04	5.87	18.66
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	9.92	11.90	13.10		3.66	0.02	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.73	0.75		0.83	0.19	0.56
d, Delay for Lane Group [s/veh]	52.80	55.08	56.45		53.71	5.89	18.79
Lane Group LOS	D	E	E		D	A	B
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	8.96	8.85	8.79		6.33	1.80	9.31
50th-Percentile Queue Length [ft/ln]	224.04	221.23	219.87		158.36	45.01	232.75
95th-Percentile Queue Length [veh/ln]	13.87	13.73	13.66		10.46	3.24	14.31
95th-Percentile Queue Length [ft/ln]	346.77	343.20	341.46		261.56	81.02	357.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.40	55.08	55.92	0.00	0.00	0.00	53.71	5.89	0.00	0.00	18.79	0.00
Movement LOS	D	E	E				D	A			B	
d_A, Approach Delay [s/veh]	54.74			0.00			23.97			18.79		
Approach LOS	D			A			C			B		
d_I, Intersection Delay [s/veh]	27.73											
Intersection LOS	C											
Intersection V/C	0.584											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.350	1.935	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	0	1550	550
d_b, Bicycle Delay [s]	42.50	60.00	3.04	31.54
l_b,int, Bicycle LOS Score for Intersection	2.936	4.132	2.166	2.408
Bicycle LOS	C	D	B	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	107	661	219	77	959	492	260	562	183	497	1527	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	661	219	77	959	492	260	562	183	497	1527	74
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	174	58	20	252	129	68	148	48	131	402	19
Total Analysis Volume [veh/h]	113	696	231	81	1009	518	274	592	193	523	1607	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	43	0	9	43	0	15	40	0	28	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	45	45	5	45	45	11	34	34	20	43	43
g / C, Green / Cycle	0.04	0.37	0.37	0.04	0.37	0.37	0.09	0.29	0.29	0.17	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.03	0.13	0.14	0.02	0.19	0.32	0.08	0.11	0.12	0.15	0.31	0.05
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	146	1932	603	137	1918	599	322	1475	460	595	1877	586
d1, Uniform Delay [s]	56.93	27.23	27.50	56.71	29.52	34.99	53.69	34.64	34.84	48.63	35.34	25.61
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.31	0.52	1.84	4.00	1.04	15.41	6.29	0.18	0.61	4.38	1.21	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.36	0.38	0.59	0.53	0.87	0.85	0.40	0.42	0.88	0.86	0.13
d, Delay for Lane Group [s/veh]	65.24	27.75	29.34	60.71	30.56	50.40	59.98	34.81	35.45	53.01	36.55	25.71
Lane Group LOS	E	C	C	E	C	D	E	C	D	D	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.87	4.92	5.16	1.28	7.74	16.35	4.35	4.69	4.67	7.99	14.49	1.52
50th-Percentile Queue Length [ft/ln]	46.64	122.89	128.94	32.12	193.43	408.73	108.79	117.28	116.73	199.70	362.14	38.06
95th-Percentile Queue Length [veh/ln]	3.36	8.55	8.88	2.31	12.30	22.98	7.77	8.24	8.21	12.62	20.73	2.74
95th-Percentile Queue Length [ft/ln]	83.94	213.79	222.05	57.81	307.47	574.51	194.32	206.09	205.32	315.58	518.18	68.52

Movement, Approach, & Intersection Results

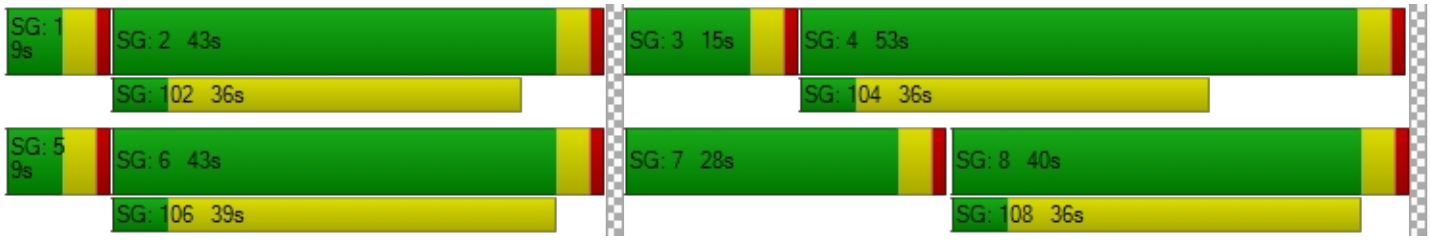
d_M, Delay for Movement [s/veh]	65.24	27.75	29.34	60.71	30.56	50.40	59.98	34.81	35.45	53.01	36.55	25.71
Movement LOS	E	C	C	E	C	D	E	C	D	D	D	C
d_A, Approach Delay [s/veh]	32.18			38.47			41.44			40.07		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	38.49											
Intersection LOS	D											
Intersection V/C	0.741											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.164	3.152	3.386	3.285
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	650	600	817
d_b, Bicycle Delay [s]	27.34	27.34	29.40	21.00
l_b,int, Bicycle LOS Score for Intersection	2.132	2.444	2.142	2.774
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.498

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	95	432	25	114	434	221	148	507	61	105	695	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	432	25	114	434	221	148	507	61	105	695	120
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	114	7	30	114	58	39	133	16	28	183	32
Total Analysis Volume [veh/h]	100	455	26	120	457	233	156	534	64	111	732	126
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	36	0	17	40	0	22	36	0	31	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	59	59	10	61	61	12	26	26	9	23	23
g / C, Green / Cycle	0.07	0.49	0.49	0.08	0.51	0.51	0.10	0.21	0.21	0.08	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.06	0.13	0.02	0.07	0.20	0.20	0.09	0.10	0.04	0.06	0.16	0.16
s, saturation flow rate [veh/h]	1810	3618	1615	1810	1870	1660	1810	5176	1589	1781	3618	1761
c, Capacity [veh/h]	124	1785	797	147	946	840	185	1102	338	141	686	334
d1, Uniform Delay [s]	55.08	17.62	15.65	54.25	18.20	18.22	52.89	41.44	38.73	54.26	46.86	46.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.36	0.34	0.08	10.45	1.19	1.35	9.77	0.33	0.27	9.33	2.84	5.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.25	0.03	0.82	0.39	0.39	0.84	0.48	0.19	0.79	0.84	0.85
d, Delay for Lane Group [s/veh]	66.44	17.96	15.73	64.70	19.39	19.57	62.66	41.77	38.99	63.60	49.70	52.83
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.37	3.72	0.39	3.99	6.46	5.80	5.12	4.67	1.58	3.66	8.53	8.67
50th-Percentile Queue Length [ft/ln]	84.33	93.07	9.66	99.82	161.61	144.92	127.99	116.68	39.55	91.52	213.30	216.77
95th-Percentile Queue Length [veh/ln]	6.07	6.70	0.70	7.19	10.63	9.75	8.83	8.21	2.85	6.59	13.32	13.50
95th-Percentile Queue Length [ft/ln]	151.79	167.53	17.38	179.67	265.86	243.63	220.76	205.25	71.18	164.74	333.05	337.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.44	17.96	15.73	64.70	19.43	19.57	62.66	41.77	38.99	63.60	50.37	52.83
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.21			26.17			45.86			52.21		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.05											
Intersection LOS	D											
Intersection V/C	0.498											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.665	2.719	3.062	2.942
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	533	683
d_b, Bicycle Delay [s]	32.27	29.40	32.27	26.00
l_b,int, Bicycle LOS Score for Intersection	2.039	2.228	1.974	2.093
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	54.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.928

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	144	642	823	139	864	281	318	1048	122	177	1060	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	642	823	139	864	281	318	1048	122	177	1060	114
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	169	217	37	227	74	84	276	32	47	279	30
Total Analysis Volume [veh/h]	152	676	866	146	909	296	335	1103	128	186	1116	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	21	62	0	13	54	0	15	34	0	11	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	12	58	58	9	55	55	11	30	30	7	26	39
g / C, Green / Cycle	0.10	0.48	0.48	0.08	0.46	0.46	0.09	0.25	0.25	0.06	0.22	0.33
(v / s)_i Volume / Saturation Flow Rate	0.08	0.36	0.54	0.08	0.25	0.18	0.10	0.21	0.08	0.05	0.22	0.07
s, saturation flow rate [veh/h]	1810	1900	1615	1810	3618	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	182	918	781	136	1656	739	322	1294	404	205	1121	525
d1, Uniform Delay [s]	53.00	24.86	31.00	55.50	23.56	21.59	54.50	42.89	36.66	56.18	46.94	29.53
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.63	5.24	66.54	58.02	1.31	1.62	34.41	1.69	0.45	13.93	11.43	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.74	1.11	1.08	0.55	0.40	1.04	0.85	0.32	0.91	1.00	0.23
d, Delay for Lane Group [s/veh]	62.63	30.10	97.54	113.52	24.87	23.21	88.91	44.58	37.10	70.11	58.37	29.75
Lane Group LOS	E	C	F	F	C	C	F	D	D	E	E	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.99	16.38	36.09	6.29	9.51	5.83	6.40	10.54	3.12	3.20	12.20	2.57
50th-Percentile Queue Length [ft/ln]	124.64	409.54	902.26	157.19	237.82	145.77	159.92	263.41	78.11	79.89	305.06	64.37
95th-Percentile Queue Length [veh/ln]	8.65	23.02	49.71	10.65	14.57	9.79	10.70	15.86	5.62	5.75	17.93	4.63
95th-Percentile Queue Length [ft/ln]	216.19	575.48	1242.83	266.36	364.27	244.78	267.39	396.49	140.61	143.80	448.28	115.87

Movement, Approach, & Intersection Results

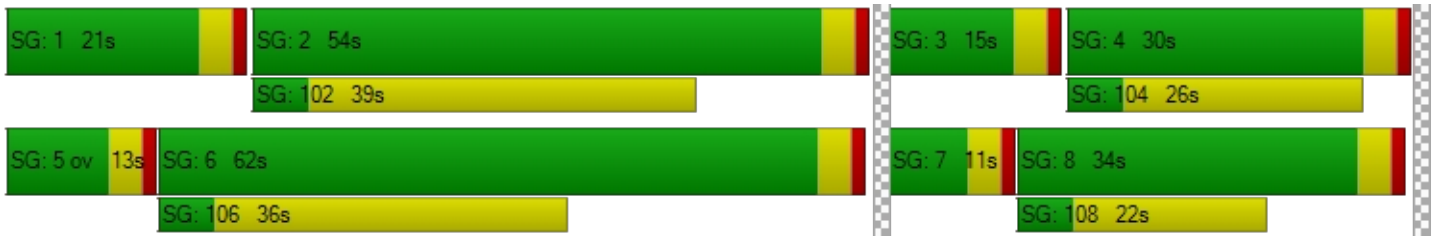
d_M, Delay for Movement [s/veh]	62.63	30.10	97.54	113.52	24.87	23.21	88.91	44.58	37.10	70.11	58.37	29.75
Movement LOS	E	C	F	F	C	C	F	D	D	E	E	C
d_A, Approach Delay [s/veh]	67.50			34.09			53.45			57.49		
Approach LOS	E			C			D			E		
d_I, Intersection Delay [s/veh]	54.01											
Intersection LOS	D											
Intersection V/C	0.928											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.884	2.871	3.204	3.327
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	833	500	433
d_b, Bicycle Delay [s]	16.02	20.42	33.75	36.82
l_b,int, Bicycle LOS Score for Intersection	2.957	2.674	2.421	2.342
Bicycle LOS	C	B	B	B

Sequence

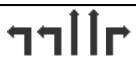
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	192	923	81	250	1228	122	115	460	122	141	640	218
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	192	923	81	250	1228	122	115	460	122	141	640	218
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	243	21	66	323	32	30	121	32	37	168	57
Total Analysis Volume [veh/h]	202	972	85	263	1293	128	121	484	128	148	674	229
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	43	0	21	51	0	9	45	0	11	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	67	67	11	69	69	5	19	19	7	21	21
g / C, Green / Cycle	0.07	0.56	0.56	0.09	0.58	0.58	0.04	0.16	0.16	0.06	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.05	0.07	0.36	0.08	0.03	0.09	0.08	0.04	0.13	0.14
s, saturation flow rate [veh/h]	3514	5176	1615	3514	3618	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	257	2874	897	329	2083	930	146	828	258	203	911	284
d1, Uniform Delay [s]	54.68	14.61	12.53	53.27	16.81	11.73	57.07	46.70	45.98	55.62	46.83	47.46
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.23	0.32	0.21	4.47	1.40	0.31	11.07	0.66	1.47	4.98	1.20	5.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.34	0.09	0.80	0.62	0.14	0.83	0.58	0.50	0.73	0.74	0.81
d, Delay for Lane Group [s/veh]	59.91	14.93	12.74	57.74	18.21	12.04	68.14	47.36	47.44	60.60	48.03	52.79
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.19	4.84	1.12	4.09	11.71	1.64	2.05	4.52	3.60	2.34	6.46	6.99
50th-Percentile Queue Length [ft/ln]	79.71	120.94	28.03	102.24	292.86	41.06	51.15	113.09	89.98	58.60	161.38	174.63
95th-Percentile Queue Length [veh/ln]	5.74	8.44	2.02	7.36	17.33	2.96	3.68	8.01	6.48	4.22	10.62	11.32
95th-Percentile Queue Length [ft/ln]	143.48	211.12	50.46	184.03	433.18	73.90	92.07	200.29	161.97	105.48	265.55	282.99

Movement, Approach, & Intersection Results

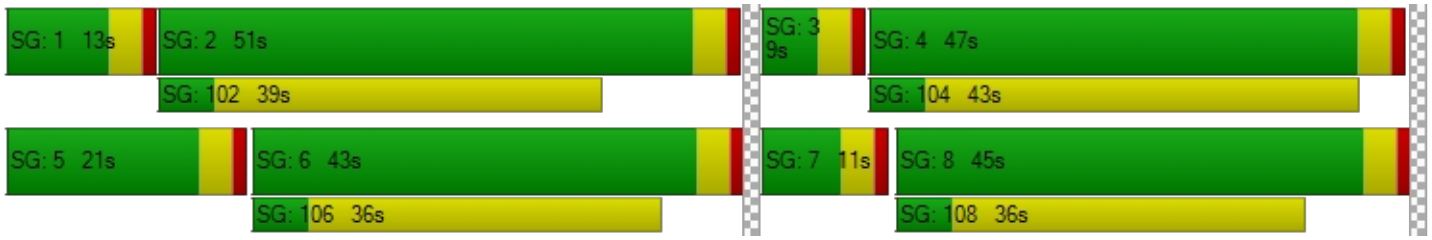
d_M, Delay for Movement [s/veh]	59.91	14.93	12.74	57.74	18.21	12.04	68.14	47.36	47.44	60.60	48.03	52.79
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	22.00			23.92			50.80			50.84		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.56											
Intersection LOS	C											
Intersection V/C	0.591											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.171	3.360	3.151	3.068
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	783	683	717
d_b, Bicycle Delay [s]	27.34	22.20	26.00	24.70
l_b,int, Bicycle LOS Score for Intersection	2.252	2.949	1.963	2.138
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	45.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.600

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	158	280	163	85	444	142	97	279	149	130	520	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	280	163	85	444	142	97	279	149	130	520	77
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	74	43	22	117	37	26	73	39	34	137	20
Total Analysis Volume [veh/h]	166	295	172	89	467	149	102	294	157	137	547	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	19	32	0	12	25	25	0	32	0	0	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	45	45	7	40	40	22	22	29	29
g / C, Green / Cycle	0.11	0.38	0.38	0.06	0.33	0.33	0.19	0.19	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.09	0.13	0.13	0.05	0.13	0.09	0.16	0.16	0.22	0.22
s, saturation flow rate [veh/h]	1810	1900	1670	1810	3618	1615	1868	1559	1868	1663
c, Capacity [veh/h]	194	717	630	112	1201	536	347	290	451	401
d1, Uniform Delay [s]	52.64	26.72	26.78	55.52	30.73	29.48	47.34	47.48	44.10	44.11
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.20	0.20
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.17	1.31	1.52	11.83	0.95	1.29	6.32	8.19	11.32	12.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.34	0.35	0.79	0.39	0.28	0.86	0.87	0.90	0.90
d, Delay for Lane Group [s/veh]	62.80	28.03	28.30	67.35	31.68	30.77	53.67	55.67	55.42	56.68
Lane Group LOS	E	C	C	E	C	C	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.46	5.32	4.79	3.03	5.35	3.37	9.26	8.01	13.00	11.72
50th-Percentile Queue Length [ft/ln]	136.52	133.06	119.80	75.64	133.66	84.20	231.44	200.21	324.88	292.99
95th-Percentile Queue Length [veh/ln]	9.29	9.11	8.38	5.45	9.14	6.06	14.25	12.65	18.91	17.33
95th-Percentile Queue Length [ft/ln]	232.33	227.65	209.55	136.15	228.47	151.55	356.19	316.23	472.68	433.35

Movement, Approach, & Intersection Results

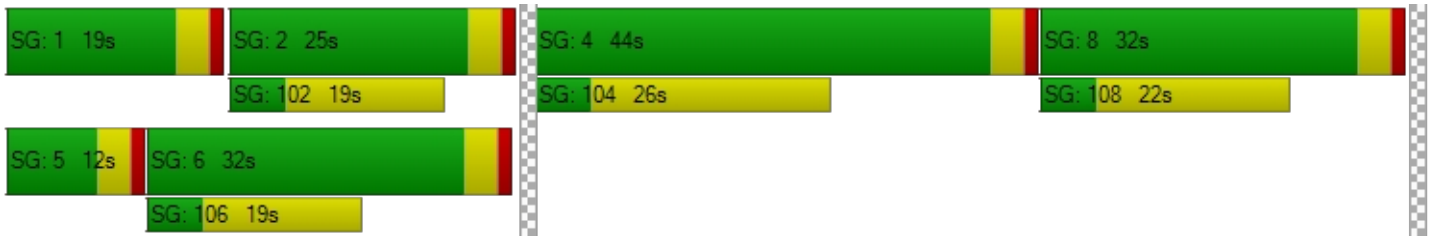
d_M, Delay for Movement [s/veh]	62.80	28.08	28.30	67.35	31.68	30.77	53.67	54.33	55.67	55.42	56.06	56.68
Movement LOS	E	C	C	E	C	C	D	D	E	E	E	E
d_A, Approach Delay [s/veh]	37.24			35.99			54.59			56.01		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	45.93											
Intersection LOS	D											
Intersection V/C	0.600											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.587	2.660	2.491	2.468
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	350	467	667
d_b, Bicycle Delay [s]	35.27	40.84	35.27	26.67
l_b,int, Bicycle LOS Score for Intersection	2.082	2.141	2.016	2.191
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	31.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	194	0	951	0	693	894	0	1774	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	194	0	951	0	693	894	0	1774	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	51	0	250	0	182	235	0	467	0
Total Analysis Volume [veh/h]	0	0	0	204	0	1001	0	729	941	0	1867	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	43	0	0	0	77	0	0	77	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		39	39	39	73	73	73
g / C, Green / Cycle		0.32	0.32	0.32	0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate		0.11	0.31	0.31	0.14	0.58	0.36
s, saturation flow rate [veh/h]		1810	1615	1615	5176	1615	5176
c, Capacity [veh/h]		585	522	522	3158	985	3158
d1, Uniform Delay [s]		30.97	39.82	39.82	10.62	21.86	14.27
k, delay calibration		0.11	0.43	0.43	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.36	27.55	27.55	0.17	19.67	0.82
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.35	0.96	0.96	0.23	0.96	0.59
d, Delay for Lane Group [s/veh]		31.33	67.38	67.38	10.79	41.53	15.09
Lane Group LOS		C	E	E	B	D	B
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		4.58	18.27	18.27	2.91	28.17	10.08
50th-Percentile Queue Length [ft/ln]		114.57	456.74	456.74	72.71	704.31	251.97
95th-Percentile Queue Length [veh/ln]		8.09	25.28	25.28	5.24	36.88	15.29
95th-Percentile Queue Length [ft/ln]		202.34	631.98	631.98	130.88	921.93	382.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	31.33	0.00	67.38	0.00	10.79	41.53	0.00	15.09	0.00
Movement LOS				C		E		B	D		B	
d_A, Approach Delay [s/veh]	0.00			61.27			28.11			15.09		
Approach LOS	A			E			C			B		
d_I, Intersection Delay [s/veh]	31.41											
Intersection LOS	C											
Intersection V/C	0.893											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.440	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	650	1217	1217
d_b, Bicycle Delay [s]	60.00	27.34	9.20	9.20
l_b,int, Bicycle LOS Score for Intersection	4.132	3.548	2.478	2.586
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	24.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.634

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	978	0	553	0	0	0	0	640	0	0	1480	257
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	978	0	553	0	0	0	0	640	0	0	1480	257
Peak Hour Factor	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000	1.0000	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	257	0	146	0	0	0	0	168	0	0	389	68
Total Analysis Volume [veh/h]	1029	0	582	0	0	0	0	674	0	0	1558	271
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	81	0	0	0	0	0	0	39	0	0	39	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	45		67	67	67
g / C, Green / Cycle	0.37	0.37	0.37		0.56	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.30	0.30	0.33		0.13	0.30	0.17
s, saturation flow rate [veh/h]	1810	1791	1615		5176	5176	1615
c, Capacity [veh/h]	676	670	604		2896	2896	904
d1, Uniform Delay [s]	33.46	33.60	35.25		13.38	16.65	13.98
k, delay calibration	0.11	0.11	0.11		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.17	2.29	4.90		0.19	0.72	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.80	0.89		0.23	0.54	0.30
d, Delay for Lane Group [s/veh]	35.63	35.90	40.15		13.57	17.37	14.84
Lane Group LOS	D	D	D		B	B	B
Critical Lane Group	No	No	Yes		No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.17	14.24	15.32		3.09	8.94	4.05
50th-Percentile Queue Length [ft/ln]	354.14	356.10	382.93		77.27	223.45	101.16
95th-Percentile Queue Length [veh/ln]	20.34	20.43	21.74		5.56	13.84	7.28
95th-Percentile Queue Length [ft/ln]	508.45	510.84	543.39		139.08	346.03	182.08

Movement, Approach, & Intersection Results

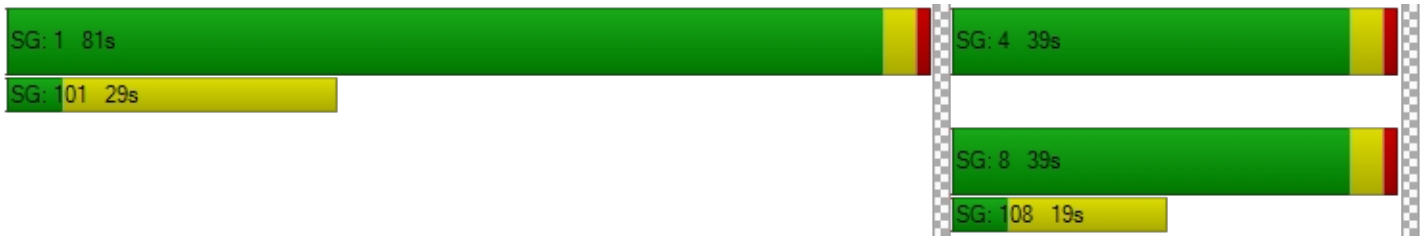
d_M, Delay for Movement [s/veh]	35.76	0.00	39.83	0.00	0.00	0.00	0.00	13.57	0.00	0.00	17.37	14.84
Movement LOS	D		D					B			B	B
d_A, Approach Delay [s/veh]	37.23			0.00			13.57			17.00		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	24.36											
Intersection LOS	C											
Intersection V/C	0.634											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.539	0.000	0.000	3.039
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1283	0	583	583
d_b, Bicycle Delay [s]	7.70	60.00	30.10	30.10
l_b,int, Bicycle LOS Score for Intersection	4.218	4.132	1.930	2.566
Bicycle LOS	D	D	A	B

Sequence

Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	42.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	223	236	76	57	419	296	118	558	282	383	1399	129
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	236	76	57	419	296	118	558	282	383	1399	129
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	62	20	15	110	78	31	147	74	101	368	34
Total Analysis Volume [veh/h]	235	248	80	60	441	312	124	587	297	403	1473	136
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	20	44	0	12	36	0	9	40	40	24	55	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	43	43	5	32	32	5	40	60	16	51	51
g / C, Green / Cycle	0.13	0.36	0.36	0.04	0.27	0.27	0.04	0.33	0.50	0.13	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.05	0.03	0.21	0.21	0.04	0.16	0.18	0.11	0.41	0.08
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1900	1642	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	241	682	579	80	512	443	146	1190	801	473	1527	682
d1, Uniform Delay [s]	51.79	28.38	25.96	56.69	40.63	40.67	57.12	32.24	18.70	50.74	33.81	21.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.26	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.37	1.50	0.50	13.07	11.60	13.41	12.44	0.32	0.68	4.42	5.24	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.97	0.36	0.14	0.75	0.79	0.79	0.85	0.49	0.37	0.85	0.96	0.20
d, Delay for Lane Group [s/veh]	73.16	29.88	26.46	69.76	52.23	54.08	69.56	32.56	19.38	55.16	39.05	22.03
Lane Group LOS	E	C	C	E	D	D	E	C	B	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.46	5.55	1.63	2.09	12.64	11.19	2.12	6.87	5.21	6.20	21.46	2.46
50th-Percentile Queue Length [ft/ln]	211.38	138.80	40.86	52.25	315.92	279.63	53.02	171.75	130.28	155.10	536.60	61.49
95th-Percentile Queue Length [veh/ln]	13.22	9.42	2.94	3.76	18.47	16.67	3.82	11.17	8.95	10.29	29.06	4.43
95th-Percentile Queue Length [ft/ln]	330.60	235.40	73.55	94.05	461.67	416.75	95.43	279.22	223.87	257.23	726.55	110.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.16	29.88	26.46	69.76	52.39	54.08	69.56	32.56	19.38	55.16	39.05	22.03
Movement LOS	E	C	C	E	D	D	E	C	B	E	D	C
d_A, Approach Delay [s/veh]	47.46			54.32			33.23			41.13		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	42.57											
Intersection LOS	D											
Intersection V/C	0.785											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.647	2.573	3.110	3.161
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	533	600	850
d_b, Bicycle Delay [s]	26.67	32.27	29.40	19.84
l_b,int, Bicycle LOS Score for Intersection	2.489	2.230	2.391	3.220
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	49.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	380	575	172	184	960	227	206	468	204	337	1306	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	380	575	172	184	960	227	206	468	204	337	1306	110
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	151	45	48	253	60	54	123	54	89	344	29
Total Analysis Volume [veh/h]	400	605	181	194	1011	239	217	493	215	355	1375	116
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	29	50	0	19	40	40	11	36	0	15	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	25	48	48	15	37	48	7	31	31	11	35	53
g / C, Green / Cycle	0.21	0.40	0.40	0.12	0.31	0.40	0.06	0.26	0.26	0.09	0.29	0.45
(v / s)_i Volume / Saturation Flow Rate	0.22	0.12	0.11	0.11	0.20	0.15	0.06	0.10	0.13	0.10	0.27	0.07
s, saturation flow rate [veh/h]	1810	5176	1615	1810	5176	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	377	2047	639	222	1602	648	205	1331	415	322	1503	721
d1, Uniform Delay [s]	47.50	24.83	24.70	51.76	35.55	25.25	56.50	36.59	38.19	54.50	41.13	19.82
k, delay calibration	0.37	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	56.83	0.37	1.11	10.43	1.90	1.61	46.01	0.17	1.00	56.52	2.59	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.30	0.28	0.88	0.63	0.37	1.06	0.37	0.52	1.10	0.91	0.16
d, Delay for Lane Group [s/veh]	104.33	25.20	25.81	62.19	37.45	26.87	102.51	36.77	39.19	111.02	43.72	19.93
Lane Group LOS	F	C	C	E	D	C	F	D	D	F	D	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	17.14	4.01	3.71	6.37	8.71	5.08	4.41	4.00	5.54	7.39	13.33	1.97
50th-Percentile Queue Length [ft/ln]	428.60	100.23	92.84	159.31	217.69	126.92	110.31	99.93	138.62	184.65	333.27	49.24
95th-Percentile Queue Length [veh/ln]	24.73	7.22	6.68	10.51	13.55	8.77	7.94	7.20	9.41	12.26	19.32	3.55
95th-Percentile Queue Length [ft/ln]	618.19	180.41	167.10	262.81	338.68	219.30	198.56	179.88	235.16	306.54	482.97	88.63

Movement, Approach, & Intersection Results

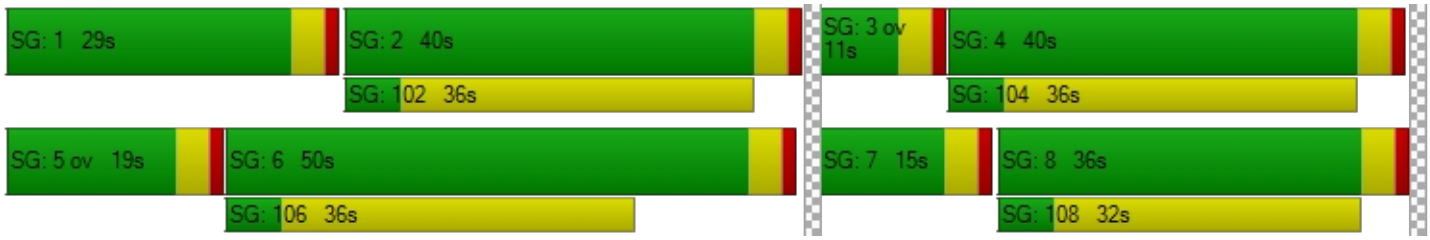
d_M, Delay for Movement [s/veh]	104.33	25.20	25.81	62.19	37.45	26.87	102.51	36.77	39.19	111.02	43.72	19.93
Movement LOS	F	C	C	E	D	C	F	D	D	F	D	B
d_A, Approach Delay [s/veh]	51.98			39.02			52.75			55.17		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	49.74											
Intersection LOS	D											
Intersection V/C	0.744											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.078	3.123	3.183	3.158
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	600	533	600
d_b, Bicycle Delay [s]	22.82	29.40	32.27	29.40
l_b,int, Bicycle LOS Score for Intersection	2.212	2.354	2.068	2.575
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	3,717.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	8.079

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	108	0	202	0	0	0	0	725	123	282	1728	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	0	202	0	0	0	0	725	123	282	1728	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	0	53	0	0	0	0	191	32	74	455	0
Total Analysis Volume [veh/h]	114	0	213	0	0	0	0	763	129	297	1819	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	8.08	0.00	0.38	0.00	0.00	0.00	0.00	0.01	0.00	0.39	0.02	0.00
d_M, Delay for Movement [s/veh]	3717.81	4076.76	3469.04	939.51	682.78	17.80	15.54	0.00	0.00	12.60	0.00	0.00
Movement LOS	F	F	F	F	F	C	C	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	39.17	39.17	39.17	0.00	0.00	0.00	0.00	0.00	0.00	1.83	0.00	0.00
95th-Percentile Queue Length [ft/ln]	979.29	979.29	979.29	0.00	0.00	0.00	0.00	0.00	0.00	45.81	0.00	0.00
d_A, Approach Delay [s/veh]	3555.77			546.70			0.00			1.77		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	349.77											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	48.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.766

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	160	586	120	151	813	181	167	502	128	365	998	107
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	586	120	151	813	181	167	502	128	365	998	107
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	154	32	40	214	48	44	132	34	96	263	28
Total Analysis Volume [veh/h]	168	617	126	159	856	191	176	528	135	384	1051	113
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	42	0	16	42	0	17	28	0	34	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	41	41	12	41	41	13	23	23	27	38	38
g / C, Green / Cycle	0.10	0.34	0.34	0.10	0.34	0.34	0.11	0.20	0.20	0.23	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.20	0.20	0.09	0.28	0.28	0.10	0.15	0.08	0.21	0.29	0.07
s, saturation flow rate [veh/h]	1810	1900	1790	1810	1900	1782	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	181	652	614	181	652	611	196	706	315	414	1141	509
d1, Uniform Delay [s]	53.57	32.44	32.44	53.28	36.17	36.23	52.84	45.52	42.42	45.31	39.63	30.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.34	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.91	3.85	4.08	12.64	11.56	12.44	13.48	1.62	0.92	22.49	3.61	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.59	0.59	0.88	0.83	0.83	0.90	0.75	0.43	0.93	0.92	0.22
d, Delay for Lane Group [s/veh]	71.49	36.29	36.52	65.92	47.73	48.66	66.32	47.14	43.35	67.80	43.25	30.45
Lane Group LOS	E	D	D	E	D	D	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.92	9.80	9.27	5.36	16.40	15.59	5.97	7.56	3.61	13.72	15.36	2.46
50th-Percentile Queue Length [ft/ln]	148.05	244.88	231.71	134.05	409.96	389.83	149.16	189.02	90.21	343.08	383.92	61.40
95th-Percentile Queue Length [veh/ln]	9.91	14.93	14.26	9.16	23.04	22.07	9.97	12.07	6.50	19.80	21.78	4.42
95th-Percentile Queue Length [ft/ln]	247.83	373.20	356.53	228.99	575.99	551.73	249.31	301.76	162.38	494.97	544.59	110.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.49	36.38	36.52	65.92	48.08	48.66	66.32	47.14	43.35	67.80	43.25	30.45
Movement LOS	E	D	D	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	42.87			50.52			50.55			48.40		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	48.25											
Intersection LOS	D											
Intersection V/C	0.766											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.761	2.727	2.834	2.852
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	633	400	683
d_b, Bicycle Delay [s]	28.02	28.02	38.40	26.00
l_b,int, Bicycle LOS Score for Intersection	2.311	2.555	2.252	2.837
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	44.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	129	722	138	216	996	143	239	434	125	233	811	169
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	129	722	138	216	996	143	239	434	125	233	811	169
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	190	36	57	262	38	63	114	33	61	213	44
Total Analysis Volume [veh/h]	136	760	145	227	1048	151	252	457	132	245	854	178
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	34	0	22	41	0	24	37	0	27	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	37	37	17	43	43	19	32	32	18	31	31
g / C, Green / Cycle	0.09	0.31	0.31	0.14	0.36	0.36	0.15	0.26	0.26	0.15	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.08	0.21	0.09	0.13	0.29	0.09	0.14	0.13	0.08	0.14	0.24	0.11
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	162	1116	498	255	1300	581	280	957	427	277	950	424
d1, Uniform Delay [s]	53.75	36.32	31.52	50.65	34.66	27.15	49.81	37.15	35.35	49.79	42.70	36.66
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.13	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.73	3.36	1.48	10.32	5.41	1.09	11.57	0.37	0.41	9.66	3.38	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.68	0.29	0.89	0.81	0.26	0.90	0.48	0.31	0.89	0.90	0.42
d, Delay for Lane Group [s/veh]	64.48	39.69	33.00	60.96	40.07	28.24	61.38	37.52	35.76	59.45	46.07	37.32
Lane Group LOS	E	D	C	E	D	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.52	10.21	3.41	7.42	14.59	3.25	8.31	5.71	3.16	7.93	12.58	4.42
50th-Percentile Queue Length [ft/ln]	113.05	255.27	85.32	185.42	364.63	81.20	207.67	142.64	78.93	198.33	314.43	110.49
95th-Percentile Queue Length [veh/ln]	8.01	15.45	6.14	11.88	20.85	5.85	13.03	9.62	5.68	12.55	18.39	7.87
95th-Percentile Queue Length [ft/ln]	200.24	386.29	153.58	297.08	521.21	146.15	325.84	240.58	142.07	313.80	459.83	196.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.48	39.69	33.00	60.96	40.07	28.24	61.38	37.52	35.76	59.45	46.07	37.32
Movement LOS	E	D	C	E	D	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	41.99			42.14			44.39			47.42		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.99											
Intersection LOS	D											
Intersection V/C	0.740											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.953	3.060	2.790	2.810
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	617	550	600
d_b, Bicycle Delay [s]	33.75	28.70	31.54	29.40
l_b,int, Bicycle LOS Score for Intersection	2.418	2.736	2.253	2.613
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	72.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.917

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	398	246	65	163	519	439	104	848	209	277	1753	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	398	246	65	163	519	439	104	848	209	277	1753	167
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	65	17	43	137	116	27	223	55	73	461	44
Total Analysis Volume [veh/h]	419	259	68	172	546	462	109	893	220	292	1845	176
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	30	30	17	30	30	9	59	59	14	64	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	26	40	13	26	35	5	55	72	10	60	60
g / C, Green / Cycle	0.11	0.22	0.33	0.11	0.22	0.29	0.04	0.46	0.60	0.08	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.12	0.07	0.04	0.10	0.15	0.29	0.03	0.47	0.14	0.08	0.53	0.55
s, saturation flow rate [veh/h]	3514	3618	1615	1810	3618	1615	3514	1900	1615	3514	1900	1843
c, Capacity [veh/h]	381	784	538	196	784	471	146	871	969	293	950	922
d1, Uniform Delay [s]	53.50	39.66	27.84	52.71	43.36	42.17	56.87	32.50	11.11	54.99	30.00	30.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.49	0.12	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	54.55	1.13	0.48	11.71	5.08	36.98	7.28	36.89	0.13	23.77	47.68	59.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.10	0.33	0.13	0.88	0.70	0.98	0.74	1.03	0.23	1.00	1.06	1.10
d, Delay for Lane Group [s/veh]	108.05	40.78	28.32	64.43	48.44	79.14	64.14	69.39	11.24	78.76	77.68	89.55
Lane Group LOS	F	D	C	E	D	E	E	F	B	E	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.61	3.36	1.44	5.74	8.02	18.25	1.78	33.31	2.70	5.37	38.77	40.65
50th-Percentile Queue Length [ft/ln]	215.34	84.07	36.12	143.47	200.54	456.27	44.56	832.84	67.39	134.33	969.22	1016.30
95th-Percentile Queue Length [veh/ln]	13.94	6.05	2.60	9.67	12.67	25.26	3.21	43.64	4.85	9.17	51.47	54.94
95th-Percentile Queue Length [ft/ln]	348.41	151.32	65.02	241.69	316.66	631.43	80.21	1091.07	121.30	229.36	1286.80	1373.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	108.05	40.78	28.32	64.43	48.44	79.14	64.14	69.39	11.24	78.76	83.05	89.55
Movement LOS	F	D	C	E	D	E	E	F	B	E	F	F
d_A, Approach Delay [s/veh]	77.43			62.79			58.45			83.00		
Approach LOS	E			E			E			F		
d_I, Intersection Delay [s/veh]	72.38											
Intersection LOS	E											
Intersection V/C	0.917											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.860	2.748	3.159	3.028
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	917	1000
d_b, Bicycle Delay [s]	36.82	36.82	17.60	15.00
l_b,int, Bicycle LOS Score for Intersection	2.175	2.533	3.576	3.468
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	48.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.805

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	136	1033	168	59	1220	106	81	437	104	221	763	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	1033	168	59	1220	106	81	437	104	221	763	87
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	272	44	16	321	28	21	115	27	58	201	23
Total Analysis Volume [veh/h]	143	1087	177	62	1284	112	85	460	109	233	803	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	41	0	9	36	0	10	47	0	23	60	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	40	40	5	35	35	6	41	41	17	53	53
g / C, Green / Cycle	0.08	0.34	0.34	0.04	0.29	0.29	0.05	0.34	0.34	0.14	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.08	0.23	0.23	0.03	0.26	0.26	0.05	0.24	0.07	0.13	0.42	0.06
s, saturation flow rate [veh/h]	1810	3618	1767	1810	3618	1823	1810	1900	1615	1810	1900	1615
c, Capacity [veh/h]	151	1216	594	75	1066	537	90	653	555	263	834	709
d1, Uniform Delay [s]	54.74	34.55	34.55	57.06	40.17	40.17	56.82	34.10	27.72	50.33	32.73	20.04
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.21	0.11	0.11	0.40	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.53	3.34	6.68	19.24	9.78	17.43	31.13	2.66	0.17	9.78	20.35	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.70	0.70	0.82	0.87	0.87	0.94	0.70	0.20	0.89	0.96	0.13
d, Delay for Lane Group [s/veh]	78.27	37.89	41.23	76.30	49.94	57.60	87.95	36.77	27.89	60.11	53.08	20.12
Lane Group LOS	E	D	D	E	D	E	F	D	C	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.28	11.24	11.53	2.27	14.32	15.58	3.35	12.00	2.24	7.57	26.73	1.56
50th-Percentile Queue Length [ft/ln]	132.05	280.94	288.26	56.72	358.09	389.43	83.74	300.04	56.12	189.21	668.17	39.01
95th-Percentile Queue Length [veh/ln]	9.05	16.74	17.10	4.08	20.53	22.05	6.03	17.68	4.04	12.08	35.21	2.81
95th-Percentile Queue Length [ft/ln]	226.28	418.38	427.48	102.09	513.26	551.25	150.73	442.08	101.01	302.01	880.13	70.21

Movement, Approach, & Intersection Results

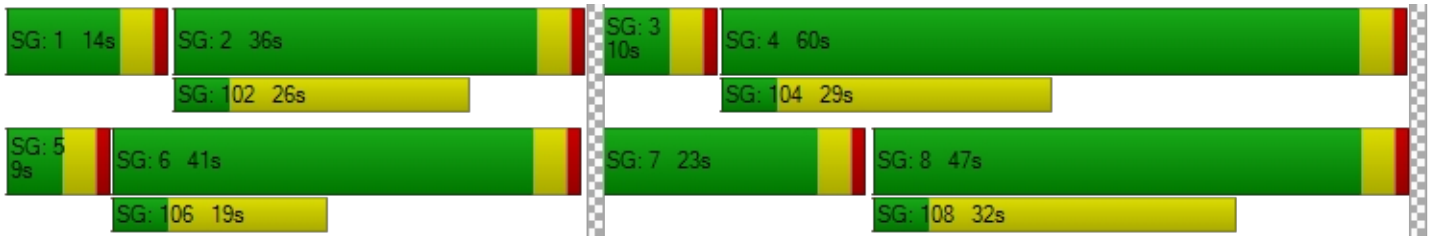
d_M, Delay for Movement [s/veh]	78.27	38.62	41.23	76.30	52.06	57.60	87.95	36.77	27.89	60.11	53.08	20.12
Movement LOS	E	D	D	E	D	E	F	D	C	E	D	C
d_A, Approach Delay [s/veh]	42.98			53.52			41.94			51.84		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	48.29											
Intersection LOS	D											
Intersection V/C	0.805											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.110	2.988	2.746	2.592
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	533	717	933
d_b, Bicycle Delay [s]	28.70	32.27	24.70	17.07
l_b,int, Bicycle LOS Score for Intersection	2.333	2.362	2.639	3.421
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	25.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	107	260	156	24	260	137	68	397	65	189	780	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	260	156	24	260	137	68	397	65	189	780	45
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	68	41	6	68	36	18	104	17	50	205	12
Total Analysis Volume [veh/h]	113	274	164	25	274	144	72	418	68	199	821	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	33	0	0	33	0	0	87	0	0	87	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	47	47	47	47	47	47	65	65	65	65	65	65
g / C, Green / Cycle	0.39	0.39	0.39	0.39	0.39	0.39	0.54	0.54	0.54	0.54	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.11	0.14	0.10	0.03	0.14	0.09	0.11	0.22	0.04	0.22	0.43	0.03
s, saturation flow rate [veh/h]	984	1900	1615	966	1900	1615	648	1900	1615	924	1900	1615
c, Capacity [veh/h]	349	750	638	344	750	638	149	1023	870	403	1023	870
d1, Uniform Delay [s]	33.83	25.68	24.46	30.74	25.68	24.13	50.16	16.38	13.34	30.21	22.50	13.16
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.19	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.45	1.37	0.97	0.41	1.37	0.82	2.40	0.26	0.04	0.94	2.69	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.37	0.26	0.07	0.37	0.23	0.48	0.41	0.08	0.49	0.80	0.05
d, Delay for Lane Group [s/veh]	36.29	27.05	25.43	31.15	27.05	24.95	52.55	16.64	13.38	31.15	25.20	13.19
Lane Group LOS	D	C	C	C	C	C	D	B	B	C	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.88	5.82	3.33	0.57	5.82	2.88	2.19	6.77	0.90	4.69	18.84	0.61
50th-Percentile Queue Length [ft/ln]	71.89	145.53	83.21	14.24	145.53	71.97	54.84	169.33	22.41	117.19	470.91	15.28
95th-Percentile Queue Length [veh/ln]	5.18	9.78	5.99	1.03	9.78	5.18	3.95	11.04	1.61	8.24	25.95	1.10
95th-Percentile Queue Length [ft/ln]	129.41	244.45	149.77	25.63	244.45	129.54	98.70	276.03	40.34	205.96	648.86	27.51

Movement, Approach, & Intersection Results

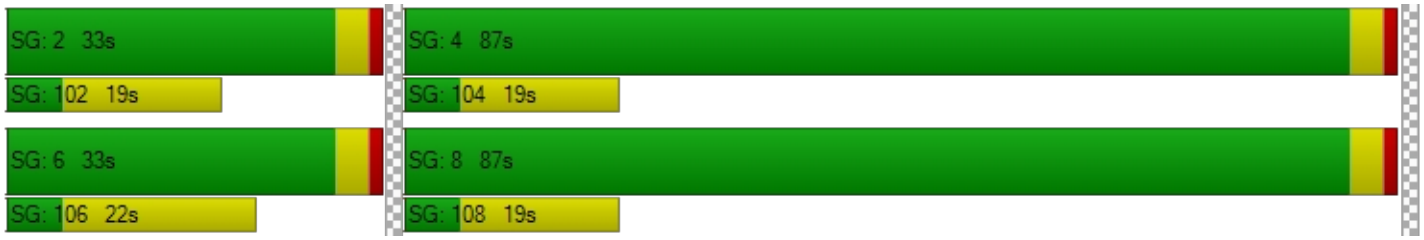
d_M, Delay for Movement [s/veh]	36.29	27.05	25.43	31.15	27.05	24.95	52.55	16.64	13.38	31.15	25.20	13.19
Movement LOS	D	C	C	C	C	C	D	B	B	C	C	B
d_A, Approach Delay [s/veh]	28.46			26.60			20.88			25.78		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.44											
Intersection LOS	C											
Intersection V/C	0.576											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.696	2.453	2.706	2.677
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	483	1383	1383
d_b, Bicycle Delay [s]	34.50	34.50	5.70	5.70
l_b,int, Bicycle LOS Score for Intersection	2.469	2.291	2.480	3.320
Bicycle LOS	B	B	B	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	57.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	268	714	233	108	888	178	90	297	123	262	596	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	268	714	233	108	888	178	90	297	123	262	596	160
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	188	61	28	234	47	24	78	32	69	157	42
Total Analysis Volume [veh/h]	282	752	245	114	935	187	95	313	129	276	627	168
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	51	0	13	41	0	11	26	0	30	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	47	47	9	37	37	7	28	28	20	41	41
g / C, Green / Cycle	0.16	0.39	0.39	0.08	0.31	0.31	0.06	0.23	0.23	0.17	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.16	0.27	0.27	0.06	0.30	0.30	0.05	0.09	0.08	0.15	0.33	0.10
s, saturation flow rate [veh/h]	1810	1900	1743	1810	1900	1792	1810	3618	1615	1810	1900	1615
c, Capacity [veh/h]	287	745	683	136	587	553	106	829	370	308	648	551
d1, Uniform Delay [s]	50.35	30.49	30.58	54.79	41.16	41.23	56.15	39.03	38.75	48.72	38.86	29.06
k, delay calibration	0.17	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.16	0.44	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	27.80	5.31	5.92	12.78	33.12	35.13	22.20	0.28	0.56	12.84	25.92	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.70	0.70	0.84	0.98	0.99	0.90	0.38	0.35	0.89	0.97	0.30
d, Delay for Lane Group [s/veh]	78.15	35.80	36.50	67.57	74.27	76.36	78.36	39.31	39.31	61.56	64.78	29.36
Lane Group LOS	E	D	D	E	E	E	E	D	D	E	E	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.62	13.48	12.61	3.88	22.07	21.22	3.51	3.94	3.25	9.17	22.52	3.62
50th-Percentile Queue Length [ft/ln]	265.53	336.91	315.14	97.05	551.77	530.40	87.73	98.40	81.30	229.37	562.95	90.59
95th-Percentile Queue Length [veh/ln]	15.97	19.50	18.43	6.99	29.78	28.77	6.32	7.08	5.85	14.14	30.30	6.52
95th-Percentile Queue Length [ft/ln]	399.14	487.42	460.71	174.69	744.38	719.24	157.91	177.12	146.33	353.56	757.50	163.06

Movement, Approach, & Intersection Results

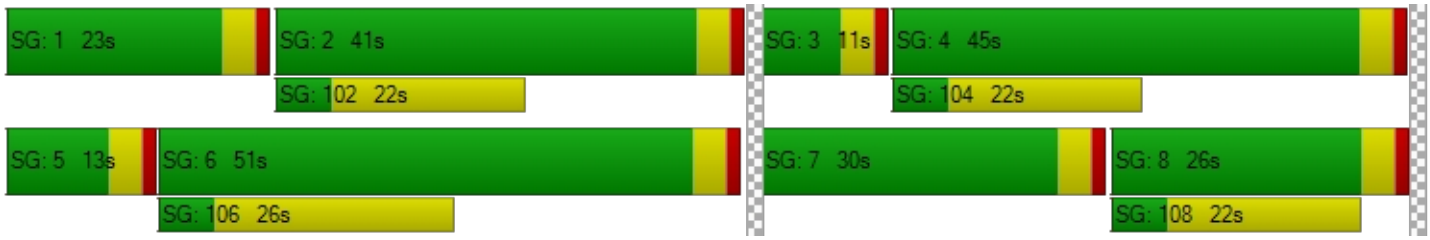
d_M, Delay for Movement [s/veh]	78.15	36.02	36.50	67.57	75.07	76.36	78.36	39.31	39.31	61.56	64.78	29.36
Movement LOS	E	D	D	E	E	E	E	D	D	E	E	C
d_A, Approach Delay [s/veh]	45.40			74.58			46.22			58.39		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	57.63											
Intersection LOS	E											
Intersection V/C	0.843											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.826	2.754	2.634	2.751
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	617	367	683
d_b, Bicycle Delay [s]	22.20	28.70	40.02	26.00
l_b,int, Bicycle LOS Score for Intersection	2.615	2.579	2.003	3.327
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	112	837	43	76	988	94	94	453	92	79	592	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	837	43	76	988	94	94	453	92	79	592	72
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	220	11	20	260	25	25	119	24	21	156	19
Total Analysis Volume [veh/h]	118	881	45	80	1040	99	99	477	97	83	623	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	50	0	11	47	0	12	48	0	11	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	64	64	7	61	61	8	27	27	7	25	25
g / C, Green / Cycle	0.08	0.53	0.53	0.06	0.51	0.51	0.07	0.22	0.22	0.06	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.07	0.25	0.25	0.04	0.30	0.30	0.05	0.16	0.16	0.05	0.19	0.19
s, saturation flow rate [veh/h]	1810	1900	1868	1810	1900	1843	1810	1900	1790	1810	1900	1829
c, Capacity [veh/h]	144	1008	991	102	964	935	121	421	397	105	405	390
d1, Uniform Delay [s]	54.39	17.53	17.53	55.92	20.93	20.94	55.29	43.00	43.05	55.79	45.70	45.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.92	1.53	1.56	12.49	2.75	2.85	12.74	2.11	2.28	12.32	6.24	6.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.46	0.46	0.79	0.60	0.60	0.82	0.70	0.70	0.79	0.88	0.88
d, Delay for Lane Group [s/veh]	65.31	19.06	19.09	68.41	23.68	23.79	68.03	45.12	45.33	68.11	51.94	52.25
Lane Group LOS	E	B	B	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.95	8.31	8.18	2.74	11.95	11.65	3.38	8.30	7.89	2.84	10.94	10.57
50th-Percentile Queue Length [ft/ln]	98.64	207.85	204.52	68.62	298.78	291.16	84.58	207.48	197.20	71.00	273.41	264.37
95th-Percentile Queue Length [veh/ln]	7.10	13.04	12.87	4.94	17.62	17.24	6.09	13.02	12.49	5.11	16.36	15.91
95th-Percentile Queue Length [ft/ln]	177.55	326.07	321.79	123.51	440.52	431.07	152.24	325.59	312.35	127.80	409.00	397.70

Movement, Approach, & Intersection Results

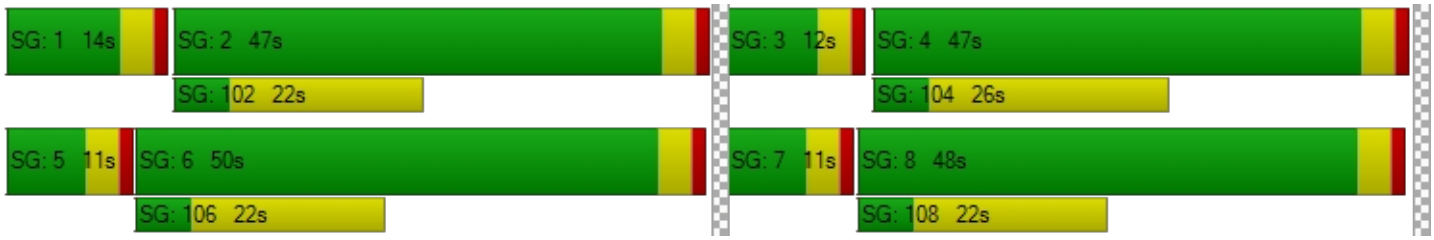
d_M, Delay for Movement [s/veh]	65.31	19.07	19.09	68.41	23.73	23.79	68.03	45.20	45.33	68.11	52.07	52.25
Movement LOS	E	B	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	24.30			26.67			48.58			53.79		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.67											
Intersection LOS	D											
Intersection V/C	0.612											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.757	2.838	2.610	2.585
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	717	733	717
d_b, Bicycle Delay [s]	22.82	24.70	24.07	24.70
l_b,int, Bicycle LOS Score for Intersection	2.421	2.565	2.115	2.205
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	24.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.728

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	572	171	89	941	0	0	0	0	262	0	153
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	572	171	89	941	0	0	0	0	262	0	153
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	151	45	23	248	0	0	0	0	69	0	40
Total Analysis Volume [veh/h]	0	602	180	94	991	0	0	0	0	276	0	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	69	0	19	79	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	73	73	8	81	81	27	27	27	27
g / C, Green / Cycle	0.00	0.61	0.61	0.07	0.68	0.68	0.22	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.00	0.32	0.11	0.05	0.52	0.00	0.00	0.00	0.21	0.10
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1900	1615	1795	1615	1335	1615
c, Capacity [veh/h]	2	1162	988	121	1287	1094	428	358	356	358
d1, Uniform Delay [s]	0.00	13.26	10.19	55.09	13.07	0.00	0.00	0.00	46.87	40.39
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.32	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	1.65	0.41	10.09	4.49	0.00	0.00	0.00	10.30	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.52	0.18	0.78	0.77	0.00	0.00	0.00	0.78	0.45
d, Delay for Lane Group [s/veh]	0.00	14.91	10.60	65.18	17.57	0.00	0.00	0.00	57.18	41.27
Lane Group LOS	A	B	B	E	B	A	A	A	E	D
Critical Lane Group	No	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	9.40	2.15	3.14	17.93	0.00	0.00	0.00	9.07	4.21
50th-Percentile Queue Length [ft/ln]	0.00	235.11	53.77	78.49	448.28	0.00	0.00	0.00	226.72	105.20
95th-Percentile Queue Length [veh/ln]	0.00	14.43	3.87	5.65	24.88	0.00	0.00	0.00	14.01	7.57
95th-Percentile Queue Length [ft/ln]	0.00	360.84	96.78	141.29	621.89	0.00	0.00	0.00	350.19	189.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	14.91	10.60	65.18	17.57	0.00	0.00	0.00	0.00	57.18	57.18	41.27
Movement LOS	A	B	B	E	B	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	13.92			21.69			0.00			51.32		
Approach LOS	B			C			A			D		
d_I, Intersection Delay [s/veh]	24.67											
Intersection LOS	C											
Intersection V/C	0.728											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.107	0.000	1.955	2.187
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1083	1250	467	467
d_b, Bicycle Delay [s]	12.60	8.44	35.27	35.27
l_b,int, Bicycle LOS Score for Intersection	2.850	3.350	1.560	2.281
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	37.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	251	1239	148	39	1300	103	34	34	224	169	152	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	251	1239	148	39	1300	103	34	34	224	169	152	76
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	326	39	10	342	27	9	9	59	44	40	20
Total Analysis Volume [veh/h]	264	1304	156	41	1368	108	36	36	236	178	160	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	64	0	9	42	0	13	29	0	18	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	67	67	4	51	51	4	20	20	14	30
g / C, Green / Cycle	0.16	0.56	0.56	0.03	0.43	0.43	0.03	0.16	0.16	0.11	0.25
(v / s)_i Volume / Saturation Flow Rate	0.15	0.39	0.40	0.02	0.38	0.07	0.02	0.02	0.15	0.10	0.13
s, saturation flow rate [veh/h]	1810	1900	1830	1810	3618	1615	1810	1900	1615	1810	1794
c, Capacity [veh/h]	296	1061	1022	57	1542	688	55	311	264	205	442
d1, Uniform Delay [s]	49.14	19.10	19.37	57.60	31.78	21.18	57.53	42.78	49.15	52.32	39.34
k, delay calibration	0.14	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.70	3.74	4.16	15.81	7.96	0.49	12.19	0.16	13.04	10.60	1.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.69	0.71	0.72	0.89	0.16	0.65	0.12	0.89	0.87	0.54
d, Delay for Lane Group [s/veh]	60.84	22.83	23.52	73.40	39.73	21.66	69.72	42.95	62.19	62.92	40.38
Lane Group LOS	E	C	C	E	D	C	E	D	E	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	8.69	15.29	15.35	1.48	19.54	1.97	1.27	0.93	7.87	5.87	6.29
50th-Percentile Queue Length [ft/ln]	217.32	382.16	383.76	37.07	488.56	49.25	31.73	23.29	196.71	146.74	157.13
95th-Percentile Queue Length [veh/ln]	13.53	21.70	21.78	2.67	26.79	3.55	2.28	1.68	12.47	9.84	10.40
95th-Percentile Queue Length [ft/ln]	338.20	542.46	544.40	66.73	669.81	88.65	57.11	41.93	311.72	246.07	259.92

Movement, Approach, & Intersection Results

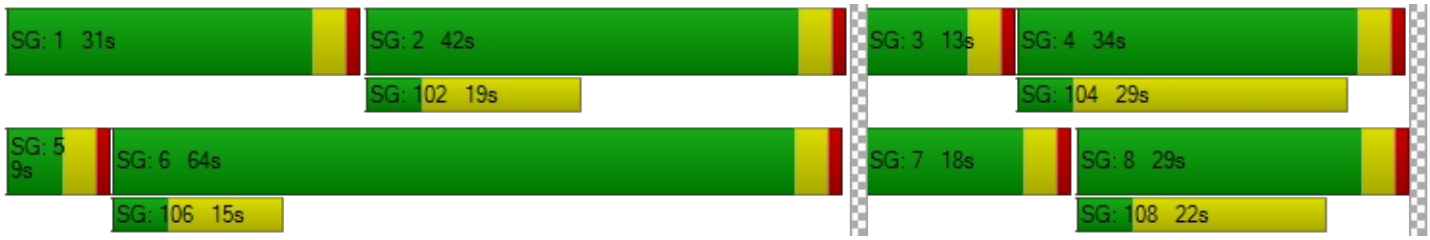
d_M, Delay for Movement [s/veh]	60.84	23.13	23.52	73.40	39.73	21.66	69.72	42.95	62.19	62.92	40.38	40.38
Movement LOS	E	C	C	E	D	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	28.94			39.36			60.82			49.98		
Approach LOS	C			D			E			D		
d_I, Intersection Delay [s/veh]	37.62											
Intersection LOS	D											
Intersection V/C	0.769											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.038	3.018	2.351	2.167
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	633	417	500
d_b, Bicycle Delay [s]	15.00	28.02	37.60	33.75
l_b,int, Bicycle LOS Score for Intersection	2.982	2.811	2.068	2.249
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	90.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.653

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	150	487	0	0	421	125	64	0	74	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	487	0	0	421	125	64	0	74	0	0	0
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	128	0	0	111	33	17	0	19	0	0	0
Total Analysis Volume [veh/h]	158	513	0	0	443	132	67	0	78	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.01	0.00	0.00	0.00	0.00	0.65	0.00	0.14	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.23	0.00	0.00	0.00	0.00	0.00	90.15	0.00	12.34	0.00	0.00	0.00
Movement LOS	A	A			A	A	F		B			
95th-Percentile Queue Length [veh/ln]	0.55	0.55	0.00	0.00	0.00	0.00	3.26	0.00	0.47	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	13.87	13.87	0.00	0.00	0.00	0.00	81.50	0.00	11.84	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	2.17			0.00			48.30			0.00		
Approach LOS	A			A			E			A		
d_I, Intersection Delay [s/veh]	6.08											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.521

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	1	849	298	113	1074	1	0	0	2	204	0	129
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	849	298	113	1074	1	0	0	2	204	0	129
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	223	78	30	283	0	0	0	1	54	0	34
Total Analysis Volume [veh/h]	1	894	314	119	1131	1	0	0	2	215	0	136
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	16	35	0	31	50	0	0	9	0	0	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	77	77	10	86	86	0	0	17	17
g / C, Green / Cycle	0.00	0.64	0.64	0.08	0.72	0.72	0.00	0.00	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.00	0.33	0.33	0.07	0.30	0.30	0.00	0.00	0.12	0.08
s, saturation flow rate [veh/h]	1810	1900	1734	1810	1900	1899	1900	1470	1781	1615
c, Capacity [veh/h]	3	1217	1110	148	1369	1368	5	4	253	229
d1, Uniform Delay [s]	59.82	11.62	11.65	54.15	6.69	6.69	0.00	59.74	50.26	48.25
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	48.84	1.58	1.75	9.73	0.92	0.92	0.00	66.76	7.89	2.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.52	0.52	0.80	0.41	0.41	0.00	0.48	0.85	0.59
d, Delay for Lane Group [s/veh]	108.66	13.20	13.39	63.89	7.61	7.61	0.00	126.50	58.14	50.70
Lane Group LOS	F	B	B	E	A	A	A	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.07	9.11	8.42	3.93	5.53	5.53	0.00	0.14	6.84	3.98
50th-Percentile Queue Length [ft/ln]	1.84	227.66	210.56	98.30	138.34	138.30	0.00	3.45	171.10	99.41
95th-Percentile Queue Length [veh/ln]	0.13	14.06	13.18	7.08	9.39	9.39	0.00	0.25	11.13	7.16
95th-Percentile Queue Length [ft/ln]	3.30	351.39	329.55	176.95	234.78	234.73	0.00	6.22	278.36	178.94

Movement, Approach, & Intersection Results

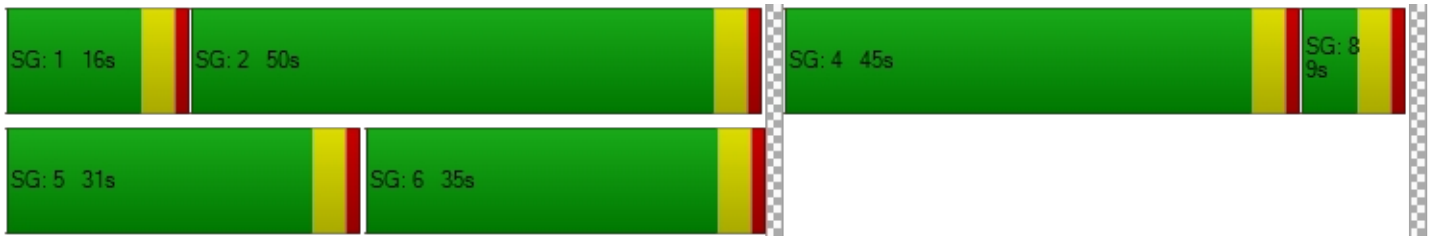
d_M, Delay for Movement [s/veh]	108.66	13.25	13.39	63.89	7.61	7.61	0.00	63.25	126.50	58.14	58.14	50.70
Movement LOS	F	B	B	E	A	A	A	E	F	E	E	D
d_A, Approach Delay [s/veh]	13.37			12.97			126.50			55.26		
Approach LOS	B			B			F			E		
d_I, Intersection Delay [s/veh]	18.50											
Intersection LOS	B											
Intersection V/C	0.521											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	767	83	683
d_b, Bicycle Delay [s]	33.00	22.82	55.10	26.00
l_b,int, Bicycle LOS Score for Intersection	2.557	2.592	1.561	2.139
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	3	813	117	146	1237	0	0	0	0	145	0	419
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	813	117	146	1237	0	0	0	0	145	0	419
Peak Hour Factor	0.9130	0.9130	0.9130	0.9500	0.9130	0.9500	0.9500	0.9500	0.9130	0.9130	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	223	32	38	339	0	0	0	0	40	0	110
Total Analysis Volume [veh/h]	3	890	128	154	1355	0	0	0	0	159	0	441
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	32	0	16	39	0	25	38	0	34	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	57	57	12	68	68	0	23	13	35
g / C, Green / Cycle	0.00	0.47	0.47	0.10	0.57	0.57	0.00	0.19	0.10	0.29
(v / s)_i Volume / Saturation Flow Rate	0.00	0.25	0.08	0.09	0.37	0.00	0.00	0.00	0.09	0.27
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1810	1615
c, Capacity [veh/h]	7	1711	764	181	2058	919	1	359	190	473
d1, Uniform Delay [s]	59.61	22.10	18.09	53.14	17.84	0.00	0.00	0.00	52.68	41.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	31.59	1.13	0.47	10.73	1.67	0.00	0.00	0.00	9.27	8.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.52	0.17	0.85	0.66	0.00	0.00	0.00	0.84	0.93
d, Delay for Lane Group [s/veh]	91.19	23.23	18.57	63.87	19.51	0.00	0.00	0.00	61.95	49.96
Lane Group LOS	F	C	B	E	B	A	A	A	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	8.93	2.14	5.10	12.91	0.00	0.00	0.00	5.19	13.69
50th-Percentile Queue Length [ft/ln]	3.91	223.18	53.49	127.59	322.72	0.00	0.00	0.00	129.69	342.29
95th-Percentile Queue Length [veh/ln]	0.28	13.83	3.85	8.81	18.80	0.00	0.00	0.00	8.92	19.76
95th-Percentile Queue Length [ft/ln]	7.04	345.68	96.29	220.21	470.03	0.00	0.00	0.00	223.07	494.00

Movement, Approach, & Intersection Results

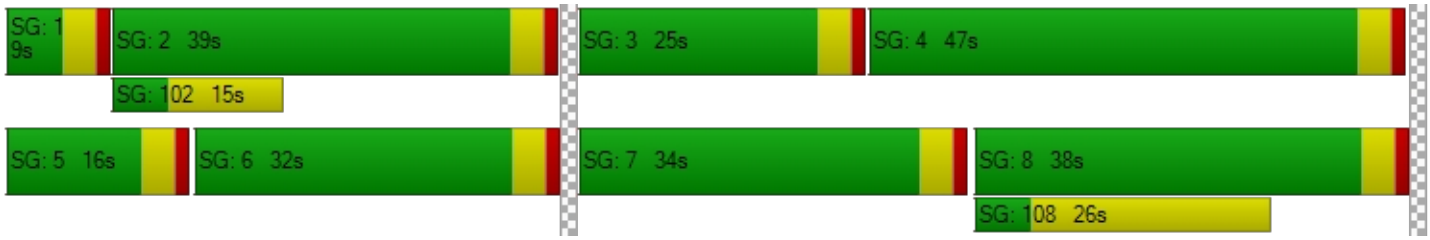
d_M, Delay for Movement [s/veh]	91.19	23.23	18.57	63.87	19.51	0.00	0.00	0.00	0.00	61.95	49.96	49.96
Movement LOS	F	C	B	E	B	A	A	A	A	E	D	D
d_A, Approach Delay [s/veh]	22.85			24.04			0.00			53.14		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	29.23											
Intersection LOS	C											
Intersection V/C	0.649											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.962	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	583	567	717
d_b, Bicycle Delay [s]	35.27	30.10	30.82	24.70
l_b,int, Bicycle LOS Score for Intersection	2.402	2.805	1.560	2.550
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	93.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.285

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	75	251	65	65	241	132	159	143	79	84	397	210
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	251	65	65	241	132	159	143	79	84	397	210
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	66	17	17	63	35	42	38	21	22	104	55
Total Analysis Volume [veh/h]	79	264	68	68	254	139	167	151	83	88	418	221
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	383	418	461	375	415	506	430
Degree of Utilization, x	0.90	0.16	1.17	0.85	0.20	1.29	0.51

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	9.13	0.57	17.88	7.94	0.74	22.48	2.86
95th-Percentile Queue Length [ft]	228.14	14.37	446.95	198.44	18.40	562.04	71.53
Approach Delay [s/veh]	47.72		128.06	40.67		126.41	
Approach LOS	E		F	E		F	
Intersection Delay [s/veh]	93.43						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	74	835	32	68	1077	117	165	186	54	52	265	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	835	32	68	1077	117	165	186	54	52	265	115
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	220	8	18	283	31	43	49	14	14	70	30
Total Analysis Volume [veh/h]	78	879	34	72	1134	123	174	196	57	55	279	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	52	0	11	52	0	31	34	0	23	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	68	68	6	68	68	14	25	25	5	16	16
g / C, Green / Cycle	0.05	0.57	0.57	0.05	0.56	0.56	0.11	0.21	0.21	0.04	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.24	0.04	0.34	0.34	0.10	0.05	0.04	0.03	0.11	0.11
s, saturation flow rate [veh/h]	1810	1900	1875	1810	1900	1836	1810	3618	1615	1810	1900	1710
c, Capacity [veh/h]	99	1078	1064	92	1071	1035	206	749	334	75	255	229
d1, Uniform Delay [s]	56.01	14.81	14.81	56.27	17.20	17.24	52.10	39.90	39.12	56.88	50.50	50.68
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.67	1.23	1.25	13.17	2.44	2.56	8.98	0.18	0.24	13.09	6.24	7.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.43	0.43	0.78	0.60	0.60	0.84	0.26	0.17	0.74	0.81	0.84
d, Delay for Lane Group [s/veh]	68.68	16.04	16.06	69.44	19.65	19.80	61.09	40.09	39.36	69.97	56.75	58.62
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.68	7.35	7.25	2.49	11.90	11.61	5.65	2.46	1.41	1.92	6.50	6.14
50th-Percentile Queue Length [ft/ln]	67.06	183.64	181.37	62.34	297.62	290.21	141.20	61.47	35.34	48.06	162.49	153.42
95th-Percentile Queue Length [veh/ln]	4.83	11.79	11.67	4.49	17.56	17.20	9.55	4.43	2.54	3.46	10.68	10.20
95th-Percentile Queue Length [ft/ln]	120.71	294.77	291.80	112.20	439.09	429.90	238.64	110.65	63.61	86.50	267.01	254.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.68	16.05	16.06	69.44	19.71	19.80	61.09	40.09	39.36	69.97	57.23	58.62
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	20.19			22.41			48.55			59.14		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	30.43											
Intersection LOS	C											
Intersection V/C	0.589											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.751	2.875	2.615	2.591
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	800	500	367
d_b, Bicycle Delay [s]	21.60	21.60	33.75	40.02
l_b,int, Bicycle LOS Score for Intersection	2.377	2.656	1.912	1.935
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.605

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	794	102	51	1141	64	71	387	106	150	418	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	794	102	51	1141	64	71	387	106	150	418	58
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	209	27	13	300	17	19	102	28	39	110	15
Total Analysis Volume [veh/h]	68	836	107	54	1201	67	75	407	112	158	440	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	65	0	9	65	0	12	30	0	16	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	44	44	5	44	44	6	43	43	12	49	49
g / C, Green / Cycle	0.04	0.37	0.37	0.04	0.37	0.37	0.05	0.36	0.36	0.10	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.04	0.25	0.25	0.03	0.34	0.34	0.04	0.14	0.14	0.09	0.13	0.13
s, saturation flow rate [veh/h]	1810	1900	1825	1810	1900	1865	1810	1900	1761	1810	1900	1820
c, Capacity [veh/h]	75	704	676	70	698	685	97	679	630	181	767	735
d1, Uniform Delay [s]	57.26	31.84	31.84	57.14	36.17	36.21	56.05	28.84	28.89	53.25	24.64	24.66
k, delay calibration	0.11	0.11	0.11	0.11	0.22	0.22	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.73	1.18	1.23	16.05	9.69	10.08	12.11	1.72	1.88	12.19	1.17	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.68	0.68	0.77	0.92	0.92	0.77	0.39	0.40	0.87	0.33	0.33
d, Delay for Lane Group [s/veh]	85.98	33.02	33.07	73.19	45.86	46.29	68.17	30.55	30.77	65.44	25.81	25.88
Lane Group LOS	F	C	C	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.65	11.89	11.44	1.94	19.42	19.20	2.57	6.10	5.75	5.31	5.25	5.07
50th-Percentile Queue Length [ft/ln]	66.37	297.34	285.92	48.39	485.52	479.94	64.26	152.48	143.84	132.67	131.30	126.70
95th-Percentile Queue Length [veh/ln]	4.78	17.55	16.98	3.48	26.65	26.38	4.63	10.15	9.69	9.08	9.01	8.76
95th-Percentile Queue Length [ft/ln]	119.47	438.74	424.57	87.11	666.21	659.58	115.66	253.73	242.18	227.12	225.26	219.00

Movement, Approach, & Intersection Results

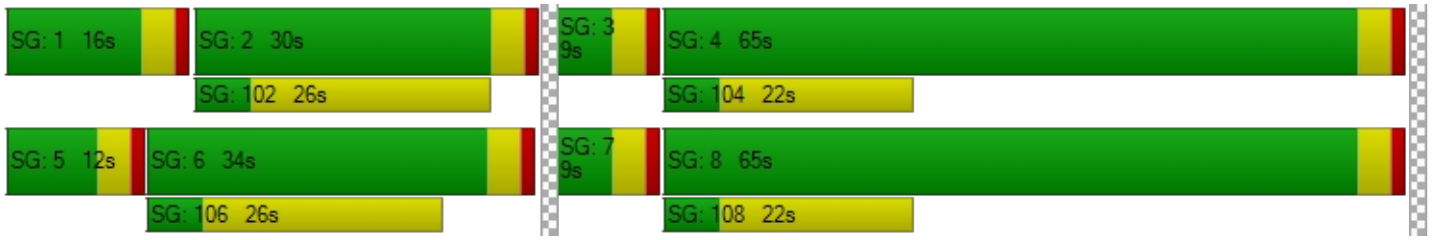
d_M, Delay for Movement [s/veh]	85.98	33.04	33.07	73.19	46.06	46.29	68.17	30.63	30.77	65.44	25.84	25.88
Movement LOS	F	C	C	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	36.61			47.18			35.40			35.34		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.07											
Intersection LOS	D											
Intersection V/C	0.605											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.871	2.841	2.543	2.554
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1017	433	500
d_b, Bicycle Delay [s]	14.50	14.50	36.82	33.75
l_b,int, Bicycle LOS Score for Intersection	2.394	2.650	2.050	2.103
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	47	724	84	26	979	361	230	168	17	88	220	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	724	84	26	979	361	230	168	17	88	220	40
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	191	22	7	258	95	61	44	4	23	58	11
Total Analysis Volume [veh/h]	49	762	88	27	1031	380	242	177	18	93	232	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	52	0	9	52	0	33	31	0	28	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	66	66	3	65	65	18	27	27	8	17	17
g / C, Green / Cycle	0.04	0.55	0.55	0.02	0.54	0.54	0.15	0.23	0.23	0.07	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.03	0.23	0.23	0.01	0.38	0.39	0.13	0.09	0.01	0.05	0.12	0.03
s, saturation flow rate [veh/h]	1810	1900	1832	1810	1900	1729	1810	1900	1615	1810	1900	1615
c, Capacity [veh/h]	64	1043	1006	45	1024	932	274	429	364	121	268	228
d1, Uniform Delay [s]	57.41	15.80	15.80	57.90	20.73	21.01	49.85	39.67	36.38	55.07	50.44	45.47
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.61	1.22	1.26	11.95	4.25	4.99	9.12	0.64	0.06	9.73	8.29	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.41	0.41	0.60	0.71	0.73	0.88	0.41	0.05	0.77	0.87	0.18
d, Delay for Lane Group [s/veh]	75.03	17.01	17.06	69.86	24.98	26.00	58.97	40.31	36.44	64.80	58.73	45.85
Lane Group LOS	E	B	B	E	C	C	E	D	D	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.79	7.15	6.91	0.96	16.03	15.25	7.79	4.55	0.42	3.10	7.42	1.14
50th-Percentile Queue Length [ft/ln]	44.64	178.69	172.64	24.05	400.84	381.29	194.80	113.71	10.57	77.41	185.58	28.38
95th-Percentile Queue Length [veh/ln]	3.21	11.53	11.22	1.73	22.60	21.66	12.37	8.05	0.76	5.57	11.89	2.04
95th-Percentile Queue Length [ft/ln]	80.35	288.31	280.39	43.29	565.02	541.41	309.25	201.15	19.02	139.34	297.29	51.08

Movement, Approach, & Intersection Results

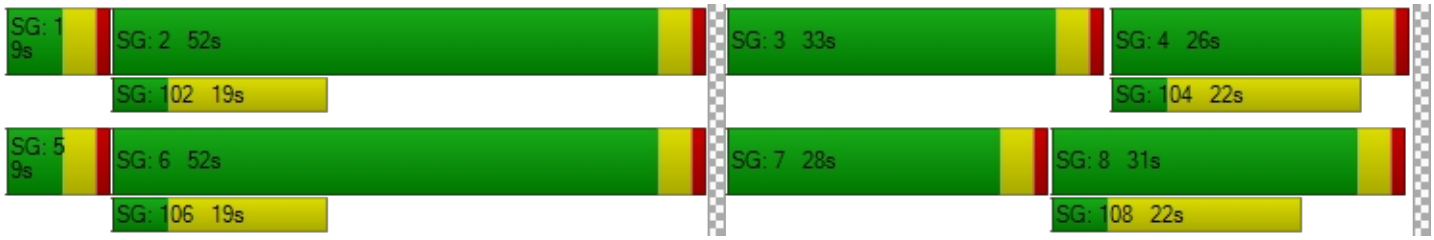
d_M, Delay for Movement [s/veh]	75.03	17.03	17.06	69.86	25.28	26.00	58.97	40.31	36.44	64.80	58.73	45.85
Movement LOS	E	B	B	E	C	C	E	D	D	E	E	D
d_A, Approach Delay [s/veh]	20.20			26.31			50.48			58.80		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	31.72											
Intersection LOS	C											
Intersection V/C	0.676											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.713	2.799	2.414	2.307
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	800	450	367
d_b, Bicycle Delay [s]	21.60	21.60	36.04	40.02
l_b,int, Bicycle LOS Score for Intersection	2.301	2.746	2.281	2.165
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	33.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.605

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	128	838	116	156	1207	9	0	124	96	248	97	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	838	116	156	1207	9	0	124	96	248	97	109
Peak Hour Factor	0.9500	0.9150	0.9500	0.9150	0.9150	0.9150	0.9150	0.9500	0.9500	0.9500	0.9500	0.9150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	229	31	43	330	2	0	33	25	65	26	30
Total Analysis Volume [veh/h]	135	916	122	170	1319	10	0	131	101	261	102	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	25	0	23	33	0	13	33	0	39	59	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	53	53	13	56	56	0	18	19	37
g / C, Green / Cycle	0.09	0.44	0.44	0.11	0.47	0.47	0.00	0.15	0.16	0.31
(v / s)_i Volume / Saturation Flow Rate	0.07	0.19	0.19	0.09	0.25	0.01	0.00	0.13	0.14	0.13
s, saturation flow rate [veh/h]	1810	3618	1788	1810	5176	1615	1810	1764	1810	1735
c, Capacity [veh/h]	161	1606	794	199	2406	751	1	265	294	541
d1, Uniform Delay [s]	53.79	22.96	22.97	52.43	23.05	17.28	0.00	49.91	49.17	32.55
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.78	0.85	1.72	9.83	0.90	0.03	0.00	8.97	8.87	0.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.43	0.43	0.85	0.55	0.01	0.00	0.88	0.89	0.41
d, Delay for Lane Group [s/veh]	64.57	23.81	24.69	62.26	23.95	17.32	0.00	58.88	58.05	33.04
Lane Group LOS	E	C	C	E	C	B	A	E	E	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.49	6.91	7.04	5.57	9.02	0.16	0.00	7.46	8.36	5.15
50th-Percentile Queue Length [ft/ln]	112.29	172.65	175.94	139.23	225.42	3.93	0.00	186.46	209.02	128.80
95th-Percentile Queue Length [veh/ln]	7.97	11.22	11.39	9.44	13.94	0.28	0.00	11.94	13.10	8.87
95th-Percentile Queue Length [ft/ln]	199.19	280.40	284.71	235.98	348.54	7.07	0.00	298.44	327.57	221.87

Movement, Approach, & Intersection Results

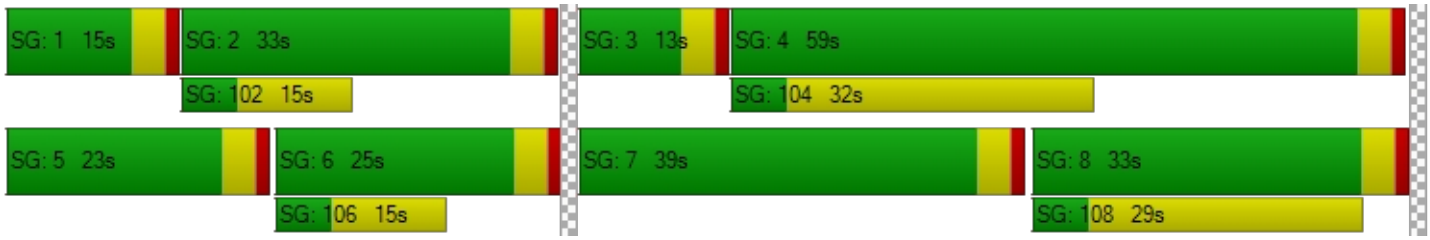
d_M, Delay for Movement [s/veh]	64.57	24.02	24.69	62.26	23.95	17.32	0.00	58.88	58.88	58.05	33.04	33.04
Movement LOS	E	C	C	E	C	B	A	E	E	E	C	C
d_A, Approach Delay [s/veh]	28.76			28.25			58.88			46.58		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	33.14											
Intersection LOS	C											
Intersection V/C	0.605											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.007	3.229	2.111	2.250
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	350	483	483	917
d_b, Bicycle Delay [s]	40.84	34.50	34.50	17.60
l_b,int, Bicycle LOS Score for Intersection	2.205	2.384	1.942	2.355
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	95.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.147

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	28	290	58	7	302	110	66	258	28	44	296	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	290	58	7	302	110	66	258	28	44	296	44
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	76	15	2	79	29	17	68	7	12	78	12
Total Analysis Volume [veh/h]	29	305	61	7	318	116	69	272	29	46	312	46
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	395	441	377	404
Degree of Utilization, x	1.04	1.15	0.98	1.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	13.06	16.87	11.36	13.90
95th-Percentile Queue Length [ft]	326.43	421.86	284.08	347.50
Approach Delay [s/veh]	87.36	122.51	73.61	95.50
Approach LOS	F	F	F	F
Intersection Delay [s/veh]	95.87			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	150.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.538

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	4	67	242	86	68	1	75	436	32	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	67	242	86	68	1	75	436	32	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	18	64	23	18	0	20	115	8	3
Total Analysis Volume [veh/h]	4	71	255	91	72	1	79	459	34	11
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	493	584
Degree of Utilization, x	1.28	1.54

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	21.87	32.31
95th-Percentile Queue Length [ft]	546.86	807.78
Approach Delay [s/veh]	171.41	279.15
Approach LOS	F	F
Intersection Delay [s/veh]	150.13	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	52	24	211	104	0	30	92	253	27	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	24	211	104	0	30	92	253	27	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	6	56	27	0	8	24	67	7	1
Total Analysis Volume [veh/h]	55	25	222	109	0	32	97	266	28	4
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	411	427
Degree of Utilization, x	1.07	1.13

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	14.24	16.05
95th-Percentile Queue Length [ft]	355.91	401.26
Approach Delay [s/veh]	97.50	116.68
Approach LOS	F	F
Intersection Delay [s/veh]	150.13	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	2	15	74	26	1	15	50	138	36	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	15	74	26	1	15	50	138	36	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	19	7	0	4	13	36	9	2
Total Analysis Volume [veh/h]	2	16	78	27	1	16	53	145	38	7
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	400	382	419
Degree of Utilization, x	0.31	0.56	0.11

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.30	3.31	0.36
95th-Percentile Queue Length [ft]	32.47	82.85	8.95
Approach Delay [s/veh]	15.99	21.61	
Approach LOS	C	C	
Intersection Delay [s/veh]	150.13		
Intersection LOS	F		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	34.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.588

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	166	662	220	117	951	64	92	183	193	140	163	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	662	220	117	951	64	92	183	193	140	163	95
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	174	58	31	250	17	24	48	51	37	43	25
Total Analysis Volume [veh/h]	175	697	232	123	1001	67	97	193	203	147	172	100
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	27	46	0	21	40	0	27	37	0	16	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	65	65	10	61	61	8	18	18	12	21	21
g / C, Green / Cycle	0.11	0.54	0.54	0.08	0.51	0.51	0.07	0.15	0.15	0.10	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.10	0.26	0.26	0.07	0.28	0.28	0.05	0.05	0.13	0.08	0.09	0.06
s, saturation flow rate [veh/h]	1810	1900	1740	1810	1900	1858	1810	3618	1615	1810	1900	1615
c, Capacity [veh/h]	206	1025	939	152	968	947	125	533	238	174	331	281
d1, Uniform Delay [s]	52.15	17.07	17.08	54.05	20.17	20.18	54.92	46.09	49.90	53.37	45.01	43.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.30	1.56	1.71	9.91	2.32	2.37	9.71	0.41	8.44	10.66	1.27	0.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.47	0.47	0.81	0.56	0.56	0.77	0.36	0.85	0.85	0.52	0.36
d, Delay for Lane Group [s/veh]	61.45	18.63	18.79	63.96	22.48	22.55	64.64	46.50	58.35	64.03	46.27	44.40
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.70	8.53	7.87	4.07	10.75	10.55	3.22	2.64	6.49	4.87	4.78	2.69
50th-Percentile Queue Length [ft/ln]	142.46	213.35	196.70	101.72	268.82	263.69	80.62	65.89	162.29	121.86	119.40	67.15
95th-Percentile Queue Length [veh/ln]	9.61	13.32	12.47	7.32	16.13	15.87	5.80	4.74	10.67	8.50	8.36	4.83
95th-Percentile Queue Length [ft/ln]	240.33	333.12	311.70	183.09	403.26	396.85	145.12	118.61	266.75	212.38	209.01	120.87

Movement, Approach, & Intersection Results

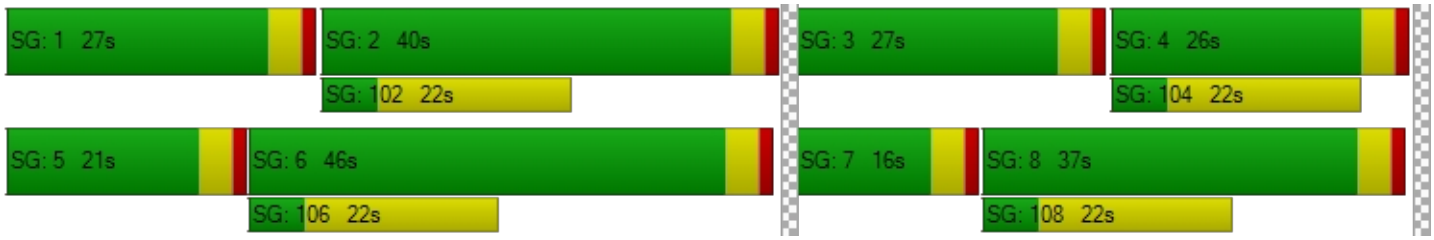
d_M, Delay for Movement [s/veh]	61.45	18.68	18.79	63.96	22.51	22.55	64.64	46.50	58.35	64.03	46.27	44.40
Movement LOS	E	B	B	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	25.48			26.80			54.95			52.05		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.97											
Intersection LOS	C											
Intersection V/C	0.588											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.794	2.722	2.492	2.625
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	600	550	367
d_b, Bicycle Delay [s]	25.35	29.40	31.54	40.02
l_b,int, Bicycle LOS Score for Intersection	2.470	2.542	1.966	2.251
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.629

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	55	876	64	30	1276	48	73	247	136	195	253	75
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	876	64	30	1276	48	73	247	136	195	253	75
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	231	17	8	336	13	19	65	36	51	67	20
Total Analysis Volume [veh/h]	58	922	67	32	1343	51	77	260	143	205	266	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	51	0	9	51	0	17	34	0	26	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	69	69	3	67	67	7	16	16	16	25	25
g / C, Green / Cycle	0.04	0.57	0.57	0.03	0.56	0.56	0.05	0.14	0.14	0.13	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.26	0.02	0.37	0.37	0.04	0.11	0.11	0.11	0.09	0.10
s, saturation flow rate [veh/h]	1810	1900	1855	1810	1900	1876	1810	1900	1679	1810	1900	1753
c, Capacity [veh/h]	75	1087	1062	50	1061	1047	100	260	230	235	402	371
d1, Uniform Delay [s]	56.96	14.90	14.90	57.76	18.53	18.56	55.93	50.30	50.50	51.20	41.16	41.22
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.44	1.40	1.44	12.94	3.23	3.29	11.72	6.04	7.86	9.55	0.77	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.46	0.46	0.64	0.66	0.66	0.77	0.81	0.84	0.87	0.44	0.45
d, Delay for Lane Group [s/veh]	72.39	16.30	16.34	70.70	21.76	21.85	67.66	56.34	58.36	60.75	41.93	42.07
Lane Group LOS	E	B	B	E	C	C	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.06	8.13	7.95	1.14	14.06	13.96	2.63	6.58	6.12	6.66	4.69	4.40
50th-Percentile Queue Length [ft/ln]	51.58	203.28	198.76	28.53	351.47	348.88	65.68	164.53	153.04	166.58	117.18	110.10
95th-Percentile Queue Length [veh/ln]	3.71	12.81	12.57	2.05	20.21	20.08	4.73	10.79	10.18	10.90	8.24	7.85
95th-Percentile Queue Length [ft/ln]	92.84	320.19	314.37	51.36	505.20	502.05	118.22	269.71	254.48	272.41	205.95	196.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.39	16.32	16.34	70.70	21.80	21.85	67.66	56.72	58.36	60.75	41.97	42.07
Movement LOS	E	B	B	E	C	C	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	19.42			22.90			58.97			48.99		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	30.90											
Intersection LOS	C											
Intersection V/C	0.629											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.991	2.875	2.482	2.492
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	783	500	650
d_b, Bicycle Delay [s]	22.20	22.20	33.75	27.34
l_b,int, Bicycle LOS Score for Intersection	2.423	2.736	1.956	2.013
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	43.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	96	58	86	166	276	991	336	452	66	150	1395	330
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	58	86	166	276	991	336	452	66	150	1395	330
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	15	23	44	73	261	88	119	17	39	367	87
Total Analysis Volume [veh/h]	101	61	91	175	291	1043	354	476	69	158	1468	347
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	38	0	20	46	0	18	47	0	15	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	38	38	14	44	44	44	14	45	45	7	38	38
g / C, Green / Cycle	0.07	0.32	0.32	0.11	0.37	0.37	0.37	0.12	0.37	0.37	0.06	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.02	0.06	0.10	0.15	0.32	0.32	0.10	0.09	0.04	0.04	0.28	0.21
s, saturation flow rate [veh/h]	1810	3618	1615	1810	1900	1615	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	121	1157	517	204	696	591	591	407	1918	599	222	1645	513
d1, Uniform Delay [s]	55.36	28.23	29.41	52.26	28.46	35.60	35.60	52.15	26.17	24.82	55.14	38.96	35.55
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.20
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.93	0.09	0.74	9.80	1.85	17.17	17.17	5.79	0.07	0.08	4.20	1.88	2.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.05	0.18	0.86	0.42	0.88	0.88	0.87	0.25	0.12	0.71	0.89	0.68
d, Delay for Lane Group [s/veh]	69.29	28.32	30.16	62.06	30.31	52.76	52.76	57.94	26.24	24.91	59.34	40.85	38.37
Lane Group LOS	E	C	C	E	C	D	D	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.49	0.63	2.01	5.73	6.62	16.86	16.86	5.56	3.17	1.32	2.48	13.85	9.18
50th-Percentile Queue Length [ft/ln]	87.16	15.68	50.31	143.2	165.5	421.6	421.6	139.01	79.25	32.92	61.91	346.30	229.45
95th-Percentile Queue Length [veh/ln]	6.28	1.13	3.62	9.65	10.84	23.60	23.60	9.43	5.71	2.37	4.46	19.96	14.15
95th-Percentile Queue Length [ft/ln]	156.89	28.22	90.57	241.3	271.0	589.9	589.9	235.69	142.66	59.26	111.43	498.89	353.67

Movement, Approach, & Intersection Results

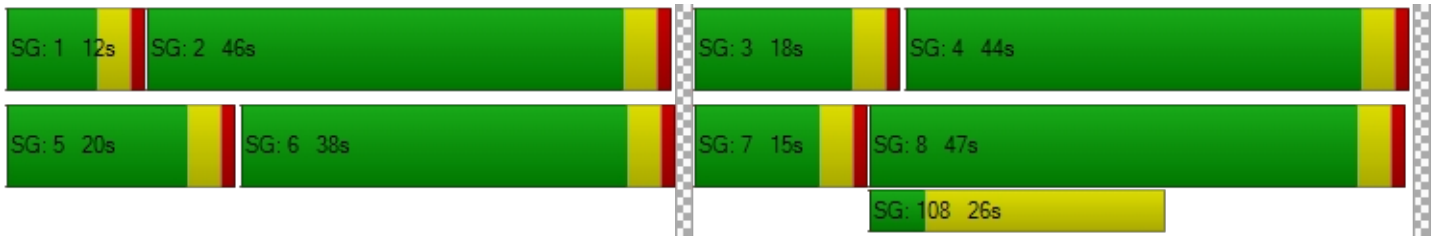
d_M, Delay for Movement [s/veh]	69.29	28.32	30.16	62.06	30.31	52.76	57.94	26.24	24.91	59.34	40.85	38.37
Movement LOS	E	C	C	E	C	D	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	45.34			49.51			38.62			41.89		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.93											
Intersection LOS	D											
Intersection V/C	0.763											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.593	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	700	717	667
d_b, Bicycle Delay [s]	30.82	25.35	24.70	26.67
l_b,int, Bicycle LOS Score for Intersection	1.768	2.805	2.054	2.645
Bicycle LOS	A	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	49.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.606

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	28	38	424	55	1070	286	468	28	34	372	106
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	28	38	424	55	1070	286	468	28	34	372	106
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	7	10	112	14	282	75	123	7	9	98	28
Total Analysis Volume [veh/h]	52	29	40	446	58	1126	301	493	29	36	392	112
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	48	0	9	23	0	16	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	6	44	44	44	13	51	51	4	42	42
g / C, Green / Cycle	0.05	0.05	0.05	0.37	0.37	0.37	0.11	0.42	0.42	0.03	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.02	0.14	0.14	0.39	0.09	0.10	0.02	0.02	0.09	0.10
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1830	2859	3514	5176	1615	1810	3618	1698
c, Capacity [veh/h]	84	88	75	663	671	1048	372	2197	685	53	1258	590
d1, Uniform Delay [s]	56.18	55.41	55.95	27.96	27.91	38.00	52.47	21.97	20.24	57.69	28.15	28.28
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.12	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.26	2.15	5.80	0.36	0.35	38.55	4.24	0.24	0.12	14.21	0.53	1.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.33	0.53	0.38	0.38	1.07	0.81	0.22	0.04	0.68	0.27	0.28
d, Delay for Lane Group [s/veh]	63.44	57.57	61.76	28.32	28.26	76.55	56.71	22.21	20.36	71.90	28.68	29.46
Lane Group LOS	E	E	E	C	C	F	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.72	0.90	1.31	5.40	5.39	20.69	4.65	3.01	0.50	1.29	3.61	3.66
50th-Percentile Queue Length [ft/ln]	42.92	22.60	32.66	135.06	134.80	517.35	116.19	75.20	12.58	32.29	90.29	91.48
95th-Percentile Queue Length [veh/ln]	3.09	1.63	2.35	9.21	9.20	29.54	8.18	5.41	0.91	2.32	6.50	6.59
95th-Percentile Queue Length [ft/ln]	77.26	40.68	58.79	230.36	230.00	738.52	204.58	135.36	22.65	58.12	162.52	164.67

Movement, Approach, & Intersection Results

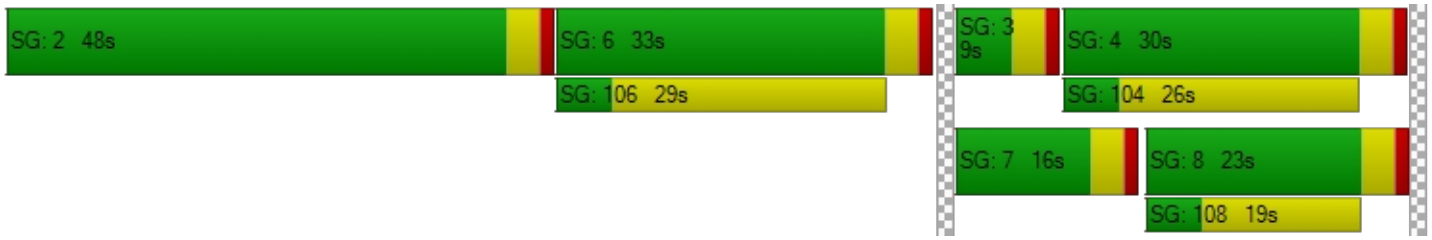
d_M, Delay for Movement [s/veh]	63.44	57.57	61.76	28.29	28.26	76.55	56.71	22.21	20.36	71.90	28.78	29.46
Movement LOS	E	E	E	C	C	F	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	61.48			61.63			34.76			31.80		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	49.35											
Intersection LOS	D											
Intersection V/C	0.606											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.206	2.805	0.000	2.821
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	733	317	433
d_b, Bicycle Delay [s]	34.50	24.07	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.659	4.249	2.012	1.857
Bicycle LOS	A	D	B	A

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	35.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.607

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	298	894	97	69	1010	196	194	196	103	217	502	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	298	894	97	69	1010	196	194	196	103	217	502	82
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	235	26	18	266	52	51	52	27	57	132	22
Total Analysis Volume [veh/h]	314	941	102	73	1063	206	204	206	108	228	528	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	59	0	9	50	0	13	36	0	16	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	68	5	60	60	9	22	22	10	23	23
g / C, Green / Cycle	0.11	0.57	0.04	0.50	0.50	0.07	0.18	0.18	0.08	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.09	0.26	0.02	0.29	0.13	0.06	0.06	0.07	0.06	0.17	0.17
s, saturation flow rate [veh/h]	3514	3618	3514	3618	1615	3514	3618	1615	3514	1900	1808
c, Capacity [veh/h]	372	2044	134	1799	803	259	656	293	288	360	343
d1, Uniform Delay [s]	52.67	15.34	56.69	21.47	17.38	54.65	42.63	43.08	54.07	47.21	47.22
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.14	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.25	0.75	3.42	1.43	0.77	5.25	0.27	0.77	4.87	8.11	8.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.46	0.54	0.59	0.26	0.79	0.31	0.37	0.79	0.87	0.87
d, Delay for Lane Group [s/veh]	57.93	16.08	60.11	22.90	18.15	59.90	42.90	43.86	58.94	55.33	55.76
Lane Group LOS	E	B	E	C	B	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.91	7.58	1.15	10.78	3.44	3.22	2.69	2.89	3.57	9.91	9.48
50th-Percentile Queue Length [ft/ln]	122.83	189.53	28.78	269.46	86.02	80.50	67.29	72.22	89.37	247.79	237.10
95th-Percentile Queue Length [veh/ln]	8.55	12.10	2.07	16.16	6.19	5.80	4.84	5.20	6.43	15.07	14.53
95th-Percentile Queue Length [ft/ln]	213.71	302.42	51.81	404.06	154.84	144.90	121.11	130.00	160.86	376.87	363.36

Movement, Approach, & Intersection Results

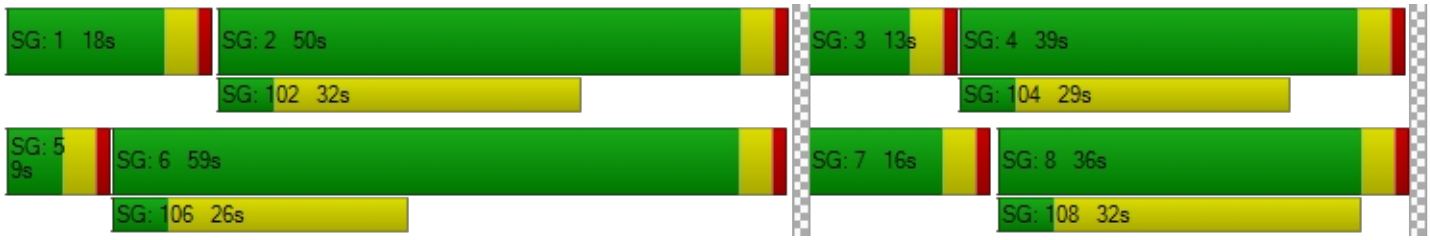
d_M, Delay for Movement [s/veh]	57.93	16.08	0.00	60.11	22.90	18.15	59.90	42.90	43.86	58.94	55.50	55.76
Movement LOS	E	B		E	C	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	26.55			24.19			49.79			56.46		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	35.16											
Intersection LOS	D											
Intersection V/C	0.607											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.064	2.968	2.932	2.650
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	767	533	583
d_b, Bicycle Delay [s]	17.60	22.82	32.27	30.10
l_b,int, Bicycle LOS Score for Intersection	2.595	2.667	1.987	2.254
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	30.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.507

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	87	3	285	12	9	0	1	260	37	381	808	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	3	285	12	9	0	1	260	37	381	808	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	1	75	3	2	0	0	68	10	100	213	1
Total Analysis Volume [veh/h]	92	3	300	13	9	0	1	274	39	401	851	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	39	0	9	33	0	18	26	0	46	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33	25	33	0	47	47	29	75	75
g / C, Green / Cycle	0.27	0.27	0.21	0.27	0.00	0.39	0.39	0.24	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.19	0.02	0.00	0.08	0.02	0.22	0.23	0.23
s, saturation flow rate [veh/h]	1428	1472	1615	1130	1810	3618	1615	1810	1900	1896
c, Capacity [veh/h]	373	516	333	379	3	1402	626	436	1191	1188
d1, Uniform Delay [s]	33.02	33.02	46.46	32.30	59.82	24.34	23.05	44.42	10.79	10.79
k, delay calibration	0.11	0.11	0.18	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	0.09	13.38	0.06	45.21	0.31	0.19	8.32	0.85	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.11	0.90	0.06	0.30	0.20	0.06	0.92	0.36	0.36
d, Delay for Lane Group [s/veh]	33.14	33.11	59.84	32.37	105.03	24.65	23.24	52.73	11.64	11.64
Lane Group LOS	C	C	E	C	F	C	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.91	1.23	9.93	0.48	0.07	2.66	0.73	12.56	5.55	5.55
50th-Percentile Queue Length [ft/ln]	22.67	30.70	248.15	12.08	1.79	66.41	18.33	313.92	138.87	138.63
95th-Percentile Queue Length [veh/ln]	1.63	2.21	15.09	0.87	0.13	4.78	1.32	18.37	9.42	9.41
95th-Percentile Queue Length [ft/ln]	40.80	55.27	377.32	21.75	3.23	119.55	32.99	459.21	235.50	235.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.14	33.11	59.84	32.37	32.37	32.37	105.03	24.65	23.24	52.73	11.64	11.64
Movement LOS	C	C	E	C	C	C	F	C	C	D	B	B
d_A, Approach Delay [s/veh]	53.42			32.37			24.73			24.75		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	30.53											
Intersection LOS	C											
Intersection V/C	0.507											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.480	0.000	2.919	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	733	367	833
d_b, Bicycle Delay [s]	24.07	24.07	40.02	20.42
l_b,int, Bicycle LOS Score for Intersection	2.211	1.596	1.819	2.597
Bicycle LOS	B	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	16.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.328

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	149	0	505	1059	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	149	0	505	1059	1
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	39	0	133	279	0
Total Analysis Volume [veh/h]	0	157	0	532	1115	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.33	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	34.81	16.16	10.79	0.00	0.00	0.00
Movement LOS	D	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	1.42	1.42	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	35.40	35.40	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	16.16		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.41					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	141	1096	122	111	1143	432	263	90	158	237	457	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	1096	122	111	1143	432	263	90	158	237	457	110
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	288	32	29	301	114	69	24	42	62	120	29
Total Analysis Volume [veh/h]	148	1154	128	117	1203	455	277	95	166	249	481	116
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	39	0	13	36	36	26	40	0	28	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	52	52	9	49	74	21	24	18	22	22
g / C, Green / Cycle	0.10	0.43	0.43	0.08	0.41	0.62	0.17	0.20	0.15	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.08	0.24	0.24	0.06	0.23	0.28	0.15	0.03	0.14	0.16	0.16
s, saturation flow rate [veh/h]	1810	3618	1804	1810	5176	1615	1810	3618	1810	1900	1774
c, Capacity [veh/h]	175	1567	782	136	2131	997	312	739	279	354	330
d1, Uniform Delay [s]	53.34	25.24	25.24	54.89	27.06	12.23	48.54	39.01	49.78	47.45	47.46
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.17	0.11	0.12	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.68	1.37	2.73	14.52	1.09	1.51	12.27	0.08	10.61	6.73	7.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.55	0.55	0.86	0.56	0.46	0.89	0.13	0.89	0.87	0.87
d, Delay for Lane Group [s/veh]	64.02	26.61	27.97	69.41	28.15	13.74	60.81	39.09	60.39	54.17	54.66
Lane Group LOS	E	C	C	E	C	B	E	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.91	9.25	9.53	4.04	8.94	6.67	9.15	1.16	8.13	9.59	9.01
50th-Percentile Queue Length [ft/ln]	122.69	231.33	238.17	101.09	223.57	166.71	228.72	29.05	203.27	239.84	225.33
95th-Percentile Queue Length [veh/ln]	8.54	14.24	14.59	7.28	13.85	10.90	14.11	2.09	12.81	14.67	13.94
95th-Percentile Queue Length [ft/ln]	213.52	356.05	364.71	181.95	346.17	272.59	352.74	52.29	320.19	366.83	348.42

Movement, Approach, & Intersection Results

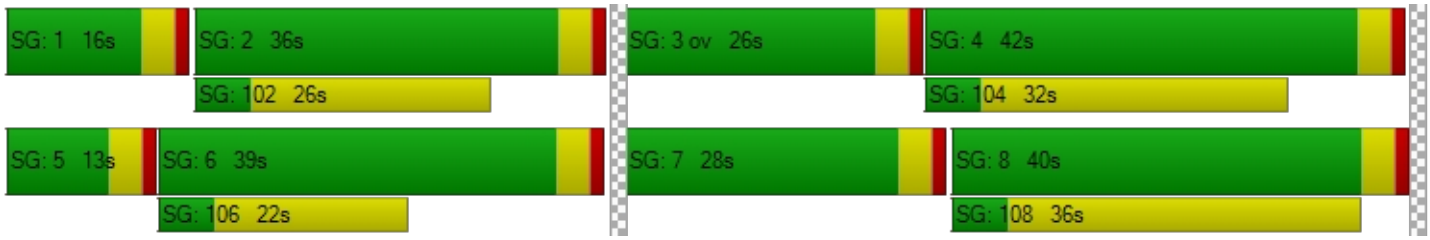
d_M, Delay for Movement [s/veh]	64.02	26.97	27.97	69.41	28.15	13.74	60.81	39.09	0.00	60.39	54.35	54.66
Movement LOS	E	C	C	E	C	B	E	D		E	D	D
d_A, Approach Delay [s/veh]	30.89			27.17			55.26			56.17		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	36.28											
Intersection LOS	D											
Intersection V/C	0.630											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.177	3.146	2.705	2.546
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	533	600	633
d_b, Bicycle Delay [s]	30.10	32.27	29.40	28.02
l_b,int, Bicycle LOS Score for Intersection	2.346	2.536	1.867	2.258
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.548

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	67	217	7	50	285	88	67	248	90	18	456	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	217	7	50	285	88	67	248	90	18	456	74
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	57	2	13	75	23	18	65	24	5	120	19
Total Analysis Volume [veh/h]	71	228	7	53	300	93	71	261	95	19	480	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	36	0	0	36	0	10	75	0	9	74	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	69	69	6	36	2	33	33
g / C, Green / Cycle	0.58	0.58	0.05	0.30	0.02	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.20	0.26	0.04	0.20	0.01	0.25	0.05
s, saturation flow rate [veh/h]	1518	1745	1810	1815	1810	1900	1615
c, Capacity [veh/h]	910	1037	90	553	37	522	444
d1, Uniform Delay [s]	13.09	14.31	56.36	36.10	58.21	42.22	33.15
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.00	1.30	13.73	1.26	10.90	7.09	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.43	0.78	0.64	0.52	0.92	0.18
d, Delay for Lane Group [s/veh]	14.09	15.61	70.09	37.36	69.11	49.31	33.34
Lane Group LOS	B	B	E	D	E	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.44	7.01	2.47	9.19	0.68	14.72	1.77
50th-Percentile Queue Length [ft/ln]	110.95	175.16	61.80	229.75	17.07	367.98	44.25
95th-Percentile Queue Length [veh/ln]	7.89	11.35	4.45	14.16	1.23	21.01	3.19
95th-Percentile Queue Length [ft/ln]	197.32	283.68	111.24	354.05	30.73	525.28	79.65

Movement, Approach, & Intersection Results

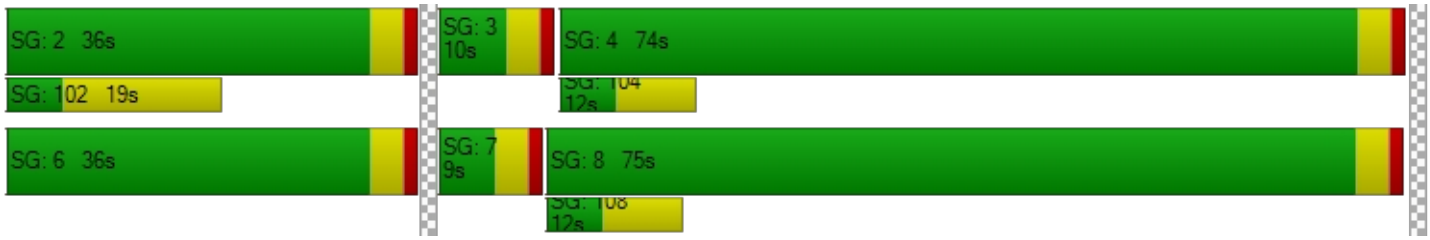
d_M, Delay for Movement [s/veh]	14.09	14.09	14.09	15.61	15.61	15.61	70.09	37.36	37.36	69.11	49.31	33.34
Movement LOS	B	B	B	B	B	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	14.09			15.61			42.80			47.81		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	32.54											
Intersection LOS	C											
Intersection V/C	0.548											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.081	2.131	2.508	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	533	1183	1167
d_b, Bicycle Delay [s]	32.27	32.27	10.00	10.42
l_b,int, Bicycle LOS Score for Intersection	2.065	2.296	2.264	2.512
Bicycle LOS	B	B	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	40.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	1	87	157	31	9	0	127	439	77	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	87	157	31	9	0	127	439	77	17
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	23	41	8	2	0	33	116	20	4
Total Analysis Volume [veh/h]	1	92	165	33	9	0	134	462	81	18
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	73	0	0	0	0	73	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	56	56
g / C, Green / Cycle	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.32	0.45
s, saturation flow rate [veh/h]	952	1555
c, Capacity [veh/h]	483	761
d1, Uniform Delay [s]	22.80	31.63
k, delay calibration	0.13	0.31
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	1.61	11.78
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.91
d, Delay for Lane Group [s/veh]	24.42	43.41
Lane Group LOS	C	D
Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	6.43	21.51
50th-Percentile Queue Length [ft/ln]	160.84	537.70
95th-Percentile Queue Length [veh/ln]	10.59	29.11
95th-Percentile Queue Length [ft/ln]	264.84	727.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.42	24.42	24.42	24.42	24.42	43.41	43.41	43.41	43.41	43.41
Movement LOS	C	C	C	C	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	24.42					43.41				
Approach LOS	C					D				
d_I, Intersection Delay [s/veh]	40.22									
Intersection LOS	D									
Intersection V/C	0.666									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.168	2.231
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1150	1150
d_b, Bicycle Delay [s]	10.84	10.84
l_b,int, Bicycle LOS Score for Intersection	1.888	2.456
Bicycle LOS	A	B

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	10	83	179	28	6	1	32	189	30	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	83	179	28	6	1	32	189	30	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	22	47	7	2	0	8	50	8	2
Total Analysis Volume [veh/h]	11	87	188	29	6	1	34	199	32	7
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissiv	Permissiv	Permissiv	Permissiv	ProtPerm	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	19	0	0	9	0	19	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	40	33	40	30	30
g / C, Green / Cycle	0.34	0.27	0.34	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.12	0.03	0.10	0.02
s, saturation flow rate [veh/h]	1295	1849	1262	1900	1615
c, Capacity [veh/h]	428	508	401	476	404
d1, Uniform Delay [s]	28.36	35.87	27.48	37.66	34.55
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.24	2.74	0.09	2.69	0.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.44	0.09	0.42	0.10
d, Delay for Lane Group [s/veh]	29.60	38.61	27.57	40.35	35.03
Lane Group LOS	C	D	C	D	D
Critical Lane Group	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.14	5.79	0.70	5.27	0.94
50th-Percentile Queue Length [ft/ln]	53.51	144.70	17.42	131.83	23.44
95th-Percentile Queue Length [veh/ln]	3.85	9.73	1.25	9.04	1.69
95th-Percentile Queue Length [ft/ln]	96.32	243.33	31.35	225.98	42.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.60	29.60	38.61	38.61	38.61	27.57	27.57	40.35	35.03	35.03
Movement LOS	C	C	D	D	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	35.86					37.95				
Approach LOS	D					D				
d_I, Intersection Delay [s/veh]	40.22									
Intersection LOS	D									
Intersection V/C	0.666									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.339	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250
d_b, Bicycle Delay [s]	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.936	1.942
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	11	40	13	1	3	16	105	87	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	11	40	13	1	3	16	105	87	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	11	3	0	1	4	28	23	1
Total Analysis Volume [veh/h]	0	12	42	14	1	3	17	111	92	2
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12
g / C, Green / Cycle	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.07	0.07	0.06
s, saturation flow rate [veh/h]	929	1747	1615
c, Capacity [veh/h]	125	204	156
d1, Uniform Delay [s]	51.01	52.72	51.98
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	3.76	3.38	3.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.64	0.60
d, Delay for Lane Group [s/veh]	54.77	56.10	55.66
Lane Group LOS	D	E	E
Critical Lane Group	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.08	4.04	2.88
50th-Percentile Queue Length [ft/ln]	52.03	100.92	71.88
95th-Percentile Queue Length [veh/ln]	3.75	7.27	5.18
95th-Percentile Queue Length [ft/ln]	93.65	181.65	129.38

Movement, Approach, & Intersection Results

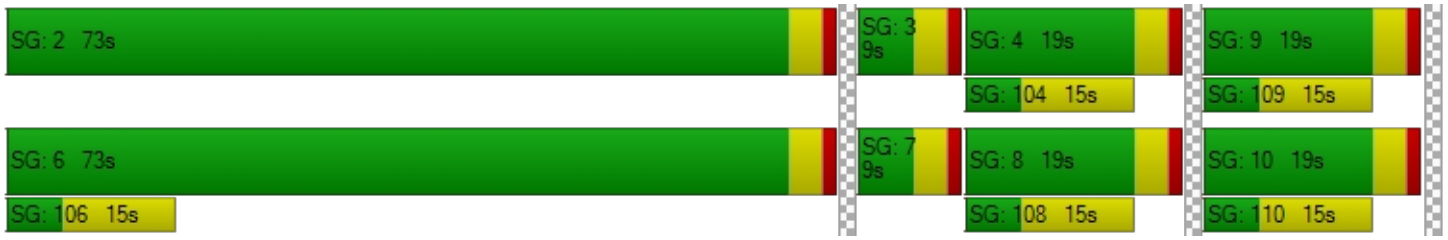
d_M, Delay for Movement [s/veh]	54.77	54.77	54.77	54.77	54.77	56.10	56.10	56.10	55.66	55.66
Movement LOS	D	D	D	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	54.77					55.91				
Approach LOS	D					E				
d_I, Intersection Delay [s/veh]	40.22									
Intersection LOS	D									
Intersection V/C	0.666									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.024	2.311
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250
d_b, Bicycle Delay [s]	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.631	1.923
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	38.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	130	691	192	122	911	71	151	134	75	157	172	318
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	130	691	192	122	911	71	151	134	75	157	172	318
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	182	51	32	240	19	40	35	20	41	45	84
Total Analysis Volume [veh/h]	137	727	202	128	959	75	159	141	79	165	181	335
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	41	0	15	41	0	16	38	0	26	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	54	54	10	54	54	12	27	27	13	28	28
g / C, Green / Cycle	0.09	0.45	0.45	0.09	0.45	0.45	0.10	0.22	0.22	0.11	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.08	0.25	0.25	0.07	0.28	0.28	0.09	0.06	0.06	0.09	0.10	0.21
s, saturation flow rate [veh/h]	1810	1900	1760	1810	1900	1852	1810	1900	1678	1810	1900	1615
c, Capacity [veh/h]	163	858	794	154	848	827	181	420	371	197	437	371
d1, Uniform Delay [s]	53.72	24.21	24.21	54.02	25.38	25.39	53.28	38.75	38.86	52.41	39.32	44.89
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.77	2.66	2.87	10.70	3.35	3.45	12.64	0.35	0.42	8.98	0.63	10.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.56	0.56	0.83	0.62	0.62	0.88	0.27	0.28	0.84	0.41	0.90
d, Delay for Lane Group [s/veh]	64.50	26.87	27.08	64.72	28.73	28.84	65.92	39.09	39.28	61.39	39.95	55.05
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.56	10.57	9.85	4.26	12.02	11.75	5.36	2.85	2.64	5.37	4.64	10.69
50th-Percentile Queue Length [ft/ln]	113.90	264.31	246.17	106.54	300.54	293.84	134.05	71.23	66.11	134.13	115.95	267.17
95th-Percentile Queue Length [veh/ln]	8.06	15.91	14.99	7.65	17.71	17.38	9.16	5.13	4.76	9.16	8.17	16.05
95th-Percentile Queue Length [ft/ln]	201.42	397.63	374.83	191.18	442.70	434.41	228.99	128.21	119.00	229.09	204.25	401.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.50	26.94	27.08	64.72	28.78	28.84	65.92	39.13	39.28	61.39	39.95	55.05
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	31.79			32.74			50.40			52.57		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.58											
Intersection LOS	D											
Intersection V/C	0.647											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.758	2.780	2.466	2.655
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	617	567	733
d_b, Bicycle Delay [s]	28.70	28.70	30.82	24.07
l_b,int, Bicycle LOS Score for Intersection	2.439	2.518	1.872	2.121
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	57	866	181	15	1414	116	42	212	95	289	344	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	866	181	15	1414	116	42	212	95	289	344	46
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	228	48	4	372	31	11	56	25	76	91	12
Total Analysis Volume [veh/h]	60	912	191	16	1488	122	44	223	100	304	362	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	26	0	9	26	0	33	36	0	49	52	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	66	66	2	63	63	4	14	14	22	32	32
g / C, Green / Cycle	0.04	0.55	0.55	0.02	0.53	0.53	0.03	0.11	0.11	0.19	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.03	0.25	0.12	0.01	0.41	0.08	0.02	0.09	0.09	0.17	0.11	0.11
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1707	1810	1900	1823
c, Capacity [veh/h]	75	1988	887	32	1900	848	61	214	193	338	506	485
d1, Uniform Delay [s]	56.99	16.29	13.81	58.45	22.98	14.63	57.42	51.77	51.98	47.67	36.31	36.32
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.97	0.77	0.56	12.07	3.31	0.36	14.80	6.02	7.90	8.57	0.54	0.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.46	0.22	0.51	0.78	0.14	0.72	0.78	0.81	0.90	0.41	0.41
d, Delay for Lane Group [s/veh]	73.96	17.05	14.37	70.52	26.29	14.99	72.22	57.79	59.88	56.23	36.85	36.89
Lane Group LOS	E	B	B	E	C	B	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.16	7.60	2.76	0.59	17.21	1.79	1.57	5.24	5.01	9.66	5.14	4.95
50th-Percentile Queue Length [ft/ln]	53.97	189.94	69.03	14.70	430.25	44.74	39.36	131.08	125.25	241.39	128.47	123.76
95th-Percentile Queue Length [veh/ln]	3.89	12.12	4.97	1.06	24.01	3.22	2.83	9.00	8.68	14.75	8.86	8.60
95th-Percentile Queue Length [ft/ln]	97.15	302.95	124.25	26.45	600.34	80.54	70.84	224.97	217.02	368.79	221.42	214.98

Movement, Approach, & Intersection Results

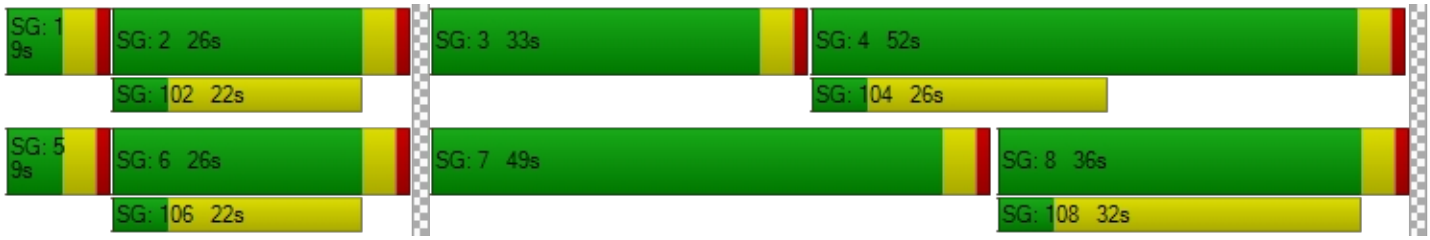
d_M, Delay for Movement [s/veh]	73.96	17.05	14.37	70.52	26.29	14.99	72.22	58.31	59.88	56.23	36.86	36.89
Movement LOS	E	B	B	E	C	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	19.55			25.88			60.41			45.11		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	30.80											
Intersection LOS	C											
Intersection V/C	0.704											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.113	2.895	2.493	2.538
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	367	533	800
d_b, Bicycle Delay [s]	40.02	40.02	32.27	21.60
l_b,int, Bicycle LOS Score for Intersection	2.519	2.901	1.862	2.149
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	147.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.588

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	7	221	86	24	381	50	24	138	7	386	263	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	221	86	24	381	50	24	138	7	386	263	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	58	23	6	100	13	6	36	2	102	69	7
Total Analysis Volume [veh/h]	7	233	91	25	401	53	25	145	7	406	277	26
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	454	479	403	683	489
Degree of Utilization, x	0.73	1.01	0.44	1.59	0.05

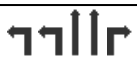
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.86	13.58	2.19	38.30	0.17
95th-Percentile Queue Length [ft]	146.51	339.46	54.66	957.49	4.21
Approach Delay [s/veh]	29.53	70.39	18.79	286.12	
Approach LOS	D	F	C	F	
Intersection Delay [s/veh]	147.22				
Intersection LOS	F				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.535

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	327	1213	103	56	1182	48	28	360	143	320	251	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	327	1213	103	56	1182	48	28	360	143	320	251	128
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	319	27	15	311	13	7	95	38	84	66	34
Total Analysis Volume [veh/h]	344	1277	108	59	1244	51	29	379	151	337	264	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	61	0	10	43	0	15	22	0	27	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	70	70	5	60	60	3	15	15	14	26	26
g / C, Green / Cycle	0.12	0.58	0.58	0.04	0.50	0.50	0.03	0.13	0.13	0.12	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.10	0.25	0.25	0.03	0.24	0.24	0.02	0.10	0.09	0.10	0.07	0.08
s, saturation flow rate [veh/h]	3514	3618	1825	1810	3618	1862	1810	3618	1615	3514	3618	1615
c, Capacity [veh/h]	419	2098	1059	76	1820	937	49	462	206	411	787	351
d1, Uniform Delay [s]	51.60	14.19	14.20	56.90	19.41	19.41	57.75	51.01	50.37	51.76	39.62	40.08
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.06	0.67	1.32	15.07	0.87	1.69	11.17	3.69	4.97	4.12	0.25	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.44	0.44	0.77	0.47	0.47	0.60	0.82	0.73	0.82	0.34	0.38
d, Delay for Lane Group [s/veh]	55.67	14.86	15.53	71.96	20.28	21.10	68.92	54.70	55.34	55.88	39.87	40.77
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.29	7.04	7.31	2.09	7.87	8.31	1.02	5.78	4.65	5.19	3.33	3.48
50th-Percentile Queue Length [ft/ln]	132.17	176.12	182.85	52.27	196.64	207.76	25.56	144.55	116.20	129.66	83.23	87.09
95th-Percentile Queue Length [veh/ln]	9.06	11.40	11.75	3.76	12.46	13.04	1.84	9.73	8.18	8.92	5.99	6.27
95th-Percentile Queue Length [ft/ln]	226.44	284.94	293.73	94.09	311.62	325.95	46.00	243.14	204.59	223.03	149.82	156.76

Movement, Approach, & Intersection Results

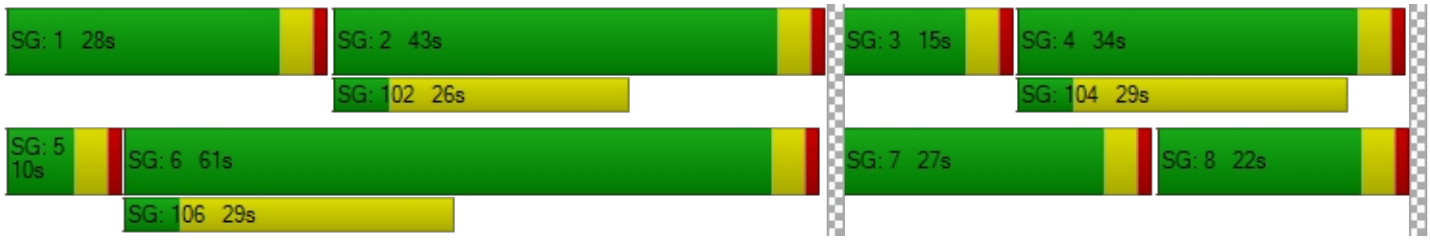
d_M, Delay for Movement [s/veh]	55.67	15.05	15.53	71.96	20.53	21.10	68.92	54.70	55.34	55.88	39.87	40.77
Movement LOS	E	B	B	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	23.16			22.80			55.61			47.37		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	31.26											
Intersection LOS	C											
Intersection V/C	0.535											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.998	2.666	2.788
Crosswalk LOS	F	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	650	300	500
d_b, Bicycle Delay [s]	16.54	27.34	43.35	33.75
l_b,int, Bicycle LOS Score for Intersection	2.511	2.304	2.021	2.167
Bicycle LOS	B	B	B	B

Sequence

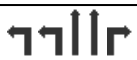
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.481

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	133	315	446	9	430	47	20	120	46	503	478	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	315	446	9	430	47	20	120	46	503	478	34
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	83	117	2	113	12	5	32	12	132	126	9
Total Analysis Volume [veh/h]	140	332	469	9	453	49	21	126	48	529	503	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	58	0	10	49	0	9	11	0	41	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	75	75	1	70	70	3	6	6	21	25	25
g / C, Green / Cycle	0.06	0.63	0.63	0.01	0.58	0.58	0.02	0.05	0.05	0.18	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.04	0.17	0.29	0.00	0.13	0.13	0.01	0.03	0.03	0.15	0.14	0.02
s, saturation flow rate [veh/h]	3514	1900	1615	1810	1900	1836	1810	3618	1615	3514	3618	1615
c, Capacity [veh/h]	203	1190	1011	21	1102	1065	39	192	86	618	751	335
d1, Uniform Delay [s]	55.48	10.16	11.81	58.93	12.22	12.24	58.15	55.73	55.44	47.98	43.75	38.52
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.14	0.58	1.53	13.80	0.49	0.51	11.44	3.75	5.59	3.55	1.04	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.28	0.46	0.44	0.23	0.23	0.54	0.66	0.56	0.86	0.67	0.11
d, Delay for Lane Group [s/veh]	59.62	10.74	13.34	72.73	12.71	12.75	69.59	59.48	61.02	51.53	44.79	38.66
Lane Group LOS	E	B	B	E	B	B	E	E	E	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.20	4.04	6.74	0.35	3.41	3.33	0.75	1.97	1.55	7.96	6.98	0.88
50th-Percentile Queue Length [ft/ln]	54.93	100.88	168.55	8.78	85.17	83.16	18.86	49.30	38.80	199.12	174.58	21.99
95th-Percentile Queue Length [veh/ln]	3.96	7.26	11.00	0.63	6.13	5.99	1.36	3.55	2.79	12.59	11.32	1.58
95th-Percentile Queue Length [ft/ln]	98.88	181.59	275.01	15.80	153.31	149.68	33.95	88.74	69.84	314.83	282.92	39.58

Movement, Approach, & Intersection Results

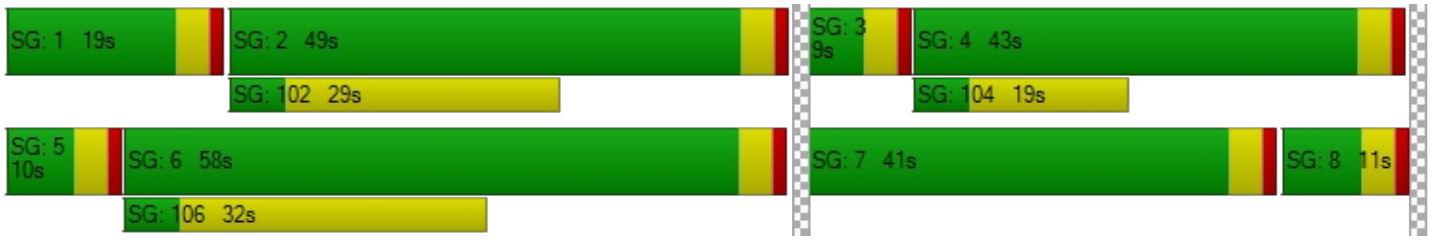
d_M, Delay for Movement [s/veh]	59.62	10.74	13.34	72.73	12.73	12.75	69.59	59.48	61.02	51.53	44.79	38.66
Movement LOS	E	B	B	E	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	19.31			13.79			60.95			47.92		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	32.52											
Intersection LOS	C											
Intersection V/C	0.481											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.366	2.733	2.944
Crosswalk LOS	F	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	750	117	650
d_b, Bicycle Delay [s]	18.15	23.44	53.20	27.34
l_b,int, Bicycle LOS Score for Intersection	3.112	1.981	1.720	2.441
Bicycle LOS	C	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	43.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	522	1233	425	118	1405	87	96	130	299	567	375	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	522	1233	425	118	1405	87	96	130	299	567	375	96
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	137	324	112	31	370	23	25	34	79	149	99	25
Total Analysis Volume [veh/h]	549	1298	447	124	1479	92	101	137	315	597	395	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	44	0	13	36	0	13	40	40	23	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	65	65	9	57	57	5	11	32	19	25	25
g / C, Green / Cycle	0.14	0.54	0.54	0.08	0.47	0.47	0.04	0.09	0.27	0.16	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.16	0.36	0.28	0.07	0.29	0.06	0.03	0.04	0.20	0.17	0.14	0.14
s, saturation flow rate [veh/h]	3514	3618	1615	1810	5176	1615	3514	3618	1615	3514	1900	1768
c, Capacity [veh/h]	498	1953	872	136	2450	764	157	338	433	556	393	366
d1, Uniform Delay [s]	51.50	19.80	17.56	55.11	23.30	17.65	56.37	51.26	39.90	50.50	43.64	43.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.29	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	53.50	1.80	2.15	20.02	1.11	0.32	4.32	0.78	6.10	41.06	1.84	1.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.10	0.66	0.51	0.91	0.60	0.12	0.64	0.41	0.73	1.07	0.65	0.65
d, Delay for Lane Group [s/veh]	105.00	21.60	19.70	75.13	24.41	17.97	60.69	52.05	46.00	91.56	45.48	45.63
Lane Group LOS	F	C	B	E	C	B	E	D	D	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.16	13.09	8.22	4.48	10.38	1.50	1.60	1.98	9.15	11.49	7.19	6.71
50th-Percentile Queue Length [ft/ln]	279.00	327.29	205.41	111.88	259.51	37.50	40.02	49.58	228.71	287.32	179.72	167.82
95th-Percentile Queue Length [veh/ln]	17.37	19.03	12.92	7.94	15.66	2.70	2.88	3.57	14.11	17.63	11.59	10.96
95th-Percentile Queue Length [ft/ln]	434.34	475.64	322.93	198.62	391.61	67.49	72.03	89.24	352.72	440.66	289.65	274.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	105.00	21.60	19.70	75.13	24.41	17.97	60.69	52.05	46.00	91.56	45.53	45.63
Movement LOS	F	C	B	E	C	B	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	41.19			27.78			50.18			70.68		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	43.76											
Intersection LOS	D											
Intersection V/C	0.739											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.372	3.130	2.934	2.860
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	533	600	767
d_b, Bicycle Delay [s]	26.67	32.27	29.40	22.82
l_b,int, Bicycle LOS Score for Intersection	3.452	2.492	2.016	2.461
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	9	10	4	26	1	149	10	202	29	134	390	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	10	4	26	1	149	10	202	29	134	390	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	1	7	0	39	3	53	8	35	103	3
Total Analysis Volume [veh/h]	9	11	4	27	1	157	11	213	31	141	411	14
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			
v_di, Inbound Pedestrian Volume crossing th	0				0				0			
v_co, Outbound Pedestrian Volume along th	0				0				0			
v_ci, Inbound Pedestrian Volume along the le	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	35	0	0	0	0	35	0	9	0	28	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	31	31	56	50	50
g / C, Green / Cycle	0.26	0.26	0.47	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.03	0.24	0.20	0.11	0.11
s, saturation flow rate [veh/h]	1591	1562	879	1900	1878
c, Capacity [veh/h]	444	443	379	791	782
d1, Uniform Delay [s]	34.15	43.49	20.82	23.04	23.05
k, delay calibration	0.11	0.41	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	16.49	3.88	0.84	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.86	0.45	0.27	0.27
d, Delay for Lane Group [s/veh]	34.27	59.98	24.70	23.88	23.90
Lane Group LOS	C	E	C	C	C
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.16	13.08	3.22	4.17	4.13
50th-Percentile Queue Length [ft/ln]	29.11	326.94	80.47	104.18	103.24
95th-Percentile Queue Length [veh/ln]	2.10	19.01	5.79	7.50	7.43
95th-Percentile Queue Length [ft/ln]	52.40	475.21	144.84	187.53	185.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.27	34.27	34.27	34.27	59.98	59.98	59.98	59.98	24.70	24.70	23.89	23.90
Movement LOS	C	C	C	C	E	E	E	E	C	C	C	C
d_A, Approach Delay [s/veh]	34.27				59.98				24.12			
Approach LOS	C				E				C			
d_I, Intersection Delay [s/veh]	37.27											
Intersection LOS	D											
Intersection V/C	0.660											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.782	0.000	2.755
Crosswalk LOS	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	517	400
d_b, Bicycle Delay [s]	33.00	33.00	38.40
l_b,int, Bicycle LOS Score for Intersection	1.599	1.931	1.936
Bicycle LOS	A	A	A

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	18	610	55	20	11	10	217	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	610	55	20	11	10	217	1
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	161	14	5	3	3	57	0
Total Analysis Volume [veh/h]	19	642	58	21	12	11	228	1
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			
v_di, Inbound Pedestrian Volume crossing th	0				0			
v_co, Outbound Pedestrian Volume along th	0				0			
v_ci, Inbound Pedestrian Volume along the le	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	28	0	0	0	48	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	47	47	47	21
g / C, Green / Cycle	0.02	0.39	0.39	0.39	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.13	0.21	0.05	0.15
s, saturation flow rate [veh/h]	1810	1900	1900	1615	1634
c, Capacity [veh/h]	36	746	746	634	284
d1, Uniform Delay [s]	58.25	25.50	27.82	23.25	48.43
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.46	1.23	2.60	0.40	9.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.34	0.52	0.12	0.89
d, Delay for Lane Group [s/veh]	69.70	26.73	30.43	23.66	57.58
Lane Group LOS	E	C	C	C	E
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.69	5.30	9.04	1.51	8.07
50th-Percentile Queue Length [ft/ln]	17.17	132.47	225.95	37.78	201.84
95th-Percentile Queue Length [veh/ln]	1.24	9.07	13.97	2.72	12.73
95th-Percentile Queue Length [ft/ln]	30.90	226.85	349.21	68.00	318.34

Movement, Approach, & Intersection Results

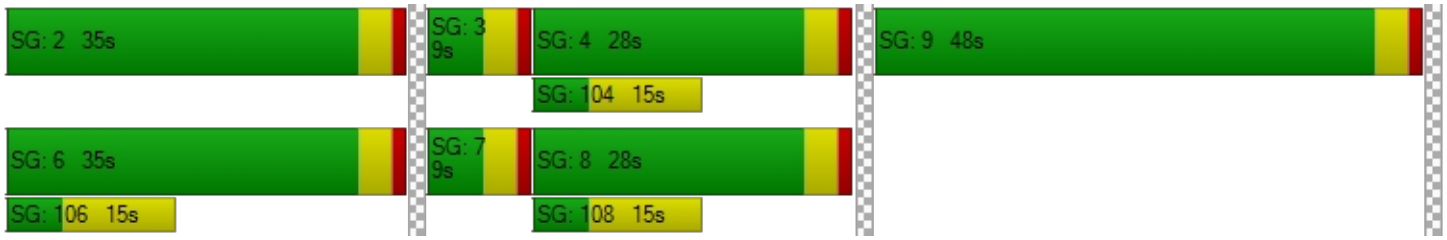
d_M, Delay for Movement [s/veh]	69.70	28.97	30.43	23.66	57.58	57.58	57.58	57.58
Movement LOS	E	C	C	C	E	E	E	E
d_A, Approach Delay [s/veh]	29.45				57.58			
Approach LOS	C				E			
d_I, Intersection Delay [s/veh]	37.27							
Intersection LOS	D							
Intersection V/C	0.660							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.259
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	733
d_b, Bicycle Delay [s]	38.40	24.07
I_b,int, Bicycle LOS Score for Intersection	2.153	1.974
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	16.416

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	187	96	229	162	442	146	59	448	321	238	678	130
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	96	229	162	442	146	59	448	321	238	678	130
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	25	60	43	116	38	16	118	84	63	178	34
Total Analysis Volume [veh/h]	197	101	241	171	465	154	62	472	338	251	714	137
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	3.08	0.40	0.00	16.42	0.26	0.08	0.00	0.00	0.30	0.01	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	10000.0	10000.0	10000.0	13.38	9.90	0.00	0.00	11.26	0.00	0.00
Movement LOS	F	F	F	F	F	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	70.25	70.25	70.25	82.39	82.39	1.06	0.25	0.00	0.00	1.29	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1756.30	1756.30	1756.30	2059.87	2059.87	26.41	6.32	0.00	0.00	32.23	0.00	0.00
d_A, Approach Delay [s/veh]	10000.00			8053.24			0.70			2.57		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	3559.04											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	61.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.881

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	492	681	161	94	882	35	39	316	520	465	421	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	492	681	161	94	882	35	39	316	520	465	421	99
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	129	179	42	25	232	9	10	83	137	122	111	26
Total Analysis Volume [veh/h]	518	717	169	99	928	37	41	333	547	489	443	104
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	43	0	12	34	0	11	44	0	21	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	39	39	8	30	30	4	40	40	17	53	53
g / C, Green / Cycle	0.14	0.33	0.33	0.07	0.25	0.25	0.03	0.33	0.33	0.14	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.15	0.20	0.10	0.05	0.26	0.26	0.01	0.09	0.34	0.14	0.15	0.15
s, saturation flow rate [veh/h]	3514	3618	1615	1810	1900	1874	3514	3618	1615	3514	1900	1777
c, Capacity [veh/h]	498	1176	525	121	475	469	112	1206	538	498	842	787
d1, Uniform Delay [s]	51.50	34.10	30.53	55.29	45.00	45.00	56.90	29.37	40.00	51.35	21.86	21.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.47	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	30.30	2.36	1.62	12.74	47.15	47.47	1.99	0.12	41.89	15.02	0.23	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.04	0.61	0.32	0.82	1.02	1.02	0.37	0.28	1.02	0.98	0.34	0.34
d, Delay for Lane Group [s/veh]	81.80	36.46	32.15	68.03	92.15	92.47	58.88	29.49	81.89	66.36	22.09	22.11
Lane Group LOS	F	D	C	E	F	F	E	C	F	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.56	9.16	3.94	3.38	20.23	20.00	0.64	3.57	21.88	8.35	5.26	4.92
50th-Percentile Queue Length [ft/ln]	238.90	228.90	98.47	84.58	505.71	499.93	16.02	89.17	547.00	208.63	131.39	122.99
95th-Percentile Queue Length [veh/ln]	14.89	14.12	7.09	6.09	27.99	27.71	1.15	6.42	29.88	13.08	9.02	8.56
95th-Percentile Queue Length [ft/ln]	372.23	352.97	177.24	152.24	699.66	692.77	28.83	160.51	746.93	327.07	225.39	213.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	81.80	36.46	32.15	68.03	92.30	92.47	58.88	29.49	81.89	66.36	22.10	22.11
Movement LOS	F	D	C	E	F	F	E	C	F	E	C	C
d_A, Approach Delay [s/veh]	52.67			90.05			61.92			42.99		
Approach LOS	D			F			E			D		
d_I, Intersection Delay [s/veh]	61.32											
Intersection LOS	E											
Intersection V/C	0.881											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.078	2.691	2.876	2.940
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	500	667	833
d_b, Bicycle Delay [s]	27.34	33.75	26.67	20.42
l_b,int, Bicycle LOS Score for Intersection	2.718	2.437	2.319	2.414
Bicycle LOS	B	B	B	B

Sequence

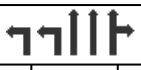
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	222	1373	756	128	1600	132	203	290	191	612	469	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	222	1373	756	128	1600	132	203	290	191	612	469	109
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	361	199	34	421	35	53	76	50	161	123	29
Total Analysis Volume [veh/h]	234	1445	796	135	1684	139	214	305	201	644	494	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	40	40	10	37	0	34	43	0	27	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	57	84	6	54	54	10	18	18	23	31	41
g / C, Green / Cycle	0.08	0.48	0.70	0.05	0.45	0.45	0.08	0.15	0.15	0.19	0.26	0.34
(v / s)_i Volume / Saturation Flow Rate	0.07	0.28	0.49	0.04	0.33	0.34	0.06	0.08	0.12	0.18	0.14	0.04
s, saturation flow rate [veh/h]	3514	5176	1615	3514	3618	1827	3514	3618	1615	3514	3618	2859
c, Capacity [veh/h]	264	2469	1134	176	1636	826	287	535	239	674	933	976
d1, Uniform Delay [s]	55.00	22.76	10.50	56.31	27.06	27.12	53.89	47.58	49.76	48.00	38.26	27.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.78	1.02	3.64	6.89	3.05	5.99	3.86	0.96	7.79	8.73	0.47	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.59	0.70	0.77	0.74	0.74	0.75	0.57	0.84	0.96	0.53	0.12
d, Delay for Lane Group [s/veh]	64.78	23.78	14.14	63.20	30.10	33.10	57.75	48.53	57.55	56.73	38.73	27.18
Lane Group LOS	E	C	B	E	C	C	E	D	E	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.86	9.95	12.19	2.19	14.65	15.57	3.31	4.32	6.38	10.30	6.31	1.15
50th-Percentile Queue Length [ft/ln]	96.54	248.70	304.80	54.71	366.37	389.30	82.87	108.07	159.44	257.56	157.73	28.74
95th-Percentile Queue Length [veh/ln]	6.95	15.12	17.92	3.94	20.93	22.04	5.97	7.73	10.52	15.57	10.43	2.07
95th-Percentile Queue Length [ft/ln]	173.77	378.01	447.97	98.48	523.32	551.09	149.17	193.31	262.98	389.16	260.72	51.73

Movement, Approach, & Intersection Results

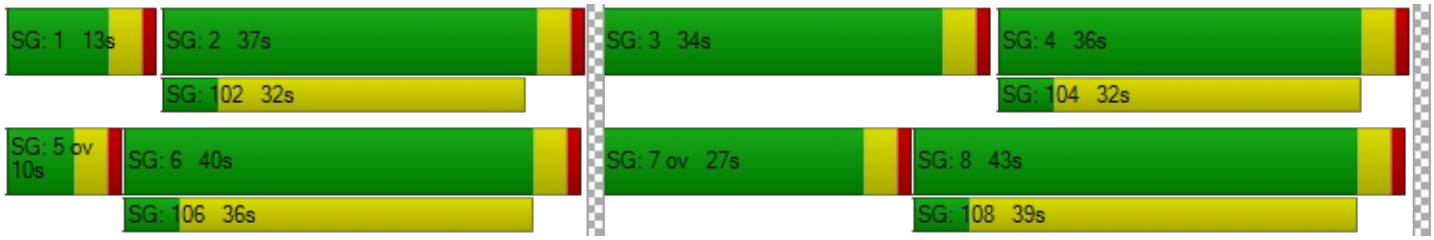
d_M, Delay for Movement [s/veh]	64.78	23.78	14.14	63.20	30.95	33.10	57.75	48.53	57.55	56.73	38.73	27.18
Movement LOS	E	C	B	E	C	C	E	D	E	E	D	C
d_A, Approach Delay [s/veh]	24.56			33.33			53.79			46.92		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.90											
Intersection LOS	C											
Intersection V/C	0.736											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.470	3.196	2.934	3.134
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	550	650	533
d_b, Bicycle Delay [s]	29.40	31.54	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.921	2.637	1.956	2.593
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	23.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.585

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1092	445	0	1012	655	0	0	0	637	0	595
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1092	445	0	1012	655	0	0	0	637	0	595
Peak Hour Factor	1.0000	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	287	111	0	266	172	0	0	0	168	0	157
Total Analysis Volume [veh/h]	0	1149	445	0	1065	689	0	0	0	671	0	626
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	34	0	0	34	0	0	0	0	86	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	75	75		37	37	37
g / C, Green / Cycle	0.63	0.63		0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.32	0.21		0.24	0.25	0.27
s, saturation flow rate [veh/h]	3618	5176		1810	1717	1615
c, Capacity [veh/h]	2273	3252		552	524	493
d1, Uniform Delay [s]	12.15	10.44		38.08	38.73	39.57
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.81	0.27		2.48	3.37	5.18
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.33		0.78	0.83	0.88
d, Delay for Lane Group [s/veh]	12.95	10.71		40.56	42.10	44.75
Lane Group LOS	B	B		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.23	4.32		11.92	12.23	12.70
50th-Percentile Queue Length [ft/ln]	205.85	107.94		297.94	305.64	317.46
95th-Percentile Queue Length [veh/ln]	12.94	7.73		17.58	17.96	18.54
95th-Percentile Queue Length [ft/ln]	323.50	193.13		439.48	449.00	463.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.95	0.00	0.00	10.71	0.00	0.00	0.00	0.00	41.11	0.00	43.93
Movement LOS		B			B					D		D
d_A, Approach Delay [s/veh]	12.95			10.71			0.00			42.47		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	23.18											
Intersection LOS	C											
Intersection V/C	0.585											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	500	0	1367
d_b, Bicycle Delay [s]	33.75	33.75	60.00	6.02
l_b,int, Bicycle LOS Score for Intersection	2.508	2.145	4.132	3.700
Bicycle LOS	B	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1164	608	0	2082	0	0	0	0	949	0	808
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1164	608	0	2082	0	0	0	0	949	0	808
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	306	160	0	548	0	0	0	0	250	0	213
Total Analysis Volume [veh/h]	0	1225	640	0	2192	0	0	0	0	999	0	851
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	19	0	0	19	0	0	0	0	101	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	44	44		68	68
g / C, Green / Cycle	0.37	0.37		0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.24	0.32		0.28	0.53
s, saturation flow rate [veh/h]	5176	6901		3514	1615
c, Capacity [veh/h]	1898	2530		1991	915
d1, Uniform Delay [s]	31.53	35.27		15.74	23.82
k, delay calibration	0.50	0.50		0.11	0.22
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	1.71	4.30		0.20	8.84
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.87		0.50	0.93
d, Delay for Lane Group [s/veh]	33.24	39.57		15.94	32.65
Lane Group LOS	C	D		B	C
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	10.04	15.38		8.14	23.08
50th-Percentile Queue Length [ft/ln]	251.02	384.47		203.38	576.89
95th-Percentile Queue Length [veh/ln]	15.24	21.81		12.81	30.95
95th-Percentile Queue Length [ft/ln]	380.93	545.25		320.33	773.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	33.24	0.00	0.00	39.57	0.00	0.00	0.00	0.00	15.94	0.00	32.65
Movement LOS		C			D					B		C
d_A, Approach Delay [s/veh]	33.24			39.57			0.00			23.63		
Approach LOS	C			D			A			C		
d_I, Intersection Delay [s/veh]	32.50											
Intersection LOS	C											
Intersection V/C	0.845											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	0	1617
d_b, Bicycle Delay [s]	45.94	45.94	60.00	2.20
l_b,int, Bicycle LOS Score for Intersection	2.233	2.464	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.566

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	736	272	0	1133	466	0	0	0	407	0	529
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	736	272	0	1133	466	0	0	0	407	0	529
Peak Hour Factor	1.0000	0.9500	0.8680	1.0000	0.9500	1.0000	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	194	78	0	298	117	0	0	0	107	0	139
Total Analysis Volume [veh/h]	0	775	313	0	1193	466	0	0	0	428	0	557
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	53	0	0	53	0	0	0	0	67	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	80	80		32	32
g / C, Green / Cycle	0.67	0.67		0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.15	0.33		0.24	0.19
s, saturation flow rate [veh/h]	5176	3618		1810	2859
c, Capacity [veh/h]	3440	2404		486	768
d1, Uniform Delay [s]	7.94	10.07		42.03	39.85
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.15	0.73		5.35	1.32
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.50		0.88	0.73
d, Delay for Lane Group [s/veh]	8.09	10.81		47.37	41.17
Lane Group LOS	A	B		D	D
Critical Lane Group	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	2.56	7.60		12.79	7.58
50th-Percentile Queue Length [ft/ln]	64.01	190.10		319.64	189.61
95th-Percentile Queue Length [veh/ln]	4.61	12.13		18.65	12.10
95th-Percentile Queue Length [ft/ln]	115.22	303.15		466.24	302.53

Movement, Approach, & Intersection Results

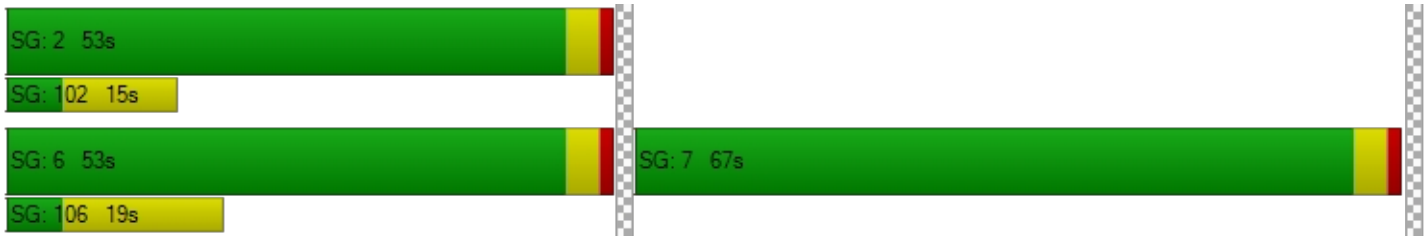
d_M, Delay for Movement [s/veh]	0.00	8.09	0.00	0.00	10.81	0.00	0.00	0.00	0.00	47.37	0.00	41.17
Movement LOS		A			B					D		D
d_A, Approach Delay [s/veh]	8.09			10.81			0.00			43.87		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	21.12											
Intersection LOS	C											
Intersection V/C	0.566											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.386
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	817	0	1050
d_b, Bicycle Delay [s]	21.00	21.00	60.00	13.54
l_b,int, Bicycle LOS Score for Intersection	1.986	2.544	4.132	1.560
Bicycle LOS	A	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1329	381	0	1366	238	308	0	671	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1329	381	0	1366	238	308	0	671	0	0	0
Peak Hour Factor	1.0000	0.9500	1.0000	1.0000	0.9500	1.0000	0.9270	1.0000	0.9270	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	350	95	0	359	60	83	0	181	0	0	0
Total Analysis Volume [veh/h]	0	1399	381	0	1438	238	332	0	724	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	19	0	0	19	0	101	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	55	55	57	57	
g / C, Green / Cycle	0.46	0.46	0.47	0.47	
(v / s)_i Volume / Saturation Flow Rate	0.27	0.40	0.09	0.45	
s, saturation flow rate [veh/h]	5176	3618	3514	1615	
c, Capacity [veh/h]	2373	1659	1668	767	
d1, Uniform Delay [s]	24.10	29.19	18.28	30.00	
k, delay calibration	0.50	0.50	0.11	0.14	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.08	6.38	0.06	8.45	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.59	0.87	0.20	0.94	
d, Delay for Lane Group [s/veh]	25.19	35.57	18.34	38.46	
Lane Group LOS	C	D	B	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.92	19.56	2.70	21.00	
50th-Percentile Queue Length [ft/ln]	248.07	488.88	67.40	525.07	
95th-Percentile Queue Length [veh/ln]	15.09	26.81	4.85	28.52	
95th-Percentile Queue Length [ft/ln]	377.22	670.18	121.31	712.97	

Movement, Approach, & Intersection Results

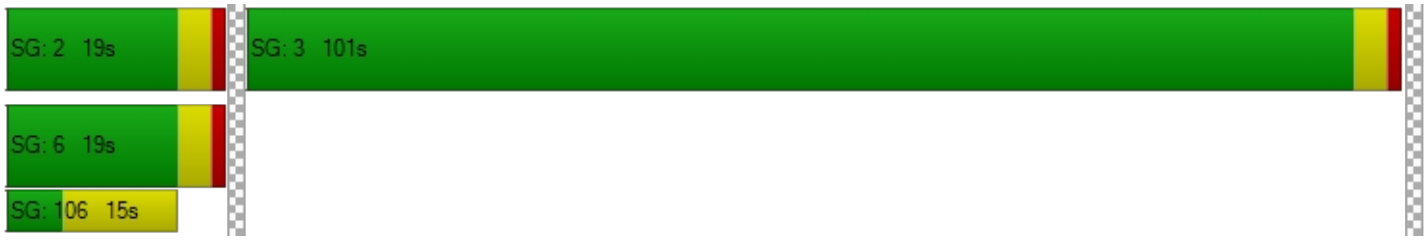
d_M, Delay for Movement [s/veh]	0.00	25.19	0.00	0.00	35.57	0.00	18.34	0.00	38.46	0.00	0.00	0.00
Movement LOS		C			D		B		D			
d_A, Approach Delay [s/veh]	25.19			35.57			32.13			0.00		
Approach LOS	C			D			C			A		
d_I, Intersection Delay [s/veh]	30.91											
Intersection LOS	C											
Intersection V/C	0.846											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1617	0
d_b, Bicycle Delay [s]	45.94	45.94	2.20	60.00
l_b,int, Bicycle LOS Score for Intersection	2.329	2.746	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1403	541	609	1701	0	543	8	691	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1403	541	609	1701	0	543	8	691	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	369	142	160	448	0	143	2	182	0	0	0
Total Analysis Volume [veh/h]	0	1477	569	641	1791	0	572	8	727	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	44	0	31	75	0	0	45	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	48	48	24	76	36	36	36	
g / C, Green / Cycle	0.40	0.40	0.20	0.63	0.30	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.29	0.35	0.18	0.35	0.24	0.26	0.27	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1810	1676	1615	
c, Capacity [veh/h]	2064	644	711	3284	541	501	483	
d1, Uniform Delay [s]	30.34	33.47	46.70	12.26	38.85	39.86	40.39	
k, delay calibration	0.50	0.50	0.11	0.50	0.24	0.28	0.31	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.16	16.17	4.56	0.66	6.25	11.44	15.61	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.72	0.88	0.90	0.55	0.81	0.87	0.90	
d, Delay for Lane Group [s/veh]	32.49	49.64	51.26	12.91	45.10	51.29	56.00	
Lane Group LOS	C	D	D	B	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	12.21	17.94	9.75	8.68	12.70	13.66	14.32	
50th-Percentile Queue Length [ft/ln]	305.28	448.48	243.71	216.92	317.57	341.50	358.10	
95th-Percentile Queue Length [veh/ln]	17.94	24.89	14.87	13.51	18.55	19.72	20.53	
95th-Percentile Queue Length [ft/ln]	448.56	622.13	371.72	337.70	463.70	493.03	513.27	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	32.49	49.64	51.26	12.91	0.00	46.58	51.29	54.11	0.00	0.00	0.00
Movement LOS		C	D	D	B		D	D	D			
d_A, Approach Delay [s/veh]	37.26			23.02			50.80			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	34.33											
Intersection LOS	C											
Intersection V/C	0.804											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.465	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	1183	683	0
d_b, Bicycle Delay [s]	26.67	10.00	26.00	60.00
l_b,int, Bicycle LOS Score for Intersection	2.685	2.897	3.716	4.132
Bicycle LOS	B	C	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.746

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	733	372	624	959	0	340	9	478	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	733	372	624	959	0	340	9	478	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	193	98	164	252	0	89	2	126	0	0	0
Total Analysis Volume [veh/h]	0	772	392	657	1009	0	358	9	503	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	9	0	33	42	0	0	78	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	42	42	25	71	41	41	
g / C, Green / Cycle	0.35	0.35	0.21	0.59	0.34	0.34	
(v / s)_i Volume / Saturation Flow Rate	0.21	0.24	0.19	0.28	0.10	0.32	
s, saturation flow rate [veh/h]	3618	1615	3514	3618	3514	1619	
c, Capacity [veh/h]	1260	562	732	2134	1207	556	
d1, Uniform Delay [s]	32.40	33.66	46.27	14.00	28.79	37.81	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.23	7.00	4.28	0.75	0.14	6.79	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.61	0.70	0.90	0.47	0.30	0.92	
d, Delay for Lane Group [s/veh]	34.63	40.66	50.55	14.76	28.92	44.60	
Lane Group LOS	C	D	D	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.63	10.84	9.94	7.77	3.81	15.28	
50th-Percentile Queue Length [ft/ln]	240.71	270.96	248.41	194.15	95.27	382.02	
95th-Percentile Queue Length [veh/ln]	14.72	16.24	15.11	12.34	6.86	21.69	
95th-Percentile Queue Length [ft/ln]	367.93	405.94	377.65	308.41	171.49	542.29	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	34.63	40.66	50.55	14.76	0.00	28.92	44.60	44.60	0.00	0.00	0.00
Movement LOS		C	D	D	B		C	D	D			
d_A, Approach Delay [s/veh]	36.66			28.87			38.15			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	33.50											
Intersection LOS	C											
Intersection V/C	0.746											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	633	1233	0
d_b, Bicycle Delay [s]	55.10	28.02	8.82	60.00
l_b,int, Bicycle LOS Score for Intersection	2.200	2.934	2.995	4.132
Bicycle LOS	B	C	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.789

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	470	808	400	610	984	920	958	0	561	493	0	665
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	470	808	400	610	984	920	958	0	561	493	0	665
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	124	213	105	161	259	242	252	0	148	130	0	175
Total Analysis Volume [veh/h]	495	851	421	642	1036	968	1008	0	591	519	0	700
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	66	0	0	66	0	54	0	0	54	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	74	74	74	74	38	38
g / C, Green / Cycle	0.62	0.62	0.62	0.62	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.46	0.16	0.50	0.20	0.29	0.15
s, saturation flow rate [veh/h]	1074	5176	1278	5176	3514	3514
c, Capacity [veh/h]	585	3185	712	3185	1117	1117
d1, Uniform Delay [s]	29.11	10.62	28.93	11.09	39.15	32.76
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.09	0.21	16.80	0.27	3.01	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.27	0.90	0.33	0.90	0.46
d, Delay for Lane Group [s/veh]	43.20	10.82	45.73	11.36	42.16	33.06
Lane Group LOS	D	B	D	B	D	C
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.64	3.43	10.32	4.36	14.51	6.10
50th-Percentile Queue Length [ft/ln]	190.90	85.64	257.98	109.00	362.84	152.45
95th-Percentile Queue Length [veh/ln]	12.17	6.17	15.59	7.78	20.76	10.15
95th-Percentile Queue Length [ft/ln]	304.20	154.16	389.68	194.61	519.04	253.70

Movement, Approach, & Intersection Results

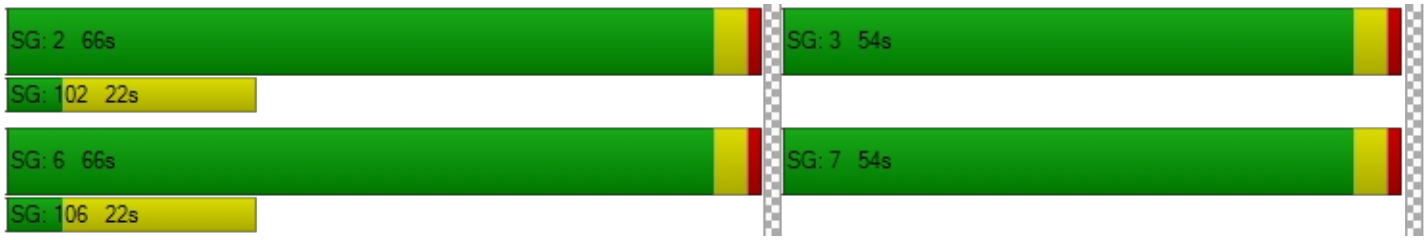
d_M, Delay for Movement [s/veh]	43.20	10.82	0.00	45.73	11.36	0.00	42.16	0.00	0.00	33.06	0.00	0.00
Movement LOS	D	B		D	B		D			C		
d_A, Approach Delay [s/veh]	22.73			24.51			42.16			33.06		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	28.87											
Intersection LOS	C											
Intersection V/C	0.789											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.312	3.455
Crosswalk LOS	F	F	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	1033	833	833
d_b, Bicycle Delay [s]	14.02	14.02	20.42	20.42
l_b,int, Bicycle LOS Score for Intersection	2.300	2.483	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	37.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	197	373	94	132	920	254	86	462	132	181	1240	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	373	94	132	920	254	86	462	132	181	1240	121
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	98	25	35	242	67	23	122	35	48	326	32
Total Analysis Volume [veh/h]	207	393	99	139	968	267	91	486	139	191	1305	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	28	0	12	27	0	11	57	0	23	69	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	42	42	7	40	40	7	41	41	15	48	48
g / C, Green / Cycle	0.07	0.35	0.35	0.06	0.33	0.33	0.06	0.34	0.34	0.12	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.06	0.04	0.19	0.17	0.05	0.13	0.09	0.11	0.36	0.08
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	262	1805	563	197	1708	533	106	1227	548	222	1460	652
d1, Uniform Delay [s]	54.60	27.55	27.12	55.67	33.12	32.26	56.02	30.27	28.68	51.60	33.37	23.16
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.29	0.28	0.68	4.60	1.37	3.34	17.88	0.21	0.24	9.27	2.14	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.22	0.18	0.71	0.57	0.50	0.86	0.40	0.25	0.86	0.89	0.19
d, Delay for Lane Group [s/veh]	59.89	27.82	27.80	60.28	34.49	35.60	73.90	30.48	28.92	60.87	35.51	23.30
Lane Group LOS	E	C	C	E	C	D	E	C	C	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.27	2.71	2.09	2.19	7.93	6.71	3.26	5.41	2.95	6.21	17.79	2.37
50th-Percentile Queue Length [ft/ln]	81.70	67.81	52.25	54.87	198.26	167.79	81.39	135.14	73.66	155.14	444.73	59.25
95th-Percentile Queue Length [veh/ln]	5.88	4.88	3.76	3.95	12.55	10.96	5.86	9.22	5.30	10.29	24.71	4.27
95th-Percentile Queue Length [ft/ln]	147.05	122.06	94.04	98.77	313.72	274.01	146.50	230.46	132.58	257.27	617.66	106.64

Movement, Approach, & Intersection Results

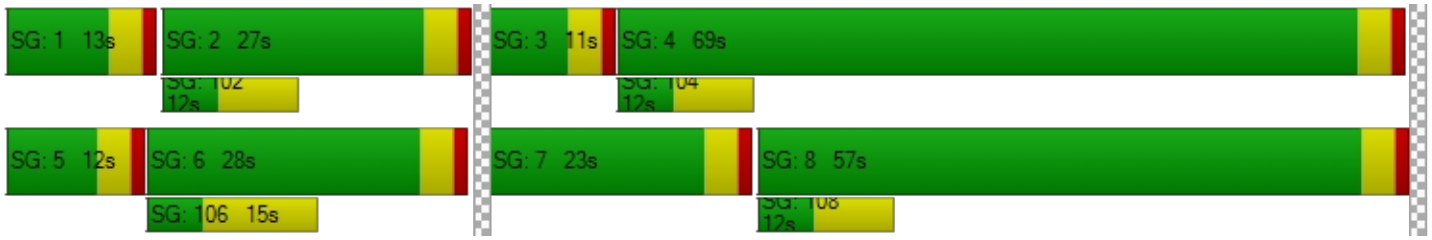
d_M, Delay for Movement [s/veh]	59.89	27.82	27.80	60.28	34.49	35.60	73.90	30.48	28.92	60.87	35.51	23.30
Movement LOS	E	C	C	E	C	D	E	C	C	E	D	C
d_A, Approach Delay [s/veh]	37.32			37.32			35.70			37.54		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	37.14											
Intersection LOS	D											
Intersection V/C	0.657											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.081	3.079	2.874	2.849
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	383	883	1083
d_b, Bicycle Delay [s]	38.40	39.20	18.70	12.60
l_b,int, Bicycle LOS Score for Intersection	1.944	2.315	2.150	2.899
Bicycle LOS	A	B	B	C

Sequence

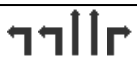
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	88.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	55	190	187	444	437	302	132	757	77	310	1498	326
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	190	187	444	437	302	132	757	77	310	1498	326
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	50	49	117	115	79	35	199	20	82	394	86
Total Analysis Volume [veh/h]	58	200	197	467	460	318	139	797	81	326	1577	343
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	33	0	29	50	50	12	41	0	17	46	46
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	29	29	25	49	61	8	37	37	13	42	71
g / C, Green / Cycle	0.04	0.24	0.24	0.21	0.41	0.51	0.07	0.31	0.31	0.11	0.35	0.59
(v / s)_i Volume / Saturation Flow Rate	0.03	0.06	0.12	0.26	0.13	0.20	0.08	0.23	0.23	0.09	0.44	0.21
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1839	3514	3618	1615
c, Capacity [veh/h]	78	874	390	377	1473	819	121	587	568	379	1266	956
d1, Uniform Delay [s]	56.78	36.52	39.30	47.50	24.16	18.15	56.00	37.47	37.47	52.63	39.00	12.70
k, delay calibration	0.11	0.50	0.50	0.47	0.50	0.50	0.11	0.28	0.28	0.11	0.18	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.25	0.61	4.61	127.30	0.55	1.39	87.59	5.24	5.41	5.74	113.04	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.23	0.50	1.24	0.31	0.39	1.15	0.76	0.76	0.86	1.25	0.36
d, Delay for Lane Group [s/veh]	70.04	37.13	43.90	174.80	24.72	19.54	143.59	42.71	42.88	58.37	152.04	13.06
Lane Group LOS	E	D	D	F	C	B	F	D	D	E	F	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.03	2.44	5.52	24.52	4.55	5.67	6.58	12.61	12.23	5.13	38.17	4.77
50th-Percentile Queue Length [ft/ln]	50.65	61.11	138.09	613.09	113.87	141.75	164.59	315.17	305.76	128.17	954.31	119.17
95th-Percentile Queue Length [veh/ln]	3.65	4.40	9.38	36.39	8.05	9.58	11.27	18.43	17.97	8.84	55.38	8.35
95th-Percentile Queue Length [ft/ln]	91.18	110.00	234.45	909.86	201.37	239.38	281.73	460.74	449.14	221.00	1384.54	208.68

Movement, Approach, & Intersection Results

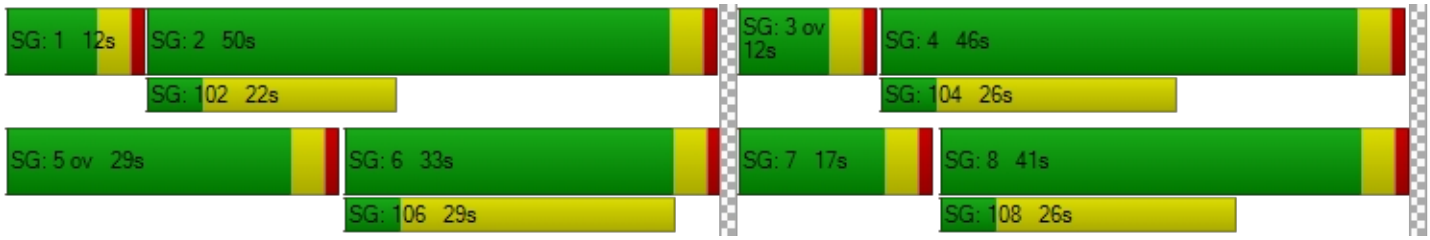
d_M, Delay for Movement [s/veh]	70.04	37.13	43.90	174.80	24.72	19.54	143.59	42.79	42.88	58.37	152.04	13.06
Movement LOS	E	D	D	F	C	B	F	D	D	E	F	B
d_A, Approach Delay [s/veh]	44.26			79.69			56.57			117.22		
Approach LOS	D			E			E			F		
d_I, Intersection Delay [s/veh]	88.69											
Intersection LOS	F											
Intersection V/C	0.893											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.683	2.781	2.894	3.125
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	767	617	700
d_b, Bicycle Delay [s]	34.50	22.82	28.70	25.35
l_b,int, Bicycle LOS Score for Intersection	1.935	2.587	2.399	3.413
Bicycle LOS	A	B	B	C

Sequence

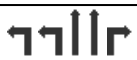
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	32.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.670

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	37	1144	67	458	1531	613	460	246	52	68	289	393
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	1144	67	458	1531	613	460	246	52	68	289	393
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	301	18	121	403	161	121	65	14	18	76	103
Total Analysis Volume [veh/h]	39	1204	71	482	1612	645	484	259	55	72	304	414
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	9	34	0	21	46	46	22	56	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	4	54	54	17	67	89	18	29	29	5	15	36
g / C, Green / Cycle	0.03	0.45	0.45	0.14	0.56	0.74	0.15	0.24	0.24	0.04	0.13	0.30
(v / s)_i Volume / Saturation Flow Rate	0.02	0.23	0.23	0.14	0.31	0.40	0.14	0.09	0.09	0.02	0.08	0.26
s, saturation flow rate [veh/h]	1810	3618	1846	3514	5176	1615	3514	1900	1786	3514	3618	1615
c, Capacity [veh/h]	55	1617	825	498	2888	1197	527	456	429	134	463	489
d1, Uniform Delay [s]	57.62	23.93	23.94	51.23	17.03	6.68	50.27	37.88	37.89	56.69	49.81	39.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.30
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.91	1.21	2.36	12.63	0.78	1.74	6.96	0.47	0.50	3.35	1.59	10.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.52	0.52	0.97	0.56	0.54	0.92	0.35	0.36	0.54	0.66	0.85
d, Delay for Lane Group [s/veh]	72.53	25.14	26.29	63.86	17.81	8.43	57.24	38.35	38.38	60.04	51.39	49.85
Lane Group LOS	E	C	C	E	B	A	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.40	8.83	9.28	8.06	9.45	6.73	7.65	4.03	3.80	1.13	4.45	12.78
50th-Percentile Queue Length [ft/ln]	35.08	220.70	231.94	201.48	236.20	168.22	191.31	100.69	94.95	28.37	111.20	319.50
95th-Percentile Queue Length [veh/ln]	2.53	13.70	14.27	12.72	14.49	10.98	12.19	7.25	6.84	2.04	7.91	18.64
95th-Percentile Queue Length [ft/ln]	63.14	342.52	356.82	317.88	362.22	274.58	304.73	181.24	170.90	51.07	197.67	466.07

Movement, Approach, & Intersection Results

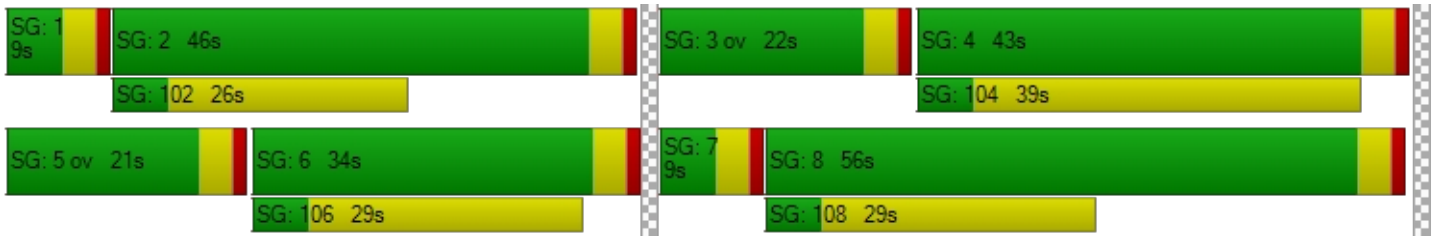
d_M, Delay for Movement [s/veh]	72.53	25.49	26.29	63.86	17.81	8.43	57.24	38.36	38.38	60.04	51.39	49.85
Movement LOS	E	C	C	E	B	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.93			23.70			49.81			51.37		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	32.02											
Intersection LOS	C											
Intersection V/C	0.670											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.113	3.454	2.758	2.832
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	700	867	650
d_b, Bicycle Delay [s]	33.75	25.35	19.27	27.34
l_b,int, Bicycle LOS Score for Intersection	2.282	3.066	2.218	2.211
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	662.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	32.708

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	54	857	20	142	812	377	278	62	106	31	70	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	857	20	142	812	377	278	62	106	31	70	144
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	226	5	37	214	99	73	16	28	8	18	38
Total Analysis Volume [veh/h]	57	902	21	149	855	397	293	65	112	33	74	152
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	12	12	5	12	12	91	91	91	91
g / C, Green / Cycle	0.04	0.10	0.10	0.04	0.10	0.10	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.03	0.17	0.17	0.08	0.24	0.25	32.43	0.07	1.12	0.09
s, saturation flow rate [veh/h]	1810	3618	1878	1810	3618	1615	11	1615	96	1615
c, Capacity [veh/h]	74	365	190	75	369	165	63	1223	112	1223
d1, Uniform Delay [s]	57.01	53.94	53.94	57.50	53.88	53.88	49.88	3.80	45.78	3.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.65	309.65	320.83	449.50	601.26	652.76	2144.84	0.03	74.71	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	1.66	1.66	1.98	2.32	2.41	5.69	0.09	0.96	0.12
d, Delay for Lane Group [s/veh]	72.66	363.59	374.77	507.00	655.14	706.64	2194.72	3.83	120.49	3.95
Lane Group LOS	E	F	F	F	F	F	F	A	F	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.03	21.23	22.63	11.70	36.37	34.83	39.40	0.64	4.24	0.89
50th-Percentile Queue Length [ft/ln]	50.81	530.68	565.71	292.51	909.29	870.78	984.96	15.88	105.90	22.15
95th-Percentile Queue Length [veh/ln]	3.66	33.71	35.69	19.69	56.98	54.91	70.92	1.14	7.61	1.59
95th-Percentile Queue Length [ft/ln]	91.46	842.85	892.34	492.17	1424.58	1372.79	1772.93	28.59	190.29	39.87

Movement, Approach, & Intersection Results

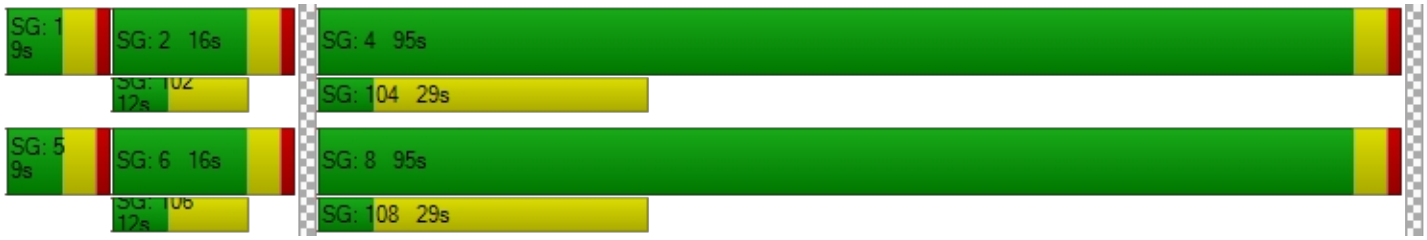
d_M, Delay for Movement [s/veh]	72.66	367.24	374.77	507.00	655.14	706.64	2194.72	2194.72	3.83	120.49	120.49	3.95
Movement LOS	E	F	F	F	F	F	F	F	A	F	F	A
d_A, Approach Delay [s/veh]	350.27			653.98			1672.63			52.09		
Approach LOS	F			F			F			D		
d_I, Intersection Delay [s/veh]	662.10											
Intersection LOS	F											
Intersection V/C	32.708											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.932	3.409	2.280	2.116
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	2.099	2.330	2.335	1.987
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	40	40	0	24	24	24	0	33	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	104	0	104	112	0	0	0	0	0
g / C, Green / Cycle	0.00	0.87	0.87	0.00	0.87	0.93	0.00	0.00	0.00	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1781	3560	1870	1781	3560	1589	1781	1870	2813	1781	1870
c, Capacity [veh/h]	1	3082	1619	1	3081	1483	1	1	1	1	1
d1, Uniform Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Group LOS	A	A	A	A	A	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	No	No	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											
Intersection V/C	0.000											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.609	0.000	2.468	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	333	483	317
d_b, Bicycle Delay [s]	29.40	41.67	34.50	42.50
l_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560	1.560
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 998543: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Level Of Service Report
Intersection 998552: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Crosswalk	Yes		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Level Of Service Report
Intersection 998555: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Left	Thru	Left	Thru	Right	Left	Thru	Right	Thru	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Speedway Commerce Center

Vistro File: K:\...\Speedway CC PM.vistro
Report File: K:\...\7 HY 2040 PM.pdf

Scenario 7 HY 2040 PM
5/3/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Left	0.604	29.2	C
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.651	26.2	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.452	16.3	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.604	24.9	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.735	31.3	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.492	15.7	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.526	36.1	D
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.707	41.3	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.844	50.5	D
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	SB Left	0.506	40.1	D
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.567	19.2	B
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.632	33.8	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.682	39.5	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.580	42.8	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.737	41.3	D
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.576	36.6	D
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.547	43.2	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.877	20.5	C
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.579	22.1	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.731	49.7	D
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.733	61.6	E
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	33.884	10,000.0	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.948	80.3	F
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	SB Left	0.892	58.9	E
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	EB Thru	1.345	161.2	F
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.906	68.8	E
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	NB Left	0.664	28.4	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.745	45.5	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.644	38.0	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.892	37.5	D
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Right	0.890	59.4	E
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	1.421	361.9	F
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.665	26.4	C
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.811	39.3	D
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	SB Thru	1.874	218.9	F
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.564	30.7	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	SB Left	0.695	42.8	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.638	34.2	C

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.638	32.1	C
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	EB Thru	1.238	123.8	F
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	NB Thru	1.720	156.5	F
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.514	27.9	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	EB Left	0.711	35.5	D
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	WB Right	0.890	53.0	D
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	WB Left	0.536	38.6	D
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.612	37.4	D
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	WB Left	0.882	61.6	E
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.219	11.3	B
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.790	45.0	D
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	WB Left	0.793	37.4	D
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	EB Thru	0.820	49.5	D
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.568	32.5	C
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	SB Left	0.721	40.9	D
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	NB Thru	2.025	249.1	F
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.676	37.7	D
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	EB Right	0.958	71.3	E
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	WB Left	1.048	70.0	E
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.472	15.5	B
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	NB Thru	335.374	10,000.0	F
			HCM 6th				

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.788	45.6	D
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	SB Left	0.893	52.3	D
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.670	22.0	C
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	WB Right	0.754	26.5	C
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Right	0.520	18.6	B
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.677	20.4	C
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	NB Right	0.889	44.7	D
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	EB Right	0.711	30.4	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	EB Left	1.152	69.8	E
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	WB Left	0.752	39.5	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	EB Left	1.004	87.2	F
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.732	36.9	D
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	35.648	687.5	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition		0.000	0.0	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.604

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	353	822	0	0	680	253	0	0	0	347	0	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	353	822	0	0	680	253	0	0	0	347	0	204
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	216	0	0	179	67	0	0	0	91	0	54
Total Analysis Volume [veh/h]	372	865	0	0	716	266	0	0	0	365	0	215
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	44	82	0	0	38	0	0	0	0	0	38	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	27	85	54	54		27	27
g / C, Green / Cycle	0.22	0.71	0.45	0.45		0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.21	0.24	0.18	0.20		0.20	0.13
s, saturation flow rate [veh/h]	1810	3618	3618	1662		1810	1615
c, Capacity [veh/h]	407	2570	1637	752		403	360
d1, Uniform Delay [s]	45.39	6.61	21.97	22.40		45.40	41.81
k, delay calibration	0.18	0.50	0.50	0.50		0.24	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	12.60	0.35	0.73	1.83		15.28	1.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.34	0.40	0.44		0.91	0.60
d, Delay for Lane Group [s/veh]	57.98	6.96	22.70	24.24		60.68	43.40
Lane Group LOS	E	A	C	C		E	D
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	12.18	3.97	6.30	6.64		12.24	5.87
50th-Percentile Queue Length [ft/ln]	304.51	99.15	157.45	165.92		306.06	146.79
95th-Percentile Queue Length [veh/ln]	17.90	7.14	10.41	10.86		17.98	9.85
95th-Percentile Queue Length [ft/ln]	447.61	178.47	260.34	271.54		449.52	246.13

Movement, Approach, & Intersection Results

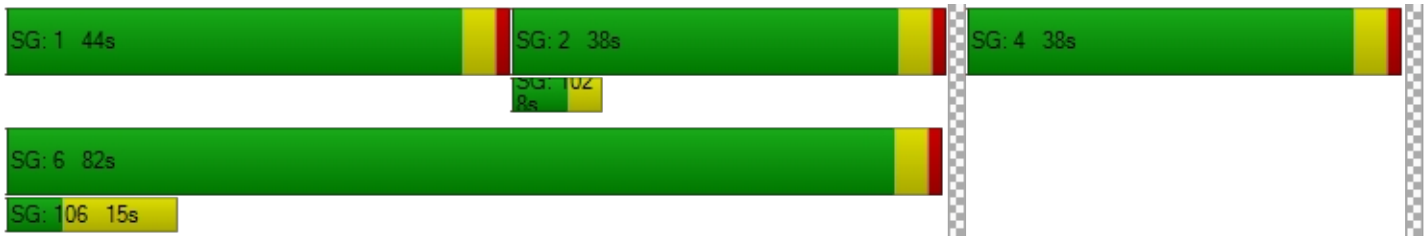
d_M, Delay for Movement [s/veh]	57.98	6.96	0.00	0.00	22.83	24.24	0.00	0.00	0.00	60.68	60.68	43.40
Movement LOS	E	A			C	C				E	E	D
d_A, Approach Delay [s/veh]	22.31			23.21			0.00			54.28		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	29.25											
Intersection LOS	C											
Intersection V/C	0.604											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.061	2.144
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1300	567	0	567
d_b, Bicycle Delay [s]	7.35	30.82	60.00	30.82
l_b,int, Bicycle LOS Score for Intersection	2.580	2.100	4.132	2.517
Bicycle LOS	B	B	D	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.651

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	362	1187	0	0	857	460	0	0	0	389	0	372
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	362	1187	0	0	857	460	0	0	0	389	0	372
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	312	0	0	226	121	0	0	0	102	0	98
Total Analysis Volume [veh/h]	381	1249	0	0	902	484	0	0	0	409	0	392
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	21	59	0	0	38	0	0	0	0	0	61	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	15	80	61	61		32	32	32
g / C, Green / Cycle	0.13	0.66	0.51	0.51		0.27	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.11	0.35	0.25	0.30		0.11	0.11	0.24
s, saturation flow rate [veh/h]	3514	3618	3618	1615		1810	1810	1615
c, Capacity [veh/h]	442	2400	1825	815		488	488	436
d1, Uniform Delay [s]	51.44	10.37	19.62	21.03		36.07	36.07	42.25
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	5.11	0.81	0.96	3.18		0.57	0.57	6.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.52	0.49	0.59		0.42	0.42	0.90
d, Delay for Lane Group [s/veh]	56.55	11.18	20.58	24.21		36.64	36.64	49.18
Lane Group LOS	E	B	C	C		D	D	D
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.93	8.20	8.42	10.12		5.03	5.03	11.96
50th-Percentile Queue Length [ft/ln]	148.13	204.92	210.45	253.07		125.73	125.73	298.92
95th-Percentile Queue Length [veh/ln]	9.92	12.89	13.18	15.34		8.71	8.71	17.63
95th-Percentile Queue Length [ft/ln]	247.93	322.31	329.40	383.51		217.68	217.68	440.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.55	11.18	0.00	0.00	20.58	24.21	0.00	0.00	0.00	36.64	36.64	49.18
Movement LOS	E	B			C	C				D	D	D
d_A, Approach Delay [s/veh]	21.79			21.85			0.00			42.78		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	26.22											
Intersection LOS	C											
Intersection V/C	0.651											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.152	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	567	0	950
d_b, Bicycle Delay [s]	17.60	30.82	60.00	16.54
l_b,int, Bicycle LOS Score for Intersection	2.904	2.703	4.132	2.881
Bicycle LOS	C	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	16.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1273	0	0	1404	0	0	0	0	337	0	448
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1273	0	0	1404	0	0	0	0	337	0	448
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	335	0	0	369	0	0	0	0	89	0	118
Total Analysis Volume [veh/h]	0	1340	0	0	1478	0	0	0	0	355	0	472
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	52	0	0	52	0	0	0	0	0	68	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	88	88		24	24	24
g / C, Green / Cycle	0.74	0.74		0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.26	0.29		0.16	0.16	0.17
s, saturation flow rate [veh/h]	5176	5176		1810	1660	1615
c, Capacity [veh/h]	3809	3809		357	328	319
d1, Uniform Delay [s]	5.64	5.85		45.90	46.26	46.37
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	0.30		4.16	5.50	6.04
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.39		0.80	0.83	0.84
d, Delay for Lane Group [s/veh]	5.90	6.15		50.06	51.76	52.42
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.64	4.17		8.52	8.30	8.24
50th-Percentile Queue Length [ft/ln]	90.97	104.13		212.91	207.54	205.93
95th-Percentile Queue Length [veh/ln]	6.55	7.50		13.30	13.03	12.94
95th-Percentile Queue Length [ft/ln]	163.74	187.44		332.56	325.67	323.60

Movement, Approach, & Intersection Results

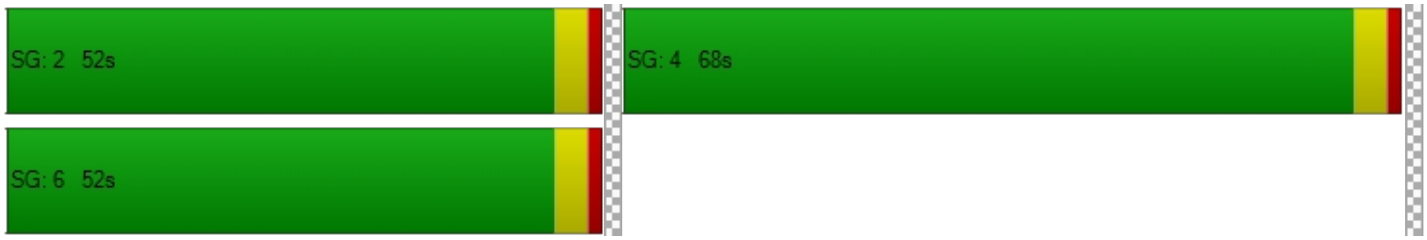
d_M, Delay for Movement [s/veh]	0.00	5.90	0.00	0.00	6.15	0.00	0.00	0.00	0.00	50.43	51.76	52.14
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]		5.90			6.15			0.00			51.39	
Approach LOS		A			A			A			D	
d_I, Intersection Delay [s/veh]						16.32						
Intersection LOS						B						
Intersection V/C						0.452						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	800	0	1067
d_b, Bicycle Delay [s]	21.60	21.60	60.00	13.07
l_b,int, Bicycle LOS Score for Intersection	2.297	2.373	4.132	2.924
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.604

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	854	366	121	819	0	288	3	418	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	854	366	121	819	0	288	3	418	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	225	96	32	216	0	76	1	110	0	0	0
Total Analysis Volume [veh/h]	0	899	385	127	862	0	303	3	440	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	22	0	15	37	0	0	83	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	62	62	10	76	36	36	
g / C, Green / Cycle	0.52	0.52	0.08	0.64	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.24	0.26	0.07	0.24	0.17	0.27	
s, saturation flow rate [veh/h]	3618	1640	1810	3618	1810	1615	
c, Capacity [veh/h]	1869	847	153	2297	540	482	
d1, Uniform Delay [s]	18.35	18.96	54.05	10.50	35.54	40.59	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.81	2.15	10.70	0.47	0.94	7.15	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.46	0.51	0.83	0.38	0.57	0.91	
d, Delay for Lane Group [s/veh]	19.16	21.11	64.74	10.97	36.47	47.74	
Lane Group LOS	B	C	E	B	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	7.61	8.15	4.23	5.39	7.70	13.37	
50th-Percentile Queue Length [ft/ln]	190.23	203.71	105.73	134.75	192.48	334.28	
95th-Percentile Queue Length [veh/ln]	12.13	12.83	7.60	9.20	12.25	19.37	
95th-Percentile Queue Length [ft/ln]	303.32	320.75	190.04	229.94	306.24	484.20	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	19.26	21.11	64.74	10.97	0.00	36.47	36.47	47.74	0.00	0.00	0.00
Movement LOS		B	C	E	B		D	D	D			
d_A, Approach Delay [s/veh]	19.81			17.88			43.12			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	24.94											
Intersection LOS	C											
Intersection V/C	0.604											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.198	1.941
Crosswalk LOS	F	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	550	1317	0
d_b, Bicycle Delay [s]	43.35	31.54	7.00	60.00
l_b,int, Bicycle LOS Score for Intersection	2.266	2.376	2.791	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1173	308	287	779	0	578	0	385	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1173	308	287	779	0	578	0	385	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	309	81	76	205	0	152	0	101	0	0	0
Total Analysis Volume [veh/h]	0	1235	324	302	820	0	608	0	405	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	64	0	16	80	0	0	40	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	68	68	12	84	28	28	28	
g / C, Green / Cycle	0.56	0.56	0.10	0.70	0.24	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.41	0.44	0.09	0.23	0.19	0.19	0.21	
s, saturation flow rate [veh/h]	1900	1770	3514	3618	1810	1767	1615	
c, Capacity [veh/h]	1068	995	351	2516	431	420	384	
d1, Uniform Delay [s]	19.51	20.56	53.17	7.20	42.84	43.07	44.05	
k, delay calibration	0.50	0.50	0.11	0.50	0.18	0.19	0.23	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.40	6.16	6.16	0.35	5.14	6.17	12.83	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.73	0.78	0.86	0.33	0.78	0.80	0.88	
d, Delay for Lane Group [s/veh]	23.91	26.72	59.33	7.55	47.97	49.25	56.89	
Lane Group LOS	C	C	E	A	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	16.75	17.98	4.78	3.96	9.97	10.13	10.99	
50th-Percentile Queue Length [ft/ln]	418.80	449.51	119.51	99.02	249.33	253.29	274.87	
95th-Percentile Queue Length [veh/ln]	23.46	24.93	8.37	7.13	15.15	15.35	16.43	
95th-Percentile Queue Length [ft/ln]	586.61	623.36	209.15	178.23	378.81	383.80	410.82	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	24.95	26.72	59.33	7.55	0.00	48.54	49.25	55.62	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	E			
d_A, Approach Delay [s/veh]	25.32			21.48			51.37			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	31.30											
Intersection LOS	C											
Intersection V/C	0.735											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.393	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	1267	600	0
d_b, Bicycle Delay [s]	15.00	8.07	29.40	60.00
l_b,int, Bicycle LOS Score for Intersection	2.846	2.485	3.231	4.132
Bicycle LOS	C	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.492

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1592	1202	0	1465	41	333	0	458	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1592	1202	0	1465	41	333	0	458	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	419	316	0	386	11	88	0	121	0	0	0
Total Analysis Volume [veh/h]	0	1676	1265	0	1542	43	351	0	482	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	77	0	0	77	0	0	43	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	88	88	24	24	24	
g / C, Green / Cycle	0.74	0.74	0.20	0.20	0.20	
(v / s)_i Volume / Saturation Flow Rate	0.32	0.30	0.16	0.17	0.17	
s, saturation flow rate [veh/h]	5176	5176	1810	1656	1615	
c, Capacity [veh/h]	3807	3807	358	328	319	
d1, Uniform Delay [s]	6.21	5.98	45.90	46.29	46.40	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.37	0.32	4.23	5.71	6.24	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.44	0.41	0.80	0.84	0.85	
d, Delay for Lane Group [s/veh]	6.58	6.30	50.14	51.99	52.63	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	5.01	4.44	8.58	8.38	8.33	
50th-Percentile Queue Length [ft/ln]	125.23	110.90	214.55	209.53	208.24	
95th-Percentile Queue Length [veh/ln]	8.68	7.89	13.39	13.13	13.06	
95th-Percentile Queue Length [ft/ln]	216.99	197.25	334.66	328.23	326.56	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.58	0.00	0.00	6.30	0.00	50.51	51.99	52.36	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]		6.58			6.30			51.56			0.00	
Approach LOS		A			A			D			A	
d_I, Intersection Delay [s/veh]	15.72											
Intersection LOS	B											
Intersection V/C	0.492											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.349	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1217	1217	650	0
d_b, Bicycle Delay [s]	9.20	9.20	27.34	60.00
I_b,int, Bicycle LOS Score for Intersection	2.481	2.408	2.934	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	36.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.526

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	66	588	161	112	524	60	73	432	146	133	275	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	588	161	112	524	60	73	432	146	133	275	92
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	155	42	29	138	16	19	114	38	35	72	24
Total Analysis Volume [veh/h]	69	619	169	118	552	63	77	455	154	140	289	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	30	0	14	33	0	26	59	0	17	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	60	60	10	64	64	7	23	23	11	28	28
g / C, Green / Cycle	0.05	0.50	0.50	0.08	0.53	0.53	0.06	0.19	0.19	0.09	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.22	0.07	0.16	0.16	0.04	0.17	0.17	0.08	0.11	0.11
s, saturation flow rate [veh/h]	1810	1900	1761	1810	1900	1833	1810	1900	1738	1810	1900	1740
c, Capacity [veh/h]	89	953	884	144	1011	975	102	367	336	167	435	399
d1, Uniform Delay [s]	56.41	18.99	18.99	54.40	15.73	15.74	55.78	46.87	46.94	53.56	39.84	39.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.47	1.41	1.52	10.95	0.80	0.83	10.58	6.09	6.92	10.44	0.76	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.43	0.43	0.82	0.31	0.31	0.75	0.86	0.87	0.84	0.46	0.47
d, Delay for Lane Group [s/veh]	69.87	20.40	20.52	65.35	16.53	16.57	66.36	52.96	53.86	64.00	40.60	40.78
Lane Group LOS	E	C	C	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.40	7.51	7.00	3.95	4.97	4.82	2.60	9.76	9.08	4.64	5.18	4.85
50th-Percentile Queue Length [ft/ln]	59.98	187.72	174.95	98.67	124.36	120.46	65.00	244.02	227.06	115.95	129.57	121.29
95th-Percentile Queue Length [veh/ln]	4.32	12.00	11.34	7.10	8.63	8.42	4.68	14.88	14.02	8.17	8.92	8.46
95th-Percentile Queue Length [ft/ln]	107.96	300.07	283.41	177.60	215.80	210.45	117.00	372.12	350.62	204.25	222.90	211.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	69.87	20.44	20.52	65.35	16.55	16.57	66.36	53.24	53.86	64.00	40.65	40.78
Movement LOS	E	C	C	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	24.43			24.40			54.85			46.89		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.09											
Intersection LOS	D											
Intersection V/C	0.526											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.647	2.613	2.531	2.674
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	483	917	767
d_b, Bicycle Delay [s]	36.82	34.50	17.60	22.82
l_b,int, Bicycle LOS Score for Intersection	2.267	2.164	2.126	1.994
Bicycle LOS	B	B	B	A

Sequence

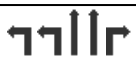
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	41.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	73	852	92	329	715	119	245	480	81	177	435	441
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	852	92	329	715	119	245	480	81	177	435	441
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	224	24	87	188	31	64	126	21	47	114	116
Total Analysis Volume [veh/h]	77	897	97	346	753	125	258	505	85	186	458	464
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	33	0	18	40	0	15	47	0	22	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	42	42	14	49	49	11	34	34	14	38	38
g / C, Green / Cycle	0.05	0.35	0.35	0.11	0.41	0.41	0.09	0.28	0.28	0.12	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.04	0.25	0.06	0.10	0.21	0.08	0.07	0.14	0.05	0.10	0.24	0.29
s, saturation flow rate [veh/h]	1810	3618	1615	3514	3618	1615	3514	3618	1615	1810	1900	1615
c, Capacity [veh/h]	98	1264	565	400	1480	661	313	1025	458	217	597	507
d1, Uniform Delay [s]	56.03	33.76	27.01	52.25	26.46	22.71	53.72	35.81	32.53	51.81	37.21	39.62
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.15	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.56	3.39	0.66	5.64	1.25	0.63	5.41	0.37	0.19	9.44	2.91	13.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.71	0.17	0.86	0.51	0.19	0.82	0.49	0.19	0.86	0.77	0.92
d, Delay for Lane Group [s/veh]	68.59	37.14	27.67	57.89	27.71	23.34	59.13	36.18	32.72	61.25	40.11	52.86
Lane Group LOS	E	D	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.65	11.79	2.04	5.43	8.24	2.39	4.06	6.22	1.91	6.06	12.55	14.89
50th-Percentile Queue Length [ft/ln]	66.17	294.76	51.02	135.71	205.97	59.77	101.53	155.41	47.73	151.44	313.84	372.20
95th-Percentile Queue Length [veh/ln]	4.76	17.42	3.67	9.25	12.95	4.30	7.31	10.31	3.44	10.09	18.36	21.22
95th-Percentile Queue Length [ft/ln]	119.11	435.55	91.84	231.24	323.65	107.58	182.75	257.63	85.91	252.35	459.10	530.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.59	37.14	27.67	57.89	27.71	23.34	59.13	36.18	32.72	61.25	40.11	52.86
Movement LOS	E	D	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	38.55			35.80			42.82			49.00		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.33											
Intersection LOS	D											
Intersection V/C	0.707											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.809	3.005	2.819	2.802
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	600	717	833
d_b, Bicycle Delay [s]	34.50	29.40	24.70	20.42
l_b,int, Bicycle LOS Score for Intersection	2.443	2.569	2.259	3.388
Bicycle LOS	B	B	B	C

Sequence

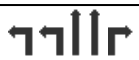
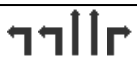
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	50.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.844

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	172	1482	118	400	1207	318	551	526	162	132	347	396
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	172	1482	118	400	1207	318	551	526	162	132	347	396
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	390	31	105	318	84	145	138	43	35	91	104
Total Analysis Volume [veh/h]	181	1560	124	421	1271	335	580	554	171	139	365	417
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	37	0	19	45	0	24	51	0	13	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	36	36	15	44	44	20	46	46	7	33	33
g / C, Green / Cycle	0.06	0.30	0.30	0.13	0.37	0.37	0.17	0.39	0.39	0.06	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.05	0.30	0.08	0.12	0.25	0.21	0.17	0.15	0.11	0.04	0.10	0.26
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	205	1544	482	439	1889	589	586	1399	625	199	1001	447
d1, Uniform Delay [s]	56.09	42.10	32.00	52.19	32.07	30.53	49.90	26.65	25.24	55.60	34.92	42.32
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.36
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.71	25.46	1.29	12.31	1.93	3.94	15.16	0.18	0.23	4.39	0.22	22.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	1.01	0.26	0.96	0.67	0.57	0.99	0.40	0.27	0.70	0.36	0.93
d, Delay for Lane Group [s/veh]	67.80	67.57	33.29	64.50	34.00	34.47	65.06	26.83	25.47	59.98	35.14	65.09
Lane Group LOS	E	F	C	E	C	C	E	C	C	E	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.05	18.68	2.93	7.04	10.60	8.37	9.88	5.78	3.40	2.19	4.34	14.76
50th-Percentile Queue Length [ft/ln]	76.33	466.88	73.14	175.91	265.02	209.23	246.98	144.39	84.92	54.73	108.53	369.08
95th-Percentile Queue Length [veh/ln]	5.50	25.94	5.27	11.39	15.94	13.11	15.03	9.72	6.11	3.94	7.76	21.06
95th-Percentile Queue Length [ft/ln]	137.39	648.39	131.65	284.67	398.51	327.84	375.85	242.92	152.86	98.52	193.96	526.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.80	67.57	33.29	64.50	34.00	34.47	65.06	26.83	25.47	59.98	35.14	65.09
Movement LOS	E	F	C	E	C	C	E	C	C	E	D	E
d_A, Approach Delay [s/veh]	65.31			40.41			43.64			52.45		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	50.50											
Intersection LOS	D											
Intersection V/C	0.844											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.238	3.361	2.914	2.891
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	683	783	600
d_b, Bicycle Delay [s]	31.54	26.00	22.20	29.40
l_b,int, Bicycle LOS Score for Intersection	2.585	2.674	2.636	2.319
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.506

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	122	193	231	55	113	71	104	1286	170	169	787	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	193	231	55	113	71	104	1286	170	169	787	58
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	51	61	14	30	19	27	338	45	44	207	15
Total Analysis Volume [veh/h]	128	203	243	58	119	75	109	1354	179	178	828	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	36	36	9	31	0	13	64	0	11	62	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	53	64	5	52	52	9	39	39	7	37	37
g / C, Green / Cycle	0.05	0.44	0.53	0.04	0.43	0.43	0.07	0.33	0.33	0.06	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.15	0.03	0.05	0.06	0.06	0.28	0.28	0.05	0.24	0.24
s, saturation flow rate [veh/h]	3514	1900	1615	1810	1900	1666	1810	3618	1789	3514	1900	1855
c, Capacity [veh/h]	187	838	860	75	815	714	134	1180	583	205	590	576
d1, Uniform Delay [s]	55.81	21.00	15.43	56.96	20.65	20.73	54.74	38.03	38.05	56.04	37.39	37.39
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.15	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.35	0.69	0.82	15.43	0.31	0.38	11.18	2.12	5.54	10.61	2.08	2.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.24	0.28	0.77	0.12	0.13	0.81	0.87	0.87	0.87	0.76	0.76
d, Delay for Lane Group [s/veh]	60.15	21.69	16.26	72.39	20.96	21.12	65.93	40.15	43.59	66.65	39.47	39.53
Lane Group LOS	E	C	B	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.02	3.74	3.83	2.06	1.77	1.68	3.66	14.37	14.78	2.97	12.20	11.92
50th-Percentile Queue Length [ft/ln]	50.46	93.44	95.63	51.58	44.29	42.06	91.54	359.18	369.48	74.36	304.90	297.89
95th-Percentile Queue Length [veh/ln]	3.63	6.73	6.89	3.71	3.19	3.03	6.59	20.58	21.08	5.35	17.92	17.58
95th-Percentile Queue Length [ft/ln]	90.83	168.19	172.14	92.84	79.72	75.71	164.77	514.58	527.10	133.85	448.08	439.42

Movement, Approach, & Intersection Results

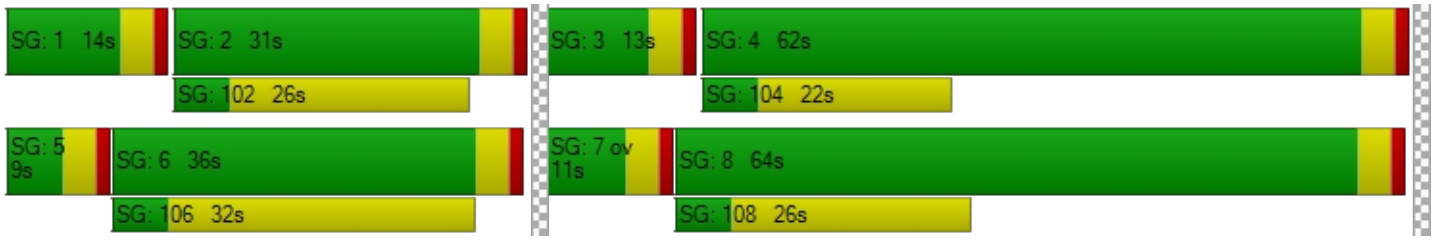
d_M, Delay for Movement [s/veh]	60.15	21.69	16.26	72.39	20.98	21.12	65.93	40.99	43.59	66.65	39.50	39.53
Movement LOS	E	C	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	27.97			32.85			42.93			44.03		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	40.11											
Intersection LOS	D											
Intersection V/C	0.506											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.639	2.437	2.902	3.072
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	450	1000	967
d_b, Bicycle Delay [s]	32.27	36.04	15.00	16.02
l_b,int, Bicycle LOS Score for Intersection	2.507	1.768	2.463	2.440
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	289	0	633	0	1642	189	0	625	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	289	0	633	0	1642	189	0	625	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	76	0	167	0	432	50	0	164	0
Total Analysis Volume [veh/h]	0	0	0	304	0	666	0	1728	199	0	658	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	65	0	0	0	55	0	0	55	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		32	32	80	80
g / C, Green / Cycle		0.27	0.27	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate		0.09	0.23	0.33	0.13
s, saturation flow rate [veh/h]		3514	2859	5176	5176
c, Capacity [veh/h]		939	763	3448	3448
d1, Uniform Delay [s]		35.28	42.02	10.03	7.66
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.20	3.29	0.52	0.12
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.32	0.87	0.50	0.19
d, Delay for Lane Group [s/veh]		35.48	45.31	10.56	7.78
Lane Group LOS		D	D	B	A
Critical Lane Group		No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.62	9.72	7.27	2.10
50th-Percentile Queue Length [ft/ln]		90.39	242.88	181.73	52.58
95th-Percentile Queue Length [veh/ln]		6.51	14.83	11.69	3.79
95th-Percentile Queue Length [ft/ln]		162.70	370.68	292.27	94.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	35.48	0.00	45.31	0.00	10.56	0.00	0.00	7.78	0.00
Movement LOS				D		D		B			A	
d_A, Approach Delay [s/veh]	0.00			42.23			10.56			7.78		
Approach LOS	A			D			B			A		
d_I, Intersection Delay [s/veh]	19.17											
Intersection LOS	B											
Intersection V/C	0.567											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.504	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1017	850	850
d_b, Bicycle Delay [s]	60.00	14.50	19.84	19.84
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.510	1.922
Bicycle LOS	D	A	B	A

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	33.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.632

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	445	0	853	0	0	0	627	1074	0	0	1061	269
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	445	0	853	0	0	0	627	1074	0	0	1061	269
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	0	224	0	0	0	165	283	0	0	279	71
Total Analysis Volume [veh/h]	468	0	898	0	0	0	660	1131	0	0	1117	283
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	45	0	0	0	0	48	75	0	0	27	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	58	58	58		26	54	24
g / C, Green / Cycle	0.48	0.48	0.48		0.22	0.45	0.20
(v / s)_i Volume / Saturation Flow Rate	0.25	0.28	0.28		0.19	0.22	0.16
s, saturation flow rate [veh/h]	1810	1620	1615		3514	5176	6901
c, Capacity [veh/h]	870	779	777		759	2341	1401
d1, Uniform Delay [s]	21.59	22.48	22.50		45.41	23.03	45.48
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.24	3.19	3.22		3.24	0.16	1.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.58	0.59		0.87	0.48	0.80
d, Delay for Lane Group [s/veh]	23.84	25.67	25.73		48.65	23.19	46.56
Lane Group LOS	C	C	C		D	C	D
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	9.31	9.81	9.83		9.80	7.46	7.99
50th-Percentile Queue Length [ft/ln]	232.65	245.34	245.73		244.97	186.38	199.77
95th-Percentile Queue Length [veh/ln]	14.31	14.95	14.97		14.93	11.93	12.63
95th-Percentile Queue Length [ft/ln]	357.73	373.78	374.27		373.31	298.33	315.67

Movement, Approach, & Intersection Results

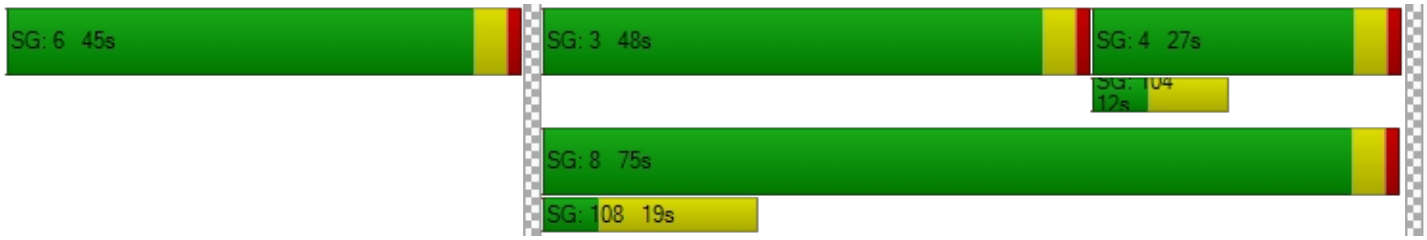
d_M, Delay for Movement [s/veh]	23.89	25.67	25.70	0.00	0.00	0.00	48.65	23.19	0.00	0.00	46.56	0.00
Movement LOS	C	C	C				D	C			D	
d_A, Approach Delay [s/veh]	25.08			0.00			32.57			46.56		
Approach LOS	C			A			C			D		
d_I, Intersection Delay [s/veh]	33.83											
Intersection LOS	C											
Intersection V/C	0.632											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.479	2.052	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	0	1183	383
d_b, Bicycle Delay [s]	26.00	60.00	10.00	39.20
l_b,int, Bicycle LOS Score for Intersection	3.814	4.132	2.545	2.020
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.682

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	232	1079	418	120	537	113	394	1263	141	390	687	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	232	1079	418	120	537	113	394	1263	141	390	687	68
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	284	110	32	141	30	104	332	37	103	181	18
Total Analysis Volume [veh/h]	244	1136	440	126	565	119	415	1329	148	411	723	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	45	0	10	40	0	24	43	0	22	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	46	46	6	42	42	16	36	36	16	35	35
g / C, Green / Cycle	0.09	0.39	0.39	0.05	0.35	0.35	0.14	0.30	0.30	0.13	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.07	0.22	0.27	0.04	0.11	0.07	0.12	0.26	0.09	0.12	0.14	0.04
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	301	1998	623	176	1813	566	484	1532	478	473	1516	473
d1, Uniform Delay [s]	53.90	28.98	31.09	56.16	28.43	27.34	50.58	40.01	32.73	50.89	34.87	31.40
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.20	1.18	6.60	5.38	0.45	0.85	4.50	1.62	0.36	5.02	0.23	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.57	0.71	0.72	0.31	0.21	0.86	0.87	0.31	0.87	0.48	0.15
d, Delay for Lane Group [s/veh]	59.10	30.16	37.68	61.55	28.88	28.18	55.08	41.62	33.10	55.90	35.11	31.55
Lane Group LOS	E	C	D	E	C	C	E	D	C	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.84	8.74	11.77	2.01	4.04	2.54	6.39	12.50	3.40	6.37	5.83	1.58
50th-Percentile Queue Length [ft/ln]	95.89	218.54	294.17	50.30	100.99	63.55	159.79	312.46	85.05	159.36	145.65	39.45
95th-Percentile Queue Length [veh/ln]	6.90	13.59	17.39	3.62	7.27	4.58	10.54	18.30	6.12	10.51	9.78	2.84
95th-Percentile Queue Length [ft/ln]	172.61	339.76	434.82	90.54	181.79	114.38	263.44	457.41	153.10	262.87	244.61	71.00

Movement, Approach, & Intersection Results

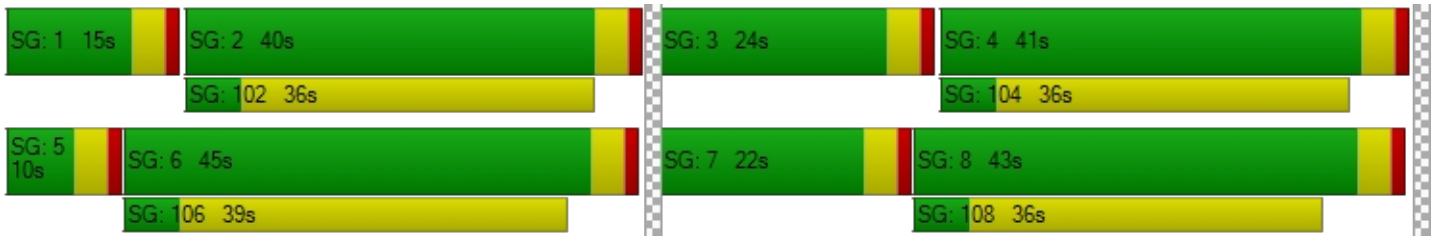
d_M, Delay for Movement [s/veh]	59.10	30.16	37.68	61.55	28.88	28.18	55.08	41.62	33.10	55.90	35.11	31.55
Movement LOS	E	C	D	E	C	C	E	D	C	E	D	C
d_A, Approach Delay [s/veh]	35.86			33.86			43.91			41.98		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.52											
Intersection LOS	D											
Intersection V/C	0.682											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.183	3.128	3.357	3.284
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	600	650	617
d_b, Bicycle Delay [s]	26.00	29.40	27.34	28.70
l_b,int, Bicycle LOS Score for Intersection	2.561	2.005	2.600	2.223
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	42.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	170	542	61	179	413	101	236	1129	129	150	672	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	170	542	61	179	413	101	236	1129	129	150	672	150
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	143	16	47	109	27	62	297	34	39	177	39
Total Analysis Volume [veh/h]	179	571	64	188	435	106	248	1188	136	158	707	158
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	38	0	20	40	0	32	45	0	17	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	45	45	14	46	46	19	32	32	12	26	26
g / C, Green / Cycle	0.11	0.37	0.37	0.12	0.38	0.38	0.15	0.27	0.27	0.10	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.10	0.16	0.04	0.10	0.15	0.15	0.14	0.23	0.09	0.09	0.16	0.16
s, saturation flow rate [veh/h]	1810	3618	1615	1810	1870	1745	1810	5176	1589	1781	3618	1729
c, Capacity [veh/h]	206	1351	603	216	709	661	281	1399	430	185	791	378
d1, Uniform Delay [s]	52.29	27.98	24.53	51.92	27.21	27.23	49.60	41.47	34.94	52.90	43.69	43.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.11	0.11	0.11	0.11	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.62	0.97	0.35	10.26	1.64	1.77	9.65	1.53	0.42	10.74	1.37	3.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.42	0.11	0.87	0.39	0.40	0.88	0.85	0.32	0.86	0.74	0.74
d, Delay for Lane Group [s/veh]	62.91	28.95	24.89	62.18	28.85	29.00	59.26	43.00	35.36	63.65	45.06	47.20
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.90	6.28	1.26	6.17	6.17	5.81	8.02	11.22	3.24	5.23	8.21	8.14
50th-Percentile Queue Length [ft/ln]	147.57	157.02	31.45	154.24	154.22	145.20	200.55	280.58	81.00	130.79	205.25	203.44
95th-Percentile Queue Length [veh/ln]	9.89	10.39	2.26	10.24	10.24	9.76	12.67	16.72	5.83	8.98	12.91	12.82
95th-Percentile Queue Length [ft/ln]	247.18	259.77	56.61	256.08	256.05	244.01	316.67	417.93	145.80	224.57	322.72	320.40

Movement, Approach, & Intersection Results

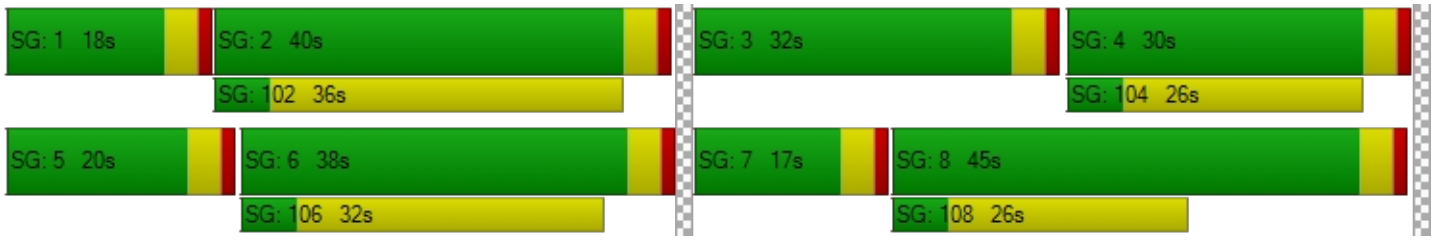
d_M, Delay for Movement [s/veh]	62.91	28.95	24.89	62.18	28.90	29.00	59.26	43.00	35.36	63.65	45.43	47.20
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	36.10			37.50			44.90			48.52		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.76											
Intersection LOS	D											
Intersection V/C	0.580											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.719	2.745	3.142	3.041
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	600	683	433
d_b, Bicycle Delay [s]	30.82	29.40	26.00	36.82
l_b,int, Bicycle LOS Score for Intersection	2.231	2.161	2.424	2.122
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	41.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	106	682	97	188	496	134	345	1701	129	202	625	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	682	97	188	496	134	345	1701	129	202	625	77
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	179	26	49	131	35	91	448	34	53	164	20
Total Analysis Volume [veh/h]	112	718	102	198	522	141	363	1791	136	213	658	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	40	0	19	46	0	18	49	0	12	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	37	37	15	42	42	14	45	45	8	39	57
g / C, Green / Cycle	0.08	0.30	0.30	0.12	0.35	0.35	0.12	0.37	0.37	0.07	0.32	0.48
(v / s)_i Volume / Saturation Flow Rate	0.06	0.22	0.22	0.11	0.14	0.09	0.10	0.35	0.08	0.06	0.13	0.05
s, saturation flow rate [veh/h]	1810	1900	1818	1810	3618	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	136	577	552	225	1277	570	410	1925	601	234	1666	775
d1, Uniform Delay [s]	54.72	37.31	37.31	51.66	29.34	27.51	52.21	36.20	25.85	55.64	31.61	17.11
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.77	7.77	8.10	10.60	0.97	1.03	6.51	2.50	0.19	12.68	0.15	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.73	0.73	0.88	0.41	0.25	0.89	0.93	0.23	0.91	0.39	0.10
d, Delay for Lane Group [s/veh]	66.50	45.08	45.42	62.26	30.31	28.54	58.72	38.70	26.04	68.32	31.76	17.17
Lane Group LOS	E	D	D	E	C	C	E	D	C	E	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.78	12.16	11.69	6.51	5.87	3.05	5.75	16.94	2.71	3.61	4.98	1.25
50th-Percentile Queue Length [ft/ln]	94.52	304.02	292.26	162.79	146.63	76.18	143.67	423.48	67.86	90.32	124.55	31.19
95th-Percentile Queue Length [veh/ln]	6.81	17.88	17.30	10.70	9.84	5.49	9.68	23.69	4.89	6.50	8.64	2.25
95th-Percentile Queue Length [ft/ln]	170.13	447.00	432.44	267.41	245.92	137.13	241.95	592.23	122.16	162.58	216.07	56.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.50	45.22	45.42	62.26	30.31	28.54	58.72	38.70	26.04	68.32	31.76	17.17
Movement LOS	E	D	D	E	C	C	E	D	C	E	C	B
d_A, Approach Delay [s/veh]	47.80			37.37			41.12			38.70		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.26											
Intersection LOS	D											
Intersection V/C	0.737											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.667	2.797	3.211	3.278
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	700	750	650
d_b, Bicycle Delay [s]	29.40	25.35	23.44	27.34
l_b,int, Bicycle LOS Score for Intersection	2.329	2.270	2.819	2.083
Bicycle LOS	B	B	C	B

Sequence

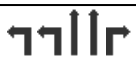
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	36.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	151	1259	100	335	814	76	161	804	131	139	791	263
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	151	1259	100	335	814	76	161	804	131	139	791	263
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	331	26	88	214	20	42	212	34	37	208	69
Total Analysis Volume [veh/h]	159	1325	105	353	857	80	169	846	138	146	833	277
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	40	0	22	47	0	11	48	0	10	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	58	58	14	64	64	7	26	26	6	25	25
g / C, Green / Cycle	0.06	0.48	0.48	0.12	0.54	0.54	0.06	0.22	0.22	0.05	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.07	0.10	0.24	0.05	0.05	0.16	0.09	0.04	0.16	0.17
s, saturation flow rate [veh/h]	3514	5176	1615	3514	3618	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	219	2483	775	418	1941	866	205	1128	352	176	1085	339
d1, Uniform Delay [s]	55.27	21.82	17.37	51.78	16.89	13.56	55.89	43.87	40.12	56.50	44.67	45.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.57	0.83	0.36	4.74	0.73	0.21	8.08	1.02	0.71	9.65	1.17	4.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.53	0.14	0.84	0.44	0.09	0.82	0.75	0.39	0.83	0.77	0.82
d, Delay for Lane Group [s/veh]	59.84	22.65	17.73	56.52	17.62	13.77	63.97	44.89	40.84	66.15	45.84	50.12
Lane Group LOS	E	C	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.50	8.76	1.70	5.47	7.24	1.11	2.76	7.93	3.57	2.43	7.89	8.31
50th-Percentile Queue Length [ft/ln]	62.55	219.05	42.50	136.81	181.08	27.67	69.01	198.16	89.24	60.69	197.15	207.68
95th-Percentile Queue Length [veh/ln]	4.50	13.62	3.06	9.31	11.66	1.99	4.97	12.54	6.43	4.37	12.49	13.03
95th-Percentile Queue Length [ft/ln]	112.59	340.41	76.49	232.73	291.42	49.81	124.22	313.59	160.63	109.25	312.28	325.86

Movement, Approach, & Intersection Results

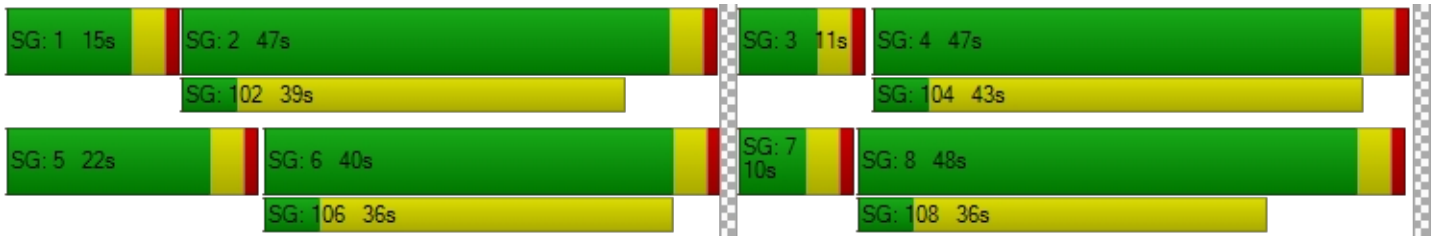
d_M, Delay for Movement [s/veh]	59.84	22.65	17.73	56.52	17.62	13.77	63.97	44.89	40.84	66.15	45.84	50.12
Movement LOS	E	C	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.05			28.03			47.20			49.15		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.63											
Intersection LOS	D											
Intersection V/C	0.576											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.160	3.365	3.199	3.142
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	717	733	717
d_b, Bicycle Delay [s]	29.40	24.70	24.07	24.70
l_b,int, Bicycle LOS Score for Intersection	2.434	2.624	2.194	2.250
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	43.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.547

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	149	321	146	39	315	108	153	500	187	53	287	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	321	146	39	315	108	153	500	187	53	287	38
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	84	38	10	83	28	40	132	49	14	76	10
Total Analysis Volume [veh/h]	157	338	154	41	332	114	161	526	197	56	302	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	16	25	0	14	23	23	0	51	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	50	50	4	42	42	34	34	16	16
g / C, Green / Cycle	0.10	0.42	0.42	0.03	0.35	0.35	0.28	0.28	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.09	0.14	0.14	0.02	0.09	0.07	0.26	0.26	0.11	0.11
s, saturation flow rate [veh/h]	1810	1900	1702	1810	3618	1615	1868	1593	1875	1666
c, Capacity [veh/h]	181	796	714	58	1270	567	527	449	250	222
d1, Uniform Delay [s]	53.22	23.42	23.47	57.54	27.82	27.19	41.52	41.53	50.73	50.78
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.12	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.76	1.08	1.23	14.90	0.50	0.80	6.93	8.01	7.33	8.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.32	0.33	0.71	0.26	0.20	0.90	0.91	0.84	0.85
d, Delay for Lane Group [s/veh]	64.98	24.50	24.69	72.44	28.32	27.99	48.45	49.54	58.06	59.30
Lane Group LOS	E	C	C	E	C	C	D	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.25	5.15	4.70	1.47	3.51	2.42	14.50	12.50	6.66	6.04
50th-Percentile Queue Length [ft/ln]	131.32	128.79	117.59	36.80	87.81	60.59	362.48	312.59	166.45	151.03
95th-Percentile Queue Length [veh/ln]	9.01	8.87	8.26	2.65	6.32	4.36	20.74	18.30	10.89	10.07
95th-Percentile Queue Length [ft/ln]	225.29	221.84	206.51	66.24	158.06	109.06	518.60	457.57	272.25	251.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.98	24.55	24.69	72.44	28.32	27.99	48.45	48.89	49.54	58.06	58.67	59.30
Movement LOS	E	C	C	E	C	C	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	34.36			31.96			48.95			58.65		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	43.21											
Intersection LOS	D											
Intersection V/C	0.547											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.556	2.635	2.501	2.419
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	350	317	783	433
d_b, Bicycle Delay [s]	40.84	42.50	22.20	36.82
l_b,int, Bicycle LOS Score for Intersection	2.095	1.961	2.289	1.888
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.877

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	229	0	600	0	2163	1046	0	1526	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	229	0	600	0	2163	1046	0	1526	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	60	0	158	0	569	275	0	402	0
Total Analysis Volume [veh/h]	0	0	0	241	0	632	0	2277	1101	0	1606	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	29	0	0	0	91	0	0	91	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		25	25	25	87	87	87
g / C, Green / Cycle		0.21	0.21	0.21	0.73	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate		0.13	0.20	0.20	0.44	0.68	0.31
s, saturation flow rate [veh/h]		1810	1615	1615	5176	1615	5176
c, Capacity [veh/h]		377	336	336	3752	1171	3752
d1, Uniform Delay [s]		43.38	46.75	46.75	8.10	14.26	6.58
k, delay calibration		0.11	0.29	0.29	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		1.81	25.10	25.10	0.74	15.40	0.36
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.64	0.94	0.94	0.61	0.94	0.43
d, Delay for Lane Group [s/veh]		45.19	71.86	71.86	8.84	29.65	6.94
Lane Group LOS		D	E	E	A	C	A
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		6.72	11.58	11.58	8.77	26.74	5.00
50th-Percentile Queue Length [ft/ln]		168.11	289.52	289.52	219.26	668.52	125.02
95th-Percentile Queue Length [veh/ln]		10.98	17.16	17.16	13.63	35.22	8.67
95th-Percentile Queue Length [ft/ln]		274.43	429.04	429.04	340.68	880.54	216.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	45.19	0.00	71.86	0.00	8.84	29.65	0.00	6.94	0.00
Movement LOS				D		E		A	C		A	
d_A, Approach Delay [s/veh]	0.00			64.50			15.62			6.94		
Approach LOS	A			E			B			A		
d_I, Intersection Delay [s/veh]	20.53											
Intersection LOS	C											
Intersection V/C	0.877											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.359	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	417	1450	1450
d_b, Bicycle Delay [s]	60.00	37.60	4.54	4.54
l_b,int, Bicycle LOS Score for Intersection	4.132	3.000	3.418	2.443
Bicycle LOS	D	C	C	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	22.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.579

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	819	0	521	0	0	0	0	1415	0	0	1401	362
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	819	0	521	0	0	0	0	1415	0	0	1401	362
Peak Hour Factor	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000	1.0000	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	216	0	137	0	0	0	0	372	0	0	369	95
Total Analysis Volume [veh/h]	862	0	548	0	0	0	0	1489	0	0	1475	381
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	60	0	0	0	0	0	0	60	0	0	60	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	39	39	39		73	73	73
g / C, Green / Cycle	0.33	0.33	0.33		0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.29		0.29	0.28	0.24
s, saturation flow rate [veh/h]	1810	1774	1615		5176	5176	1615
c, Capacity [veh/h]	594	582	530		3133	3133	977
d1, Uniform Delay [s]	36.59	36.85	38.21		13.13	13.08	12.24
k, delay calibration	0.14	0.15	0.19		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	3.06	3.63	8.58		0.52	0.51	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.81	0.89		0.48	0.47	0.39
d, Delay for Lane Group [s/veh]	39.66	40.48	46.79		13.65	13.59	13.41
Lane Group LOS	D	D	D		B	B	B
Critical Lane Group	No	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.91	13.08	14.22		7.29	7.19	5.43
50th-Percentile Queue Length [ft/ln]	322.78	327.01	355.42		182.28	179.87	135.70
95th-Percentile Queue Length [veh/ln]	18.80	19.01	20.40		11.72	11.59	9.25
95th-Percentile Queue Length [ft/ln]	470.10	475.29	510.01		292.99	289.84	231.22

Movement, Approach, & Intersection Results

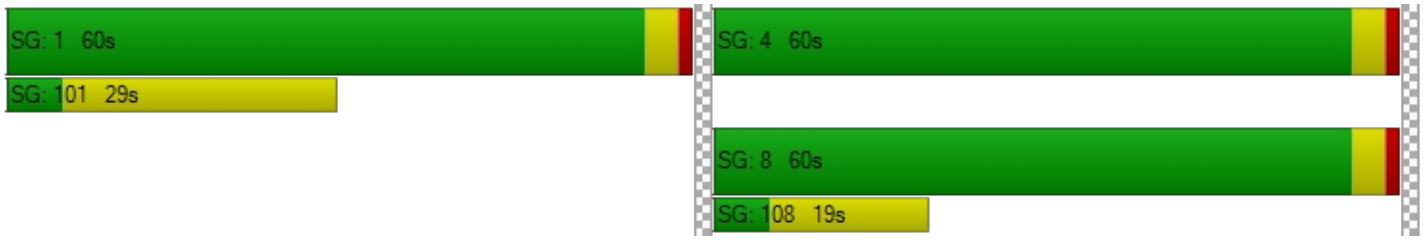
d_M, Delay for Movement [s/veh]	40.03	0.00	45.89	0.00	0.00	0.00	0.00	13.65	0.00	0.00	13.59	13.41
Movement LOS	D		D					B			B	B
d_A, Approach Delay [s/veh]	42.31			0.00			13.65			13.55		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	22.11											
Intersection LOS	C											
Intersection V/C	0.579											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.490	0.000	0.000	3.151
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	0	933	933
d_b, Bicycle Delay [s]	17.07	60.00	17.07	17.07
l_b,int, Bicycle LOS Score for Intersection	3.886	4.132	2.379	2.580
Bicycle LOS	D	D	B	B

Sequence

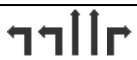
Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	49.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.731

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	382	400	224	69	251	174	266	1164	287	140	957	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	382	400	224	69	251	174	266	1164	287	140	957	53
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	105	59	18	66	46	70	306	76	37	252	14
Total Analysis Volume [veh/h]	402	421	236	73	264	183	280	1225	302	147	1007	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	31	54	0	13	36	0	14	44	44	9	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	53	53	6	32	32	10	40	71	5	35	35
g / C, Green / Cycle	0.23	0.44	0.44	0.05	0.27	0.27	0.08	0.33	0.59	0.04	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.15	0.04	0.12	0.13	0.08	0.34	0.19	0.04	0.28	0.03
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1900	1648	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	407	834	708	96	507	439	293	1206	956	146	1055	471
d1, Uniform Delay [s]	46.33	24.28	22.14	56.07	36.85	37.00	54.78	40.00	12.31	57.50	41.72	31.19
k, delay calibration	0.37	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.27	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	35.35	2.18	1.26	11.69	3.06	3.72	15.99	16.23	0.46	35.54	5.97	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	0.51	0.33	0.76	0.47	0.48	0.96	1.02	0.32	1.00	0.95	0.12
d, Delay for Lane Group [s/veh]	81.68	26.47	23.40	67.77	39.91	40.72	70.78	56.23	12.77	93.04	47.69	31.30
Lane Group LOS	F	C	C	E	D	D	E	F	B	F	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	15.86	9.05	4.62	2.49	6.24	5.67	4.86	20.21	4.11	2.94	15.34	1.22
50th-Percentile Queue Length [ft/ln]	396.45	226.32	115.42	62.37	156.12	141.68	121.50	505.17	102.68	73.57	383.42	30.42
95th-Percentile Queue Length [veh/ln]	22.39	13.99	8.14	4.49	10.34	9.57	8.48	27.88	7.39	5.30	21.76	2.19
95th-Percentile Queue Length [ft/ln]	559.72	349.68	203.52	112.27	258.58	239.29	211.88	696.90	184.83	132.43	543.99	54.76

Movement, Approach, & Intersection Results

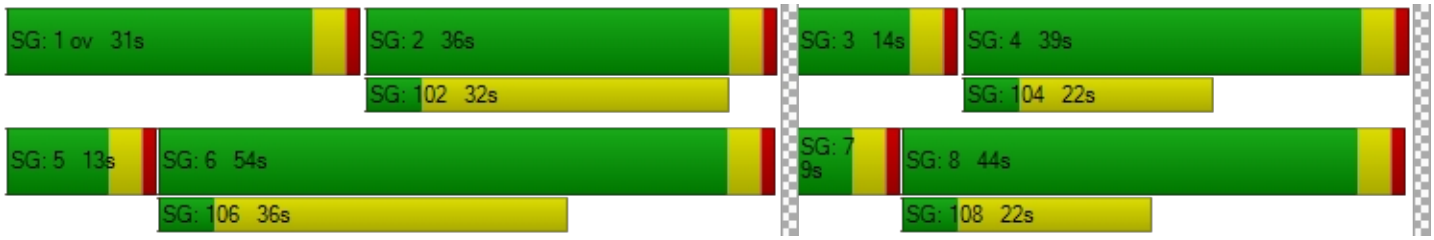
d_M, Delay for Movement [s/veh]	81.68	26.47	23.40	67.77	39.99	40.72	70.78	56.23	12.77	93.04	47.69	31.30
Movement LOS	F	C	C	E	D	D	E	F	B	F	D	C
d_A, Approach Delay [s/veh]	46.74			44.15			51.22			52.44		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	49.71											
Intersection LOS	D											
Intersection V/C	0.731											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.661	2.564	3.155	3.162
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	533	667	583
d_b, Bicycle Delay [s]	20.42	32.27	26.67	30.10
l_b,int, Bicycle LOS Score for Intersection	3.307	1.989	3.050	2.558
Bicycle LOS	C	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	61.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	461	1014	285	315	855	219	288	1137	236	200	635	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	461	1014	285	315	855	219	288	1137	236	200	635	138
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	267	75	83	225	58	76	299	62	53	167	36
Total Analysis Volume [veh/h]	485	1067	300	332	900	231	303	1197	248	211	668	145
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	28	40	0	28	40	40	12	40	0	12	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	24	40	40	24	40	52	8	32	32	8	32	60
g / C, Green / Cycle	0.20	0.34	0.34	0.20	0.33	0.43	0.07	0.27	0.27	0.07	0.27	0.50
(v / s)_i Volume / Saturation Flow Rate	0.27	0.21	0.19	0.18	0.17	0.14	0.09	0.23	0.15	0.06	0.13	0.09
s, saturation flow rate [veh/h]	1810	5176	1615	1810	5176	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	362	1739	542	358	1726	700	234	1379	430	234	1379	803
d1, Uniform Delay [s]	48.00	33.33	32.50	47.31	32.27	22.47	56.00	41.99	38.14	55.61	37.06	16.65
k, delay calibration	0.50	0.50	0.50	0.26	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	170.64	1.63	4.02	20.45	1.13	1.26	138.97	1.80	1.22	11.89	0.26	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.34	0.61	0.55	0.93	0.52	0.33	1.29	0.87	0.58	0.90	0.48	0.18
d, Delay for Lane Group [s/veh]	218.64	34.96	36.52	67.76	33.40	23.73	194.97	43.79	39.36	67.49	37.33	16.76
Lane Group LOS	F	C	D	E	C	C	F	D	D	E	D	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	27.91	8.88	7.69	11.73	7.20	4.55	8.06	11.43	6.47	3.56	5.55	2.24
50th-Percentile Queue Length [ft/ln]	697.82	222.00	192.33	293.35	179.89	113.84	201.61	285.78	161.73	88.88	138.79	55.90
95th-Percentile Queue Length [veh/ln]	42.05	13.77	12.24	17.35	11.59	8.05	13.71	16.98	10.64	6.40	9.42	4.02
95th-Percentile Queue Length [ft/ln]	1051.23	344.18	306.05	433.79	289.87	201.33	342.77	424.40	266.01	159.98	235.39	100.61

Movement, Approach, & Intersection Results

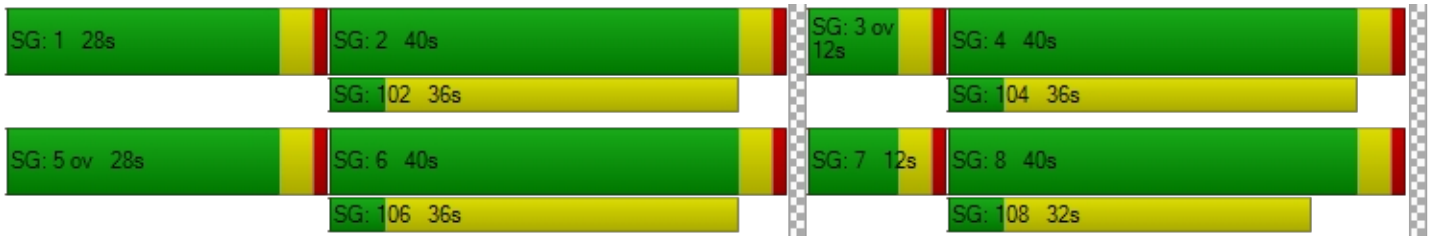
d_M, Delay for Movement [s/veh]	218.64	34.96	36.52	67.76	33.40	23.73	194.97	43.79	39.36	67.49	37.33	16.76
Movement LOS	F	C	D	E	C	C	F	D	D	E	D	B
d_A, Approach Delay [s/veh]	83.32			39.67			69.36			40.63		
Approach LOS	F			D			E			D		
d_I, Intersection Delay [s/veh]	61.64											
Intersection LOS	E											
Intersection V/C	0.733											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.132	3.187	3.204	3.174
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	600	600
d_b, Bicycle Delay [s]	29.40	29.40	29.40	29.40
l_b,int, Bicycle LOS Score for Intersection	2.578	2.364	2.521	2.123
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	33.884

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	214	0	211	0	0	0	0	1511	226	195	887	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	214	0	211	0	0	0	0	1511	226	195	887	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	0	56	0	0	0	0	398	59	51	233	0
Total Analysis Volume [veh/h]	225	0	222	0	0	0	0	1591	238	205	934	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	33.88	0.00	0.80	0.00	0.00	0.00	0.00	0.02	0.00	0.61	0.01	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	10000.0	1203.82	864.11	11.57	9.86	0.00	0.00	30.69	0.00	0.00
Movement LOS	F	F	F	F	F	B	A	A	A	D	A	A
95th-Percentile Queue Length [veh/ln]	57.19	57.19	57.19	0.00	0.00	0.00	0.00	0.00	0.00	3.76	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1429.86	1429.86	1429.86	0.00	0.00	0.00	0.00	0.00	0.00	93.99	0.00	0.00
d_A, Approach Delay [s/veh]	10000.00			693.17			0.00			5.52		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	1310.77											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	80.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.948

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	155	758	152	189	618	80	287	1101	198	444	647	154
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	758	152	189	618	80	287	1101	198	444	647	154
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	199	40	50	163	21	76	290	52	117	170	41
Total Analysis Volume [veh/h]	163	798	160	199	651	84	302	1159	208	467	681	162
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	34	0	16	36	0	28	38	0	32	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	30	30	12	32	32	22	34	34	28	40	40
g / C, Green / Cycle	0.08	0.25	0.25	0.10	0.27	0.27	0.18	0.28	0.28	0.23	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.09	0.26	0.26	0.11	0.20	0.20	0.17	0.32	0.13	0.26	0.19	0.10
s, saturation flow rate [veh/h]	1810	1900	1791	1810	1900	1825	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	151	475	448	181	507	487	332	1025	458	422	1206	538
d1, Uniform Delay [s]	55.00	45.00	45.00	54.00	40.20	40.20	48.04	43.00	35.37	46.00	32.85	29.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.21	0.13	0.11	0.47	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	58.04	51.32	52.96	62.03	9.36	9.72	16.27	62.68	0.71	74.70	0.42	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	1.04	1.04	1.10	0.74	0.74	0.91	1.13	0.45	1.11	0.56	0.30
d, Delay for Lane Group [s/veh]	113.04	96.32	97.96	116.03	49.56	49.92	64.31	105.68	36.08	120.70	33.26	29.95
Lane Group LOS	F	F	F	F	D	D	E	F	D	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.98	20.78	19.79	8.57	11.39	10.99	10.33	23.94	5.10	21.25	8.17	3.52
50th-Percentile Queue Length [ft/ln]	174.58	519.47	494.82	214.24	284.68	274.66	258.27	598.58	127.62	531.16	204.27	88.10
95th-Percentile Queue Length [veh/ln]	11.63	28.90	27.72	13.86	16.92	16.42	15.60	34.42	8.81	30.50	12.86	6.34
95th-Percentile Queue Length [ft/ln]	290.69	722.39	693.03	346.51	423.03	410.55	390.05	860.57	220.25	762.57	321.46	158.57

Movement, Approach, & Intersection Results

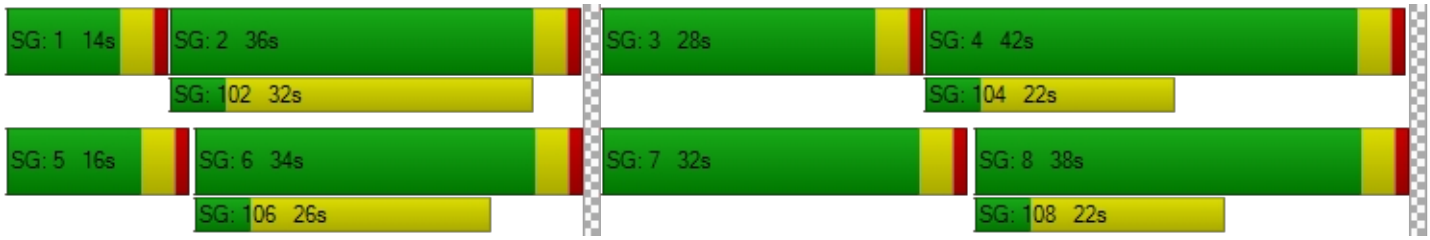
d_M, Delay for Movement [s/veh]	113.04	96.95	97.96	116.03	49.71	49.92	64.31	105.68	36.08	120.70	33.26	29.95
Movement LOS	F	F	F	F	D	D	E	F	D	F	C	C
d_A, Approach Delay [s/veh]	99.43			63.86			89.52			64.02		
Approach LOS	F			E			F			E		
d_I, Intersection Delay [s/veh]	80.33											
Intersection LOS	F											
Intersection V/C	0.948											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.792	2.743	2.890	2.928
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	533	567	633
d_b, Bicycle Delay [s]	33.75	32.27	30.82	28.02
l_b,int, Bicycle LOS Score for Intersection	2.484	2.330	2.937	2.640
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	58.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.892

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	160	1095	230	220	750	156	227	958	199	287	615	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	1095	230	220	750	156	227	958	199	287	615	181
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	288	61	58	197	41	60	252	52	76	162	48
Total Analysis Volume [veh/h]	168	1153	242	232	789	164	239	1008	209	302	647	191
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	41	0	19	43	0	24	36	0	24	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	37	37	15	39	39	18	32	32	20	34	34
g / C, Green / Cycle	0.11	0.31	0.31	0.13	0.33	0.33	0.15	0.27	0.27	0.17	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.09	0.32	0.15	0.13	0.22	0.10	0.13	0.28	0.13	0.17	0.18	0.12
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	195	1115	498	226	1178	526	268	965	431	302	1032	461
d1, Uniform Delay [s]	52.67	41.50	33.76	52.50	34.89	30.36	50.17	44.00	37.06	50.00	37.33	34.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.21	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.68	36.01	3.37	34.54	3.03	1.54	9.92	27.18	0.85	33.65	0.63	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	1.03	0.49	1.03	0.67	0.31	0.89	1.04	0.49	1.00	0.63	0.41
d, Delay for Lane Group [s/veh]	63.35	77.51	37.13	87.04	37.93	31.91	60.08	71.18	37.91	83.65	37.97	35.37
Lane Group LOS	E	F	D	F	D	C	E	F	D	F	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.55	21.84	6.21	8.96	10.38	3.80	7.77	17.82	5.28	11.83	8.34	4.61
50th-Percentile Queue Length [ft/ln]	138.81	546.07	155.20	224.10	259.54	95.04	194.17	445.56	131.94	295.71	208.41	115.26
95th-Percentile Queue Length [veh/ln]	9.42	30.16	10.29	14.03	15.67	6.84	12.34	25.41	9.04	17.48	13.07	8.13
95th-Percentile Queue Length [ft/ln]	235.43	753.99	257.35	350.67	391.65	171.08	308.43	635.36	226.12	437.02	326.78	203.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.35	77.51	37.13	87.04	37.93	31.91	60.08	71.18	37.91	83.65	37.97	35.37
Movement LOS	E	F	D	F	D	C	E	F	D	F	D	D
d_A, Approach Delay [s/veh]	69.73			46.71			64.58			49.63		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	58.94											
Intersection LOS	E											
Intersection V/C	0.892											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.008	3.078	2.864	2.894
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	650	533	533
d_b, Bicycle Delay [s]	28.70	27.34	32.27	32.27
l_b,int, Bicycle LOS Score for Intersection	2.849	2.537	2.761	2.500
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	161.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.345

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	216	751	240	192	353	128	391	1737	457	177	973	180
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	216	751	240	192	353	128	391	1737	457	177	973	180
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	198	63	51	93	34	103	457	120	47	256	47
Total Analysis Volume [veh/h]	227	791	253	202	372	135	412	1828	481	186	1024	189
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	12	30	30	12	30	30	33	69	69	9	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	26	35	8	26	47	17	65	77	5	53	53
g / C, Green / Cycle	0.07	0.22	0.29	0.07	0.22	0.39	0.14	0.54	0.64	0.04	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.06	0.22	0.16	0.11	0.10	0.08	0.12	0.96	0.30	0.05	0.33	0.33
s, saturation flow rate [veh/h]	3514	3618	1615	1810	3618	1615	3514	1900	1615	3514	1900	1799
c, Capacity [veh/h]	234	784	471	121	784	634	502	1029	1036	146	837	793
d1, Uniform Delay [s]	55.88	47.00	35.70	56.00	41.04	24.14	49.95	27.50	10.97	57.50	27.87	28.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.28	0.28
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.81	34.42	4.34	311.32	2.06	0.77	3.42	353.24	1.50	133.05	3.30	3.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.97	1.01	0.54	1.67	0.47	0.21	0.82	1.78	0.46	1.27	0.74	0.75
d, Delay for Lane Group [s/veh]	76.69	81.42	40.04	367.32	43.09	24.91	53.37	380.74	12.47	190.55	31.17	31.70
Lane Group LOS	E	F	D	F	D	C	D	F	B	F	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.10	15.37	6.79	14.08	5.04	2.69	6.24	128.81	6.64	4.93	15.26	14.75
50th-Percentile Queue Length [ft/ln]	102.55	384.20	169.66	352.01	125.98	67.34	155.91	3220.37	165.92	123.14	381.56	368.66
95th-Percentile Queue Length [veh/ln]	7.38	21.91	11.06	23.12	8.72	4.85	10.33	203.47	10.86	8.87	21.67	21.04
95th-Percentile Queue Length [ft/ln]	184.60	547.77	276.47	577.92	218.02	121.22	258.30	5086.64	271.55	221.66	541.74	526.11

Movement, Approach, & Intersection Results

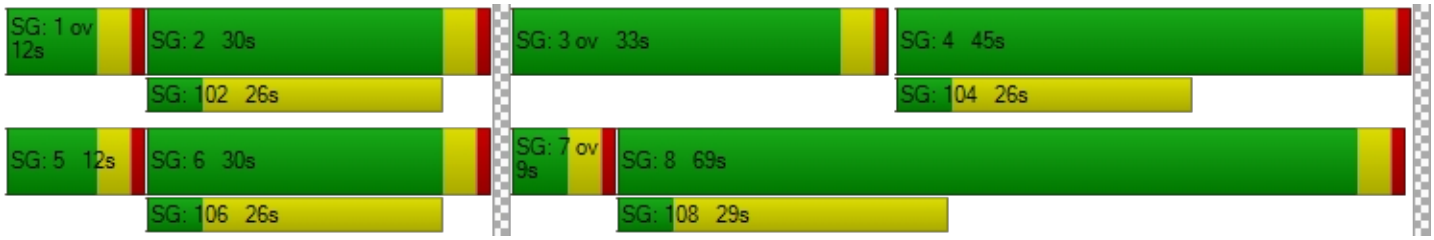
d_M, Delay for Movement [s/veh]	76.69	81.42	40.04	367.32	43.09	24.91	53.37	380.74	12.47	190.55	31.38	31.70
Movement LOS	E	F	D	F	D	C	D	F	B	F	C	C
d_A, Approach Delay [s/veh]	72.34			132.00			266.07			52.59		
Approach LOS	E			F			F			D		
d_I, Intersection Delay [s/veh]	161.16											
Intersection LOS	F											
Intersection V/C	1.345											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.931	2.810	3.181	3.066
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	1083	683
d_b, Bicycle Delay [s]	36.82	36.82	12.60	26.00
l_b,int, Bicycle LOS Score for Intersection	2.608	2.145	6.049	2.714
Bicycle LOS	B	B	F	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	68.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.906

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	162	1374	310	103	1160	115	95	758	123	160	607	67
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	1374	310	103	1160	115	95	758	123	160	607	67
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	362	82	27	305	30	25	199	32	42	160	18
Total Analysis Volume [veh/h]	171	1446	326	108	1221	121	100	798	129	168	639	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	42	0	11	38	0	11	52	0	15	56	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	38	38	7	34	34	7	48	48	11	52	52
g / C, Green / Cycle	0.09	0.32	0.32	0.06	0.28	0.28	0.06	0.40	0.40	0.09	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.09	0.33	0.33	0.06	0.25	0.25	0.06	0.42	0.08	0.09	0.34	0.04
s, saturation flow rate [veh/h]	1810	3618	1728	1810	3618	1814	1810	1900	1615	1810	1900	1615
c, Capacity [veh/h]	166	1146	547	106	1025	514	106	760	646	166	823	700
d1, Uniform Delay [s]	54.50	41.00	41.00	56.50	40.93	40.93	56.32	36.00	23.48	54.50	29.03	20.15
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.30	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	40.66	38.65	53.47	46.73	10.17	18.16	29.52	46.54	0.15	35.70	4.39	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	1.04	1.05	1.02	0.87	0.87	0.95	1.05	0.20	1.01	0.78	0.10
d, Delay for Lane Group [s/veh]	95.16	79.65	94.47	103.23	51.10	59.09	85.84	82.54	23.63	90.20	33.42	20.22
Lane Group LOS	F	F	F	F	D	E	F	F	C	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.88	22.83	24.05	4.57	13.92	15.09	3.88	31.51	2.43	6.65	16.41	1.20
50th-Percentile Queue Length [ft/ln]	171.90	570.64	601.33	114.13	347.93	377.33	97.07	787.65	60.66	166.18	410.31	30.02
95th-Percentile Queue Length [veh/ln]	11.30	31.54	33.23	8.12	20.04	21.46	6.99	42.21	4.37	10.93	23.06	2.16
95th-Percentile Queue Length [ft/ln]	282.57	788.49	830.86	203.10	500.88	536.62	174.73	1055.21	109.19	273.19	576.41	54.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	95.16	82.22	94.47	103.23	53.24	59.09	85.84	82.54	23.63	90.20	33.42	20.22
Movement LOS	F	F	F	F	D	E	F	F	C	F	C	C
d_A, Approach Delay [s/veh]	85.42			57.45			75.46			43.21		
Approach LOS	F			E			E			D		
d_I, Intersection Delay [s/veh]	68.84											
Intersection LOS	E											
Intersection V/C	0.906											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.162	3.036	2.786	2.661
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	567	800	867
d_b, Bicycle Delay [s]	28.02	30.82	21.60	19.27
l_b,int, Bicycle LOS Score for Intersection	2.628	2.357	3.254	3.008
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	28.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	124	345	276	34	368	42	73	830	117	142	510	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	345	276	34	368	42	73	830	117	142	510	56
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	91	73	9	97	11	19	218	31	37	134	15
Total Analysis Volume [veh/h]	131	363	291	36	387	44	77	874	123	149	537	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	41	0	0	41	0	0	79	0	0	79	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	39	39	39	39	39	39	73	73	73	73	73	73
g / C, Green / Cycle	0.32	0.32	0.32	0.32	0.32	0.32	0.61	0.61	0.61	0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.13	0.19	0.18	0.05	0.20	0.03	0.09	0.46	0.08	0.26	0.28	0.04
s, saturation flow rate [veh/h]	972	1900	1615	791	1900	1615	835	1900	1615	574	1900	1615
c, Capacity [veh/h]	180	610	518	169	610	518	436	1164	989	219	1164	989
d1, Uniform Delay [s]	53.16	34.21	33.76	46.77	34.76	28.45	19.93	16.68	9.75	42.31	12.56	9.35
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.28	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.36	4.25	4.35	2.87	4.98	0.32	0.19	2.54	0.06	3.67	0.29	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.60	0.56	0.21	0.63	0.08	0.18	0.75	0.12	0.68	0.46	0.06
d, Delay for Lane Group [s/veh]	75.52	38.46	38.11	49.64	39.74	28.77	20.12	19.22	9.81	45.98	12.84	9.38
Lane Group LOS	E	D	D	D	D	C	C	B	A	D	B	A
Critical Lane Group	No	No	No	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	5.10	9.58	7.63	1.11	10.44	0.94	1.33	17.08	1.35	4.49	7.61	0.62
50th-Percentile Queue Length [ft/ln]	127.59	239.45	190.86	27.74	260.95	23.48	33.30	426.97	33.82	112.33	190.30	15.55
95th-Percentile Queue Length [veh/ln]	8.81	14.65	12.17	2.00	15.74	1.69	2.40	23.86	2.43	7.97	12.14	1.12
95th-Percentile Queue Length [ft/ln]	220.21	366.34	304.14	49.94	393.41	42.27	59.95	596.40	60.87	199.23	303.42	27.99

Movement, Approach, & Intersection Results

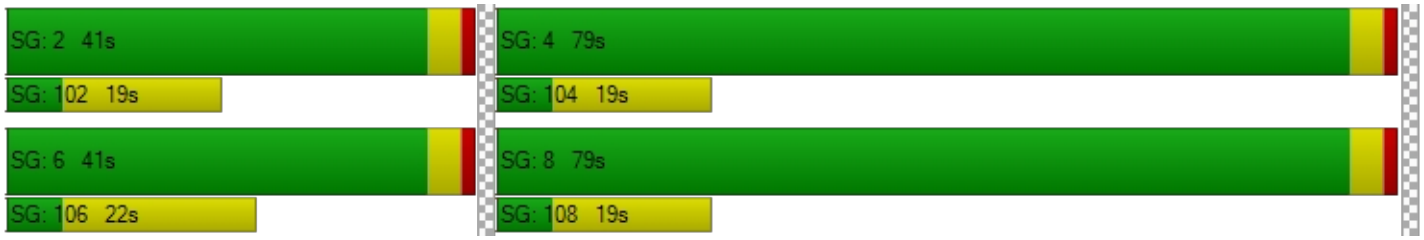
d_M, Delay for Movement [s/veh]	75.52	38.46	38.11	49.64	39.74	28.77	20.12	19.22	9.81	45.98	12.84	9.38
Movement LOS	E	D	D	D	D	C	C	B	A	D	B	A
d_A, Approach Delay [s/veh]	44.52			39.47			18.21			19.20		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	28.41											
Intersection LOS	C											
Intersection V/C	0.664											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.710	2.491	2.768	2.746
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	617	1250	1250
d_b, Bicycle Delay [s]	28.70	28.70	8.44	8.44
l_b,int, Bicycle LOS Score for Intersection	2.855	2.330	3.332	2.789
Bicycle LOS	C	B	C	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	45.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	222	968	191	155	817	90	111	779	237	164	390	103
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	222	968	191	155	817	90	111	779	237	164	390	103
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	255	50	41	215	24	29	205	62	43	103	27
Total Analysis Volume [veh/h]	234	1019	201	163	860	95	117	820	249	173	411	108
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	47	0	17	42	0	23	39	0	17	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	48	48	13	43	43	10	30	30	13	34	34
g / C, Green / Cycle	0.14	0.40	0.40	0.10	0.36	0.36	0.08	0.25	0.25	0.11	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.13	0.33	0.33	0.09	0.26	0.26	0.06	0.23	0.15	0.10	0.22	0.07
s, saturation flow rate [veh/h]	1810	1900	1793	1810	1900	1834	1810	3618	1615	1810	1900	1615
c, Capacity [veh/h]	261	762	719	190	688	664	146	913	407	196	532	452
d1, Uniform Delay [s]	50.48	32.03	32.24	52.83	32.81	32.82	54.22	43.38	39.66	52.75	39.69	33.33
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.22	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.59	9.51	10.67	10.63	6.02	6.24	9.75	3.51	1.49	12.12	4.87	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.82	0.83	0.86	0.71	0.71	0.80	0.90	0.61	0.88	0.77	0.24
d, Delay for Lane Group [s/veh]	61.06	41.53	42.92	63.46	38.83	39.06	63.97	46.89	41.15	64.87	44.57	33.60
Lane Group LOS	E	D	D	E	D	D	E	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.66	17.86	17.40	5.39	13.14	12.74	3.87	12.13	6.66	5.79	11.79	2.48
50th-Percentile Queue Length [ft/ln]	191.48	446.38	434.95	134.72	328.58	318.56	96.74	303.29	166.45	144.85	294.71	61.91
95th-Percentile Queue Length [veh/ln]	12.20	24.79	24.24	9.20	19.09	18.60	6.97	17.84	10.89	9.74	17.42	4.46
95th-Percentile Queue Length [ft/ln]	304.95	619.63	605.97	229.89	477.22	464.92	174.13	446.09	272.24	243.54	435.48	111.44

Movement, Approach, & Intersection Results

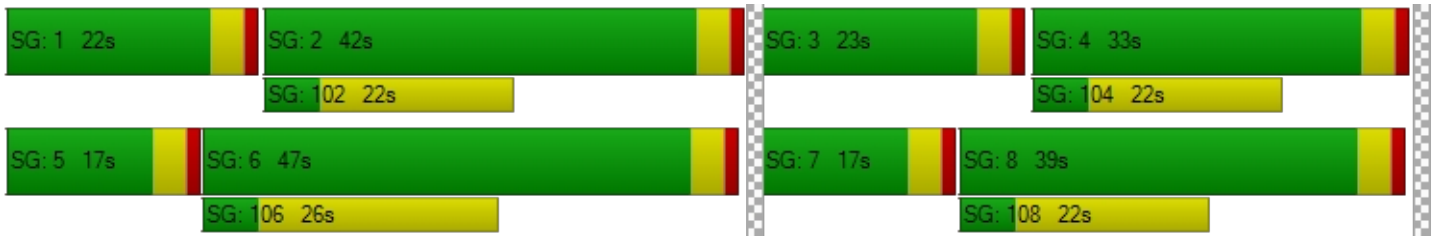
d_M, Delay for Movement [s/veh]	61.06	42.07	42.92	63.46	38.93	39.06	63.97	46.89	41.15	64.87	44.57	33.60
Movement LOS	E	D	D	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	45.24			42.52			47.37			47.93		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.54											
Intersection LOS	D											
Intersection V/C	0.745											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.849	2.776	2.691	2.773
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	633	583	483
d_b, Bicycle Delay [s]	24.70	28.02	30.10	34.50
l_b,int, Bicycle LOS Score for Intersection	2.759	2.482	2.538	2.701
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.644

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	125	1135	65	121	824	141	183	535	142	75	353	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	1135	65	121	824	141	183	535	142	75	353	59
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	299	17	32	217	37	48	141	37	20	93	16
Total Analysis Volume [veh/h]	132	1195	68	127	867	148	193	563	149	79	372	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	49	0	14	47	0	19	46	0	11	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	61	61	10	60	60	15	26	26	7	18	18
g / C, Green / Cycle	0.09	0.51	0.51	0.08	0.50	0.50	0.12	0.22	0.22	0.06	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.33	0.34	0.07	0.27	0.27	0.11	0.19	0.19	0.04	0.12	0.12
s, saturation flow rate [veh/h]	1810	1900	1864	1810	1900	1805	1810	1900	1765	1810	1900	1807
c, Capacity [veh/h]	159	965	947	151	956	908	220	418	388	101	292	278
d1, Uniform Delay [s]	53.84	21.85	21.89	54.22	20.38	20.40	51.83	45.32	45.32	55.96	48.61	48.69
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.13	0.13	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.49	3.53	3.63	11.80	2.22	2.34	10.61	7.35	7.87	12.55	3.99	4.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.66	0.66	0.84	0.54	0.54	0.88	0.88	0.88	0.79	0.76	0.77
d, Delay for Lane Group [s/veh]	64.33	25.38	25.52	66.03	22.60	22.74	62.43	52.66	53.19	68.51	52.60	53.06
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.38	13.86	13.70	4.27	10.36	9.89	6.35	11.45	10.70	2.71	6.67	6.45
50th-Percentile Queue Length [ft/ln]	109.56	346.54	342.39	106.85	259.08	247.36	158.78	286.31	267.44	67.82	166.74	161.21
95th-Percentile Queue Length [veh/ln]	7.82	19.97	19.76	7.66	15.64	15.05	10.48	17.00	16.06	4.88	10.91	10.61
95th-Percentile Queue Length [ft/ln]	195.39	499.19	494.12	191.61	391.07	376.33	262.10	425.06	401.54	122.08	272.63	265.33

Movement, Approach, & Intersection Results

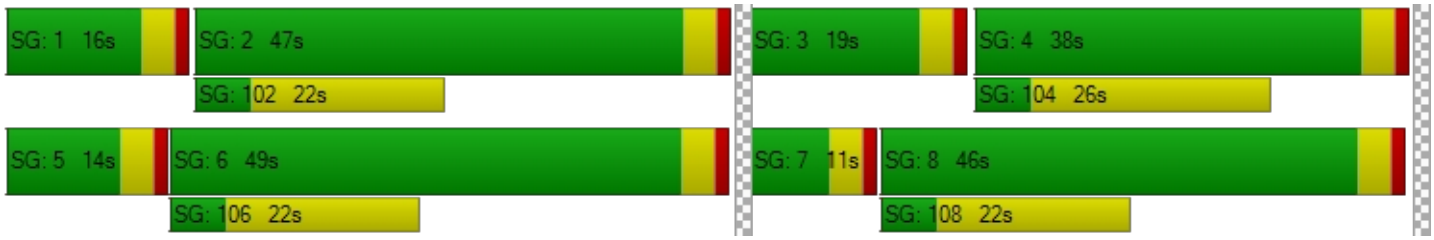
d_M, Delay for Movement [s/veh]	64.33	25.45	25.52	66.03	22.66	22.74	62.43	52.84	53.19	68.51	52.79	53.06
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	29.13			27.49			54.95			55.24		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	37.95											
Intersection LOS	D											
Intersection V/C	0.644											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.801	2.889	2.619	2.563
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	717	700	567
d_b, Bicycle Delay [s]	23.44	24.70	25.35	30.82
l_b,int, Bicycle LOS Score for Intersection	2.710	2.502	2.306	1.983
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	37.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.892

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1053	317	220	769	0	0	0	0	225	0	107
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1053	317	220	769	0	0	0	0	225	0	107
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	277	83	58	202	0	0	0	0	59	0	28
Total Analysis Volume [veh/h]	0	1108	334	232	809	0	0	0	0	237	0	113
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	30	74	0	20	64	0	0	26	0	0	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	70	70	16	86	86	22	22	22	22
g / C, Green / Cycle	0.00	0.58	0.58	0.13	0.72	0.72	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.58	0.21	0.13	0.43	0.00	0.00	0.00	0.18	0.07
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1900	1615	1728	1615	1309	1615
c, Capacity [veh/h]	2	1108	942	241	1360	1156	347	296	300	296
d1, Uniform Delay [s]	0.00	24.99	13.13	51.69	8.44	0.00	0.00	0.00	49.88	43.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	26.96	1.05	19.14	1.92	0.00	0.00	0.00	10.13	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	1.00	0.35	0.96	0.59	0.00	0.00	0.00	0.79	0.38
d, Delay for Lane Group [s/veh]	0.00	51.95	14.18	70.84	10.36	0.00	0.00	0.00	60.01	43.84
Lane Group LOS	A	D	B	E	B	A	A	A	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	37.55	4.91	8.20	9.99	0.00	0.00	0.00	7.91	3.02
50th-Percentile Queue Length [ft/ln]	0.00	938.81	122.69	205.08	249.72	0.00	0.00	0.00	197.66	75.59
95th-Percentile Queue Length [veh/ln]	0.00	47.60	8.54	12.90	15.17	0.00	0.00	0.00	12.52	5.44
95th-Percentile Queue Length [ft/ln]	0.00	1190.05	213.52	322.52	379.31	0.00	0.00	0.00	312.94	136.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	51.95	14.18	70.84	10.36	0.00	0.00	0.00	0.00	60.01	60.01	43.84
Movement LOS	A	D	B	E	B	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	43.20			23.84			0.00			54.78		
Approach LOS	D			C			A			D		
d_I, Intersection Delay [s/veh]	37.52											
Intersection LOS	D											
Intersection V/C	0.892											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.137	0.000	1.955	2.253
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1167	1000	367	367
d_b, Bicycle Delay [s]	10.42	15.00	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	3.939	3.277	1.560	2.137
Bicycle LOS	D	C	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	59.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.890

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	160	1769	125	43	1113	69	105	158	379	139	75	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	1769	125	43	1113	69	105	158	379	139	75	82
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	466	33	11	293	18	28	42	100	37	20	22
Total Analysis Volume [veh/h]	168	1862	132	45	1172	73	111	166	399	146	79	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	64	0	9	56	0	14	33	0	14	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	61	61	4	52	52	9	29	29	10	30
g / C, Green / Cycle	0.11	0.51	0.51	0.03	0.43	0.43	0.08	0.24	0.24	0.08	0.25
(v / s)_i Volume / Saturation Flow Rate	0.09	0.52	0.54	0.02	0.32	0.05	0.06	0.09	0.25	0.08	0.09
s, saturation flow rate [veh/h]	1810	1900	1857	1810	3618	1615	1810	1900	1615	1810	1740
c, Capacity [veh/h]	195	965	943	61	1570	701	138	459	390	151	433
d1, Uniform Delay [s]	52.66	29.51	29.51	57.47	28.43	20.13	54.56	37.81	45.50	54.84	37.40
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.44	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.66	37.69	45.50	16.15	3.28	0.30	10.46	0.48	48.64	27.12	0.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	1.03	1.06	0.74	0.75	0.10	0.81	0.36	1.02	0.97	0.38
d, Delay for Lane Group [s/veh]	63.32	67.20	75.01	73.63	31.72	20.43	65.02	38.29	94.14	81.96	37.95
Lane Group LOS	E	F	F	E	C	C	E	D	F	F	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.55	36.59	37.80	1.63	14.57	1.28	3.70	4.13	16.80	5.53	4.10
50th-Percentile Queue Length [ft/ln]	138.79	914.76	945.05	40.67	364.22	32.00	92.56	103.36	419.95	138.27	102.55
95th-Percentile Queue Length [veh/ln]	9.42	47.76	50.08	2.93	20.83	2.30	6.66	7.44	23.83	9.39	7.38
95th-Percentile Queue Length [ft/ln]	235.39	1194.05	1251.99	73.20	520.72	57.60	166.62	186.04	595.74	234.69	184.59

Movement, Approach, & Intersection Results

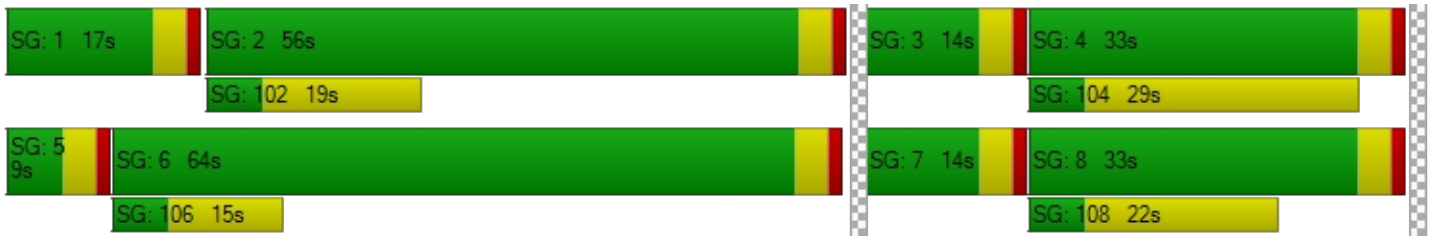
d_M, Delay for Movement [s/veh]	63.32	70.83	75.01	73.63	31.72	20.43	65.02	38.29	94.14	81.96	37.95	37.95
Movement LOS	E	E	E	E	C	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	70.50			32.54			75.64			58.61		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	59.42											
Intersection LOS	E											
Intersection V/C	0.890											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.098	3.076	2.389	2.168
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	867	483	483
d_b, Bicycle Delay [s]	15.00	19.27	34.50	34.50
l_b,int, Bicycle LOS Score for Intersection	3.343	2.624	2.675	2.073
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	361.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.421

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	99	681	0	0	642	46	90	0	185	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	681	0	0	642	46	90	0	185	0	0	0
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	179	0	0	169	12	24	0	49	0	0	0
Total Analysis Volume [veh/h]	104	717	0	0	676	48	95	0	195	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.01	0.00	0.00	0.01	0.00	1.42	0.00	0.44	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.59	0.00	0.00	0.00	0.00	0.00	361.90	0.00	19.38	0.00	0.00	0.00
Movement LOS	A	A			A	A	F		C			
95th-Percentile Queue Length [veh/ln]	0.40	0.40	0.00	0.00	0.00	0.00	7.98	0.00	2.20	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	9.91	9.91	0.00	0.00	0.00	0.00	199.54	0.00	55.11	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1.22			0.00			131.58			0.00		
Approach LOS	A			A			F			A		
d_I, Intersection Delay [s/veh]	21.34											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	26.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.665

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1216	155	206	939	0	6	0	34	223	0	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1216	155	206	939	0	6	0	34	223	0	131
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	320	41	54	247	0	2	0	9	59	0	34
Total Analysis Volume [veh/h]	0	1280	163	217	988	0	6	0	36	235	0	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	25	39	0	39	53	0	0	9	0	0	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	65	65	17	82	82	4	4	18	18
g / C, Green / Cycle	0.00	0.55	0.55	0.14	0.68	0.68	0.03	0.03	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.00	0.39	0.39	0.12	0.26	0.26	0.00	0.02	0.13	0.09
s, saturation flow rate [veh/h]	1810	1900	1826	1810	1900	1900	1810	1470	1781	1615
c, Capacity [veh/h]	1	1036	996	250	1297	1297	57	46	270	245
d1, Uniform Delay [s]	0.00	20.18	20.30	50.66	8.16	8.16	56.47	57.70	49.72	47.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	4.06	4.35	8.99	0.85	0.85	0.80	23.95	8.34	2.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.71	0.71	0.87	0.38	0.38	0.11	0.78	0.87	0.56
d, Delay for Lane Group [s/veh]	0.00	24.24	24.65	59.65	9.02	9.02	57.28	81.65	58.06	49.21
Lane Group LOS	A	C	C	E	A	A	E	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	15.79	15.46	7.00	5.43	5.43	0.19	1.39	7.50	3.97
50th-Percentile Queue Length [ft/ln]	0.00	394.72	386.62	174.96	135.83	135.83	4.74	34.81	187.50	99.21
95th-Percentile Queue Length [veh/ln]	0.00	22.31	21.91	11.34	9.26	9.26	0.34	2.51	11.99	7.14
95th-Percentile Queue Length [ft/ln]	0.00	557.63	547.85	283.42	231.40	231.40	8.54	62.66	299.78	178.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	24.42	24.65	59.65	9.02	9.02	57.28	57.28	81.65	58.06	58.06	49.21
Movement LOS	A	C	C	E	A	A	E	E	F	E	E	D
d_A, Approach Delay [s/veh]	24.44			18.13			78.17			54.79		
Approach LOS	C			B			E			D		
d_I, Intersection Delay [s/veh]	26.39											
Intersection LOS	C											
Intersection V/C	0.665											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	817	83	483
d_b, Bicycle Delay [s]	30.10	21.00	55.10	34.50
l_b,int, Bicycle LOS Score for Intersection	2.750	2.554	1.594	2.175
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	39.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.811

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	1	1458	200	372	841	1	0	1	0	107	0	258
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1458	200	372	841	1	0	1	0	107	0	258
Peak Hour Factor	0.9460	0.9460	0.9460	0.9500	0.9460	0.9500	0.9500	0.9500	0.9460	0.9460	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	385	53	98	222	0	0	0	0	28	0	68
Total Analysis Volume [veh/h]	1	1541	211	392	889	1	0	1	0	113	0	272
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	43	49	0	28	34	0	24	30	0	13	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	58	58	24	81	81	0	13	9	22
g / C, Green / Cycle	0.00	0.48	0.48	0.20	0.68	0.68	0.00	0.11	0.08	0.19
(v / s)_i Volume / Saturation Flow Rate	0.00	0.43	0.13	0.22	0.25	0.00	0.00	0.00	0.06	0.17
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1810	1615
c, Capacity [veh/h]	5	1740	777	362	2454	1095	1	210	136	299
d1, Uniform Delay [s]	59.72	28.17	18.60	48.00	8.23	6.21	0.00	47.47	54.76	47.91
k, delay calibration	0.11	0.50	0.50	0.35	0.50	0.50	0.11	0.11	0.11	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.55	7.06	0.86	64.11	0.42	0.00	0.00	0.01	12.26	13.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.89	0.27	1.08	0.36	0.00	0.00	0.00	0.83	0.91
d, Delay for Lane Group [s/veh]	80.27	35.22	19.46	112.11	8.65	6.22	0.00	47.48	67.02	61.26
Lane Group LOS	F	D	B	F	A	A	A	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.06	21.08	3.69	17.20	4.76	0.01	0.00	0.03	3.83	9.04
50th-Percentile Queue Length [ft/ln]	1.44	527.02	92.24	430.09	118.98	0.21	0.00	0.68	95.77	226.02
95th-Percentile Queue Length [veh/ln]	0.10	28.61	6.64	25.05	8.34	0.01	0.00	0.05	6.90	13.97
95th-Percentile Queue Length [ft/ln]	2.59	715.26	166.03	626.33	208.42	0.37	0.00	1.23	172.39	349.30

Movement, Approach, & Intersection Results

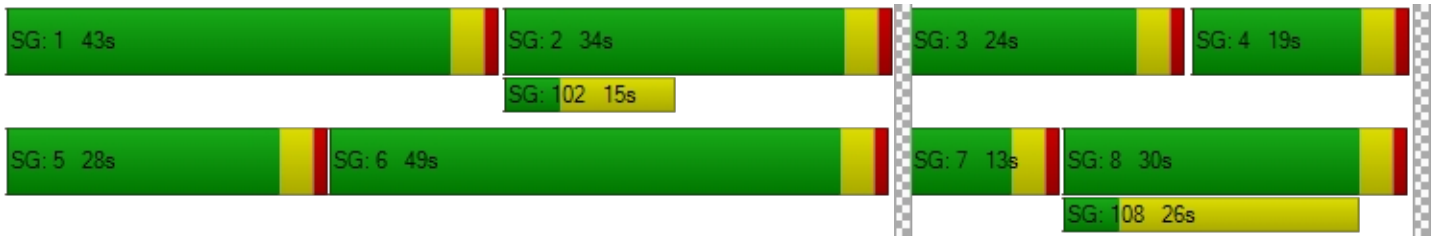
d_M, Delay for Movement [s/veh]	80.27	35.22	19.46	112.11	8.65	6.22	0.00	47.48	47.48	67.02	61.26	61.26
Movement LOS	F	D	B	F	A	A	A	D	D	E	E	E
d_A, Approach Delay [s/veh]	33.35			40.28			47.48			62.95		
Approach LOS	C			D			D			E		
d_I, Intersection Delay [s/veh]	39.28											
Intersection LOS	D											
Intersection V/C	0.811											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.993	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	500	433	250
d_b, Bicycle Delay [s]	23.44	33.75	36.82	45.94
l_b,int, Bicycle LOS Score for Intersection	3.006	2.617	1.561	2.195
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	218.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.874

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	360	65	223	346	92	235	278	51	36	296	159
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	360	65	223	346	92	235	278	51	36	296	159
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	95	17	59	91	24	62	73	13	9	78	42
Total Analysis Volume [veh/h]	52	379	68	235	364	97	247	293	54	38	312	167
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	431	412	696	540	412	374	406
Degree of Utilization, x	1.14	0.17	1.87	1.45	0.13	0.93	0.41

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	16.35	0.59	46.23	28.12	0.45	10.03	1.97
95th-Percentile Queue Length [ft]	408.69	14.64	1155.63	702.89	11.22	250.80	49.21
Approach Delay [s/veh]	104.54		425.85	220.99		48.29	
Approach LOS	F		F	F		E	
Intersection Delay [s/veh]	218.90						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	62	1046	50	87	896	112	156	331	78	40	235	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	1046	50	87	896	112	156	331	78	40	235	152
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	275	13	23	236	29	41	87	21	11	62	40
Total Analysis Volume [veh/h]	65	1101	53	92	943	118	164	348	82	42	247	160
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	56	0	13	53	0	23	31	0	20	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	67	67	8	69	69	13	26	26	4	17	17
g / C, Green / Cycle	0.05	0.56	0.56	0.06	0.58	0.58	0.11	0.21	0.21	0.03	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.04	0.31	0.31	0.05	0.28	0.28	0.09	0.10	0.05	0.02	0.11	0.12
s, saturation flow rate [veh/h]	1810	1900	1869	1810	1900	1827	1810	3618	1615	1810	1900	1658
c, Capacity [veh/h]	85	1059	1042	116	1091	1049	194	768	343	60	262	229
d1, Uniform Delay [s]	56.50	16.93	16.93	55.39	15.20	15.21	52.60	41.20	39.23	57.44	50.22	50.46
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.96	2.05	2.08	11.59	1.61	1.68	9.68	0.42	0.36	14.00	6.04	8.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.55	0.55	0.80	0.50	0.50	0.85	0.45	0.24	0.70	0.81	0.84
d, Delay for Lane Group [s/veh]	69.46	18.97	19.02	66.98	16.81	16.88	62.29	41.62	39.58	71.44	56.26	58.73
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.26	10.53	10.38	3.12	9.01	8.70	5.37	4.54	2.05	1.50	6.66	6.19
50th-Percentile Queue Length [ft/ln]	56.38	263.18	259.59	77.94	225.24	217.45	134.26	113.57	51.31	37.38	166.48	154.72
95th-Percentile Queue Length [veh/ln]	4.06	15.85	15.67	5.61	13.93	13.53	9.17	8.04	3.69	2.69	10.89	10.27
95th-Percentile Queue Length [ft/ln]	101.48	396.21	391.70	140.29	348.30	338.36	229.27	200.95	92.35	67.29	272.29	256.72

Movement, Approach, & Intersection Results

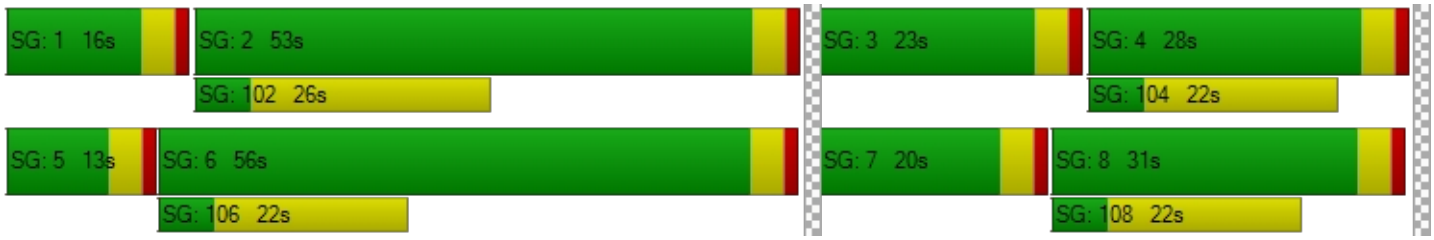
d_M, Delay for Movement [s/veh]	69.46	18.99	19.02	66.98	16.84	16.88	62.29	41.62	39.58	71.44	56.59	58.73
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	21.69			20.85			47.04			58.74		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	30.69											
Intersection LOS	C											
Intersection V/C	0.564											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.761	2.887	2.635	2.621
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	817	450	400
d_b, Bicycle Delay [s]	19.27	21.00	36.04	38.40
l_b,int, Bicycle LOS Score for Intersection	2.565	2.511	2.050	1.930
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	42.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.695

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	131	1197	184	82	935	94	124	512	115	124	310	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	1197	184	82	935	94	124	512	115	124	310	55
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	315	48	22	246	25	33	135	30	33	82	14
Total Analysis Volume [veh/h]	138	1260	194	86	984	99	131	539	121	131	326	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	65	0	11	61	0	14	30	0	14	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	51	51	7	47	47	10	36	36	10	36	36
g / C, Green / Cycle	0.09	0.42	0.42	0.06	0.39	0.39	0.08	0.30	0.30	0.08	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.08	0.39	0.40	0.05	0.29	0.29	0.07	0.18	0.18	0.07	0.10	0.10
s, saturation flow rate [veh/h]	1810	1900	1813	1810	1900	1840	1810	1900	1781	1810	1900	1802
c, Capacity [veh/h]	164	808	771	106	746	723	151	569	534	151	569	540
d1, Uniform Delay [s]	53.68	32.38	32.77	55.86	31.14	31.15	54.35	35.84	35.86	54.35	32.81	32.85
k, delay calibration	0.11	0.30	0.31	0.11	0.18	0.18	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.74	10.76	13.28	13.89	2.34	2.44	13.83	4.58	4.90	13.83	1.65	1.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.91	0.93	0.81	0.74	0.74	0.87	0.60	0.60	0.87	0.34	0.35
d, Delay for Lane Group [s/veh]	64.42	43.14	46.05	69.75	33.48	33.59	68.18	40.42	40.76	68.18	34.46	34.62
Lane Group LOS	E	D	D	E	C	C	E	D	D	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.59	22.04	22.16	2.98	13.93	13.53	4.49	9.20	8.69	4.49	4.73	4.56
50th-Percentile Queue Length [ft/ln]	114.68	550.94	553.89	74.52	348.26	338.28	112.18	229.95	217.29	112.18	118.20	113.91
95th-Percentile Queue Length [veh/ln]	8.10	29.74	29.87	5.37	20.05	19.56	7.96	14.17	13.53	7.96	8.29	8.06
95th-Percentile Queue Length [ft/ln]	202.49	743.41	746.87	134.14	501.29	489.10	199.03	354.30	338.16	199.03	207.34	201.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.42	44.35	46.05	69.75	33.53	33.59	68.18	40.55	40.76	68.18	34.52	34.62
Movement LOS	E	D	D	E	C	C	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	46.30			36.20			45.16			43.10		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.77											
Intersection LOS	D											
Intersection V/C	0.695											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.928	2.894	2.579	2.575
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	950	433	433
d_b, Bicycle Delay [s]	14.50	16.54	36.82	36.82
l_b,int, Bicycle LOS Score for Intersection	2.873	2.524	2.212	1.984
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.638

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	32	974	77	41	767	297	352	370	16	57	188	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	974	77	41	767	297	352	370	16	57	188	24
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	256	20	11	202	78	93	97	4	15	49	6
Total Analysis Volume [veh/h]	34	1025	81	43	807	313	371	389	17	60	198	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	23	0	9	23	0	62	64	0	24	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	58	58	4	59	59	27	36	36	5	15	15
g / C, Green / Cycle	0.03	0.49	0.49	0.03	0.49	0.49	0.22	0.30	0.30	0.04	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.29	0.29	0.02	0.31	0.31	0.21	0.20	0.01	0.03	0.10	0.02
s, saturation flow rate [veh/h]	1810	1900	1852	1810	1900	1722	1810	1900	1615	1810	1900	1615
c, Capacity [veh/h]	52	925	901	58	931	844	407	576	490	81	234	199
d1, Uniform Delay [s]	57.72	22.42	22.42	57.60	22.57	22.60	45.34	36.63	29.44	56.61	51.50	46.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.48	2.94	3.02	17.16	3.23	3.59	8.16	1.39	0.03	12.26	8.18	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.61	0.61	0.75	0.63	0.63	0.91	0.68	0.03	0.74	0.85	0.13
d, Delay for Lane Group [s/veh]	71.20	25.35	25.44	74.76	25.79	26.19	53.50	38.02	29.47	68.87	59.67	47.14
Lane Group LOS	E	C	C	E	C	C	D	D	C	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.22	12.03	11.75	1.57	12.79	11.73	11.64	10.17	0.35	2.07	6.36	0.68
50th-Percentile Queue Length [ft/ln]	30.38	300.74	293.87	39.24	319.69	293.21	291.01	254.25	8.83	51.87	158.90	17.12
95th-Percentile Queue Length [veh/ln]	2.19	17.72	17.38	2.83	18.65	17.35	17.24	15.40	0.64	3.73	10.49	1.23
95th-Percentile Queue Length [ft/ln]	54.68	442.94	434.44	70.63	466.30	433.63	430.90	385.01	15.90	93.37	262.27	30.81

Movement, Approach, & Intersection Results

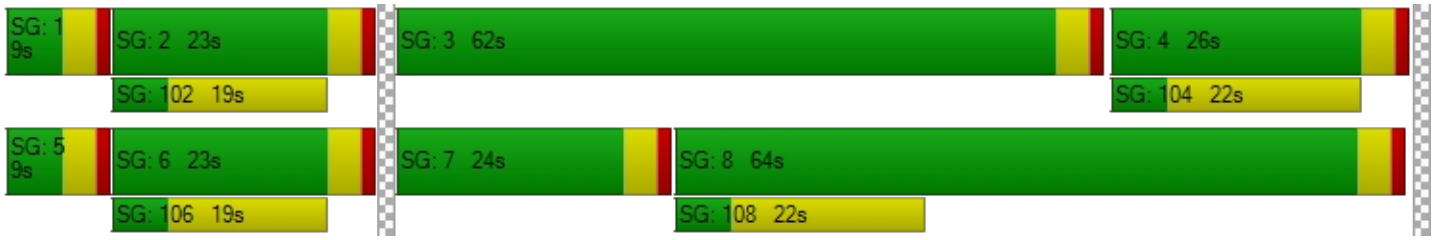
d_M, Delay for Movement [s/veh]	71.20	25.39	25.44	74.76	25.90	26.19	53.50	38.02	29.47	68.87	59.67	47.14
Movement LOS	E	C	C	E	C	C	D	D	C	E	E	D
d_A, Approach Delay [s/veh]	26.76			27.79			45.23			60.52		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	34.22											
Intersection LOS	C											
Intersection V/C	0.638											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.710	2.819	2.469	2.340
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	1000	367
d_b, Bicycle Delay [s]	42.50	42.50	15.00	40.02
l_b,int, Bicycle LOS Score for Intersection	2.500	2.519	2.842	2.027
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.638

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	162	1461	183	160	882	2	5	108	99	185	116	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	1461	183	160	882	2	5	108	99	185	116	124
Peak Hour Factor	0.9500	0.9720	0.9500	0.9720	0.9720	0.9720	0.9720	0.9500	0.9500	0.9500	0.9500	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	376	48	41	227	1	1	28	26	49	31	32
Total Analysis Volume [veh/h]	171	1503	193	165	907	2	5	114	104	195	122	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	39	19	0	47	27	0	9	33	0	21	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	59	59	13	59	59	1	17	15	31
g / C, Green / Cycle	0.11	0.49	0.49	0.11	0.49	0.49	0.01	0.14	0.12	0.26
(v / s)_i Volume / Saturation Flow Rate	0.09	0.31	0.31	0.09	0.18	0.00	0.00	0.12	0.11	0.14
s, saturation flow rate [veh/h]	1810	3618	1792	1810	5176	1615	1810	1752	1810	1743
c, Capacity [veh/h]	204	1778	881	198	2529	789	12	249	223	451
d1, Uniform Delay [s]	52.19	22.58	22.63	52.34	19.03	15.71	59.37	50.41	51.69	38.48
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.91	1.76	3.55	8.72	0.40	0.01	21.08	9.32	10.27	1.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.64	0.64	0.83	0.36	0.00	0.41	0.87	0.87	0.55
d, Delay for Lane Group [s/veh]	61.10	24.34	26.18	61.06	19.42	15.72	80.45	59.73	61.96	39.54
Lane Group LOS	E	C	C	E	B	B	F	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.55	12.01	12.41	5.35	5.28	0.03	0.22	7.05	6.39	6.50
50th-Percentile Queue Length [ft/ln]	138.70	300.21	310.22	133.71	131.95	0.74	5.56	176.17	159.83	162.57
95th-Percentile Queue Length [veh/ln]	9.41	17.69	18.19	9.14	9.05	0.05	0.40	11.40	10.54	10.69
95th-Percentile Queue Length [ft/ln]	235.27	442.29	454.64	228.52	226.14	1.33	10.00	285.00	263.50	267.13

Movement, Approach, & Intersection Results

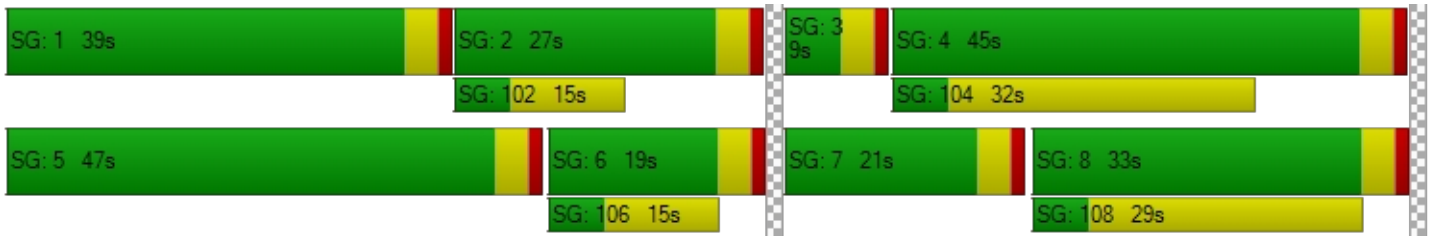
d_M, Delay for Movement [s/veh]	61.10	24.79	26.18	61.06	19.42	15.72	80.45	59.73	59.73	61.96	39.54	39.54
Movement LOS	E	C	C	E	B	B	F	E	E	E	D	D
d_A, Approach Delay [s/veh]	28.26			25.81			60.19			49.37		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	32.11											
Intersection LOS	C											
Intersection V/C	0.638											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.037	3.246	2.124	2.253
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	383	483	683
d_b, Bicycle Delay [s]	45.94	39.20	34.50	26.00
l_b,int, Bicycle LOS Score for Intersection	2.586	2.150	1.928	2.294
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	123.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.238

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	31	376	24	45	336	43	77	327	48	19	271	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	376	24	45	336	43	77	327	48	19	271	47
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	99	6	12	88	11	20	86	13	5	71	12
Total Analysis Volume [veh/h]	33	396	25	47	354	45	81	344	51	20	285	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	454	446	476	379
Degree of Utilization, x	1.18	1.16	1.24	0.93

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	18.14	17.31	20.26	10.05
95th-Percentile Queue Length [ft]	453.57	432.81	506.49	251.31
Approach Delay [s/veh]	135.15	126.65	155.93	62.42
Approach LOS	F	F	F	F
Intersection Delay [s/veh]	123.79			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	156.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.720

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	65	444	87	22	4	34	320	22	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	65	444	87	22	4	34	320	22	1
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	17	117	23	6	1	9	84	6	0
Total Analysis Volume [veh/h]	0	68	467	92	23	4	36	337	23	1
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	650	401
Degree of Utilization, x	1.72	1.07

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	40.10	13.98
95th-Percentile Queue Length [ft]	1002.50	349.56
Approach Delay [s/veh]	358.04	97.76
Approach LOS	F	F
Intersection Delay [s/veh]	156.54	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	44	15	275	49	4	13	68	291	22	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	15	275	49	4	13	68	291	22	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	4	72	13	1	3	18	77	6	2
Total Analysis Volume [veh/h]	46	16	289	52	4	14	72	306	23	6
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	407	421
Degree of Utilization, x	1.08	1.12

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	14.40	15.80
95th-Percentile Queue Length [ft]	360.06	394.89
Approach Delay [s/veh]	101.33	115.57
Approach LOS	F	F
Intersection Delay [s/veh]	156.54	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	3	18	269	45	0	6	44	106	38	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	18	269	45	0	6	44	106	38	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	71	12	0	2	12	28	10	2
Total Analysis Volume [veh/h]	3	19	283	47	0	6	46	112	40	8
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	408	361	394
Degree of Utilization, x	0.86	0.45	0.12

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.51	2.29	0.41
95th-Percentile Queue Length [ft]	212.64	57.27	10.30
Approach Delay [s/veh]	47.08	19.02	
Approach LOS	E	C	
Intersection Delay [s/veh]	156.54		
Intersection LOS	F		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.514

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	105	979	130	96	710	29	24	239	104	64	235	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	979	130	96	710	29	24	239	104	64	235	71
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	258	34	25	187	8	6	63	27	17	62	19
Total Analysis Volume [veh/h]	111	1031	137	101	747	31	25	252	109	67	247	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	57	0	19	56	0	9	26	0	18	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	75	75	8	74	74	3	15	15	6	18	18
g / C, Green / Cycle	0.08	0.62	0.62	0.07	0.62	0.62	0.02	0.12	0.12	0.05	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.06	0.31	0.31	0.06	0.21	0.21	0.01	0.07	0.07	0.04	0.13	0.05
s, saturation flow rate [veh/h]	1810	1900	1823	1810	1900	1873	1810	3618	1615	1810	1900	1615
c, Capacity [veh/h]	139	1183	1135	128	1171	1155	43	452	202	88	285	242
d1, Uniform Delay [s]	54.51	12.45	12.47	54.91	11.12	11.12	57.97	49.39	49.27	56.37	49.84	45.47
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.15	1.53	1.61	10.45	0.77	0.78	11.70	1.08	2.24	12.41	7.89	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.50	0.51	0.79	0.33	0.33	0.58	0.56	0.54	0.76	0.87	0.31
d, Delay for Lane Group [s/veh]	64.66	13.98	14.08	65.36	11.89	11.91	69.67	50.47	51.52	68.78	57.73	46.19
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.69	8.88	8.59	3.38	5.12	5.06	0.89	3.63	3.20	2.31	7.85	2.05
50th-Percentile Queue Length [ft/ln]	92.27	221.98	214.78	84.43	128.09	126.41	22.30	90.70	79.96	57.77	196.35	51.28
95th-Percentile Queue Length [veh/ln]	6.64	13.77	13.40	6.08	8.84	8.74	1.61	6.53	5.76	4.16	12.45	3.69
95th-Percentile Queue Length [ft/ln]	166.09	344.15	334.95	151.98	220.90	218.61	40.14	163.26	143.93	103.99	311.25	92.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.66	14.02	14.08	65.36	11.90	11.91	69.67	50.47	51.52	68.78	57.73	46.19
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	D
d_A, Approach Delay [s/veh]	18.42			18.04			52.01			57.41		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	27.90											
Intersection LOS	C											
Intersection V/C	0.514											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.744	2.707	2.466	2.611
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	883	867	367	517
d_b, Bicycle Delay [s]	18.70	19.27	40.02	33.00
l_b,int, Bicycle LOS Score for Intersection	2.615	2.285	1.878	2.201
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	35.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	111	1336	182	118	923	78	93	302	104	153	203	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	1336	182	118	923	78	93	302	104	153	203	96
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	352	48	31	243	21	24	79	27	40	53	25
Total Analysis Volume [veh/h]	117	1406	192	124	972	82	98	318	109	161	214	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	45	0	14	45	0	14	35	0	26	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	65	65	10	65	65	8	17	17	13	21	21
g / C, Green / Cycle	0.08	0.54	0.54	0.08	0.54	0.54	0.07	0.14	0.14	0.11	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.42	0.43	0.07	0.28	0.28	0.05	0.12	0.12	0.09	0.09	0.09
s, saturation flow rate [veh/h]	1810	1900	1822	1810	1900	1849	1810	1900	1738	1810	1900	1699
c, Capacity [veh/h]	143	1020	978	150	1027	1000	123	268	245	192	341	305
d1, Uniform Delay [s]	54.43	22.37	22.78	54.19	17.60	17.61	55.13	50.09	50.21	52.63	44.22	44.34
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.96	6.24	7.22	10.92	1.88	1.94	11.24	6.32	7.53	9.36	1.05	1.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.79	0.81	0.83	0.52	0.52	0.80	0.82	0.84	0.84	0.48	0.50
d, Delay for Lane Group [s/veh]	65.39	28.61	30.00	65.11	19.48	19.55	66.37	56.41	57.75	61.99	45.28	45.59
Lane Group LOS	E	C	C	E	B	B	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.91	19.31	19.52	4.14	9.74	9.51	3.30	6.92	6.53	5.26	4.50	4.16
50th-Percentile Queue Length [ft/ln]	97.86	482.84	487.88	103.52	243.58	237.75	82.60	172.89	163.27	131.43	112.47	104.05
95th-Percentile Queue Length [veh/ln]	7.05	26.52	26.76	7.45	14.86	14.57	5.95	11.23	10.72	9.02	7.98	7.49
95th-Percentile Queue Length [ft/ln]	176.15	663.03	669.00	186.33	371.56	364.19	148.68	280.71	268.05	225.44	199.43	187.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.39	29.20	30.00	65.11	19.51	19.55	66.37	56.82	57.75	61.99	45.35	45.59
Movement LOS	E	C	C	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	31.76			24.32			58.79			51.03		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	35.51											
Intersection LOS	D											
Intersection V/C	0.711											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.021	2.920	2.498	2.532
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	683	517	717
d_b, Bicycle Delay [s]	26.00	26.00	33.00	24.70
l_b,int, Bicycle LOS Score for Intersection	2.974	2.531	1.993	1.952
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	53.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.890

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	133	233	434	131	316	598	915	1261	105	170	683	394
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	233	434	131	316	598	915	1261	105	170	683	394
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	61	114	34	83	157	241	332	28	45	180	104
Total Analysis Volume [veh/h]	140	245	457	138	333	629	963	1327	111	179	719	415
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	37	0	13	30	0	36	58	0	12	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	33	33	9	31	31	31	32	54	54	8	30	30
g / C, Green / Cycle	0.09	0.28	0.28	0.08	0.26	0.26	0.26	0.27	0.45	0.45	0.07	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.07	0.28	0.08	0.18	0.19	0.19	0.27	0.26	0.07	0.05	0.14	0.26
s, saturation flow rate [veh/h]	1810	3618	1615	1810	1900	1615	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	169	995	444	136	487	414	414	937	2329	727	234	1294	404
d1, Uniform Delay [s]	53.43	33.83	43.50	55.50	40.23	41.20	41.20	44.00	24.40	19.48	55.08	39.20	45.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.47
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.72	0.59	50.33	40.20	7.58	12.33	12.33	21.41	0.22	0.10	5.16	0.38	50.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.25	1.03	1.02	0.68	0.76	0.76	1.03	0.57	0.15	0.76	0.56	1.03
d, Delay for Lane Group [s/veh]	63.15	34.42	93.83	95.70	47.81	53.53	53.53	65.41	24.62	19.58	60.24	39.57	95.81
Lane Group LOS	E	C	F	F	D	D	D	F	C	B	E	D	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.61	2.88	19.25	5.62	9.86	9.97	9.97	16.56	9.24	1.86	2.83	6.20	17.60
50th-Percentile Queue Length [ft/ln]	115.17	71.95	481.17	140.4	246.5	249.1	249.1	414.04	230.90	46.51	70.74	155.01	440.10
95th-Percentile Queue Length [veh/ln]	8.13	5.18	26.92	9.56	15.01	15.14	15.14	23.62	14.22	3.35	5.09	10.28	24.89
95th-Percentile Queue Length [ft/ln]	203.16	129.51	673.00	238.9	375.3	378.5	378.5	590.62	355.51	83.73	127.34	257.11	622.33

Movement, Approach, & Intersection Results

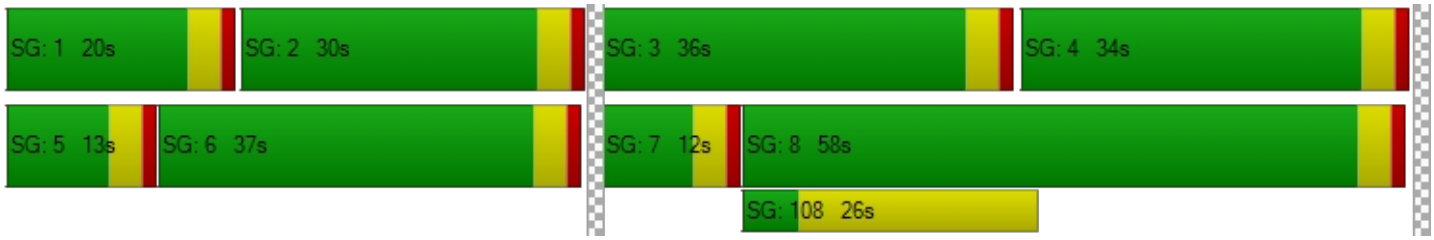
d_M, Delay for Movement [s/veh]	63.15	34.42	93.83	95.70	47.81	53.53	65.41	24.62	19.58	60.24	39.57	95.81
Movement LOS	E	C	F	F	D	D	F	C	B	E	D	F
d_A, Approach Delay [s/veh]	71.44			57.09			40.75			60.16		
Approach LOS	E			E			D			E		
d_I, Intersection Delay [s/veh]	53.00											
Intersection LOS	D											
Intersection V/C	0.890											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.706	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	433	900	500
d_b, Bicycle Delay [s]	31.54	36.82	18.15	33.75
l_b,int, Bicycle LOS Score for Intersection	2.254	2.467	2.880	2.282
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	38.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.536

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	83	54	51	179	47	402	755	367	71	41	381	165
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	54	51	179	47	402	755	367	71	41	381	165
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	14	13	47	12	106	199	97	19	11	100	43
Total Analysis Volume [veh/h]	87	57	54	188	49	423	795	386	75	43	401	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	29	0	28	23	0	35	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	8	20	20	20	31	72	72	4	45	45
g / C, Green / Cycle	0.07	0.07	0.07	0.17	0.17	0.17	0.26	0.60	0.60	0.03	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.03	0.06	0.06	0.15	0.23	0.07	0.05	0.02	0.11	0.11
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1846	2859	3514	5176	1615	1810	3618	1629
c, Capacity [veh/h]	123	129	109	307	313	484	896	3089	964	59	1355	610
d1, Uniform Delay [s]	54.78	53.76	53.95	44.26	44.25	48.57	43.04	10.54	10.23	57.52	26.31	26.47
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.36	2.38	3.42	0.79	0.77	5.07	3.21	0.08	0.16	15.68	0.54	1.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.44	0.49	0.38	0.38	0.87	0.89	0.12	0.08	0.73	0.29	0.30
d, Delay for Lane Group [s/veh]	62.15	56.15	57.37	45.04	45.02	53.65	46.25	10.62	10.38	73.20	26.85	27.75
Lane Group LOS	E	E	E	D	D	D	D	B	B	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.83	1.74	1.68	3.18	3.24	6.50	11.67	1.49	0.87	1.55	4.03	3.95
50th-Percentile Queue Length [ft/ln]	70.70	43.56	41.98	79.56	80.90	162.44	291.86	37.20	21.76	38.77	100.78	98.86
95th-Percentile Queue Length [veh/ln]	5.09	3.14	3.02	5.73	5.83	10.68	17.28	2.68	1.57	2.79	7.26	7.12
95th-Percentile Queue Length [ft/ln]	127.25	78.40	75.57	143.22	145.63	266.95	431.95	66.96	39.17	69.79	181.41	177.94

Movement, Approach, & Intersection Results

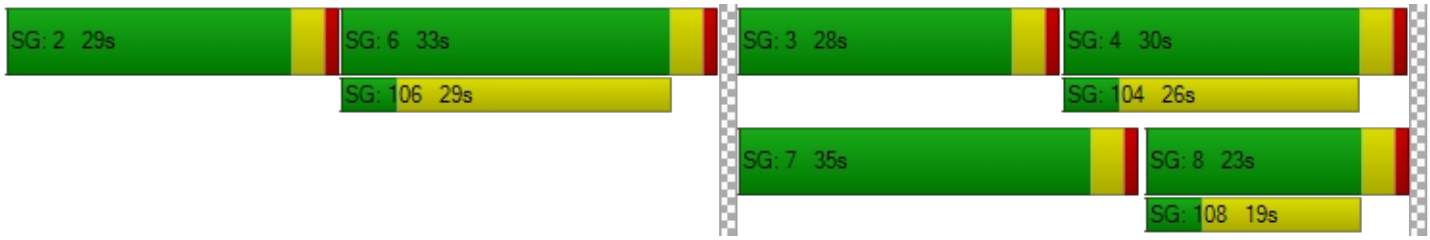
d_M, Delay for Movement [s/veh]	62.15	56.15	57.37	45.03	45.02	53.65	46.25	10.62	10.38	73.20	26.88	27.75
Movement LOS	E	E	E	D	D	D	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	59.12			50.55			33.16			30.34		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	38.61											
Intersection LOS	D											
Intersection V/C	0.536											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.235	2.742	0.000	2.783
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	417	317	433
d_b, Bicycle Delay [s]	34.50	37.60	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.723	2.649	2.250	1.900
Bicycle LOS	A	B	B	A

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	37.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	199	967	109	185	893	223	257	767	358	138	354	108
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	199	967	109	185	893	223	257	767	358	138	354	108
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	254	29	49	235	59	68	202	94	36	93	28
Total Analysis Volume [veh/h]	209	1018	115	195	940	235	271	807	377	145	373	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	39	0	13	37	0	24	58	0	10	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	57	9	57	57	12	32	32	6	27	27
g / C, Green / Cycle	0.08	0.48	0.07	0.47	0.47	0.10	0.27	0.27	0.05	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.06	0.26	0.15	0.08	0.22	0.23	0.04	0.13	0.13
s, saturation flow rate [veh/h]	3514	3618	3514	3618	1615	3514	3618	1615	3514	1900	1750
c, Capacity [veh/h]	268	1723	251	1705	761	344	973	434	176	420	387
d1, Uniform Delay [s]	54.43	22.90	54.78	22.65	19.62	52.92	41.27	41.83	56.48	41.97	42.03
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.88	1.50	5.14	1.29	1.05	4.04	1.90	5.40	9.34	1.38	1.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.59	0.78	0.55	0.31	0.79	0.83	0.87	0.83	0.60	0.61
d, Delay for Lane Group [s/veh]	59.31	24.40	59.91	23.94	20.67	56.96	43.17	47.23	65.82	43.35	43.57
Lane Group LOS	E	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.28	10.67	3.08	9.65	4.27	4.19	11.42	11.23	2.40	6.87	6.42
50th-Percentile Queue Length [ft/ln]	82.08	266.63	76.92	241.15	106.70	104.72	285.61	280.68	60.11	171.86	160.45
95th-Percentile Queue Length [veh/ln]	5.91	16.02	5.54	14.74	7.66	7.54	16.97	16.72	4.33	11.17	10.57
95th-Percentile Queue Length [ft/ln]	147.74	400.52	138.45	368.48	191.40	188.49	424.18	418.06	108.20	279.35	264.32

Movement, Approach, & Intersection Results

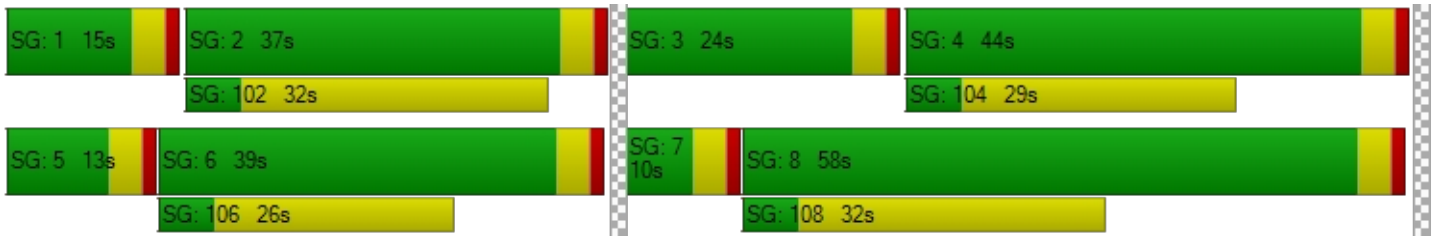
d_M, Delay for Movement [s/veh]	59.31	24.40	0.00	59.91	23.94	20.67	56.96	43.17	47.23	65.82	43.42	43.57
Movement LOS	E	C		E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	30.35			28.50			46.79			48.59		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.37											
Intersection LOS	D											
Intersection V/C	0.612											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.068	2.995	3.018	2.734
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	550	900	667
d_b, Bicycle Delay [s]	30.10	31.54	18.15	26.67
l_b,int, Bicycle LOS Score for Intersection	2.572	2.690	2.760	2.081
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	61.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	87	3	612	4	0	1	0	1147	50	247	378	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	3	612	4	0	1	0	1147	50	247	378	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	1	161	1	0	0	0	302	13	65	99	1
Total Analysis Volume [veh/h]	92	3	644	4	0	1	0	1207	53	260	398	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	46	0	9	33	0	47	45	0	20	18	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	51	51	46	51	0	41	41	16	57	57
g / C, Green / Cycle	0.42	0.42	0.38	0.42	0.00	0.34	0.34	0.13	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.40	0.01	0.00	0.33	0.03	0.14	0.11	0.11
s, saturation flow rate [veh/h]	1439	1509	1615	813	1810	3618	1615	1810	1900	1893
c, Capacity [veh/h]	645	757	619	439	1	1231	550	244	903	899
d1, Uniform Delay [s]	20.53	20.44	36.99	19.98	0.00	39.19	27.00	51.90	18.49	18.50
k, delay calibration	0.11	0.11	0.50	0.11	0.11	0.50	0.50	0.14	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.04	46.77	0.01	0.00	21.37	0.35	48.72	0.57	0.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.07	1.04	0.01	0.00	0.98	0.10	1.06	0.22	0.22
d, Delay for Lane Group [s/veh]	20.57	20.48	83.76	19.99	0.00	60.56	27.35	100.61	19.07	19.07
Lane Group LOS	C	C	F	B	A	E	C	F	B	B
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.75	0.86	25.79	0.08	0.00	20.94	1.10	10.65	3.43	3.42
50th-Percentile Queue Length [ft/ln]	18.70	21.58	644.70	2.07	0.00	523.55	27.48	266.16	85.85	85.60
95th-Percentile Queue Length [veh/ln]	1.35	1.55	35.09	0.15	0.00	28.45	1.98	16.44	6.18	6.16
95th-Percentile Queue Length [ft/ln]	33.66	38.85	877.18	3.73	0.00	711.18	49.47	411.04	154.54	154.08

Movement, Approach, & Intersection Results

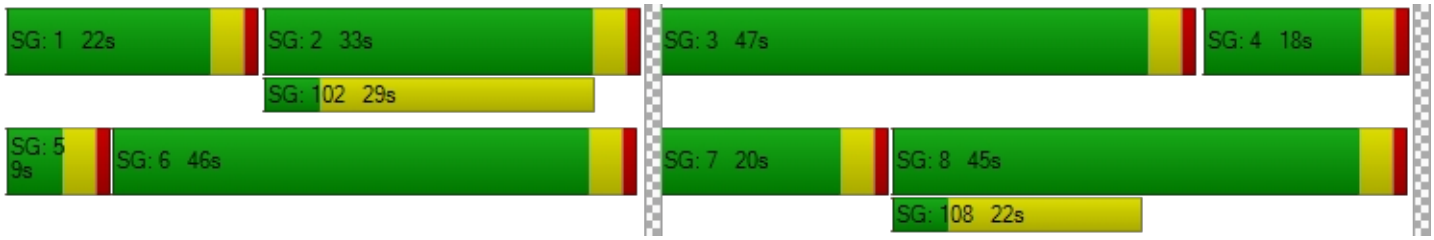
d_M, Delay for Movement [s/veh]	20.57	20.48	83.76	19.99	19.99	19.99	0.00	60.56	27.35	100.61	19.07	19.07
Movement LOS	C	C	F	B	B	B	A	E	C	F	B	B
d_A, Approach Delay [s/veh]	75.63			19.99			59.16			51.10		
Approach LOS	E			B			E			D		
d_I, Intersection Delay [s/veh]	61.65											
Intersection LOS	E											
Intersection V/C	0.882											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.520	0.000	2.988	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	850	850	683	233
d_b, Bicycle Delay [s]	19.84	19.84	26.00	46.82
l_b,int, Bicycle LOS Score for Intersection	2.779	1.568	2.599	2.106
Bicycle LOS	C	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.219

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	153	0	1569	511	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	153	0	1569	511	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	40	0	413	134	0
Total Analysis Volume [veh/h]	0	161	0	1652	538	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.22	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	31.86	11.27	8.51	0.00	0.00	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.83	0.83	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	20.79	20.79	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.27		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.77					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	45.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	73	1312	187	100	1027	253	606	874	361	108	206	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	1312	187	100	1027	253	606	874	361	108	206	88
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	345	49	26	270	67	159	230	95	28	54	23
Total Analysis Volume [veh/h]	77	1381	197	105	1081	266	638	920	380	114	217	93
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	28	0	11	30	30	45	67	0	14	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	43	43	7	45	90	41	45	9	13	13
g / C, Green / Cycle	0.04	0.36	0.36	0.06	0.38	0.75	0.34	0.37	0.08	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.04	0.29	0.29	0.06	0.21	0.16	0.35	0.25	0.06	0.08	0.09
s, saturation flow rate [veh/h]	1810	3618	1781	1810	5176	1615	1810	3618	1810	1900	1712
c, Capacity [veh/h]	75	1294	637	106	1938	1210	618	1351	140	207	186
d1, Uniform Delay [s]	57.50	34.96	34.98	56.48	29.68	4.51	39.50	31.59	54.54	52.04	52.20
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.49	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	53.71	5.79	11.15	39.44	1.16	0.42	44.19	0.61	10.98	6.14	7.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.02	0.82	0.82	0.99	0.56	0.22	1.03	0.68	0.82	0.78	0.80
d, Delay for Lane Group [s/veh]	111.21	40.75	46.13	95.93	30.84	4.93	83.69	32.20	65.52	58.19	59.95
Lane Group LOS	F	D	D	F	C	A	F	C	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.41	14.85	15.60	4.33	8.38	1.87	25.49	11.23	3.82	5.06	4.80
50th-Percentile Queue Length [ft/ln]	85.28	371.32	389.89	108.35	209.53	46.85	637.24	280.85	95.44	126.55	119.89
95th-Percentile Queue Length [veh/ln]	6.14	21.17	22.07	7.75	13.13	3.37	34.52	16.73	6.87	8.75	8.39
95th-Percentile Queue Length [ft/ln]	153.50	529.33	551.81	193.70	328.23	84.33	862.93	418.27	171.79	218.80	209.67

Movement, Approach, & Intersection Results

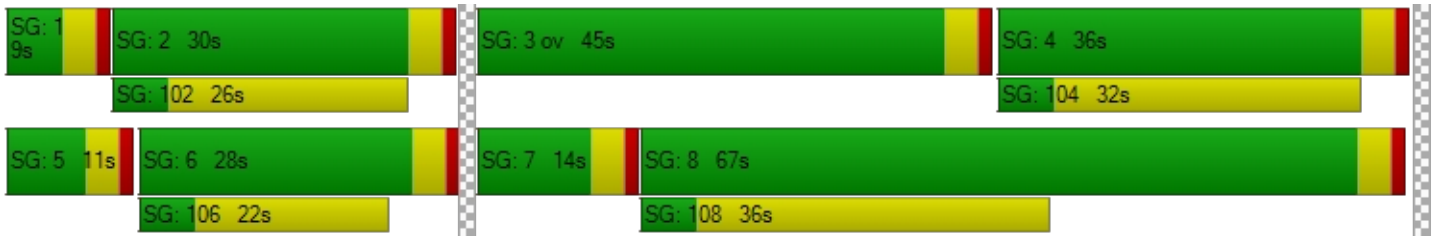
d_M, Delay for Movement [s/veh]	111.21	42.01	46.13	95.93	30.84	4.93	83.69	32.20	0.00	65.52	58.64	59.95
Movement LOS	F	D	D	F	C	A	F	C		E	E	E
d_A, Approach Delay [s/veh]	45.72			30.80			53.29			60.78		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	45.04											
Intersection LOS	D											
Intersection V/C	0.790											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.173	3.175	2.812	2.636
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	433	1050	533
d_b, Bicycle Delay [s]	38.40	36.82	13.54	32.27
l_b,int, Bicycle LOS Score for Intersection	2.470	2.358	2.845	1.909
Bicycle LOS	B	B	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	37.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.793

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	97	357	57	45	276	80	87	703	47	21	298	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	357	57	45	276	80	87	703	47	21	298	39
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	94	15	12	73	21	23	185	12	6	78	10
Total Analysis Volume [veh/h]	102	376	60	47	291	84	92	740	49	22	314	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	23	0	0	23	0	81	88	0	9	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	53	53	8	53	3	48	48
g / C, Green / Cycle	0.44	0.44	0.07	0.44	0.02	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.36	0.27	0.05	0.42	0.01	0.17	0.03
s, saturation flow rate [veh/h]	1492	1572	1810	1879	1810	1900	1615
c, Capacity [veh/h]	689	722	121	828	39	751	639
d1, Uniform Delay [s]	30.19	24.80	55.06	32.38	58.13	26.27	22.50
k, delay calibration	0.50	0.50	0.11	0.16	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.57	3.45	9.45	9.84	11.85	0.37	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.58	0.76	0.95	0.56	0.42	0.06
d, Delay for Lane Group [s/veh]	38.76	28.25	64.51	42.22	69.98	26.65	22.55
Lane Group LOS	D	C	E	D	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	15.31	9.50	3.06	23.71	0.79	6.56	0.73
50th-Percentile Queue Length [ft/ln]	382.67	237.40	76.39	592.64	19.79	164.10	18.32
95th-Percentile Queue Length [veh/ln]	21.72	14.55	5.50	31.69	1.42	10.77	1.32
95th-Percentile Queue Length [ft/ln]	543.08	363.75	137.50	792.26	35.62	269.15	32.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.76	38.76	38.76	28.25	28.25	28.25	64.51	42.22	42.22	69.98	26.65	22.55
Movement LOS	D	D	D	C	C	C	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	38.76			28.25			44.55			28.73		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	37.35											
Intersection LOS	D											
Intersection V/C	0.793											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.169	2.184	2.628	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	1400	200
d_b, Bicycle Delay [s]	42.50	42.50	5.40	48.60
l_b,int, Bicycle LOS Score for Intersection	2.447	2.256	3.013	2.182
Bicycle LOS	B	B	C	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	49.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.820

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	6	64	410	82	3	0	52	296	32	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	64	410	82	3	0	52	296	32	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	17	108	22	1	0	14	78	8	3
Total Analysis Volume [veh/h]	6	67	432	86	3	0	55	312	34	14
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	62	0	0	0	0	62	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	48	48
g / C, Green / Cycle	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.38	0.31
s, saturation flow rate [veh/h]	1553	1337
c, Capacity [veh/h]	659	572
d1, Uniform Delay [s]	34.72	28.65
k, delay calibration	0.32	0.20
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	12.35	3.28
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.73
d, Delay for Lane Group [s/veh]	47.07	31.93
Lane Group LOS	D	C
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	18.87	10.28
50th-Percentile Queue Length [ft/ln]	471.71	257.04
95th-Percentile Queue Length [veh/ln]	25.99	15.54
95th-Percentile Queue Length [ft/ln]	649.81	388.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.07	47.07	47.07	47.07	47.07	31.93	31.93	31.93	31.93	31.93
Movement LOS	D	D	D	D	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	47.07					31.93				
Approach LOS	D					C				
d_I, Intersection Delay [s/veh]	49.52									
Intersection LOS	D									
Intersection V/C	0.820									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.249	2.317
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	967
d_b, Bicycle Delay [s]	16.02	16.02
l_b,int, Bicycle LOS Score for Intersection	2.424	2.131
Bicycle LOS	B	B

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	9	292	450	59	1	7	36	207	38	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	292	450	59	1	7	36	207	38	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	77	118	16	0	2	9	54	10	3
Total Analysis Volume [veh/h]	9	307	474	62	1	7	38	218	40	11
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissiv	Permissiv	Permissiv	Permissiv	ProtPerm	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	29	0	0	9	0	29	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	44	36	44	25	25
g / C, Green / Cycle	0.36	0.30	0.36	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.23	0.29	0.04	0.11	0.03
s, saturation flow rate [veh/h]	1387	1861	1007	1900	1615
c, Capacity [veh/h]	482	555	207	397	338
d1, Uniform Delay [s]	30.24	41.52	29.96	42.41	38.77
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.81	30.84	0.52	5.38	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.97	0.22	0.55	0.15
d, Delay for Lane Group [s/veh]	37.05	72.36	30.48	47.78	39.71
Lane Group LOS	D	E	C	D	D
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.91	20.21	0.87	6.37	1.32
50th-Percentile Queue Length [ft/ln]	197.86	505.37	21.85	159.31	33.12
95th-Percentile Queue Length [veh/ln]	12.53	27.59	1.57	10.51	2.38
95th-Percentile Queue Length [ft/ln]	313.20	689.71	39.33	262.81	59.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.05	37.05	72.36	72.36	72.36	30.48	30.48	47.78	39.71	39.71
Movement LOS	D	D	E	E	E	C	C	D	D	D
d_A, Approach Delay [s/veh]	59.28					43.99				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	49.52									
Intersection LOS	D									
Intersection V/C	0.820									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.498	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	417
d_b, Bicycle Delay [s]	37.60	37.60
l_b,int, Bicycle LOS Score for Intersection	2.459	1.997
Bicycle LOS	B	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	8	18	170	13	4	4	8	58	69	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	18	170	13	4	4	8	58	69	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	5	45	3	1	1	2	15	18	1
Total Analysis Volume [veh/h]	8	19	179	14	4	4	8	61	73	2
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	20	0	0	0	0	20	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	16
g / C, Green / Cycle	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.13	0.04	0.05
s, saturation flow rate [veh/h]	1693	1748	1615
c, Capacity [veh/h]	259	268	215
d1, Uniform Delay [s]	51.99	46.87	47.26
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	8.38	0.54	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.27	0.35
d, Delay for Lane Group [s/veh]	60.36	47.41	48.22
Lane Group LOS	E	D	D
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.32	2.01	2.10
50th-Percentile Queue Length [ft/ln]	183.05	50.36	52.57
95th-Percentile Queue Length [veh/ln]	11.76	3.63	3.79
95th-Percentile Queue Length [ft/ln]	294.00	90.66	94.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.36	60.36	60.36	60.36	60.36	47.41	47.41	47.41	48.22	48.22
Movement LOS	E	E	E	E	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	60.36					47.82				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	49.52									
Intersection LOS	D									
Intersection V/C	0.820									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.032	2.373
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	267	267
d_b, Bicycle Delay [s]	45.07	45.07
l_b,int, Bicycle LOS Score for Intersection	1.875	1.794
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.568

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	194	1108	111	68	694	28	59	392	72	86	246	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	194	1108	111	68	694	28	59	392	72	86	246	92
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	292	29	18	183	7	16	103	19	23	65	24
Total Analysis Volume [veh/h]	204	1166	117	72	731	29	62	413	76	91	259	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	40	56	0	10	26	0	18	42	0	12	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	72	72	6	62	62	5	19	19	8	21	21
g / C, Green / Cycle	0.13	0.60	0.60	0.05	0.52	0.52	0.04	0.16	0.16	0.06	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.11	0.34	0.34	0.04	0.20	0.20	0.03	0.13	0.13	0.05	0.10	0.10
s, saturation flow rate [veh/h]	1810	1900	1840	1810	1900	1875	1810	1900	1799	1810	1900	1728
c, Capacity [veh/h]	237	1136	1100	90	982	969	81	296	280	114	330	300
d1, Uniform Delay [s]	51.06	14.73	14.79	56.39	17.53	17.53	56.67	49.27	49.34	55.45	45.36	45.49
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.85	2.09	2.20	14.47	1.16	1.18	13.59	6.58	7.32	11.83	1.47	1.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.57	0.58	0.80	0.39	0.39	0.76	0.85	0.85	0.80	0.56	0.57
d, Delay for Lane Group [s/veh]	59.92	16.81	16.99	70.87	18.69	18.71	70.25	55.85	56.66	67.28	46.83	47.21
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.58	11.02	10.84	2.52	6.64	6.56	2.17	7.81	7.54	3.09	5.16	4.85
50th-Percentile Queue Length [ft/ln]	164.55	275.38	270.94	63.05	165.98	163.92	54.15	195.35	188.41	77.28	129.02	121.30
95th-Percentile Queue Length [veh/ln]	10.79	16.46	16.24	4.54	10.86	10.76	3.90	12.40	12.04	5.56	8.89	8.46
95th-Percentile Queue Length [ft/ln]	269.74	411.45	405.92	113.49	271.62	268.91	97.48	309.96	300.96	139.11	222.16	211.61

Movement, Approach, & Intersection Results

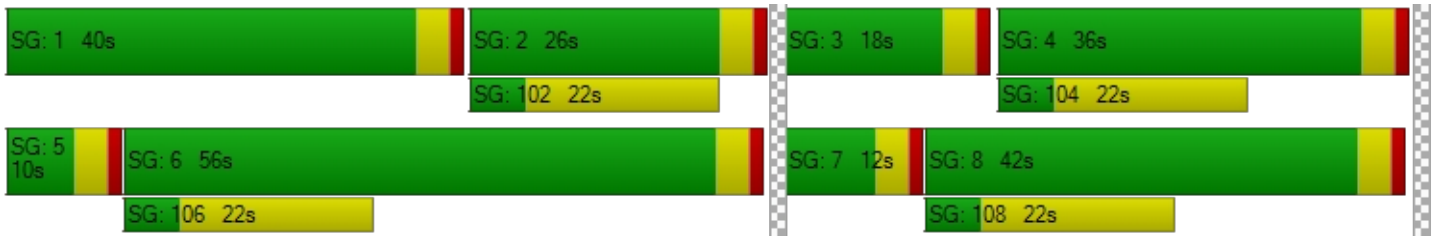
d_M, Delay for Movement [s/veh]	59.92	16.89	16.99	70.87	18.70	18.71	70.25	56.17	56.66	67.28	46.94	47.21
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	22.80			23.22			57.82			51.14		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	32.54											
Intersection LOS	C											
Intersection V/C	0.568											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.780	2.736	2.518	2.639
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	367	633	533
d_b, Bicycle Delay [s]	19.27	40.02	28.02	32.27
l_b,int, Bicycle LOS Score for Intersection	2.786	2.246	2.014	1.928
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	40.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.721

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	206	1262	412	79	1007	70	156	382	154	260	317	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	206	1262	412	79	1007	70	156	382	154	260	317	94
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	332	108	21	265	18	41	101	41	68	83	25
Total Analysis Volume [veh/h]	217	1328	434	83	1060	74	164	402	162	274	334	99
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	50	0	10	40	0	16	36	0	24	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	57	57	6	47	47	12	21	21	20	29	29
g / C, Green / Cycle	0.13	0.47	0.47	0.05	0.39	0.39	0.10	0.18	0.18	0.17	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.12	0.37	0.27	0.05	0.29	0.05	0.09	0.16	0.16	0.15	0.12	0.12
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1717	1810	1900	1753
c, Capacity [veh/h]	241	1705	761	90	1404	627	181	341	308	300	466	430
d1, Uniform Delay [s]	51.21	26.49	22.92	56.75	31.78	23.55	53.44	47.82	47.87	49.22	38.76	38.79
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.14	0.15	0.16	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.49	3.59	3.09	27.45	3.82	0.38	15.26	8.60	9.91	14.89	0.77	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.78	0.57	0.92	0.76	0.12	0.91	0.87	0.87	0.91	0.48	0.48
d, Delay for Lane Group [s/veh]	62.70	30.07	26.01	84.21	35.60	23.93	68.71	56.42	57.78	64.11	39.53	39.64
Lane Group LOS	E	C	C	F	D	C	E	E	E	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.18	16.29	9.39	3.19	13.86	1.42	5.66	9.38	8.64	9.29	5.78	5.37
50th-Percentile Queue Length [ft/ln]	179.56	407.18	234.64	79.84	346.46	35.59	141.44	234.46	216.11	232.21	144.46	134.37
95th-Percentile Queue Length [veh/ln]	11.58	22.91	14.41	5.75	19.96	2.56	9.56	14.40	13.47	14.29	9.72	9.18
95th-Percentile Queue Length [ft/ln]	289.44	572.64	360.25	143.72	499.09	64.06	238.96	360.02	336.65	357.17	243.01	229.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.70	30.07	26.01	84.21	35.60	23.93	68.71	56.78	57.78	64.11	39.57	39.64
Movement LOS	E	C	C	F	D	C	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	32.76			38.20			59.69			49.09		
Approach LOS	C			D			E			D		
d_I, Intersection Delay [s/veh]	40.92											
Intersection LOS	D											
Intersection V/C	0.721											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.164	2.924	2.579	2.632
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	600	533	667
d_b, Bicycle Delay [s]	22.82	29.40	32.27	26.67
l_b,int, Bicycle LOS Score for Intersection	3.192	2.564	2.160	2.143
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	249.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.025

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	426	330	4	363	26	55	337	11	244	86	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	426	330	4	363	26	55	337	11	244	86	50
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	112	87	1	96	7	14	89	3	64	23	13
Total Analysis Volume [veh/h]	0	448	347	4	382	27	58	355	12	257	91	53
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	795	413	425	359	401
Degree of Utilization, x	2.03	1.08	1.13	0.97	0.13

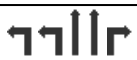
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	55.66	14.44	15.95	10.77	0.45
95th-Percentile Queue Length [ft]	1391.56	361.04	398.65	269.14	11.29
Approach Delay [s/veh]	490.98	99.56	116.02	64.59	
Approach LOS	F	F	F	F	
Intersection Delay [s/veh]	249.10				
Intersection LOS	F				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	37.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	288	1211	252	138	1319	34	84	523	381	198	281	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	1211	252	138	1319	34	84	523	381	198	281	122
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	319	66	36	347	9	22	138	100	52	74	32
Total Analysis Volume [veh/h]	303	1275	265	145	1388	36	88	551	401	208	296	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	41	0	15	40	0	19	52	0	12	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	52	52	11	51	51	8	33	33	8	34	34
g / C, Green / Cycle	0.10	0.43	0.43	0.09	0.42	0.42	0.06	0.28	0.28	0.07	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.09	0.29	0.29	0.08	0.26	0.26	0.05	0.15	0.25	0.06	0.08	0.08
s, saturation flow rate [veh/h]	3514	3618	1738	1810	3618	1875	1810	3618	1615	3514	3618	1615
c, Capacity [veh/h]	351	1563	751	166	1533	795	115	1000	446	234	1012	452
d1, Uniform Delay [s]	53.19	27.15	27.21	53.82	26.90	26.90	55.33	37.07	41.80	55.55	33.91	33.81
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.18	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.29	2.25	4.68	13.21	1.83	3.50	10.23	0.48	10.62	10.82	0.16	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.66	0.67	0.87	0.61	0.61	0.77	0.55	0.90	0.89	0.29	0.28
d, Delay for Lane Group [s/veh]	59.47	29.39	31.89	67.02	28.73	30.40	65.56	37.55	52.43	66.38	34.07	34.15
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.80	12.16	12.29	4.93	10.72	11.48	2.95	6.97	12.65	3.47	3.43	2.98
50th-Percentile Queue Length [ft/ln]	120.07	304.08	307.22	123.17	267.91	287.03	73.73	174.32	316.33	86.81	85.64	74.44
95th-Percentile Queue Length [veh/ln]	8.40	17.88	18.04	8.57	16.09	17.04	5.31	11.30	18.49	6.25	6.17	5.36
95th-Percentile Queue Length [ft/ln]	209.92	447.07	450.95	214.17	402.13	425.95	132.72	282.58	462.17	156.26	154.14	134.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.47	29.86	31.89	67.02	29.28	30.40	65.56	37.55	52.43	66.38	34.07	34.15
Movement LOS	E	C	C	E	C	C	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	35.02			32.79			45.65			44.72		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	37.71											
Intersection LOS	D											
Intersection V/C	0.676											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	3.035	2.740	2.831
Crosswalk LOS	F	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	600	800	683
d_b, Bicycle Delay [s]	28.70	29.40	21.60	26.00
l_b,int, Bicycle LOS Score for Intersection	2.573	2.423	2.418	2.081
Bicycle LOS	B	B	B	B

Sequence

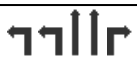
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	71.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.958

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	245	803	754	12	855	73	143	496	334	804	496	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	245	803	754	12	855	73	143	496	334	804	496	80
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	211	198	3	225	19	38	131	88	212	131	21
Total Analysis Volume [veh/h]	258	845	794	13	900	77	151	522	352	846	522	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	53	0	9	48	0	35	28	0	30	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	52	52	2	44	44	12	24	24	26	38	38
g / C, Green / Cycle	0.08	0.44	0.44	0.01	0.37	0.37	0.10	0.20	0.20	0.22	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.07	0.44	0.49	0.01	0.26	0.26	0.08	0.14	0.22	0.24	0.14	0.05
s, saturation flow rate [veh/h]	3514	1900	1615	1810	1900	1848	1810	3618	1615	3514	3618	1615
c, Capacity [veh/h]	293	826	702	27	697	678	184	724	323	761	1139	509
d1, Uniform Delay [s]	54.41	33.90	33.90	58.63	32.55	32.55	52.82	44.88	48.00	47.00	32.90	29.70
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.36	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.49	37.14	75.86	12.34	6.07	6.24	8.72	1.38	68.76	54.68	0.29	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	1.02	1.13	0.48	0.71	0.71	0.82	0.72	1.09	1.11	0.46	0.17
d, Delay for Lane Group [s/veh]	62.90	71.04	109.77	70.96	38.62	38.79	61.54	46.25	116.76	101.68	33.19	29.85
Lane Group LOS	E	F	F	E	D	D	E	D	F	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.20	31.84	34.62	0.49	13.39	13.05	4.91	7.39	15.77	17.07	6.12	1.79
50th-Percentile Queue Length [ft/ln]	104.94	796.06	865.54	12.14	334.64	326.24	122.69	184.81	394.29	426.76	153.07	44.67
95th-Percentile Queue Length [veh/ln]	7.56	41.82	48.35	0.87	19.39	18.97	8.54	11.85	23.31	25.23	10.18	3.22
95th-Percentile Queue Length [ft/ln]	188.90	1045.45	1208.80	21.86	484.65	474.34	213.52	296.28	582.87	630.84	254.53	80.41

Movement, Approach, & Intersection Results

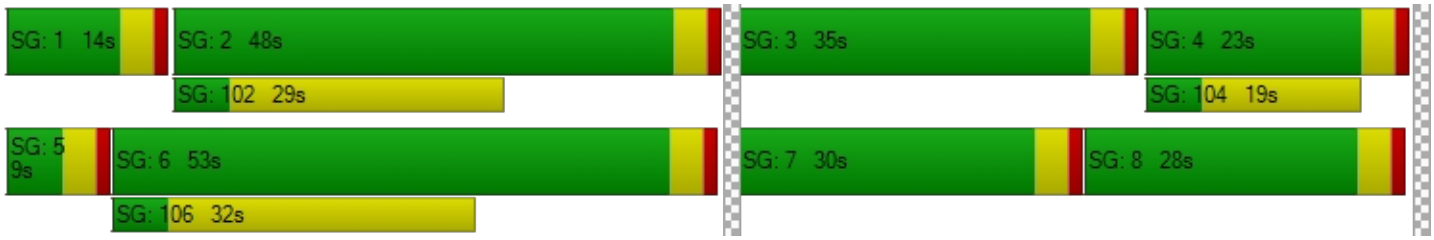
d_M, Delay for Movement [s/veh]	62.90	71.04	109.77	70.96	38.70	38.79	61.54	46.25	116.76	101.68	33.19	29.85
Movement LOS	E	F	F	E	D	D	E	D	F	F	C	C
d_A, Approach Delay [s/veh]	86.14			39.13			72.72			72.90		
Approach LOS	F			D			E			E		
d_I, Intersection Delay [s/veh]	71.32											
Intersection LOS	E											
Intersection V/C	0.958											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.651	2.871	3.080
Crosswalk LOS	F	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	733	400	317
d_b, Bicycle Delay [s]	21.00	24.07	38.40	42.50
l_b,int, Bicycle LOS Score for Intersection	4.690	2.376	2.405	2.758
Bicycle LOS	E	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	70.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.048

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	277	1194	889	112	1219	75	199	506	396	638	407	166
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	277	1194	889	112	1219	75	199	506	396	638	407	166
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	314	234	29	321	20	52	133	104	168	107	44
Total Analysis Volume [veh/h]	292	1257	936	118	1283	79	209	533	417	672	428	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	20	49	0	10	39	0	18	40	40	21	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	60	60	6	50	50	9	21	41	17	29	29
g / C, Green / Cycle	0.13	0.50	0.50	0.05	0.41	0.41	0.08	0.18	0.35	0.14	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.08	0.35	0.58	0.07	0.25	0.05	0.06	0.15	0.26	0.19	0.17	0.17
s, saturation flow rate [veh/h]	3514	3618	1615	1810	5176	1615	3514	3618	1615	3514	1900	1716
c, Capacity [veh/h]	469	1794	801	90	2135	666	272	648	558	498	462	417
d1, Uniform Delay [s]	49.15	23.36	30.24	57.00	27.53	21.77	54.30	47.42	34.62	51.50	41.19	41.27
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.48	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.36	2.31	89.14	153.35	1.26	0.36	4.55	2.70	8.42	160.39	1.78	2.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.70	1.17	1.30	0.60	0.12	0.77	0.82	0.75	1.35	0.68	0.69
d, Delay for Lane Group [s/veh]	50.51	25.67	119.39	210.35	28.79	22.13	58.85	50.12	43.04	211.89	42.98	43.30
Lane Group LOS	D	C	F	F	C	C	E	D	D	F	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.23	13.97	41.93	6.60	9.74	1.45	3.27	7.90	11.95	18.55	8.68	7.95
50th-Percentile Queue Length [ft/ln]	105.73	349.22	1048.20	164.88	243.39	36.32	81.73	197.44	298.77	463.77	217.01	198.84
95th-Percentile Queue Length [veh/ln]	7.60	20.10	58.98	11.56	14.85	2.62	5.88	12.51	17.62	28.92	13.51	12.58
95th-Percentile Queue Length [ft/ln]	190.05	502.46	1474.58	289.06	371.32	65.38	147.11	312.67	440.50	723.11	337.81	314.47

Movement, Approach, & Intersection Results

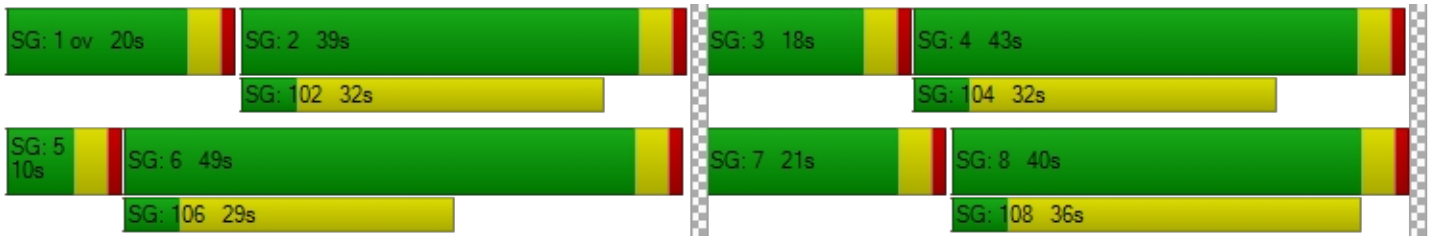
d_M, Delay for Movement [s/veh]	50.51	25.67	119.39	210.35	28.79	22.13	58.85	50.12	43.04	211.89	43.06	43.30
Movement LOS	D	C	F	F	C	C	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	63.89			42.91			49.15			132.08		
Approach LOS	E			D			D			F		
d_I, Intersection Delay [s/veh]	69.95											
Intersection LOS	E											
Intersection V/C	1.048											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.391	3.121	2.979	3.008
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	583	600	650
d_b, Bicycle Delay [s]	23.44	30.10	29.40	27.34
l_b,int, Bicycle LOS Score for Intersection	3.610	2.374	2.516	2.611
Bicycle LOS	D	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.472

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	15	9	4	26	3	46	4	21	48	412	1196	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	9	4	26	3	46	4	21	48	412	1196	16
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	2	1	7	1	12	1	6	13	108	315	4
Total Analysis Volume [veh/h]	16	9	4	27	3	48	4	22	51	434	1259	17
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			
v_di, Inbound Pedestrian Volume crossing th	0				0				0			
v_co, Outbound Pedestrian Volume along th	0				0				0			
v_ci, Inbound Pedestrian Volume along the le	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	89	84	84
g / C, Green / Cycle	0.06	0.06	0.74	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.03	0.05	0.55	0.34	0.34
s, saturation flow rate [veh/h]	1780	1508	889	1900	1891
c, Capacity [veh/h]	146	141	692	1324	1318
d1, Uniform Delay [s]	54.70	55.76	6.71	8.29	8.31
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.63	3.25	5.84	1.26	1.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.55	0.70	0.48	0.48
d, Delay for Lane Group [s/veh]	56.34	59.01	12.56	9.55	9.58
Lane Group LOS	E	E	B	A	A
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.71	2.43	4.86	7.40	7.40
50th-Percentile Queue Length [ft/ln]	42.73	60.78	121.45	184.92	184.98
95th-Percentile Queue Length [veh/ln]	3.08	4.38	8.47	11.86	11.86
95th-Percentile Queue Length [ft/ln]	76.92	109.40	211.82	296.42	296.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.34	56.34	56.34	56.34	59.01	59.01	59.01	59.01	12.56	12.56	9.56	9.58
Movement LOS	E	E	E	E	E	E	E	E	B	B	A	A
d_A, Approach Delay [s/veh]	56.34				59.01				10.39			
Approach LOS	E				E				B			
d_I, Intersection Delay [s/veh]	15.54											
Intersection LOS	B											
Intersection V/C	0.472											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.777	0.000	2.897
Crosswalk LOS	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	500
d_b, Bicycle Delay [s]	45.94	45.94	33.75
l_b,int, Bicycle LOS Score for Intersection	1.607	1.607	2.654
Bicycle LOS	A	A	B

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	11	559	148	26	6	7	105	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	559	148	26	6	7	105	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	147	39	7	2	2	28	1
Total Analysis Volume [veh/h]	12	588	156	27	6	7	111	2
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			
v_di, Inbound Pedestrian Volume crossing th	0				0			
v_co, Outbound Pedestrian Volume along th	0				0			
v_ci, Inbound Pedestrian Volume along the le	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	34	0	0	0	58	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	73	73	73	11
g / C, Green / Cycle	0.01	0.61	0.61	0.61	0.09
(v / s)_i Volume / Saturation Flow Rate	0.01	0.14	0.17	0.11	0.08
s, saturation flow rate [veh/h]	1810	1900	1900	1615	1637
c, Capacity [veh/h]	25	1152	1152	979	156
d1, Uniform Delay [s]	58.73	10.85	11.18	10.50	53.23
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.21	0.48	0.60	0.42	9.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.23	0.28	0.19	0.81
d, Delay for Lane Group [s/veh]	71.93	11.33	11.78	10.92	62.81
Lane Group LOS	E	B	B	B	E
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.45	3.38	4.11	2.23	4.14
50th-Percentile Queue Length [ft/ln]	11.37	84.61	102.74	55.83	103.54
95th-Percentile Queue Length [veh/ln]	0.82	6.09	7.40	4.02	7.45
95th-Percentile Queue Length [ft/ln]	20.47	152.29	184.93	100.50	186.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.93	11.57	11.78	10.92	62.81	62.81	62.81	62.81
Movement LOS	E	B	B	B	E	E	E	E
d_A, Approach Delay [s/veh]	12.34				62.81			
Approach LOS	B				E			
d_I, Intersection Delay [s/veh]	15.54							
Intersection LOS	B							
Intersection V/C	0.472							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.521
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	900
d_b, Bicycle Delay [s]	33.75	18.15
I_b,int, Bicycle LOS Score for Intersection	2.183	1.764
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	335.374

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	211	275	422	360	0	219	325	1125	551	265	571	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	211	275	422	360	0	219	325	1125	551	265	571	167
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	72	111	95	0	58	86	296	145	70	150	44
Total Analysis Volume [veh/h]	222	289	444	379	0	231	342	1184	580	279	601	176
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	228.00	335.37	1.51	0.00	0.00	0.38	0.40	0.01	0.01	0.78	0.01	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	10000.0	10000.0	10000.0	14.31	12.08	0.00	0.00	42.61	0.00	0.00
Movement LOS	F	F	F	F	F	B	B	A	A	E	A	A
95th-Percentile Queue Length [veh/ln]	122.10	122.10	122.10	50.21	50.21	1.74	1.97	0.00	0.00	6.40	0.00	0.00
95th-Percentile Queue Length [ft/ln]	3052.42	3052.42	3052.42	1255.15	1255.15	43.45	49.13	0.00	0.00	159.96	0.00	0.00
d_A, Approach Delay [s/veh]	10000.00			6218.53			1.96			11.26		
Approach LOS	F			F			A			B		
d_I, Intersection Delay [s/veh]	2826.17											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	45.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.788

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	619	1120	319	108	655	46	78	1189	454	177	844	208
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	619	1120	319	108	655	46	78	1189	454	177	844	208
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	163	295	84	28	172	12	21	313	119	47	222	55
Total Analysis Volume [veh/h]	652	1179	336	114	689	48	82	1252	478	186	888	219
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	49	0	12	33	0	12	48	0	11	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	45	45	8	30	30	5	44	44	7	46	46
g / C, Green / Cycle	0.20	0.38	0.38	0.07	0.25	0.25	0.04	0.36	0.36	0.06	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.19	0.33	0.21	0.06	0.20	0.20	0.02	0.35	0.30	0.05	0.30	0.30
s, saturation flow rate [veh/h]	3514	3618	1615	1810	1900	1857	3514	3618	1615	3514	1900	1772
c, Capacity [veh/h]	701	1371	612	121	468	457	140	1312	586	205	724	676
d1, Uniform Delay [s]	47.22	34.34	29.23	55.78	42.41	42.41	56.64	37.26	34.61	56.18	32.83	32.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.32	0.11	0.30	0.31
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.22	7.24	3.52	26.66	13.18	13.47	3.85	4.96	7.98	13.93	5.30	5.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.86	0.55	0.95	0.80	0.80	0.59	0.95	0.82	0.91	0.79	0.79
d, Delay for Lane Group [s/veh]	53.44	41.58	32.75	82.45	55.59	55.88	60.49	42.21	42.58	70.11	38.13	38.86
Lane Group LOS	D	D	C	F	E	E	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.13	16.96	8.16	4.33	12.02	11.79	1.30	18.48	13.76	3.20	15.53	14.74
50th-Percentile Queue Length [ft/ln]	253.33	424.05	203.96	108.19	300.58	294.79	32.45	461.93	344.06	79.89	388.19	368.55
95th-Percentile Queue Length [veh/ln]	15.35	23.72	12.84	7.74	17.71	17.42	2.34	25.53	19.85	5.75	21.99	21.04
95th-Percentile Queue Length [ft/ln]	383.84	592.90	321.07	193.49	442.75	435.58	58.41	638.17	496.16	143.80	549.75	525.97

Movement, Approach, & Intersection Results

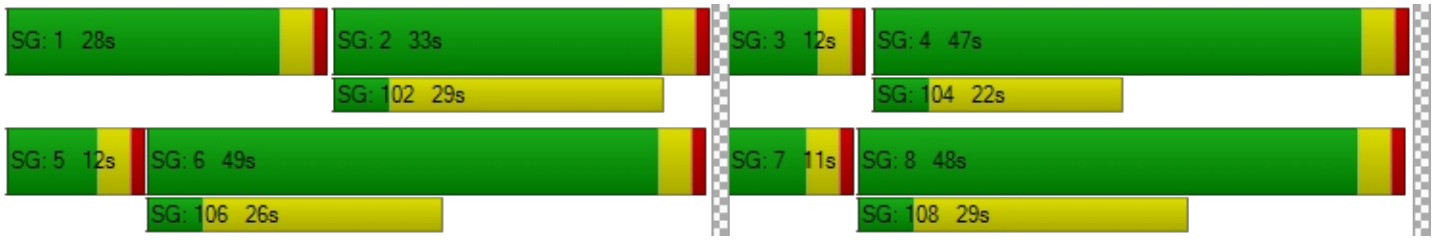
d_M, Delay for Movement [s/veh]	53.44	41.58	32.75	82.45	55.72	55.88	60.49	42.21	42.58	70.11	38.39	38.86
Movement LOS	D	D	C	F	E	E	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	43.78			59.31			43.14			43.03		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	45.59											
Intersection LOS	D											
Intersection V/C	0.788											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.099	2.770	3.083	3.106
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	483	733	717
d_b, Bicycle Delay [s]	23.44	34.50	24.07	24.70
l_b,int, Bicycle LOS Score for Intersection	3.347	2.262	3.055	2.626
Bicycle LOS	C	B	C	B

Sequence

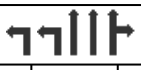
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	52.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	288	1361	814	177	1363	102	333	967	247	709	715	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	1361	814	177	1363	102	333	967	247	709	715	127
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	358	214	47	359	27	88	254	65	187	188	33
Total Analysis Volume [veh/h]	303	1433	857	186	1435	107	351	1018	260	746	753	134
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	14	40	40	10	36	0	34	43	0	27	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	10	43	70	6	39	39	15	32	32	23	41	51
g / C, Green / Cycle	0.08	0.35	0.58	0.05	0.32	0.32	0.12	0.27	0.27	0.19	0.34	0.42
(v / s)_i Volume / Saturation Flow Rate	0.09	0.28	0.53	0.05	0.28	0.28	0.10	0.24	0.24	0.21	0.21	0.05
s, saturation flow rate [veh/h]	3514	5176	1615	3514	3618	1833	3514	3618	1709	3514	3618	2859
c, Capacity [veh/h]	293	1833	935	176	1161	588	431	980	463	674	1229	1210
d1, Uniform Delay [s]	55.00	34.61	22.64	57.00	38.59	38.61	51.31	41.97	41.98	48.50	33.02	20.95
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.27	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.87	3.40	15.04	48.23	9.74	17.31	3.78	2.91	12.96	53.77	0.50	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.78	0.92	1.06	0.88	0.88	0.81	0.89	0.89	1.11	0.61	0.11
d, Delay for Lane Group [s/veh]	88.87	38.01	37.68	105.23	48.33	55.91	55.09	44.87	54.95	102.27	33.52	20.99
Lane Group LOS	F	D	D	F	D	E	E	D	D	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.80	12.89	24.25	3.84	15.66	17.13	5.37	12.62	13.24	15.05	9.17	1.15
50th-Percentile Queue Length [ft/ln]	144.94	322.26	606.28	95.97	391.42	428.21	134.24	315.53	330.95	376.34	229.23	28.86
95th-Percentile Queue Length [veh/ln]	9.86	18.78	32.33	6.91	22.15	23.92	9.17	18.45	19.21	22.56	14.14	2.08
95th-Percentile Queue Length [ft/ln]	246.55	469.47	808.19	172.74	553.65	597.89	229.25	461.19	480.13	563.96	353.38	51.95

Movement, Approach, & Intersection Results

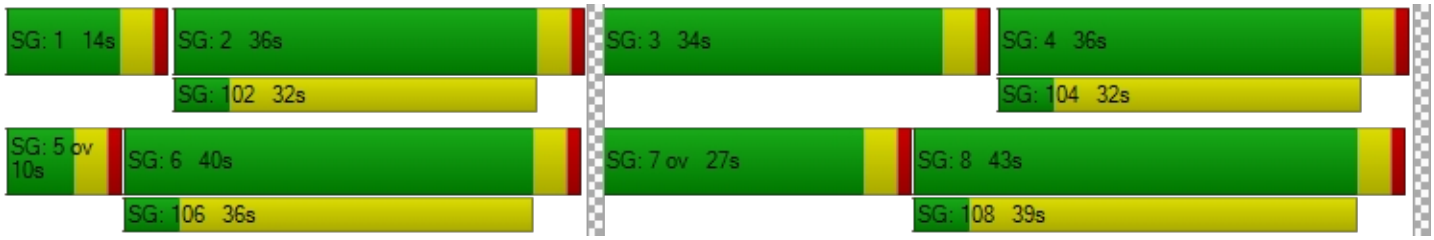
d_M, Delay for Movement [s/veh]	88.87	38.01	37.68	105.23	50.51	55.91	55.09	46.36	54.95	102.27	33.52	20.99
Movement LOS	F	D	D	F	D	E	E	D	D	F	C	C
d_A, Approach Delay [s/veh]	43.84			56.73			49.61			63.90		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	52.34											
Intersection LOS	D											
Intersection V/C	0.893											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.473	3.185	3.081	3.265
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	533	650	533
d_b, Bicycle Delay [s]	29.40	32.27	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.986	2.510	2.456	2.907
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	22.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.670

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1505	622	0	1210	819	0	0	0	585	0	484
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1505	622	0	1210	819	0	0	0	585	0	484
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	396	164	0	318	216	0	0	0	154	0	127
Total Analysis Volume [veh/h]	0	1584	655	0	1274	862	0	0	0	616	0	509
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	76	0	0	76	0	0	0	0	44	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	81	81		31	31	31
g / C, Green / Cycle	0.67	0.67		0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.44	0.25		0.21	0.22	0.23
s, saturation flow rate [veh/h]	3618	5176		1810	1735	1615
c, Capacity [veh/h]	2425	3469		476	456	425
d1, Uniform Delay [s]	11.60	8.65		41.11	41.58	42.45
k, delay calibration	0.50	0.50		0.18	0.20	0.24
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	1.39	0.30		4.82	6.73	12.25
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.37		0.79	0.82	0.88
d, Delay for Lane Group [s/veh]	12.99	8.95		45.93	48.30	54.69
Lane Group LOS	B	A		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.85	4.65		10.91	11.24	12.05
50th-Percentile Queue Length [ft/ln]	296.21	116.19		272.66	280.95	301.18
95th-Percentile Queue Length [veh/ln]	17.49	8.18		16.32	16.74	17.74
95th-Percentile Queue Length [ft/ln]	437.34	204.58		408.06	418.40	443.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.99	0.00	0.00	8.95	0.00	0.00	0.00	0.00	46.86	0.00	53.01
Movement LOS		B			A					D		D
d_A, Approach Delay [s/veh]	12.99			8.95			0.00			49.64		
Approach LOS	B			A			A			D		
d_I, Intersection Delay [s/veh]	22.05											
Intersection LOS	C											
Intersection V/C	0.670											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	1200	0	667
d_b, Bicycle Delay [s]	9.60	9.60	60.00	26.67
l_b,int, Bicycle LOS Score for Intersection	2.866	2.260	4.132	3.416
Bicycle LOS	C	B	D	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	26.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.754

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1679	436	0	2172	0	0	0	0	581	0	633
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1679	436	0	2172	0	0	0	0	581	0	633
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	442	115	0	572	0	0	0	0	153	0	167
Total Analysis Volume [veh/h]	0	1767	459	0	2286	0	0	0	0	612	0	666
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	28	0	0	28	0	0	0	0	92	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	59	59		53	53
g / C, Green / Cycle	0.49	0.49		0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.34	0.33		0.17	0.41
s, saturation flow rate [veh/h]	5176	6901		3514	1615
c, Capacity [veh/h]	2526	3368		1565	719
d1, Uniform Delay [s]	23.88	23.52		22.36	31.42
k, delay calibration	0.50	0.50		0.11	0.15
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	1.64	1.12		0.16	7.53
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.68		0.39	0.93
d, Delay for Lane Group [s/veh]	25.52	24.64		22.52	38.95
Lane Group LOS	C	C		C	D
Critical Lane Group	Yes	No		No	Yes
50th-Percentile Queue Length [veh/ln]	13.04	12.36		5.83	19.22
50th-Percentile Queue Length [ft/ln]	326.02	308.93		145.69	480.58
95th-Percentile Queue Length [veh/ln]	18.96	18.12		9.79	26.41
95th-Percentile Queue Length [ft/ln]	474.09	453.06		244.66	660.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	25.52	0.00	0.00	24.64	0.00	0.00	0.00	0.00	22.52	0.00	38.95
Movement LOS		C			C					C		D
d_A, Approach Delay [s/veh]	25.52			24.64			0.00			31.08		
Approach LOS	C			C			A			C		
d_I, Intersection Delay [s/veh]	26.47											
Intersection LOS	C											
Intersection V/C	0.754											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	400	0	1467
d_b, Bicycle Delay [s]	38.40	38.40	60.00	4.27
l_b,int, Bicycle LOS Score for Intersection	2.531	2.503	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.520

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1212	256	0	1049	555	0	0	0	269	0	584
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1212	256	0	1049	555	0	0	0	269	0	584
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	319	67	0	276	146	0	0	0	71	0	154
Total Analysis Volume [veh/h]	0	1276	269	0	1104	584	0	0	0	283	0	615
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	62	0	0	62	0	0	0	0	58	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	82	82		30	30
g / C, Green / Cycle	0.69	0.69		0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.25	0.31		0.16	0.22
s, saturation flow rate [veh/h]	5176	3618		1810	2859
c, Capacity [veh/h]	3554	2484		446	705
d1, Uniform Delay [s]	7.82	8.48		40.36	43.38
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.28	0.58		1.49	3.54
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.44		0.63	0.87
d, Delay for Lane Group [s/veh]	8.10	9.06		41.85	46.92
Lane Group LOS	A	A		D	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	4.35	6.19		7.65	9.07
50th-Percentile Queue Length [ft/ln]	108.66	154.63		191.26	226.63
95th-Percentile Queue Length [veh/ln]	7.77	10.26		12.19	14.00
95th-Percentile Queue Length [ft/ln]	194.14	256.60		304.66	350.07

Movement, Approach, & Intersection Results

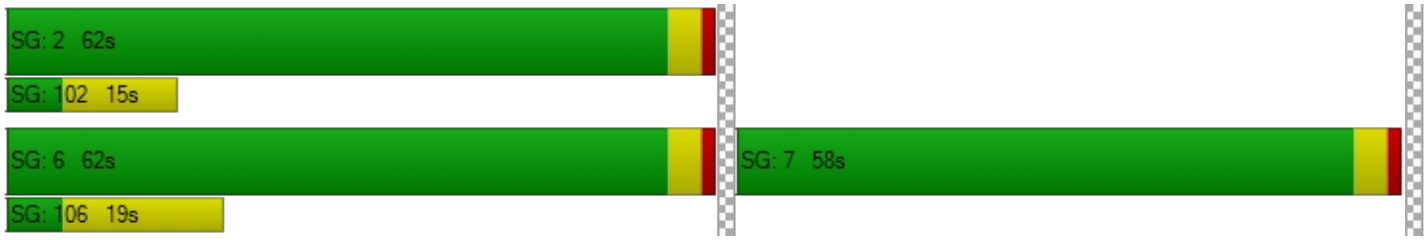
d_M, Delay for Movement [s/veh]	0.00	8.10	0.00	0.00	9.06	0.00	0.00	0.00	0.00	41.85	0.00	46.92
Movement LOS		A			A					D		D
d_A, Approach Delay [s/veh]	8.10			9.06			0.00			45.32		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	18.62											
Intersection LOS	B											
Intersection V/C	0.520											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.365
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	967	0	900
d_b, Bicycle Delay [s]	16.02	16.02	60.00	18.15
l_b,int, Bicycle LOS Score for Intersection	2.261	2.470	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.677

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1713	562	0	1344	394	344	0	439	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1713	562	0	1344	394	344	0	439	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	451	148	0	354	104	91	0	116	0	0	0
Total Analysis Volume [veh/h]	0	1803	592	0	1415	415	362	0	462	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	62	0	0	62	0	58	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	74	74	38	38	
g / C, Green / Cycle	0.62	0.62	0.31	0.31	
(v / s)_i Volume / Saturation Flow Rate	0.35	0.39	0.10	0.29	
s, saturation flow rate [veh/h]	5176	3618	3514	1615	
c, Capacity [veh/h]	3208	2243	1101	506	
d1, Uniform Delay [s]	13.30	14.24	31.53	39.61	
k, delay calibration	0.50	0.50	0.11	0.20	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.72	1.36	0.17	11.34	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.56	0.63	0.33	0.91	
d, Delay for Lane Group [s/veh]	14.02	15.60	31.70	50.95	
Lane Group LOS	B	B	C	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.21	11.76	4.07	14.56	
50th-Percentile Queue Length [ft/ln]	230.34	294.10	101.70	363.88	
95th-Percentile Queue Length [veh/ln]	14.19	17.39	7.32	20.81	
95th-Percentile Queue Length [ft/ln]	354.79	434.73	183.05	520.30	

Movement, Approach, & Intersection Results

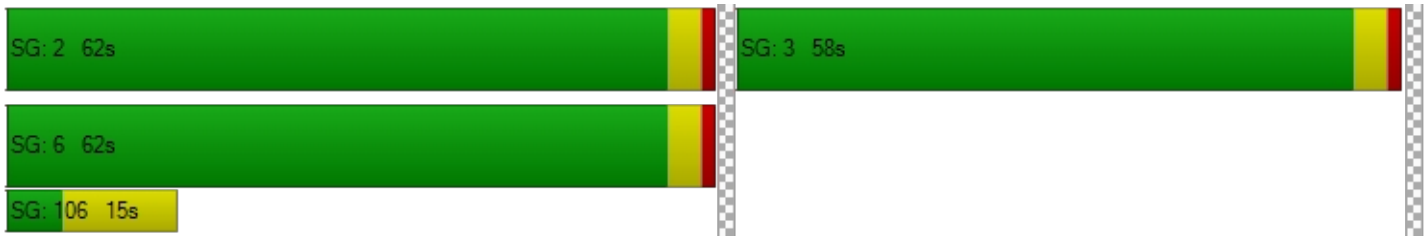
d_M, Delay for Movement [s/veh]	0.00	14.02	0.00	0.00	15.60	0.00	31.70	0.00	50.95	0.00	0.00	0.00
Movement LOS		B			B		C		D			
d_A, Approach Delay [s/veh]	14.02			15.60			42.50			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	20.38											
Intersection LOS	C											
Intersection V/C	0.677											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	967	900	0
d_b, Bicycle Delay [s]	16.02	16.02	18.15	60.00
l_b,int, Bicycle LOS Score for Intersection	2.551	2.727	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	44.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.889

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1423	533	759	1352	0	741	75	630	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1423	533	759	1352	0	741	75	630	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	374	140	200	356	0	195	20	166	0	0	0
Total Analysis Volume [veh/h]	0	1498	561	799	1423	0	780	79	663	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	46	0	32	78	0	0	42	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	42	42	28	74	38	38	38	
g / C, Green / Cycle	0.35	0.35	0.23	0.62	0.32	0.32	0.32	
(v / s)_i Volume / Saturation Flow Rate	0.29	0.35	0.23	0.27	0.28	0.29	0.31	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1810	1758	1615	
c, Capacity [veh/h]	1811	565	820	3192	573	557	511	
d1, Uniform Delay [s]	35.68	38.84	45.64	12.16	38.93	39.39	40.85	
k, delay calibration	0.50	0.50	0.11	0.50	0.38	0.39	0.45	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.49	36.06	9.78	0.45	14.27	18.09	36.05	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.83	0.99	0.97	0.45	0.89	0.91	0.99	
d, Delay for Lane Group [s/veh]	40.17	74.90	55.42	12.61	53.20	57.48	76.90	
Lane Group LOS	D	E	E	B	D	E	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	13.95	21.81	12.84	6.61	16.30	16.99	19.84	
50th-Percentile Queue Length [ft/ln]	348.80	545.18	320.90	165.16	407.41	424.64	495.92	
95th-Percentile Queue Length [veh/ln]	20.08	29.47	18.71	10.82	22.92	23.74	27.14	
95th-Percentile Queue Length [ft/ln]	501.95	736.64	467.79	270.54	572.92	593.61	678.53	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	40.17	74.90	55.42	12.61	0.00	54.70	57.48	72.34	0.00	0.00	0.00
Movement LOS		D	E	E	B		D	E	E			
d_A, Approach Delay [s/veh]	49.63			28.01			62.53			0.00		
Approach LOS	D			C			E			A		
d_I, Intersection Delay [s/veh]	44.73											
Intersection LOS	D											
Intersection V/C	0.889											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.517	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	1233	633	0
d_b, Bicycle Delay [s]	25.35	8.82	28.02	60.00
I_b,int, Bicycle LOS Score for Intersection	2.692	2.782	4.071	4.132
Bicycle LOS	B	C	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1008	570	606	730	0	505	8	237	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1008	570	606	730	0	505	8	237	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	265	150	159	192	0	133	2	62	0	0	0
Total Analysis Volume [veh/h]	0	1061	600	638	768	0	532	8	249	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	51	0	34	85	0	0	35	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	61	61	24	90	22	22	
g / C, Green / Cycle	0.51	0.51	0.20	0.75	0.19	0.19	
(v / s)_i Volume / Saturation Flow Rate	0.29	0.37	0.18	0.21	0.15	0.16	
s, saturation flow rate [veh/h]	3618	1615	3514	3618	3514	1623	
c, Capacity [veh/h]	1842	822	718	2701	656	303	
d1, Uniform Delay [s]	20.46	23.00	46.43	4.89	46.77	47.16	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.32	5.65	4.02	0.26	2.47	9.76	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.58	0.73	0.89	0.28	0.81	0.85	
d, Delay for Lane Group [s/veh]	21.78	28.65	50.45	5.15	49.24	56.92	
Lane Group LOS	C	C	D	A	D	E	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	10.43	14.13	9.62	2.80	7.82	8.22	
50th-Percentile Queue Length [ft/ln]	260.87	353.29	240.49	70.04	195.62	205.61	
95th-Percentile Queue Length [veh/ln]	15.73	20.30	14.71	5.04	12.41	12.93	
95th-Percentile Queue Length [ft/ln]	393.31	507.42	367.65	126.07	310.30	323.19	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	21.78	28.65	50.45	5.15	0.00	49.24	56.92	56.92	0.00	0.00	0.00
Movement LOS		C	C	D	A		D	E	E			
d_A, Approach Delay [s/veh]	24.26			25.71			51.74			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	30.41											
Intersection LOS	C											
Intersection V/C	0.711											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	1350	517	0
d_b, Bicycle Delay [s]	22.20	6.34	33.00	60.00
l_b,int, Bicycle LOS Score for Intersection	2.473	2.720	2.861	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	69.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.152

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	573	1426	523	554	969	892	1024	0	512	540	0	706
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	573	1426	523	554	969	892	1024	0	512	540	0	706
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	151	375	138	146	255	235	269	0	135	142	0	186
Total Analysis Volume [veh/h]	603	1501	551	583	1020	939	1078	0	539	568	0	743
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	88	0	0	88	0	32	0	0	32	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	84	84	84	84	28	28
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.55	0.29	0.85	0.20	0.31	0.16
s, saturation flow rate [veh/h]	1091	5176	690	5176	3514	3514
c, Capacity [veh/h]	726	3623	448	3623	820	820
d1, Uniform Delay [s]	20.34	7.61	30.76	6.73	46.00	42.07
k, delay calibration	0.50	0.50	0.50	0.50	0.17	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.66	0.35	151.09	0.19	144.62	1.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.41	1.30	0.28	1.31	0.69
d, Delay for Lane Group [s/veh]	31.00	7.96	181.84	6.92	190.62	43.13
Lane Group LOS	C	A	F	A	F	D
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.88	5.13	16.22	3.08	28.59	7.80
50th-Percentile Queue Length [ft/ln]	197.01	128.31	405.60	76.96	714.82	195.02
95th-Percentile Queue Length [veh/ln]	12.48	8.85	27.24	5.54	42.94	12.38
95th-Percentile Queue Length [ft/ln]	312.10	221.19	680.96	138.53	1073.62	309.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.00	7.96	0.00	181.84	6.92	0.00	190.62	0.00	0.00	43.13	0.00	0.00
Movement LOS	C	A		F	A		F			D		
d_A, Approach Delay [s/veh]	14.56			70.54			190.62			43.13		
Approach LOS	B			E			F			D		
d_I, Intersection Delay [s/veh]	69.81											
Intersection LOS	E											
Intersection V/C	1.152											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.501	3.369
Crosswalk LOS	F	F	D	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1400	1400	467	467
d_b, Bicycle Delay [s]	5.40	5.40	35.27	35.27
l_b,int, Bicycle LOS Score for Intersection	2.717	2.441	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	39.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	195	1644	376	77	598	132	265	1104	208	125	611	119
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	1644	376	77	598	132	265	1104	208	125	611	119
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	433	99	20	157	35	70	291	55	33	161	31
Total Analysis Volume [veh/h]	205	1731	396	81	629	139	279	1162	219	132	643	125
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	35	46	0	9	20	0	39	51	0	14	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	47	47	5	42	42	21	42	42	10	31	31
g / C, Green / Cycle	0.08	0.39	0.39	0.04	0.35	0.35	0.17	0.35	0.35	0.08	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.06	0.33	0.25	0.02	0.12	0.09	0.15	0.32	0.14	0.07	0.18	0.08
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	278	2036	635	137	1828	570	312	1270	567	151	948	423
d1, Uniform Delay [s]	54.05	33.18	29.26	56.73	28.57	27.47	48.58	37.21	29.22	54.38	39.74	35.42
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.83	4.70	4.57	4.05	0.52	1.01	8.87	3.04	0.43	14.41	0.86	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.85	0.62	0.59	0.34	0.24	0.89	0.91	0.39	0.88	0.68	0.30
d, Delay for Lane Group [s/veh]	57.88	37.88	33.83	60.78	29.09	28.48	57.45	40.26	29.65	68.80	40.60	35.80
Lane Group LOS	E	D	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.18	15.92	9.90	1.29	4.54	3.00	8.92	16.58	4.82	4.54	8.60	2.99
50th-Percentile Queue Length [ft/ln]	79.43	397.94	247.57	32.14	113.52	74.97	222.96	414.52	120.42	113.59	215.05	74.67
95th-Percentile Queue Length [veh/ln]	5.72	22.46	15.06	2.31	8.04	5.40	13.82	23.26	8.42	8.04	13.41	5.38
95th-Percentile Queue Length [ft/ln]	142.98	561.52	376.59	57.85	200.89	134.94	345.40	581.46	210.40	200.99	335.29	134.40

Movement, Approach, & Intersection Results

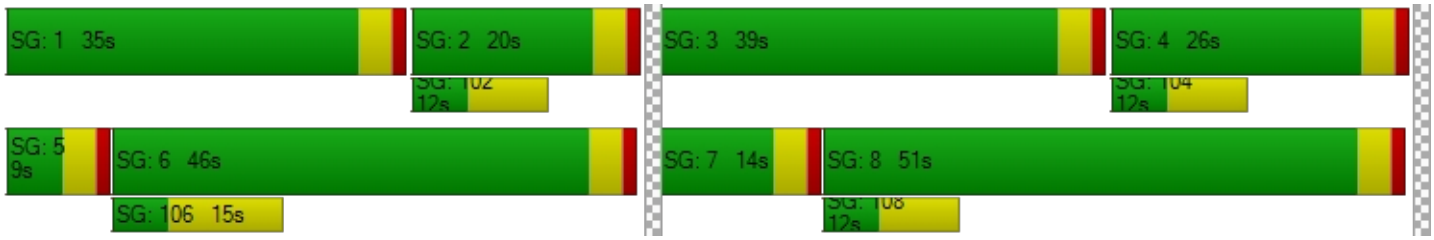
d_M, Delay for Movement [s/veh]	57.88	37.88	33.83	60.78	29.09	28.48	57.45	40.26	29.65	68.80	40.60	35.80
Movement LOS	E	D	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	38.95			32.01			41.75			44.07		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.54											
Intersection LOS	D											
Intersection V/C	0.752											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.223	3.188	2.898	2.881
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	267	783	367
d_b, Bicycle Delay [s]	25.35	45.07	22.20	40.02
l_b,int, Bicycle LOS Score for Intersection	2.842	2.027	2.929	2.302
Bicycle LOS	C	B	C	B

Sequence

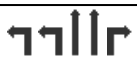
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	87.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.004

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	62	886	503	344	245	200	389	1463	24	117	762	509
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	886	503	344	245	200	389	1463	24	117	762	509
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	233	132	91	64	53	102	385	6	31	201	134
Total Analysis Volume [veh/h]	65	933	529	362	258	211	409	1540	25	123	802	536
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	37	38	0	25	26	26	27	48	0	9	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	34	34	21	49	76	23	44	44	5	26	51
g / C, Green / Cycle	0.05	0.28	0.28	0.18	0.41	0.64	0.19	0.37	0.37	0.04	0.22	0.43
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.33	0.20	0.07	0.13	0.23	0.41	0.41	0.04	0.22	0.33
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1889	3514	3618	1615
c, Capacity [veh/h]	88	1025	458	317	1483	1025	347	697	693	146	784	686
d1, Uniform Delay [s]	56.35	41.53	43.00	49.50	22.50	9.20	48.50	38.00	38.00	57.10	47.00	29.69
k, delay calibration	0.11	0.50	0.50	0.30	0.50	0.50	0.38	0.50	0.50	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.59	13.38	92.38	85.28	0.26	0.45	101.35	73.27	75.73	11.96	21.21	8.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.91	1.16	1.14	0.17	0.21	1.18	1.12	1.13	0.84	1.02	0.78
d, Delay for Lane Group [s/veh]	67.94	54.91	135.38	134.78	22.75	9.65	149.85	111.27	113.73	69.06	68.21	38.29
Lane Group LOS	E	D	F	F	C	A	F	F	F	E	F	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.23	15.11	25.15	16.95	2.38	2.38	20.09	34.23	34.51	2.10	13.93	14.70
50th-Percentile Queue Length [ft/ln]	55.70	377.72	628.85	423.75	59.52	59.43	502.19	855.70	862.76	52.38	348.24	367.55
95th-Percentile Queue Length [veh/ln]	4.01	21.48	36.38	25.31	4.29	4.28	29.81	47.45	47.97	3.77	20.31	20.99
95th-Percentile Queue Length [ft/ln]	100.25	537.09	909.62	632.65	107.14	106.97	745.22	1186.25	1199.16	94.29	507.71	524.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.94	54.91	135.38	134.78	22.75	9.65	149.85	112.48	113.73	69.06	68.21	38.29
Movement LOS	E	D	F	F	C	A	F	F	F	E	F	D
d_A, Approach Delay [s/veh]	83.34			68.23			120.24			57.31		
Approach LOS	F			E			F			E		
d_I, Intersection Delay [s/veh]	87.18											
Intersection LOS	F											
Intersection V/C	1.004											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.782	2.908	2.910	3.151
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	367	733	433
d_b, Bicycle Delay [s]	30.82	40.02	24.07	36.82
l_b,int, Bicycle LOS Score for Intersection	2.819	2.245	3.188	2.765
Bicycle LOS	C	B	C	C

Sequence

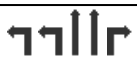
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	36.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	50	1279	86	422	1277	459	540	753	117	71	198	408
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	1279	86	422	1277	459	540	753	117	71	198	408
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	337	23	111	336	121	142	198	31	19	52	107
Total Analysis Volume [veh/h]	53	1346	91	444	1344	483	568	793	123	75	208	429
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	33	0	20	33	33	24	58	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	50	50	16	62	86	20	33	33	5	18	38
g / C, Green / Cycle	0.04	0.42	0.42	0.13	0.51	0.71	0.17	0.28	0.28	0.04	0.15	0.31
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.26	0.13	0.26	0.30	0.16	0.25	0.25	0.02	0.06	0.27
s, saturation flow rate [veh/h]	1810	3618	1839	3514	5176	1615	3514	1900	1813	3514	3618	1615
c, Capacity [veh/h]	70	1519	772	469	2662	1154	586	523	499	134	531	506
d1, Uniform Delay [s]	57.10	27.42	27.42	51.58	19.12	6.99	49.70	41.75	41.93	56.71	46.33	38.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.12	0.13	0.11	0.11	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.98	1.97	3.84	10.41	0.69	1.12	11.54	6.22	7.42	3.58	0.47	11.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.63	0.63	0.95	0.50	0.42	0.97	0.89	0.90	0.56	0.39	0.85
d, Delay for Lane Group [s/veh]	72.08	29.39	31.26	62.00	19.81	8.11	61.24	47.97	49.34	60.29	46.80	49.55
Lane Group LOS	E	C	C	E	B	A	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.88	11.06	11.64	7.29	8.21	4.92	9.37	14.03	13.77	1.18	2.85	13.24
50th-Percentile Queue Length [ft/ln]	47.12	276.39	291.02	182.14	205.34	123.12	234.28	350.87	344.22	29.62	71.36	330.96
95th-Percentile Queue Length [veh/ln]	3.39	16.51	17.24	11.71	12.91	8.56	14.39	20.18	19.85	2.13	5.14	19.21
95th-Percentile Queue Length [ft/ln]	84.81	412.72	430.90	292.81	322.84	214.10	359.79	504.47	496.35	53.31	128.46	480.13

Movement, Approach, & Intersection Results

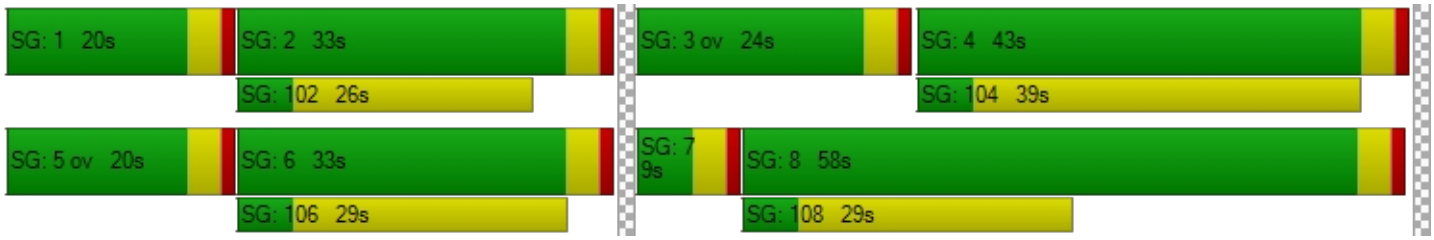
d_M, Delay for Movement [s/veh]	72.08	29.94	31.26	62.00	19.81	8.11	61.24	48.54	49.34	60.29	46.80	49.55
Movement LOS	E	C	C	E	B	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	31.52			25.57			53.46			49.88		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.91											
Intersection LOS	D											
Intersection V/C	0.732											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.110	3.432	2.830	2.893
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	483	900	650
d_b, Bicycle Delay [s]	34.50	34.50	18.15	27.34
l_b,int, Bicycle LOS Score for Intersection	2.379	2.809	2.784	2.147
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	687.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	35.648

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	12	681	87	107	1002	151	280	122	45	36	50	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	681	87	107	1002	151	280	122	45	36	50	127
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	179	23	28	264	40	74	32	12	9	13	33
Total Analysis Volume [veh/h]	13	717	92	113	1055	159	295	128	47	38	53	134
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	12	12	5	15	15	91	91	91	91
g / C, Green / Cycle	0.01	0.10	0.10	0.04	0.13	0.13	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.01	0.15	0.15	0.06	0.23	0.23	35.42	0.03	1.50	0.08
s, saturation flow rate [veh/h]	1810	3618	1792	1810	3618	1775	12	1615	61	1615
c, Capacity [veh/h]	27	367	182	75	465	228	60	1222	89	1222
d1, Uniform Delay [s]	58.68	53.91	53.91	57.50	52.29	52.29	49.75	3.66	43.27	3.87
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.33	224.71	244.54	238.99	346.61	355.71	2759.10	0.01	103.22	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	1.47	1.48	1.50	1.75	1.75	7.05	0.04	1.03	0.11
d, Delay for Lane Group [s/veh]	72.01	278.62	298.44	296.49	398.89	408.00	2808.85	3.67	146.48	3.91
Lane Group LOS	E	F	F	F	F	F	F	A	F	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.49	17.00	17.85	7.29	29.38	29.41	47.78	0.26	3.81	0.77
50th-Percentile Queue Length [ft/ln]	12.26	425.07	446.23	182.29	734.43	735.30	1194.52	6.40	95.14	19.32
95th-Percentile Queue Length [veh/ln]	0.88	27.04	28.28	12.81	46.09	46.14	86.01	0.46	6.85	1.39
95th-Percentile Queue Length [ft/ln]	22.07	675.92	707.06	320.24	1152.23	1153.57	2150.14	11.52	171.25	34.77

Movement, Approach, & Intersection Results

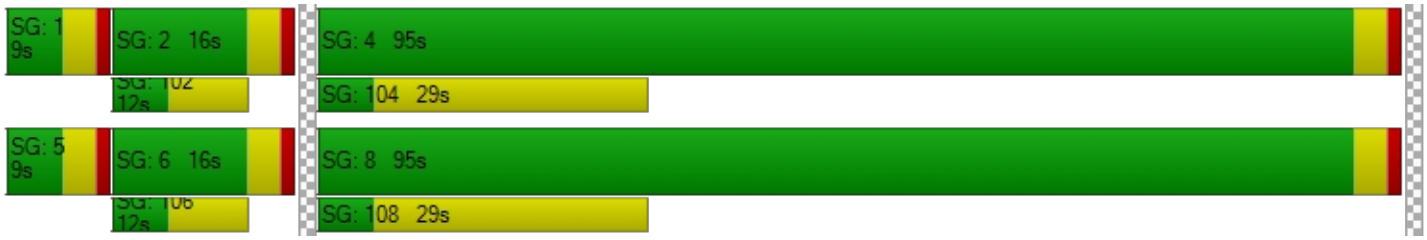
d_M, Delay for Movement [s/veh]	72.01	283.54	298.44	296.49	400.97	408.00	2808.85	2808.85	3.67	146.48	146.48	3.91
Movement LOS	E	F	F	F	F	F	F	F	A	F	F	A
d_A, Approach Delay [s/veh]	281.86			392.92			2528.34			61.57		
Approach LOS	F			F			F			E		
d_I, Intersection Delay [s/veh]	687.50											
Intersection LOS	F											
Intersection V/C	35.648											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.936	3.373	2.181	2.137
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	2.012	2.289	2.335	1.931
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	40	40	0	24	24	24	0	33	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	104	0	104	112	0	0	0	0	0
g / C, Green / Cycle	0.00	0.87	0.87	0.00	0.87	0.93	0.00	0.00	0.00	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1781	3560	1870	1781	3560	1589	1781	1870	2813	1781	1870
c, Capacity [veh/h]	1	3082	1619	1	3081	1483	1	1	1	1	1
d1, Uniform Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Group LOS	A	A	A	A	A	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	No	No	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											
Intersection V/C	0.000											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.609	0.000	2.468	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	333	483	317
d_b, Bicycle Delay [s]	29.40	41.67	34.50	42.50
l_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560	1.560
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-7

INTERSECTION ANALYSIS
WORKSHEETS –
HORIZON YEAR 2040 PLUS PROJECT

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.666	32.5	C
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.659	28.4	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.457	19.5	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.684	26.5	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.728	28.9	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.500	18.5	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	SB Left	0.465	33.6	C
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.638	37.6	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	WB Left	0.665	35.2	D
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.816	60.1	E
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Thru	0.699	26.6	C
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	NB Right	0.584	27.6	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.751	39.6	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	NB Left	0.509	39.2	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.939	56.4	E
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	EB Left	0.593	33.5	C
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.606	44.5	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.933	33.4	C
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.635	24.1	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	NB Left	0.831	51.3	D
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	WB Left	0.796	51.0	D
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	8.854	4,102.0	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.777	48.9	D
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	NB Left	0.750	44.4	D
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	NB Left	0.917	72.5	E
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.863	57.5	E
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	EB Left	0.600	25.9	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	SB Right	0.856	59.6	E
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	NB Left	0.620	35.8	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.823	27.1	C
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.867	48.8	D
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	0.674	95.7	F
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.722	32.1	C
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.751	32.2	C
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	WB Thru	1.342	103.6	F
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.597	30.8	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	SB Left	0.620	40.1	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	NB Left	0.691	32.9	C

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Right	0.871	57.5	E
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	WB Thru	1.512	160.6	F
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	SB Thru	1.542	180.9	F
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.612	35.5	D
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	SB Left	0.651	32.2	C
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Left	0.770	45.6	D
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	SB Right	0.627	48.1	D
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.673	37.4	D
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	EB Left	0.660	36.0	D
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.512	21.2	C
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.739	43.4	D
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	EB Left	0.564	32.7	C
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	SWB Thru	0.679	40.8	D
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.660	39.7	D
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	NB Left	0.716	31.7	C
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	WB Left	1.588	147.2	F
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.556	31.0	C
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	SB Left	0.481	31.4	C
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	WB Left	0.806	44.7	D
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.674	37.2	D
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	SB Thru	18.713	10,000.0	F

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Right	0.916	68.4	E
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	NB Left	0.736	34.9	C
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.617	24.1	C
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	WB Right	0.975	51.5	D
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.576	21.5	C
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.846	30.7	C
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	EB Right	0.856	39.6	D
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.756	34.1	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	SB Left	0.804	28.8	C
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	EB Left	0.657	37.2	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	SB Left	0.893	88.7	F
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.679	32.2	C
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	40.179	675.7	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition	NB Left	0.374	35.9	D
998543	New Intersection	Unknown	?		?	?	?
998552	New Intersection	Unknown	?		?	?	?
998555	New Intersection	Unknown	?		?	?	?

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	200	489	0	0	917	224	0	0	0	420	4	331
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	0	0	0	9	0	0	0	0	85	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	234	489	0	0	926	224	0	0	0	505	4	331
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	129	0	0	244	59	0	0	0	133	1	87
Total Analysis Volume [veh/h]	246	515	0	0	975	236	0	0	0	532	4	348
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	22	58	0	0	36	0	0	0	0	0	62	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	18	73	51	51		39	39
g / C, Green / Cycle	0.15	0.61	0.43	0.43		0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.22	0.23		0.30	0.22
s, saturation flow rate [veh/h]	1810	3618	3618	1722		1810	1615
c, Capacity [veh/h]	271	2207	1544	735		585	522
d1, Uniform Delay [s]	50.17	10.64	25.38	25.75		39.04	35.03
k, delay calibration	0.12	0.50	0.50	0.50		0.18	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	11.64	0.25	1.27	2.94		9.64	1.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.23	0.52	0.55		0.92	0.67
d, Delay for Lane Group [s/veh]	61.81	10.88	26.65	28.69		48.69	36.50
Lane Group LOS	E	B	C	C		D	D
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	8.12	3.10	8.69	9.14		16.57	8.95
50th-Percentile Queue Length [ft/ln]	203.07	77.60	217.21	228.49		414.26	223.84
95th-Percentile Queue Length [veh/ln]	12.80	5.59	13.52	14.10		23.25	13.86
95th-Percentile Queue Length [ft/ln]	319.92	139.68	338.06	352.44		581.16	346.52

Movement, Approach, & Intersection Results

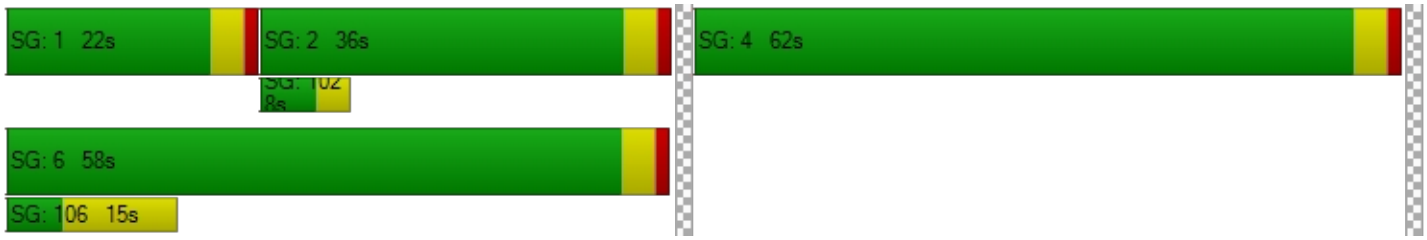
d_M, Delay for Movement [s/veh]	61.81	10.88	0.00	0.00	27.00	28.69	0.00	0.00	0.00	48.69	48.69	36.50
Movement LOS	E	B			C	C				D	D	D
d_A, Approach Delay [s/veh]	27.34			27.33			0.00			43.89		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	32.46											
Intersection LOS	C											
Intersection V/C	0.666											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.912	2.243
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	533	0	967
d_b, Bicycle Delay [s]	18.15	32.27	60.00	16.02
l_b,int, Bicycle LOS Score for Intersection	2.187	2.226	4.132	3.018
Bicycle LOS	B	B	D	C

Sequence

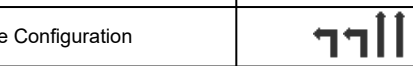
Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	338	1029	0	0	925	398	0	0	0	477	1	439
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	9	0	0	0	0	9	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	338	1029	0	0	934	398	0	0	0	486	1	439
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	271	0	0	246	105	0	0	0	128	0	116
Total Analysis Volume [veh/h]	356	1083	0	0	983	419	0	0	0	512	1	462
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	21	49	0	0	28	0	0	0	0	0	71	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	14	74	56	56		38	38	38
g / C, Green / Cycle	0.12	0.62	0.47	0.47		0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.10	0.30	0.27	0.26		0.14	0.14	0.29
s, saturation flow rate [veh/h]	3514	3618	3618	1615		1810	1810	1615
c, Capacity [veh/h]	419	2238	1686	753		570	570	508
d1, Uniform Delay [s]	51.79	12.46	23.50	23.11		32.83	32.82	39.46
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	4.88	0.75	1.48	2.96		0.56	0.56	6.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.48	0.58	0.56		0.45	0.45	0.91
d, Delay for Lane Group [s/veh]	56.67	13.21	24.98	26.07		33.38	33.38	46.03
Lane Group LOS	E	B	C	C		C	C	D
Critical Lane Group	Yes	No	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.53	7.82	10.40	9.05		6.06	6.06	13.85
50th-Percentile Queue Length [ft/ln]	138.23	195.51	259.99	226.16		151.42	151.42	346.29
95th-Percentile Queue Length [veh/ln]	9.39	12.41	15.69	13.98		10.09	10.09	19.96
95th-Percentile Queue Length [ft/ln]	234.64	310.17	392.20	349.48		252.33	252.32	498.89

Movement, Approach, & Intersection Results

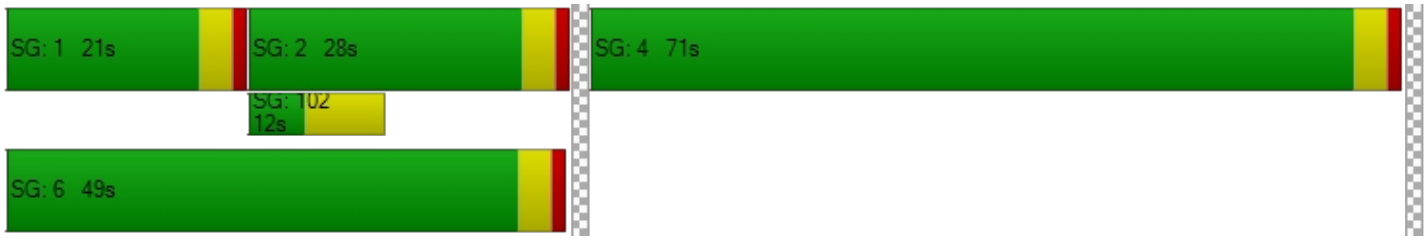
d_M, Delay for Movement [s/veh]	56.67	13.21	0.00	0.00	24.98	26.07	0.00	0.00	0.00	33.38	33.38	46.03
Movement LOS	E	B			C	C				C	C	D
d_A, Approach Delay [s/veh]	23.96			25.30			0.00			39.38		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	28.39											
Intersection LOS	C											
Intersection V/C	0.659											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.108	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	400	0	1117
d_b, Bicycle Delay [s]	23.44	38.40	60.00	11.70
l_b,int, Bicycle LOS Score for Intersection	2.747	2.716	4.132	3.168
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.457

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1006	0	0	1212	0	0	0	0	580	0	373
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	9	0	0	0	0	5	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1006	0	0	1221	0	0	0	0	585	0	373
Peak Hour Factor	1.0000	0.9500	1.0000	1.0000	0.9500	1.0000	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	265	0	0	321	0	0	0	0	154	0	98
Total Analysis Volume [veh/h]	0	1059	0	0	1285	0	0	0	0	616	0	393
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	65	0	0	65	0	0	0	0	0	55	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	83	83		29	29	29
g / C, Green / Cycle	0.69	0.69		0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.20	0.25		0.19	0.19	0.21
s, saturation flow rate [veh/h]	5176	5176		1810	1774	1615
c, Capacity [veh/h]	3585	3585		436	427	389
d1, Uniform Delay [s]	7.13	7.54		42.49	42.69	43.69
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	0.28		2.94	3.27	5.86
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.36		0.77	0.79	0.87
d, Delay for Lane Group [s/veh]	7.34	7.82		45.44	45.96	49.56
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.32	4.27		9.63	9.71	10.17
50th-Percentile Queue Length [ft/ln]	83.11	106.79		240.80	242.68	254.28
95th-Percentile Queue Length [veh/ln]	5.98	7.66		14.72	14.82	15.40
95th-Percentile Queue Length [ft/ln]	149.60	191.53		368.05	370.42	385.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.34	0.00	0.00	7.82	0.00	0.00	0.00	0.00	45.68	45.96	49.04
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	7.34			7.82			0.00			46.99		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	19.45											
Intersection LOS	B											
Intersection V/C	0.457											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1017	0	850
d_b, Bicycle Delay [s]	14.50	14.50	60.00	19.84
l_b,int, Bicycle LOS Score for Intersection	2.142	2.266	4.132	3.224
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	26.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.684

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	533	379	228	981	0	253	7	344	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	34	74	0	94	0	0	0	48	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	567	453	228	1075	0	253	7	392	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	149	119	60	283	0	67	2	103	0	0	0
Total Analysis Volume [veh/h]	0	597	477	240	1132	0	266	7	413	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	12	0	44	56	0	0	64	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	56	56	18	78	34	34	
g / C, Green / Cycle	0.47	0.47	0.15	0.65	0.28	0.28	
(v / s)_i Volume / Saturation Flow Rate	0.17	0.30	0.13	0.31	0.15	0.26	
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1812	1615	
c, Capacity [veh/h]	1693	756	275	2363	508	452	
d1, Uniform Delay [s]	20.34	24.10	49.76	10.50	36.61	41.78	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.58	3.98	8.49	0.70	0.89	7.55	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.35	0.63	0.87	0.48	0.54	0.91	
d, Delay for Lane Group [s/veh]	20.92	28.08	58.24	11.20	37.50	49.33	
Lane Group LOS	C	C	E	B	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	5.44	10.87	7.68	7.37	6.91	12.67	
50th-Percentile Queue Length [ft/ln]	135.88	271.74	191.95	184.27	172.83	316.69	
95th-Percentile Queue Length [veh/ln]	9.26	16.28	12.22	11.82	11.23	18.50	
95th-Percentile Queue Length [ft/ln]	231.46	406.91	305.55	295.58	280.63	462.62	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	20.92	28.08	58.24	11.20	0.00	37.50	37.50	49.33	0.00	0.00	0.00
Movement LOS		C	C	E	B		D	D	D			
d_A, Approach Delay [s/veh]	24.10			19.43			44.62			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	26.55											
Intersection LOS	C											
Intersection V/C	0.684											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.178	2.145
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	133	867	1000	0
d_b, Bicycle Delay [s]	52.27	19.27	15.00	60.00
l_b,int, Bicycle LOS Score for Intersection	2.150	2.692	2.692	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.728

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	921	464	338	1052	0	460	0	450	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	3	0	18	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	921	467	338	1070	0	460	0	450	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	242	123	89	282	0	121	0	118	0	0	0
Total Analysis Volume [veh/h]	0	969	492	356	1126	0	484	0	474	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	52	0	19	71	0	0	49	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	67	67	14	85	27	27	27	
g / C, Green / Cycle	0.55	0.55	0.12	0.71	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.38	0.43	0.10	0.31	0.18	0.19	0.20	
s, saturation flow rate [veh/h]	1900	1698	3514	3618	1810	1709	1615	
c, Capacity [veh/h]	1053	941	413	2550	414	391	369	
d1, Uniform Delay [s]	19.38	20.94	52.00	7.59	43.40	43.92	44.47	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.77	6.25	5.44	0.56	3.14	4.25	6.12	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.69	0.78	0.86	0.44	0.78	0.82	0.86	
d, Delay for Lane Group [s/veh]	23.16	27.19	57.45	8.15	46.54	48.16	50.59	
Lane Group LOS	C	C	E	A	D	D	D	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	15.29	16.96	5.57	5.86	9.26	9.44	9.68	
50th-Percentile Queue Length [ft/ln]	382.25	423.97	139.21	146.58	231.62	235.93	242.03	
95th-Percentile Queue Length [veh/ln]	21.70	23.71	9.44	9.83	14.26	14.48	14.78	
95th-Percentile Queue Length [ft/ln]	542.57	592.82	235.95	245.86	356.41	361.88	369.60	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	24.15	27.19	57.45	8.15	0.00	47.09	48.16	49.79	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	D			
d_A, Approach Delay [s/veh]	25.18			19.99			48.43			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	28.92											
Intersection LOS	C											
Intersection V/C	0.728											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.380	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	1117	750	0
d_b, Bicycle Delay [s]	21.60	11.70	23.44	60.00
l_b,int, Bicycle LOS Score for Intersection	2.765	2.782	3.140	4.132
Bicycle LOS	C	C	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.500

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1066	899	0	1454	26	299	0	619	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1066	900	0	1468	26	299	0	619	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	281	237	0	386	7	79	0	163	0	0	0
Total Analysis Volume [veh/h]	0	1122	947	0	1545	26	315	0	652	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	67	0	0	67	0	0	53	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	84	84	28	28	28	
g / C, Green / Cycle	0.70	0.70	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.30	0.17	0.20	0.20	
s, saturation flow rate [veh/h]	5176	5176	1810	1615	1615	
c, Capacity [veh/h]	3617	3617	424	379	379	
d1, Uniform Delay [s]	6.94	7.75	42.58	44.06	44.06	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.22	0.37	2.59	5.83	5.83	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.31	0.43	0.74	0.86	0.86	
d, Delay for Lane Group [s/veh]	7.17	8.12	45.17	49.89	49.89	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	3.48	5.35	8.95	9.87	9.87	
50th-Percentile Queue Length [ft/ln]	86.93	133.87	223.70	246.73	246.73	
95th-Percentile Queue Length [veh/ln]	6.26	9.15	13.85	15.02	15.02	
95th-Percentile Queue Length [ft/ln]	156.47	228.74	346.35	375.53	375.53	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.17	0.00	0.00	8.12	0.00	45.17	49.89	49.89	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	7.17			8.12			48.35			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	18.53											
Intersection LOS	B											
Intersection V/C	0.500											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.382	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	1050	817	0
d_b, Bicycle Delay [s]	13.54	13.54	21.00	60.00
l_b,int, Bicycle LOS Score for Intersection	2.177	2.409	3.155	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.465

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	74	727	109	62	632	110	131	237	118	149	323	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	727	109	62	632	110	131	237	118	149	323	68
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	191	29	16	166	29	34	62	31	39	85	18
Total Analysis Volume [veh/h]	78	765	115	65	665	116	138	249	124	157	340	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	49	0	11	44	0	19	26	0	34	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	71	71	6	70	70	11	15	15	12	17	17
g / C, Green / Cycle	0.06	0.59	0.59	0.05	0.58	0.58	0.09	0.13	0.13	0.10	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.24	0.04	0.21	0.21	0.08	0.10	0.11	0.09	0.11	0.11
s, saturation flow rate [veh/h]	1810	1900	1814	1810	1900	1803	1810	1900	1692	1810	1900	1787
c, Capacity [veh/h]	100	1120	1069	84	1103	1046	166	241	214	189	265	249
d1, Uniform Delay [s]	55.94	13.26	13.26	56.60	13.39	13.40	53.59	51.00	51.14	52.71	50.01	50.08
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.09	1.08	1.13	14.04	0.93	0.98	10.23	6.42	8.05	9.12	5.49	6.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.40	0.40	0.78	0.36	0.36	0.83	0.81	0.83	0.83	0.80	0.81
d, Delay for Lane Group [s/veh]	68.03	14.33	14.38	70.64	14.32	14.38	63.82	57.41	59.20	61.83	55.50	56.17
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.67	6.70	6.41	2.28	5.91	5.63	4.56	6.13	5.70	5.12	6.54	6.26
50th-Percentile Queue Length [ft/ln]	66.72	167.46	160.29	56.90	147.81	140.78	114.11	153.20	142.45	127.92	163.49	156.49
95th-Percentile Queue Length [veh/ln]	4.80	10.94	10.56	4.10	9.90	9.52	8.07	10.19	9.61	8.83	10.73	10.36
95th-Percentile Queue Length [ft/ln]	120.09	273.58	264.11	102.42	247.50	238.07	201.70	254.69	240.32	220.66	268.34	259.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.03	14.35	14.38	70.64	14.34	14.38	63.82	57.80	59.20	61.83	55.75	56.17
Movement LOS	E	B	B	E	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	18.73			18.67			59.76			57.48		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	33.63											
Intersection LOS	C											
Intersection V/C	0.465											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.686	2.670	2.519	2.630
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	667	367	617
d_b, Bicycle Delay [s]	23.44	26.67	40.02	28.70
l_b,int, Bicycle LOS Score for Intersection	2.350	2.258	1.981	2.029
Bicycle LOS	B	B	A	B

Sequence

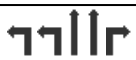
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	37.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.638

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	102	825	99	428	1064	189	241	269	59	114	315	294
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	0	18	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	828	99	428	1082	189	241	269	59	114	315	294
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	218	26	113	285	50	63	71	16	30	83	77
Total Analysis Volume [veh/h]	107	872	104	451	1139	199	254	283	62	120	332	309
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	26	0	31	43	0	14	45	0	18	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	50	50	18	59	59	10	26	26	10	26	26
g / C, Green / Cycle	0.07	0.42	0.42	0.15	0.49	0.49	0.08	0.22	0.22	0.08	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.06	0.13	0.31	0.12	0.07	0.08	0.04	0.07	0.17	0.19
s, saturation flow rate [veh/h]	1810	3618	1615	3514	3618	1615	3514	3618	1615	1810	1900	1615
c, Capacity [veh/h]	132	1507	673	529	1788	798	293	789	352	147	411	349
d1, Uniform Delay [s]	54.79	26.91	21.83	49.65	22.40	17.51	54.34	39.81	38.16	54.22	44.68	45.60
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.06	1.63	0.49	3.98	1.75	0.75	7.69	0.28	0.24	10.31	3.83	7.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.58	0.15	0.85	0.64	0.25	0.87	0.36	0.18	0.81	0.81	0.89
d, Delay for Lane Group [s/veh]	65.85	28.53	22.32	53.64	24.15	18.25	62.04	40.08	38.40	64.53	48.52	53.12
Lane Group LOS	E	C	C	D	C	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.59	9.84	1.93	6.87	12.04	3.33	4.10	3.59	1.52	3.99	9.79	9.62
50th-Percentile Queue Length [ft/ln]	89.80	246.10	48.26	171.83	301.02	83.37	102.52	89.74	37.95	99.68	244.84	240.40
95th-Percentile Queue Length [veh/ln]	6.47	14.99	3.47	11.17	17.73	6.00	7.38	6.46	2.73	7.18	14.93	14.70
95th-Percentile Queue Length [ft/ln]	161.65	374.74	86.86	279.32	443.29	150.07	184.54	161.54	68.31	179.43	373.15	367.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.85	28.53	22.32	53.64	24.15	18.25	62.04	40.08	38.40	64.53	48.52	53.12
Movement LOS	E	C	C	D	C	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	31.62			30.93			49.22			52.91		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.65											
Intersection LOS	D											
Intersection V/C	0.638											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.859	3.058	2.781	2.728
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	650	683	750
d_b, Bicycle Delay [s]	40.02	27.34	26.00	23.44
l_b,int, Bicycle LOS Score for Intersection	2.453	3.036	2.054	2.815
Bicycle LOS	B	C	B	C

Sequence

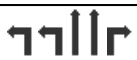
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	35.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.665

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	339	1082	67	245	1340	492	326	362	270	23	395	223
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	339	1083	67	245	1354	492	326	362	270	23	395	223
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	285	18	64	356	129	86	95	71	6	104	59
Total Analysis Volume [veh/h]	357	1140	71	258	1425	518	343	381	284	24	416	235
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	35	0	20	33	0	21	56	0	9	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	59	59	11	55	55	14	32	32	3	21	21
g / C, Green / Cycle	0.12	0.49	0.49	0.09	0.46	0.46	0.12	0.26	0.26	0.02	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.10	0.22	0.04	0.07	0.28	0.32	0.10	0.11	0.18	0.01	0.11	0.15
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	422	2524	788	323	2378	742	406	955	426	82	621	277
d1, Uniform Delay [s]	51.72	20.20	16.47	53.40	24.18	25.80	52.01	36.34	39.45	57.64	46.53	48.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.76	0.59	0.23	4.56	1.12	5.39	4.86	0.27	1.80	1.97	1.26	7.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.45	0.09	0.80	0.60	0.70	0.84	0.40	0.67	0.29	0.67	0.85
d, Delay for Lane Group [s/veh]	56.48	20.78	16.70	57.96	25.31	31.19	56.87	36.61	41.25	59.61	47.79	55.30
Lane Group LOS	E	C	B	E	C	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.53	7.04	1.10	4.02	10.15	12.63	5.33	4.65	7.68	0.38	5.93	7.35
50th-Percentile Queue Length [ft/ln]	138.37	176.02	27.54	100.46	253.74	315.79	133.24	116.24	192.00	9.52	148.13	183.82
95th-Percentile Queue Length [veh/ln]	9.39	11.39	1.98	7.23	15.37	18.46	9.12	8.19	12.22	0.69	9.92	11.80
95th-Percentile Queue Length [ft/ln]	234.83	284.81	49.57	180.82	384.36	461.51	227.89	204.64	305.62	17.14	247.93	295.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.48	20.78	16.70	57.96	25.31	31.19	56.87	36.61	41.25	59.61	47.79	55.30
Movement LOS	E	C	B	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	28.73			30.52			44.81			50.83		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.16											
Intersection LOS	D											
Intersection V/C	0.665											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.222	3.289	2.929	2.802
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	483	867	667
d_b, Bicycle Delay [s]	33.00	34.50	19.27	26.67
l_b,int, Bicycle LOS Score for Intersection	2.422	2.770	2.391	2.116
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	60.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	133	306	134	165	344	288	120	649	113	291	1377	266
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	9	0	0	0	9	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	306	134	165	353	288	120	649	122	291	1377	266
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	81	35	43	93	76	32	171	32	77	362	70
Total Analysis Volume [veh/h]	140	322	141	174	372	303	126	683	128	306	1449	280
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	36	36	15	39	0	12	50	0	19	57	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	32	49	11	36	36	8	48	48	13	53	53
g / C, Green / Cycle	0.06	0.27	0.41	0.09	0.30	0.30	0.07	0.40	0.40	0.11	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.04	0.17	0.09	0.10	0.19	0.19	0.07	0.15	0.15	0.09	0.46	0.48
s, saturation flow rate [veh/h]	3514	1900	1615	1810	1900	1621	1810	3618	1751	3514	1900	1797
c, Capacity [veh/h]	198	507	656	166	574	490	121	1455	704	373	839	794
d1, Uniform Delay [s]	55.66	38.85	23.17	54.50	36.15	36.17	56.00	25.25	25.30	52.50	33.50	33.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.49	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.62	5.98	0.75	46.07	5.26	6.17	50.20	0.16	0.34	4.48	38.87	58.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.64	0.21	1.05	0.63	0.64	1.04	0.37	0.38	0.82	1.03	1.09
d, Delay for Lane Group [s/veh]	60.27	44.83	23.92	100.57	41.41	42.34	106.20	25.41	25.63	56.98	72.37	92.44
Lane Group LOS	E	D	C	F	D	D	F	C	C	E	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.21	9.20	2.75	7.13	10.00	8.68	5.33	5.49	5.42	4.74	32.70	35.35
50th-Percentile Queue Length [ft/ln]	55.27	230.01	68.77	178.13	250.10	217.10	133.26	137.31	135.39	118.61	817.47	883.87
95th-Percentile Queue Length [veh/ln]	3.98	14.17	4.95	11.71	15.19	13.52	9.24	9.34	9.23	8.32	43.07	48.08
95th-Percentile Queue Length [ft/ln]	99.48	354.37	123.79	292.68	379.78	337.93	231.06	233.39	230.80	207.92	1076.63	1202.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.27	44.83	23.92	100.57	41.43	42.34	106.20	25.46	25.63	56.98	80.47	92.44
Movement LOS	E	D	C	F	D	D	F	C	C	E	F	F
d_A, Approach Delay [s/veh]	43.53			53.87			36.34			78.58		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	60.11											
Intersection LOS	E											
Intersection V/C	0.816											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.697	2.623	2.928	3.110
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	583	767	883
d_b, Bicycle Delay [s]	32.27	30.10	22.82	18.70
l_b,int, Bicycle LOS Score for Intersection	2.555	2.260	2.075	3.238
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	411	0	1297	0	1088	264	0	1060	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	22	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	433	0	1297	0	1088	264	0	1060	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	114	0	341	0	286	69	0	279	0
Total Analysis Volume [veh/h]	0	0	0	456	0	1365	0	1145	278	0	1116	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	94	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		64	64	48	48
g / C, Green / Cycle		0.54	0.54	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate		0.13	0.48	0.22	0.22
s, saturation flow rate [veh/h]		3514	2859	5176	5176
c, Capacity [veh/h]		1888	1536	2049	2049
d1, Uniform Delay [s]		14.76	24.58	28.11	27.91
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.07	1.94	1.11	1.05
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.24	0.89	0.56	0.54
d, Delay for Lane Group [s/veh]		14.82	26.52	29.22	28.96
Lane Group LOS		B	C	C	C
Critical Lane Group		No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.30	16.79	8.66	8.38
50th-Percentile Queue Length [ft/ln]		82.56	419.83	216.58	209.47
95th-Percentile Queue Length [veh/ln]		5.94	23.51	13.49	13.13
95th-Percentile Queue Length [ft/ln]		148.60	587.85	337.26	328.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	14.82	0.00	26.52	0.00	29.22	0.00	0.00	28.96	0.00
Movement LOS				B		C		C			C	
d_A, Approach Delay [s/veh]	0.00			23.59			29.22			28.96		
Approach LOS	A			C			C			C		
d_I, Intersection Delay [s/veh]	26.64											
Intersection LOS	C											
Intersection V/C	0.699											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.670	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1500	367	367
d_b, Bicycle Delay [s]	60.00	3.75	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.189	2.173
Bicycle LOS	D	A	B	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	363	3	427	0	0	0	396	652	0	0	1954	219
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	22	0	0	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	363	3	427	0	0	0	396	674	0	0	1954	253
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	96	1	112	0	0	0	104	177	0	0	514	67
Total Analysis Volume [veh/h]	382	3	449	0	0	0	417	709	0	0	2057	266
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	23	0	0	0	0	60	97	0	0	37	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	27		17	85	64
g / C, Green / Cycle	0.22	0.22	0.22		0.14	0.71	0.53
(v / s)_i Volume / Saturation Flow Rate	0.16	0.16	0.17		0.12	0.14	0.30
s, saturation flow rate [veh/h]	1810	1680	1615		3514	5176	6901
c, Capacity [veh/h]	406	377	363		501	3668	3677
d1, Uniform Delay [s]	42.88	43.18	43.34		50.04	5.90	18.66
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	9.92	11.90	13.10		3.66	0.03	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.73	0.75		0.83	0.19	0.56
d, Delay for Lane Group [s/veh]	52.80	55.08	56.45		53.71	5.92	18.79
Lane Group LOS	D	E	E		D	A	B
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	8.96	8.85	8.79		6.33	1.87	9.31
50th-Percentile Queue Length [ft/ln]	224.04	221.23	219.87		158.36	46.76	232.75
95th-Percentile Queue Length [veh/ln]	13.87	13.73	13.66		10.46	3.37	14.31
95th-Percentile Queue Length [ft/ln]	346.77	343.20	341.46		261.56	84.17	357.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.40	55.08	55.92	0.00	0.00	0.00	53.71	5.92	0.00	0.00	18.79	0.00
Movement LOS	D	E	E				D	A			B	
d_A, Approach Delay [s/veh]	54.74			0.00			23.62			18.79		
Approach LOS	D			A			C			B		
d_I, Intersection Delay [s/veh]	27.61											
Intersection LOS	C											
Intersection V/C	0.584											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.350	1.935	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	0	1550	550
d_b, Bicycle Delay [s]	42.50	60.00	3.04	31.54
l_b,int, Bicycle LOS Score for Intersection	2.936	4.132	2.179	2.408
Bicycle LOS	C	D	B	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	107	661	219	77	959	492	260	562	183	497	1527	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	108	8	0	142	0	0	0	22	80	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	769	227	77	1101	492	260	562	205	577	1527	74
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	202	60	20	290	129	68	148	54	152	402	19
Total Analysis Volume [veh/h]	148	809	239	81	1159	518	274	592	216	607	1607	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	44	0	9	43	0	15	40	0	27	52	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	45	45	5	44	44	11	32	32	23	43	43
g / C, Green / Cycle	0.05	0.38	0.38	0.04	0.37	0.37	0.09	0.26	0.26	0.19	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.04	0.16	0.15	0.02	0.22	0.32	0.08	0.11	0.13	0.17	0.31	0.05
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	176	1945	607	137	1888	589	322	1367	426	660	1864	582
d1, Uniform Delay [s]	56.53	27.71	27.44	56.71	31.20	35.64	53.69	36.69	37.51	47.84	35.62	25.81
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.32	0.66	1.91	4.00	1.50	16.96	6.29	0.22	0.93	5.82	1.28	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.42	0.39	0.59	0.61	0.88	0.85	0.43	0.51	0.92	0.86	0.13
d, Delay for Lane Group [s/veh]	66.85	28.37	29.36	60.71	32.70	52.60	59.98	36.91	38.44	53.66	36.89	25.91
Lane Group LOS	E	C	C	E	C	D	E	D	D	D	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.48	5.84	5.35	1.28	9.36	16.71	4.35	4.85	5.51	9.41	14.56	1.53
50th-Percentile Queue Length [ft/ln]	61.89	146.05	133.65	32.12	234.01	417.80	108.79	121.33	137.77	235.21	363.97	38.23
95th-Percentile Queue Length [veh/ln]	4.46	9.81	9.14	2.31	14.38	23.42	7.77	8.47	9.36	14.44	20.82	2.75
95th-Percentile Queue Length [ft/ln]	111.40	245.15	228.44	57.81	359.45	585.41	194.32	211.66	234.02	360.97	520.41	68.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.85	28.37	29.36	60.71	32.70	52.60	59.98	36.91	38.44	53.66	36.89	25.91
Movement LOS	E	C	C	E	C	D	E	D	D	D	D	C
d_A, Approach Delay [s/veh]	33.33			39.85			43.06			40.96		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	39.57											
Intersection LOS	D											
Intersection V/C	0.751											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.209	3.181	3.391	3.294
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	650	600	800
d_b, Bicycle Delay [s]	26.67	27.34	29.40	21.60
l_b,int, Bicycle LOS Score for Intersection	2.217	2.527	2.155	2.820
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	39.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	95	432	25	114	434	221	148	507	61	105	695	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	3	0	0	63	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	432	25	114	434	221	148	510	61	105	758	120
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	114	7	30	114	58	39	134	16	28	199	32
Total Analysis Volume [veh/h]	100	455	26	120	457	233	156	537	64	111	798	126
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	36	0	17	40	0	18	36	0	31	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	58	58	10	59	59	12	27	27	9	24	24
g / C, Green / Cycle	0.07	0.48	0.48	0.08	0.49	0.49	0.10	0.23	0.23	0.08	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.06	0.13	0.02	0.07	0.20	0.20	0.09	0.10	0.04	0.06	0.17	0.17
s, saturation flow rate [veh/h]	1810	3618	1615	1810	1870	1660	1810	5176	1589	1781	3618	1771
c, Capacity [veh/h]	124	1742	778	147	924	820	184	1163	357	141	732	358
d1, Uniform Delay [s]	55.08	18.44	16.39	54.25	19.08	19.09	53.01	40.24	37.58	54.26	46.06	46.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.36	0.36	0.08	10.45	1.27	1.43	10.36	0.29	0.24	9.33	2.80	5.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.26	0.03	0.82	0.40	0.40	0.85	0.46	0.18	0.79	0.85	0.85
d, Delay for Lane Group [s/veh]	66.44	18.81	16.47	64.70	20.35	20.53	63.37	40.53	37.82	63.60	48.86	51.82
Lane Group LOS	E	B	B	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.37	3.83	0.40	3.99	6.66	5.97	5.15	4.61	1.55	3.66	9.14	9.30
50th-Percentile Queue Length [ft/ln]	84.33	95.72	9.93	99.82	166.41	149.22	128.75	115.35	38.85	91.52	228.60	232.54
95th-Percentile Queue Length [veh/ln]	6.07	6.89	0.71	7.19	10.89	9.98	8.87	8.14	2.80	6.59	14.10	14.30
95th-Percentile Queue Length [ft/ln]	151.79	172.29	17.87	179.67	272.19	249.39	221.79	203.42	69.92	164.74	352.58	357.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.44	18.81	16.47	64.70	20.38	20.53	63.37	40.53	37.82	63.60	49.53	51.82
Movement LOS	E	B	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.90			26.99			45.01			51.31		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.17											
Intersection LOS	D											
Intersection V/C	0.509											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.665	2.719	3.069	2.950
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	600	533	750
d_b, Bicycle Delay [s]	32.27	29.40	32.27	23.44
l_b,int, Bicycle LOS Score for Intersection	2.039	2.228	1.976	2.129
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	56.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.939

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	144	642	823	139	864	281	318	1048	122	177	1060	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	0	0	18	2	1	0	8	36	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	642	828	139	864	299	320	1049	122	185	1096	114
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	169	218	37	227	79	84	276	32	49	288	30
Total Analysis Volume [veh/h]	152	676	872	146	909	315	337	1104	128	195	1154	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	21	62	0	13	54	0	15	33	0	12	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	12	58	58	9	55	55	11	29	29	8	26	39
g / C, Green / Cycle	0.10	0.48	0.48	0.08	0.46	0.46	0.09	0.24	0.24	0.07	0.22	0.33
(v / s)_i Volume / Saturation Flow Rate	0.08	0.36	0.54	0.08	0.25	0.20	0.10	0.21	0.08	0.06	0.22	0.07
s, saturation flow rate [veh/h]	1810	1900	1615	1810	3618	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	182	918	781	136	1656	739	322	1251	390	234	1121	525
d1, Uniform Delay [s]	53.00	24.86	31.00	55.50	23.56	21.91	54.50	43.86	37.47	55.34	47.00	29.53
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.63	5.24	69.40	58.02	1.31	1.79	36.40	2.24	0.49	7.50	20.81	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.74	1.12	1.08	0.55	0.43	1.05	0.88	0.33	0.83	1.03	0.23
d, Delay for Lane Group [s/veh]	62.63	30.10	100.40	113.52	24.87	23.70	90.90	46.10	37.96	62.83	67.81	29.75
Lane Group LOS	E	C	F	F	C	C	F	D	D	E	F	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.99	16.38	36.71	6.29	9.51	6.31	6.49	10.74	3.17	3.16	13.24	2.57
50th-Percentile Queue Length [ft/ln]	124.64	409.54	917.77	157.19	237.82	157.66	162.14	268.38	79.14	78.94	331.10	64.37
95th-Percentile Queue Length [veh/ln]	8.65	23.02	50.72	10.65	14.57	10.42	10.84	16.11	5.70	5.68	19.52	4.63
95th-Percentile Queue Length [ft/ln]	216.19	575.48	1268.05	266.36	364.27	260.62	270.95	402.71	142.46	142.10	487.94	115.87

Movement, Approach, & Intersection Results

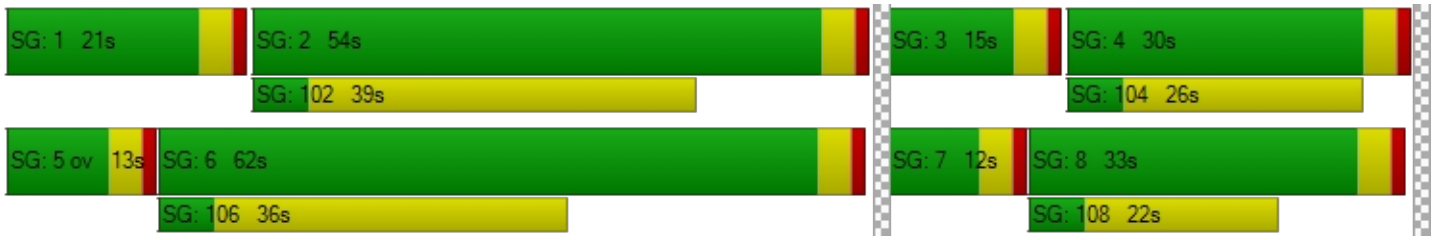
d_M, Delay for Movement [s/veh]	62.63	30.10	100.40	113.52	24.87	23.70	90.90	46.10	37.96	62.83	67.81	29.75
Movement LOS	E	C	F	F	C	C	F	D	D	E	F	C
d_A, Approach Delay [s/veh]	69.07			34.05			55.06			64.04		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	56.41											
Intersection LOS	E											
Intersection V/C	0.939											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.887	2.875	3.210	3.332
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	833	483	433
d_b, Bicycle Delay [s]	16.02	20.42	34.50	36.82
l_b,int, Bicycle LOS Score for Intersection	2.962	2.690	2.423	2.368
Bicycle LOS	C	B	B	B

Sequence

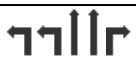
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.593

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	192	923	81	250	1228	122	115	460	122	141	640	218
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	5	18	1	0	0	0	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	192	923	81	250	1233	140	116	460	122	141	649	218
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	243	21	66	324	37	31	121	32	37	171	57
Total Analysis Volume [veh/h]	202	972	85	263	1298	147	122	484	128	148	683	229
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	43	0	21	51	0	9	45	0	11	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	67	67	11	69	69	5	19	19	7	21	21
g / C, Green / Cycle	0.07	0.56	0.56	0.09	0.58	0.58	0.04	0.16	0.16	0.06	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.05	0.07	0.36	0.09	0.03	0.09	0.08	0.04	0.13	0.14
s, saturation flow rate [veh/h]	3514	5176	1615	3514	3618	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	257	2872	896	329	2082	929	146	830	259	203	913	285
d1, Uniform Delay [s]	54.68	14.63	12.54	53.27	16.87	11.90	57.09	46.67	45.95	55.62	46.90	47.43
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.23	0.32	0.21	4.47	1.42	0.36	11.51	0.65	1.46	4.98	1.25	5.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.34	0.09	0.80	0.62	0.16	0.83	0.58	0.49	0.73	0.75	0.80
d, Delay for Lane Group [s/veh]	59.91	14.95	12.75	57.74	18.29	12.26	68.59	47.33	47.41	60.60	48.15	52.72
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.19	4.84	1.12	4.09	11.80	1.91	2.07	4.52	3.60	2.34	6.56	6.98
50th-Percentile Queue Length [ft/ln]	79.71	121.03	28.05	102.24	294.89	47.82	51.76	113.05	89.95	58.60	163.89	174.51
95th-Percentile Queue Length [veh/ln]	5.74	8.45	2.02	7.36	17.43	3.44	3.73	8.01	6.48	4.22	10.75	11.31
95th-Percentile Queue Length [ft/ln]	143.48	211.24	50.49	184.03	435.70	86.08	93.17	200.23	161.90	105.48	268.87	282.83

Movement, Approach, & Intersection Results

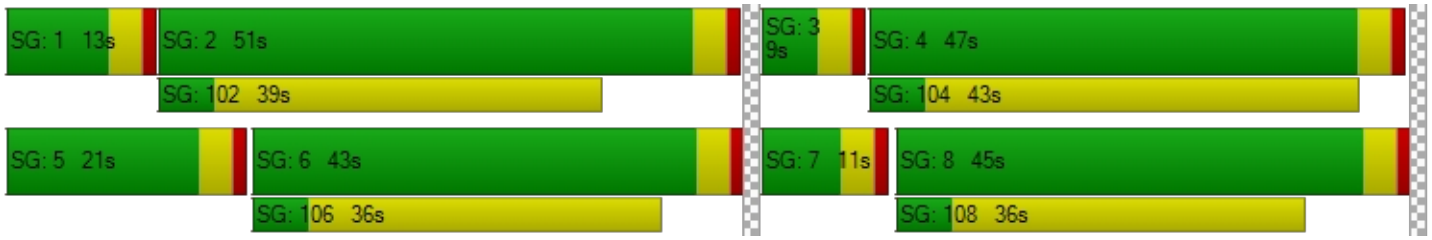
d_M, Delay for Movement [s/veh]	59.91	14.95	12.75	57.74	18.29	12.26	68.59	47.33	47.41	60.60	48.15	52.72
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	22.02			23.84			50.87			50.88		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.55											
Intersection LOS	C											
Intersection V/C	0.593											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.171	3.362	3.154	3.069
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	783	683	717
d_b, Bicycle Delay [s]	27.34	22.20	26.00	24.70
l_b,int, Bicycle LOS Score for Intersection	2.252	2.969	1.963	2.143
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	44.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.606

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	158	280	163	85	444	142	97	279	149	130	520	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	18	0	0	0	0	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	280	163	85	462	142	97	279	149	131	520	77
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	74	43	22	122	37	26	73	39	34	137	20
Total Analysis Volume [veh/h]	166	295	172	89	486	149	102	294	157	138	547	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	27	0	14	23	23	0	26	0	0	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	45	45	7	40	40	22	22	29	29
g / C, Green / Cycle	0.11	0.38	0.38	0.06	0.33	0.33	0.19	0.19	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.09	0.13	0.13	0.05	0.13	0.09	0.16	0.16	0.22	0.22
s, saturation flow rate [veh/h]	1810	1900	1670	1810	3618	1615	1868	1559	1868	1663
c, Capacity [veh/h]	194	713	627	113	1198	535	347	289	454	404
d1, Uniform Delay [s]	52.68	26.90	26.96	55.45	31.02	29.58	47.39	47.54	43.89	43.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.12	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.40	1.33	1.55	11.30	1.02	1.30	6.43	8.33	6.68	7.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.35	0.35	0.79	0.41	0.28	0.86	0.88	0.89	0.89
d, Delay for Lane Group [s/veh]	63.08	28.22	28.50	66.76	32.04	30.87	53.83	55.87	50.57	51.38
Lane Group LOS	E	C	C	E	C	C	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.47	5.34	4.81	3.01	5.61	3.38	9.27	8.02	12.41	11.15
50th-Percentile Queue Length [ft/ln]	136.83	133.57	120.26	75.28	140.34	84.39	231.68	200.47	310.27	278.78
95th-Percentile Queue Length [veh/ln]	9.31	9.13	8.41	5.42	9.50	6.08	14.26	12.66	18.19	16.63
95th-Percentile Queue Length [ft/ln]	232.75	228.34	210.19	135.50	237.49	151.90	356.50	316.58	454.71	415.70

Movement, Approach, & Intersection Results

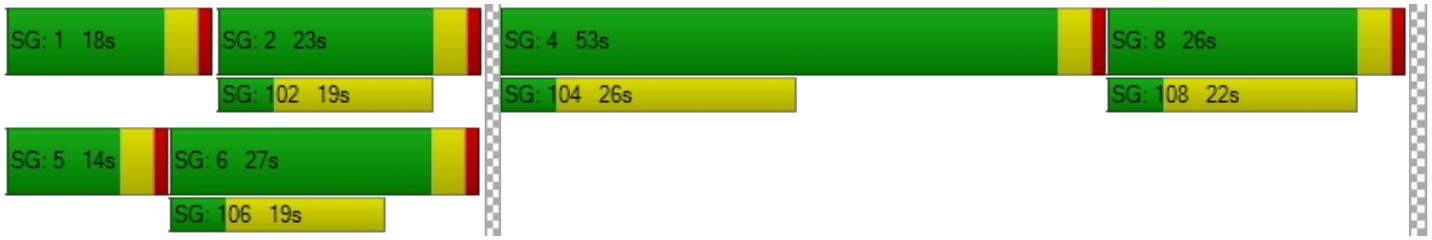
d_M, Delay for Movement [s/veh]	63.08	28.27	28.50	66.76	32.04	30.87	53.83	54.50	55.87	50.57	50.98	51.38
Movement LOS	E	C	C	E	C	C	D	D	E	D	D	D
d_A, Approach Delay [s/veh]	37.46			36.07			54.76			50.95		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.52											
Intersection LOS	D											
Intersection V/C	0.606											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.591	2.663	2.491	2.468
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	317	367	817
d_b, Bicycle Delay [s]	39.20	42.50	40.02	21.00
l_b,int, Bicycle LOS Score for Intersection	2.082	2.157	2.016	2.192
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	33.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.933

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	194	0	951	0	693	894	0	1774	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	94	0	0	0	27	0	0	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	288	0	951	0	720	894	0	1784	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	76	0	250	0	189	235	0	469	0
Total Analysis Volume [veh/h]	0	0	0	303	0	1001	0	758	941	0	1878	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	46	0	0	0	74	0	0	74	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		42	42	42	70	70	70
g / C, Green / Cycle		0.35	0.35	0.35	0.58	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate		0.17	0.35	0.27	0.15	0.58	0.36
s, saturation flow rate [veh/h]		1810	1615	1615	5176	1615	5176
c, Capacity [veh/h]		633	565	565	3019	942	3019
d1, Uniform Delay [s]		30.45	39.00	34.69	12.20	24.96	16.35
k, delay calibration		0.11	0.47	0.29	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.56	37.01	5.85	0.20	29.05	0.98
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.48	1.00	0.77	0.25	1.00	0.62
d, Delay for Lane Group [s/veh]		31.01	76.01	40.54	12.40	54.01	17.32
Lane Group LOS		C	F	D	B	D	B
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		6.93	22.14	12.09	3.31	32.41	11.08
50th-Percentile Queue Length [ft/ln]		173.36	553.60	302.23	82.84	810.36	277.12
95th-Percentile Queue Length [veh/ln]		11.25	29.90	17.79	5.96	41.75	16.55
95th-Percentile Queue Length [ft/ln]		281.33	747.55	444.79	149.11	1043.79	413.63

Movement, Approach, & Intersection Results

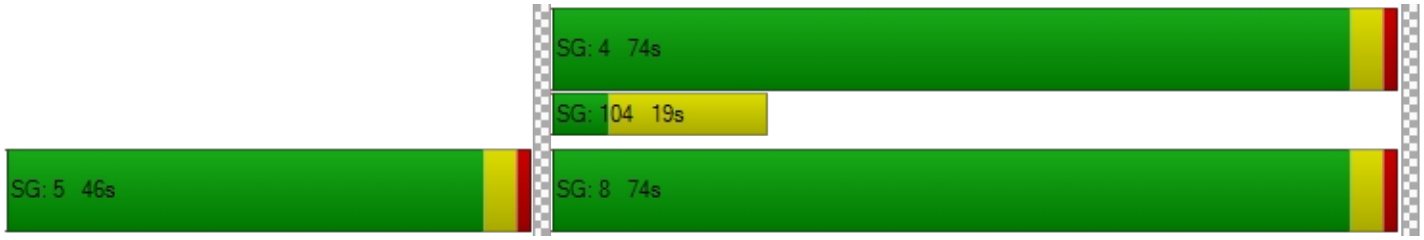
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	31.01	0.00	60.60	0.00	12.40	54.01	0.00	17.32	0.00
Movement LOS				C		E		B	D		B	
d_A, Approach Delay [s/veh]	0.00			53.73			35.45			17.32		
Approach LOS	A			D			D			B		
d_I, Intersection Delay [s/veh]	33.36											
Intersection LOS	C											
Intersection V/C	0.933											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.464	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	700	1167	1167
d_b, Bicycle Delay [s]	60.00	25.35	10.42	10.42
l_b,int, Bicycle LOS Score for Intersection	4.132	3.711	2.494	2.593
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	24.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	978	0	553	0	0	0	0	640	0	0	1480	257
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	121	0	0	10	61
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	978	0	553	0	0	0	0	761	0	0	1490	318
Peak Hour Factor	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000	1.0000	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	257	0	146	0	0	0	0	200	0	0	392	84
Total Analysis Volume [veh/h]	1029	0	582	0	0	0	0	801	0	0	1568	335
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	81	0	0	0	0	0	0	39	0	0	39	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	45		67	67	67
g / C, Green / Cycle	0.37	0.37	0.37		0.56	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.30	0.30	0.33		0.15	0.30	0.21
s, saturation flow rate [veh/h]	1810	1791	1615		5176	5176	1615
c, Capacity [veh/h]	676	670	604		2896	2896	904
d1, Uniform Delay [s]	33.46	33.60	35.25		13.77	16.70	14.68
k, delay calibration	0.11	0.11	0.11		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.17	2.29	4.90		0.24	0.73	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.80	0.89		0.28	0.54	0.37
d, Delay for Lane Group [s/veh]	35.63	35.90	40.15		14.01	17.43	15.85
Lane Group LOS	D	D	D		B	B	B
Critical Lane Group	No	No	Yes		No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.17	14.24	15.32		3.78	9.02	5.27
50th-Percentile Queue Length [ft/ln]	354.14	356.10	382.93		94.54	225.53	131.70
95th-Percentile Queue Length [veh/ln]	20.34	20.43	21.74		6.81	13.95	9.03
95th-Percentile Queue Length [ft/ln]	508.45	510.84	543.39		170.17	348.68	225.80

Movement, Approach, & Intersection Results

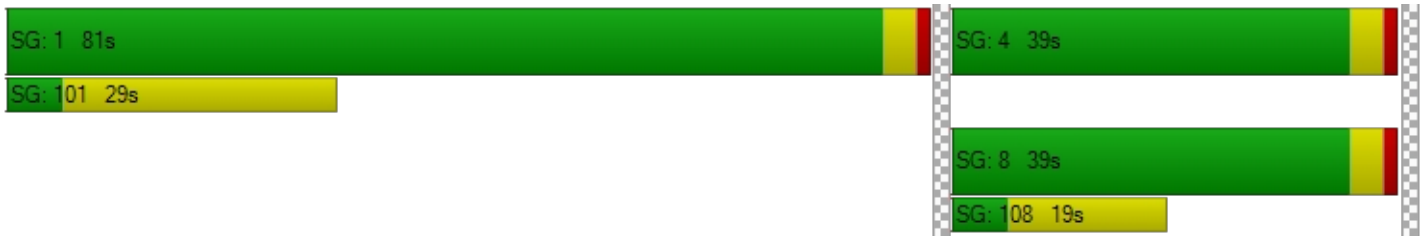
d_M, Delay for Movement [s/veh]	35.76	0.00	39.83	0.00	0.00	0.00	0.00	14.01	0.00	0.00	17.43	15.85
Movement LOS	D		D					B			B	B
d_A, Approach Delay [s/veh]	37.23			0.00			14.01			17.15		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	24.06											
Intersection LOS	C											
Intersection V/C	0.635											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.539	0.000	0.000	3.067
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1283	0	583	583
d_b, Bicycle Delay [s]	7.70	60.00	30.10	30.10
l_b,int, Bicycle LOS Score for Intersection	4.218	4.132	2.000	2.606
Bicycle LOS	D	D	B	B

Sequence

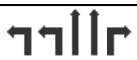
Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	51.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.831

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	223	236	76	57	419	296	118	558	282	383	1399	129
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	71	0	0	0	19	0	0	0	121	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	294	236	76	57	438	296	118	558	403	384	1399	129
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	62	20	15	115	78	31	147	106	101	368	34
Total Analysis Volume [veh/h]	309	248	80	60	461	312	124	587	424	404	1473	136
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	24	49	0	11	36	0	9	36	36	24	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	47	47	5	32	32	5	36	60	16	47	47
g / C, Green / Cycle	0.17	0.39	0.39	0.04	0.27	0.27	0.04	0.30	0.50	0.13	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.17	0.13	0.05	0.03	0.22	0.22	0.04	0.16	0.26	0.11	0.41	0.08
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1900	1648	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	302	740	629	79	507	439	146	1079	805	474	1417	633
d1, Uniform Delay [s]	50.00	25.71	23.52	56.75	41.24	41.27	57.12	35.26	20.47	50.73	36.50	24.25
k, delay calibration	0.22	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.49	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	40.61	1.22	0.42	13.73	13.54	15.51	12.44	0.43	2.40	4.42	23.32	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.02	0.34	0.13	0.76	0.82	0.82	0.85	0.54	0.53	0.85	1.04	0.22
d, Delay for Lane Group [s/veh]	90.61	26.93	23.93	70.48	54.78	56.78	69.56	35.69	22.87	55.16	59.82	24.41
Lane Group LOS	F	C	C	E	D	E	E	D	C	E	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	12.41	5.23	1.54	2.10	13.30	11.81	2.12	7.24	8.48	6.22	24.85	2.61
50th-Percentile Queue Length [ft/ln]	310.28	130.68	38.53	52.54	332.49	295.20	53.02	180.98	211.97	155.49	621.15	65.32
95th-Percentile Queue Length [veh/ln]	18.41	8.98	2.77	3.78	19.28	17.44	3.82	11.65	13.25	10.31	33.96	4.70
95th-Percentile Queue Length [ft/ln]	460.29	224.42	69.36	94.57	482.02	436.09	95.43	291.30	331.36	257.74	848.97	117.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	90.61	26.93	23.93	70.48	54.99	56.78	69.56	35.69	22.87	55.16	59.82	24.41
Movement LOS	F	C	C	E	D	E	E	D	C	E	F	C
d_A, Approach Delay [s/veh]	57.44			56.78			34.60			56.50		
Approach LOS	E			E			C			E		
d_I, Intersection Delay [s/veh]	51.30											
Intersection LOS	D											
Intersection V/C	0.831											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.691	2.577	3.134	3.161
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	533	533	783
d_b, Bicycle Delay [s]	23.44	32.27	32.27	22.20
l_b,int, Bicycle LOS Score for Intersection	2.611	2.247	2.496	3.220
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	51.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.796

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	380	575	172	184	960	227	206	468	204	337	1306	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	156	5	0	259	1	0	0	0	43	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	380	731	177	184	1219	228	206	468	204	380	1306	110
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	192	47	48	321	60	54	123	54	100	344	29
Total Analysis Volume [veh/h]	400	769	186	194	1283	240	217	493	215	400	1375	116
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	28	46	0	22	40	40	12	36	0	16	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	24	46	46	15	37	49	8	31	31	12	35	54
g / C, Green / Cycle	0.20	0.39	0.39	0.12	0.31	0.41	0.07	0.26	0.26	0.10	0.29	0.45
(v / s)_i Volume / Saturation Flow Rate	0.22	0.15	0.12	0.11	0.25	0.15	0.06	0.10	0.13	0.11	0.27	0.07
s, saturation flow rate [veh/h]	1810	5176	1615	1810	5176	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	362	1993	622	226	1604	662	234	1329	415	351	1501	724
d1, Uniform Delay [s]	48.00	26.65	25.65	51.46	37.99	24.54	55.71	36.64	38.24	54.00	41.18	19.67
k, delay calibration	0.37	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	72.38	0.57	1.23	9.11	4.28	1.54	14.51	0.17	1.01	70.29	2.64	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.11	0.39	0.30	0.86	0.80	0.36	0.93	0.37	0.52	1.14	0.92	0.16
d, Delay for Lane Group [s/veh]	120.38	27.22	26.88	60.57	42.27	26.08	70.22	36.81	39.24	124.29	43.82	19.78
Lane Group LOS	F	C	C	E	D	C	E	D	D	F	D	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	18.04	5.40	3.91	6.29	12.07	5.01	3.74	4.00	5.55	8.72	13.34	1.96
50th-Percentile Queue Length [ft/ln]	450.88	135.02	97.76	157.19	301.81	125.32	93.41	99.96	138.67	218.11	333.50	49.03
95th-Percentile Queue Length [veh/ln]	26.36	9.21	7.04	10.40	17.77	8.68	6.73	7.20	9.41	14.23	19.33	3.53
95th-Percentile Queue Length [ft/ln]	658.99	230.30	175.97	260.00	444.26	217.11	168.13	179.93	235.23	355.86	483.25	88.26

Movement, Approach, & Intersection Results

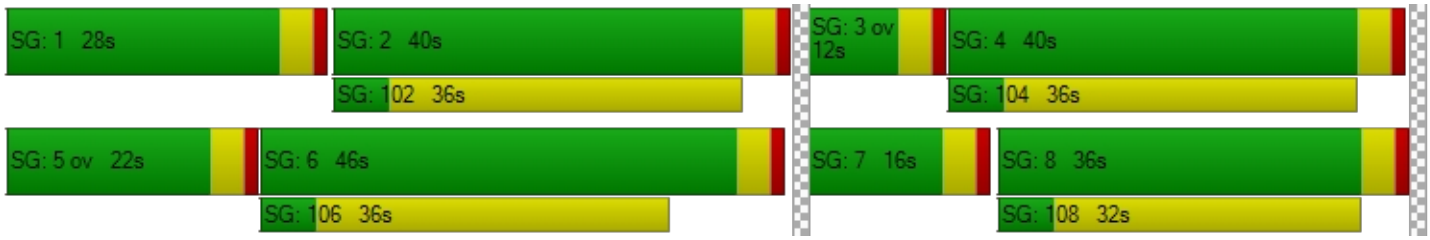
d_M, Delay for Movement [s/veh]	120.38	27.22	26.88	60.57	42.27	26.08	70.22	36.81	39.24	124.29	43.82	19.78
Movement LOS	F	C	C	E	D	C	E	D	D	F	D	B
d_A, Approach Delay [s/veh]	54.67			42.07			45.21			59.36		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	51.02											
Intersection LOS	D											
Intersection V/C	0.796											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.137	3.170	3.183	3.164
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	600	533	600
d_b, Bicycle Delay [s]	25.35	29.40	32.27	29.40
l_b,int, Bicycle LOS Score for Intersection	2.305	2.504	2.068	2.600
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	4,102.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	8.854

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	108	0	202	0	0	0	0	725	123	282	1728	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	0	0	0	0	5	0	8	43	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	0	207	0	0	0	0	730	123	290	1771	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	0	54	0	0	0	0	192	32	76	466	0
Total Analysis Volume [veh/h]	114	0	218	0	0	0	0	768	129	305	1864	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	8.85	0.00	0.39	0.00	0.00	0.00	0.00	0.01	0.00	0.40	0.02	0.00
d_M, Delay for Movement [s/veh]	4102.05	4516.06	3828.85	1085.66	770.73	18.24	15.97	0.00	0.00	12.79	0.00	0.00
Movement LOS	F	F	F	F	F	C	C	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	40.11	40.11	40.11	0.00	0.00	0.00	0.00	0.00	0.00	1.92	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1002.82	1002.82	1002.82	0.00	0.00	0.00	0.00	0.00	0.00	48.09	0.00	0.00
d_A, Approach Delay [s/veh]	3922.66			624.88			0.00			1.80		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	384.41											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	48.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	160	586	120	151	813	181	167	502	128	365	998	107
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	8	0	0	5	0	0	34	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	591	120	151	821	181	167	507	128	365	1032	107
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	156	32	40	216	48	44	133	34	96	272	28
Total Analysis Volume [veh/h]	168	622	126	159	864	191	176	534	135	384	1086	113
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	42	0	16	42	0	17	28	0	34	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	40	40	12	40	40	13	24	24	27	39	39
g / C, Green / Cycle	0.10	0.34	0.34	0.10	0.34	0.34	0.11	0.20	0.20	0.23	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.09	0.20	0.20	0.09	0.29	0.29	0.10	0.15	0.08	0.21	0.30	0.07
s, saturation flow rate [veh/h]	1810	1900	1790	1810	1900	1783	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	181	637	600	181	637	598	196	733	327	414	1168	522
d1, Uniform Delay [s]	53.57	33.24	33.24	53.28	37.11	37.17	52.84	44.76	41.63	45.31	39.30	29.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.34	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.91	4.21	4.47	12.64	13.56	14.59	13.48	1.41	0.83	22.49	3.91	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.60	0.60	0.88	0.85	0.86	0.90	0.73	0.41	0.93	0.93	0.22
d, Delay for Lane Group [s/veh]	71.49	37.45	37.71	65.92	50.68	51.76	66.32	46.17	42.47	67.80	43.22	29.78
Lane Group LOS	E	D	D	E	D	D	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.92	10.04	9.51	5.36	17.05	16.24	5.97	7.56	3.57	13.72	15.92	2.42
50th-Percentile Queue Length [ft/ln]	148.05	251.08	237.70	134.05	426.22	405.98	149.16	189.10	89.14	343.08	398.08	60.60
95th-Percentile Queue Length [veh/ln]	9.91	15.24	14.56	9.16	23.82	22.85	9.97	12.07	6.42	19.80	22.47	4.36
95th-Percentile Queue Length [ft/ln]	247.83	381.01	364.12	228.99	595.51	571.20	249.31	301.86	160.45	494.97	561.69	109.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.49	37.55	37.71	65.92	51.08	51.76	66.32	46.17	42.47	67.80	43.22	29.78
Movement LOS	E	D	D	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	43.80			53.13			49.78			48.22		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	48.93											
Intersection LOS	D											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.763	2.729	2.840	2.858
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	633	400	683
d_b, Bicycle Delay [s]	28.02	28.02	38.40	26.00
l_b,int, Bicycle LOS Score for Intersection	2.315	2.561	2.257	2.866
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	44.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.750

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	129	722	138	216	996	143	239	434	125	233	811	169
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	5	0	16	6	0	5	0	8	19	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	129	727	143	216	1012	149	239	439	125	241	830	169
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	191	38	57	266	39	63	116	33	63	218	44
Total Analysis Volume [veh/h]	136	765	151	227	1065	157	252	462	132	254	874	178
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	34	0	23	43	0	23	35	0	28	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	37	37	17	44	44	18	32	32	19	32	32
g / C, Green / Cycle	0.08	0.31	0.31	0.14	0.36	0.36	0.15	0.26	0.26	0.16	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.08	0.21	0.09	0.13	0.29	0.10	0.14	0.13	0.08	0.14	0.24	0.11
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	151	1101	492	256	1311	585	279	951	424	286	965	431
d1, Uniform Delay [s]	54.51	36.82	32.03	50.57	34.56	27.01	49.89	37.38	35.51	49.47	42.52	36.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.13	0.11	0.11	0.13	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.09	3.62	1.62	9.98	5.57	1.12	11.98	0.39	0.41	10.60	3.56	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.69	0.31	0.89	0.81	0.27	0.90	0.49	0.31	0.89	0.91	0.41
d, Delay for Lane Group [s/veh]	71.61	40.44	33.64	60.55	40.13	28.14	61.87	37.77	35.93	60.08	46.08	36.88
Lane Group LOS	E	D	C	E	D	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.79	10.39	3.60	7.39	14.86	3.37	8.34	5.79	3.16	8.29	12.90	4.39
50th-Percentile Queue Length [ft/ln]	119.63	259.76	89.96	184.80	371.61	84.36	208.50	144.79	79.12	207.25	322.57	109.75
95th-Percentile Queue Length [veh/ln]	8.37	15.68	6.48	11.85	21.19	6.07	13.08	9.74	5.70	13.01	18.79	7.83
95th-Percentile Queue Length [ft/ln]	209.31	391.92	161.92	296.27	529.69	151.84	326.90	243.46	142.42	325.30	469.85	195.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.61	40.44	33.64	60.55	40.13	28.14	61.87	37.77	35.93	60.08	46.08	36.88
Movement LOS	E	D	C	E	D	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	43.50			42.03			44.66			47.55		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.39											
Intersection LOS	D											
Intersection V/C	0.750											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.958	3.063	2.795	2.817
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	650	517	600
d_b, Bicycle Delay [s]	33.75	27.34	33.00	29.40
l_b,int, Bicycle LOS Score for Intersection	2.428	2.755	2.258	2.637
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	72.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.917

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	398	246	65	163	519	439	104	848	209	277	1753	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	71	0	0	141	0	0	0	27	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	398	317	65	163	660	439	104	848	236	277	1753	167
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	83	17	43	174	116	27	223	62	73	461	44
Total Analysis Volume [veh/h]	419	334	68	172	695	462	109	893	248	292	1845	176
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	30	30	17	30	30	9	59	59	14	64	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	26	40	13	26	35	5	55	72	10	60	60
g / C, Green / Cycle	0.11	0.22	0.33	0.11	0.22	0.29	0.04	0.46	0.60	0.08	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.12	0.09	0.04	0.10	0.19	0.29	0.03	0.47	0.15	0.08	0.53	0.55
s, saturation flow rate [veh/h]	3514	3618	1615	1810	3618	1615	3514	1900	1615	3514	1900	1843
c, Capacity [veh/h]	381	784	538	196	784	471	146	871	969	293	950	922
d1, Uniform Delay [s]	53.50	40.56	27.84	52.71	45.57	42.17	56.87	32.50	11.34	54.99	30.00	30.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.49	0.17	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	54.55	1.69	0.48	11.71	14.08	36.98	7.28	36.89	0.21	23.77	47.68	59.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.10	0.43	0.13	0.88	0.89	0.98	0.74	1.03	0.26	1.00	1.06	1.10
d, Delay for Lane Group [s/veh]	108.05	42.26	28.32	64.43	59.65	79.14	64.14	69.39	11.56	78.76	77.68	89.55
Lane Group LOS	F	D	C	E	E	E	E	F	B	E	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.61	4.46	1.44	5.74	11.52	18.25	1.78	33.31	3.12	5.37	38.77	40.65
50th-Percentile Queue Length [ft/ln]	215.34	111.45	36.12	143.47	288.09	456.27	44.56	832.84	77.98	134.33	969.22	1016.30
95th-Percentile Queue Length [veh/ln]	13.94	7.92	2.60	9.67	17.09	25.26	3.21	43.64	5.61	9.17	51.47	54.94
95th-Percentile Queue Length [ft/ln]	348.41	198.01	65.02	241.69	427.27	631.43	80.21	1091.07	140.36	229.36	1286.80	1373.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	108.05	42.26	28.32	64.43	59.65	79.14	64.14	69.39	11.56	78.76	83.05	89.55
Movement LOS	F	D	C	E	E	E	E	F	B	E	F	F
d_A, Approach Delay [s/veh]	74.68			67.05			57.46			83.00		
Approach LOS	E			E			E			F		
d_I, Intersection Delay [s/veh]	72.51											
Intersection LOS	E											
Intersection V/C	0.917											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.896	2.785	3.163	3.028
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	917	1000
d_b, Bicycle Delay [s]	36.82	36.82	17.60	15.00
l_b,int, Bicycle LOS Score for Intersection	2.237	2.656	3.622	3.468
Bicycle LOS	B	B	D	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	57.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	136	1033	168	59	1220	106	81	437	104	221	763	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	161	0	0	302	0	0	0	0	35	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	1194	168	59	1522	106	81	437	104	256	763	87
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	314	44	16	401	28	21	115	27	67	201	23
Total Analysis Volume [veh/h]	143	1257	177	62	1602	112	85	460	109	269	803	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	47	0	9	42	0	10	36	0	28	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	43	43	5	38	38	6	36	36	20	50	50
g / C, Green / Cycle	0.08	0.36	0.36	0.04	0.32	0.32	0.05	0.30	0.30	0.17	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.08	0.27	0.27	0.03	0.31	0.31	0.05	0.24	0.07	0.15	0.42	0.06
s, saturation flow rate [veh/h]	1810	3618	1782	1810	3618	1837	1810	1900	1615	1810	1900	1615
c, Capacity [veh/h]	151	1296	639	75	1146	582	90	572	486	300	792	673
d1, Uniform Delay [s]	54.74	33.63	33.64	57.06	40.84	40.87	56.82	38.70	31.45	49.04	35.00	21.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.32	0.11	0.15	0.48	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.53	3.85	7.58	19.24	24.69	35.71	31.13	7.56	0.23	12.54	34.97	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.74	0.74	0.82	0.99	0.99	0.94	0.80	0.22	0.90	1.01	0.14
d, Delay for Lane Group [s/veh]	78.27	37.48	41.22	76.30	65.53	76.58	87.95	46.26	31.68	61.59	69.97	21.74
Lane Group LOS	E	D	D	E	E	E	F	D	C	E	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.28	12.79	13.28	2.27	20.40	22.54	3.35	13.58	2.42	8.93	30.16	1.63
50th-Percentile Queue Length [ft/ln]	132.05	319.81	331.88	56.72	510.08	563.56	83.74	339.57	60.39	223.17	754.12	40.82
95th-Percentile Queue Length [veh/ln]	9.05	18.66	19.25	4.08	27.81	30.33	6.03	19.63	4.35	13.83	39.60	2.94
95th-Percentile Queue Length [ft/ln]	226.28	466.45	481.26	102.09	695.28	758.22	150.73	490.67	108.71	345.66	990.07	73.47

Movement, Approach, & Intersection Results

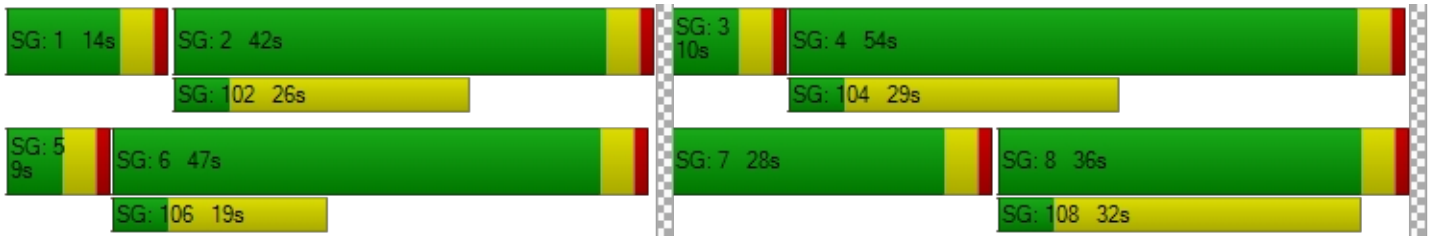
d_M, Delay for Movement [s/veh]	78.27	38.36	41.22	76.30	68.75	76.58	87.95	46.26	31.68	61.59	69.97	21.74
Movement LOS	E	D	D	E	E	E	F	D	C	E	F	C
d_A, Approach Delay [s/veh]	42.30			69.51			49.25			64.22		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	57.46											
Intersection LOS	E											
Intersection V/C	0.863											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.174	3.056	2.746	2.600
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	633	533	833
d_b, Bicycle Delay [s]	24.70	28.02	32.27	20.42
l_b,int, Bicycle LOS Score for Intersection	2.427	2.536	2.639	3.480
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.600

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	107	260	156	24	260	137	68	397	65	189	780	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	8	0	0	0	0	3	35	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	265	156	24	268	137	68	397	65	192	815	45
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	70	41	6	71	36	18	104	17	51	214	12
Total Analysis Volume [veh/h]	113	279	164	25	282	144	72	418	68	202	858	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	32	0	0	32	0	0	88	0	0	88	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	47	47	47	47	47	47	65	65	65	65	65	65
g / C, Green / Cycle	0.39	0.39	0.39	0.39	0.39	0.39	0.54	0.54	0.54	0.54	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.12	0.15	0.10	0.03	0.15	0.09	0.12	0.22	0.04	0.22	0.45	0.03
s, saturation flow rate [veh/h]	977	1900	1615	962	1900	1615	626	1900	1615	924	1900	1615
c, Capacity [veh/h]	325	740	629	322	740	629	149	1033	878	424	1033	878
d1, Uniform Delay [s]	36.07	26.21	24.89	32.63	26.26	24.55	49.82	16.00	13.03	28.26	22.76	12.86
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.21	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.93	1.46	1.01	0.47	1.49	0.85	2.40	0.26	0.04	0.83	3.43	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.38	0.26	0.08	0.38	0.23	0.48	0.40	0.08	0.48	0.83	0.05
d, Delay for Lane Group [s/veh]	39.00	27.68	25.90	33.10	27.75	25.40	52.22	16.26	13.07	29.09	26.19	12.88
Lane Group LOS	D	C	C	C	C	C	D	B	B	C	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.00	6.01	3.36	0.59	6.09	2.91	2.19	6.68	0.88	4.58	20.28	0.60
50th-Percentile Queue Length [ft/ln]	74.99	150.20	84.03	14.76	152.13	72.68	54.77	167.10	22.12	114.60	507.06	15.08
95th-Percentile Queue Length [veh/ln]	5.40	10.03	6.05	1.06	10.13	5.23	3.94	10.92	1.59	8.10	27.67	1.09
95th-Percentile Queue Length [ft/ln]	134.98	250.70	151.26	26.57	253.27	130.82	98.59	273.10	39.81	202.38	691.71	27.15

Movement, Approach, & Intersection Results

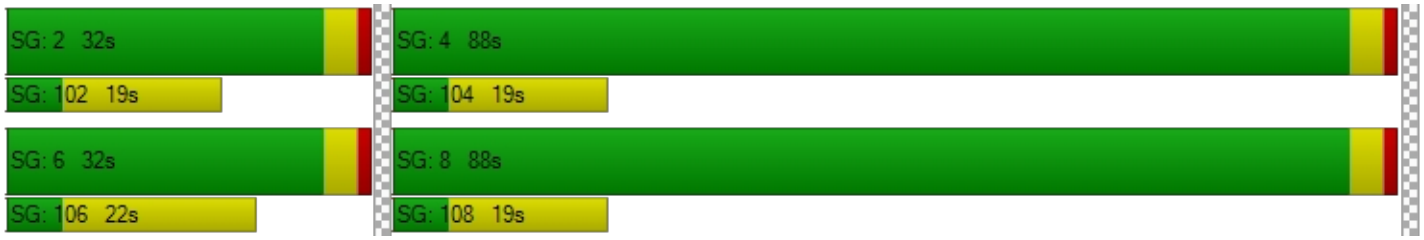
d_M, Delay for Movement [s/veh]	39.00	27.68	25.90	33.10	27.75	25.40	52.22	16.26	13.07	29.09	26.19	12.88
Movement LOS	D	C	C	C	C	C	D	B	B	C	C	B
d_A, Approach Delay [s/veh]	29.45			27.30			20.51			26.15		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.86											
Intersection LOS	C											
Intersection V/C	0.600											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.704	2.456	2.715	2.685
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	467	1400	1400
d_b, Bicycle Delay [s]	35.27	35.27	5.40	5.40
l_b,int, Bicycle LOS Score for Intersection	2.477	2.304	2.480	3.386
Bicycle LOS	B	B	B	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	59.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	268	714	233	108	888	178	90	297	123	262	596	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	8	0	0	0	0	3	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	268	719	233	108	896	178	90	297	123	265	616	160
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	189	61	28	236	47	24	78	32	70	162	42
Total Analysis Volume [veh/h]	282	757	245	114	943	187	95	313	129	279	648	168
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	51	0	13	41	0	11	26	0	30	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	47	47	9	37	37	7	27	27	21	41	41
g / C, Green / Cycle	0.16	0.39	0.39	0.08	0.31	0.31	0.06	0.23	0.23	0.17	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.16	0.27	0.28	0.06	0.31	0.31	0.05	0.09	0.08	0.15	0.34	0.10
s, saturation flow rate [veh/h]	1810	1900	1743	1810	1900	1792	1810	3618	1615	1810	1900	1615
c, Capacity [veh/h]	287	744	683	136	586	553	106	825	368	311	649	552
d1, Uniform Delay [s]	50.35	30.58	30.68	54.79	41.32	41.40	56.15	39.15	38.86	48.63	39.46	29.02
k, delay calibration	0.17	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.17	0.46	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	27.80	5.41	6.03	12.78	34.91	37.03	22.20	0.29	0.57	13.20	33.53	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.70	0.71	0.84	0.99	0.99	0.90	0.38	0.35	0.90	1.00	0.30
d, Delay for Lane Group [s/veh]	78.15	35.99	36.71	67.57	76.24	78.43	78.36	39.44	39.43	61.83	72.99	29.33
Lane Group LOS	E	D	D	E	E	E	E	D	D	E	E	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.62	13.58	12.72	3.88	22.53	21.68	3.51	3.94	3.26	9.30	24.79	3.62
50th-Percentile Queue Length [ft/ln]	265.53	339.61	317.95	97.05	563.26	542.02	87.73	98.58	81.45	232.56	619.74	90.53
95th-Percentile Queue Length [veh/ln]	15.97	19.63	18.57	6.99	30.31	29.32	6.32	7.10	5.86	14.30	32.96	6.52
95th-Percentile Queue Length [ft/ln]	399.14	490.73	464.16	174.69	757.87	732.93	157.91	177.44	146.61	357.61	823.88	162.95

Movement, Approach, & Intersection Results

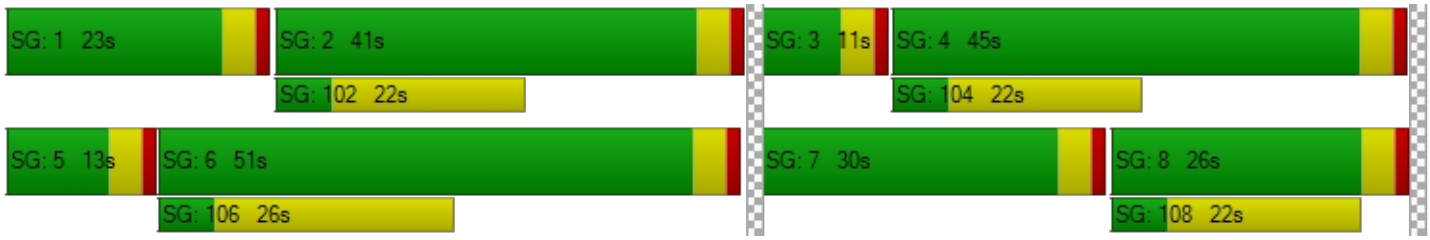
d_M, Delay for Movement [s/veh]	78.15	36.21	36.71	67.57	77.08	78.43	78.36	39.44	39.43	61.83	72.99	29.33
Movement LOS	E	D	D	E	E	E	E	D	D	E	E	C
d_A, Approach Delay [s/veh]	45.52			76.41			46.32			63.45		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	59.58											
Intersection LOS	E											
Intersection V/C	0.856											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.829	2.757	2.638	2.755
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	617	367	683
d_b, Bicycle Delay [s]	22.20	28.70	40.02	26.00
l_b,int, Bicycle LOS Score for Intersection	2.619	2.586	2.003	3.366
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	35.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.620

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	112	837	43	76	988	94	94	453	92	79	592	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	24	0	0	0	0	3	6	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	847	43	76	1012	94	94	453	92	82	598	72
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	223	11	20	266	25	25	119	24	22	157	19
Total Analysis Volume [veh/h]	118	892	45	80	1065	99	99	477	97	86	629	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	49	0	11	47	0	12	47	0	13	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	64	64	7	61	61	8	26	26	7	26	26
g / C, Green / Cycle	0.08	0.53	0.53	0.06	0.51	0.51	0.07	0.22	0.22	0.06	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.07	0.25	0.25	0.04	0.31	0.31	0.05	0.16	0.16	0.05	0.19	0.19
s, saturation flow rate [veh/h]	1810	1900	1868	1810	1900	1844	1810	1900	1790	1810	1900	1829
c, Capacity [veh/h]	136	1005	988	102	969	940	121	420	396	109	408	393
d1, Uniform Delay [s]	54.92	17.73	17.73	55.92	20.89	20.91	55.29	43.08	43.12	55.61	45.59	45.61
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.17	1.58	1.61	12.49	2.85	2.95	12.74	2.14	2.31	11.66	6.21	6.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.47	0.47	0.79	0.61	0.61	0.82	0.70	0.71	0.79	0.88	0.88
d, Delay for Lane Group [s/veh]	70.09	19.31	19.33	68.41	23.74	23.86	68.03	45.22	45.43	67.27	51.80	52.09
Lane Group LOS	E	B	B	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.10	8.49	8.35	2.74	12.25	11.95	3.38	8.31	7.90	2.92	11.02	10.66
50th-Percentile Queue Length [ft/ln]	102.50	212.13	208.78	68.62	306.31	298.86	84.58	207.69	197.40	73.06	275.53	266.40
95th-Percentile Queue Length [veh/ln]	7.38	13.26	13.09	4.94	17.99	17.62	6.09	13.03	12.50	5.26	16.47	16.01
95th-Percentile Queue Length [ft/ln]	184.50	331.56	327.26	123.51	449.83	440.62	152.24	325.86	312.61	131.50	411.64	400.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.09	19.32	19.33	68.41	23.79	23.86	68.03	45.30	45.43	67.27	51.92	52.09
Movement LOS	E	B	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	25.00			26.67			48.66			53.61		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.80											
Intersection LOS	D											
Intersection V/C	0.620											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.764	2.844	2.611	2.587
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	717	717	733
d_b, Bicycle Delay [s]	23.44	24.70	24.70	24.07
l_b,int, Bicycle LOS Score for Intersection	2.430	2.586	2.115	2.212
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	27.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.823

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	572	171	89	941	0	0	0	0	262	0	153
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	71	0	0	168	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	643	171	89	1109	0	0	0	0	262	0	153
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	169	45	23	292	0	0	0	0	69	0	40
Total Analysis Volume [veh/h]	0	677	180	94	1167	0	0	0	0	276	0	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	50	0	42	83	0	0	28	0	0	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	76	76	8	84	84	24	24	24	24
g / C, Green / Cycle	0.00	0.63	0.63	0.07	0.70	0.70	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.00	0.36	0.11	0.05	0.61	0.00	0.00	0.00	0.21	0.10
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1900	1615	1743	1615	1320	1615
c, Capacity [veh/h]	1	1201	1021	122	1329	1130	379	323	324	323
d1, Uniform Delay [s]	0.00	12.60	9.13	55.01	14.03	0.00	0.00	0.00	49.48	42.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.33	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	1.92	0.38	9.60	8.44	0.00	0.00	0.00	16.87	1.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.56	0.18	0.77	0.88	0.00	0.00	0.00	0.85	0.50
d, Delay for Lane Group [s/veh]	0.00	14.52	9.51	64.61	22.46	0.00	0.00	0.00	66.35	43.84
Lane Group LOS	A	B	A	E	C	A	A	A	E	D
Critical Lane Group	No	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	10.47	2.00	3.12	24.66	0.00	0.00	0.00	9.83	4.36
50th-Percentile Queue Length [ft/ln]	0.00	261.79	50.02	78.11	616.42	0.00	0.00	0.00	245.72	108.99
95th-Percentile Queue Length [veh/ln]	0.00	15.78	3.60	5.62	32.80	0.00	0.00	0.00	14.97	7.78
95th-Percentile Queue Length [ft/ln]	0.00	394.47	90.03	140.59	820.01	0.00	0.00	0.00	374.26	194.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	14.52	9.51	64.61	22.46	0.00	0.00	0.00	0.00	66.35	66.35	43.84
Movement LOS	A	B	A	E	C	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	13.46			25.61			0.00			58.06		
Approach LOS	B			C			A			E		
d_I, Intersection Delay [s/veh]	27.08											
Intersection LOS	C											
Intersection V/C	0.823											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.156	0.000	1.955	2.187
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	1317	400	400
d_b, Bicycle Delay [s]	22.82	7.00	38.40	38.40
l_b,int, Bicycle LOS Score for Intersection	2.974	3.640	1.560	2.281
Bicycle LOS	C	D	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	48.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.867

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	251	1239	148	39	1300	103	34	34	224	169	152	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	161	0	0	337	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	251	1400	148	39	1637	103	34	34	224	169	152	76
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	368	39	10	431	27	9	9	59	44	40	20
Total Analysis Volume [veh/h]	264	1474	156	41	1723	108	36	36	236	178	160	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	68	0	10	57	0	9	26	0	16	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	69	69	4	56	56	4	19	19	12	28
g / C, Green / Cycle	0.14	0.57	0.57	0.03	0.46	0.46	0.03	0.16	0.16	0.10	0.23
(v / s)_i Volume / Saturation Flow Rate	0.15	0.43	0.44	0.02	0.48	0.07	0.02	0.02	0.15	0.10	0.13
s, saturation flow rate [veh/h]	1810	1900	1838	1810	3618	1615	1810	1900	1615	1810	1794
c, Capacity [veh/h]	256	1089	1053	57	1675	748	53	308	262	181	417
d1, Uniform Delay [s]	51.50	19.19	19.63	57.57	32.23	18.55	57.66	42.94	49.34	53.90	40.79
k, delay calibration	0.14	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	38.16	4.76	5.51	15.31	29.73	0.41	13.78	0.17	13.95	27.39	1.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.75	0.77	0.72	1.03	0.14	0.67	0.12	0.90	0.98	0.58
d, Delay for Lane Group [s/veh]	89.66	23.95	25.15	72.88	61.96	18.95	71.43	43.11	63.28	81.29	42.04
Lane Group LOS	F	C	C	E	F	B	E	D	E	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.40	17.67	18.16	1.48	30.32	1.82	1.29	0.93	7.94	6.73	6.43
50th-Percentile Queue Length [ft/ln]	260.01	441.68	454.01	36.92	758.04	45.55	32.17	23.34	198.46	168.25	160.83
95th-Percentile Queue Length [veh/ln]	15.90	24.56	25.15	2.66	40.24	3.28	2.32	1.68	12.56	10.98	10.59
95th-Percentile Queue Length [ft/ln]	397.58	614.01	628.73	66.46	1006.10	81.99	57.91	42.01	313.98	274.61	264.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	89.66	24.48	25.15	72.88	61.96	18.95	71.43	43.11	63.28	81.29	42.04	42.04
Movement LOS	F	C	C	E	F	B	E	D	E	F	D	D
d_A, Approach Delay [s/veh]	33.62			59.72			61.88			58.76		
Approach LOS	C			E			E			E		
d_I, Intersection Delay [s/veh]	48.77											
Intersection LOS	D											
Intersection V/C	0.867											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.123	3.091	2.351	2.167
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1067	883	367	483
d_b, Bicycle Delay [s]	13.07	18.70	40.02	34.50
l_b,int, Bicycle LOS Score for Intersection	3.122	3.104	2.068	2.249
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	95.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	150	487	0	0	421	125	64	0	74	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	11	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	492	0	0	432	125	64	0	74	0	0	0
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	129	0	0	114	33	17	0	19	0	0	0
Total Analysis Volume [veh/h]	158	518	0	0	455	132	67	0	78	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.01	0.00	0.00	0.00	0.00	0.67	0.00	0.14	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.28	0.00	0.00	0.00	0.00	0.00	95.73	0.00	12.48	0.00	0.00	0.00
Movement LOS	A	A			A	A	F		B			
95th-Percentile Queue Length [veh/ln]	0.56	0.56	0.00	0.00	0.00	0.00	3.38	0.00	0.48	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	14.03	14.03	0.00	0.00	0.00	0.00	84.49	0.00	12.06	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	2.17			0.00			50.94			0.00		
Approach LOS	A			A			F			A		
d_I, Intersection Delay [s/veh]	6.29											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	1	849	298	113	1074	1	0	0	2	204	0	129
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	110	168	0	0	0	0	0	111	0	71
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	849	408	281	1074	1	0	0	2	315	0	200
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	223	107	74	283	0	0	0	1	83	0	53
Total Analysis Volume [veh/h]	1	894	429	296	1131	1	0	0	2	332	0	211
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	25	48	0	32	55	0	0	9	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	58	58	22	79	79	0	0	24	24
g / C, Green / Cycle	0.00	0.48	0.48	0.18	0.66	0.66	0.00	0.00	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.00	0.37	0.37	0.16	0.30	0.30	0.00	0.00	0.19	0.13
s, saturation flow rate [veh/h]	1810	1900	1696	1810	1900	1899	1900	1470	1781	1615
c, Capacity [veh/h]	4	912	814	326	1251	1250	5	4	363	329
d1, Uniform Delay [s]	59.79	25.58	25.79	48.19	9.98	9.98	0.00	59.74	46.78	43.78
k, delay calibration	0.11	0.50	0.50	0.20	0.50	0.50	0.11	0.11	0.26	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	35.18	5.98	7.03	15.44	1.18	1.19	0.00	66.76	18.99	2.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.76	0.77	0.91	0.45	0.45	0.00	0.48	0.92	0.64
d, Delay for Lane Group [s/veh]	94.97	31.56	32.82	63.63	11.17	11.17	0.00	126.50	65.77	45.87
Lane Group LOS	F	C	C	E	B	B	A	F	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.07	17.33	16.02	10.05	7.26	7.26	0.00	0.14	11.57	5.93
50th-Percentile Queue Length [ft/ln]	1.66	433.21	400.54	251.20	181.52	181.48	0.00	3.45	289.22	148.36
95th-Percentile Queue Length [veh/ln]	0.12	24.16	22.59	15.25	11.68	11.68	0.00	0.25	17.15	9.93
95th-Percentile Queue Length [ft/ln]	3.00	603.88	564.65	381.16	291.99	291.95	0.00	6.22	428.67	248.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	94.97	31.84	32.82	63.63	11.17	11.17	0.00	63.25	126.50	65.77	65.77	45.87
Movement LOS	F	C	C	E	B	B	A	E	F	E	E	D
d_A, Approach Delay [s/veh]	32.21			22.04			126.50			58.03		
Approach LOS	C			C			F			E		
d_I, Intersection Delay [s/veh]	32.12											
Intersection LOS	C											
Intersection V/C	0.722											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	850	83	450
d_b, Bicycle Delay [s]	24.07	19.84	55.10	36.04
l_b,int, Bicycle LOS Score for Intersection	2.652	2.738	1.561	2.456
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	3	813	117	146	1237	0	0	0	0	145	0	419
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	161	0	0	337	0	0	0	0	20	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	974	117	146	1574	0	0	0	0	165	0	419
Peak Hour Factor	0.9130	0.9130	0.9130	0.9500	0.9130	0.9500	0.9500	0.9500	0.9130	0.9130	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	267	32	38	431	0	0	0	0	45	0	110
Total Analysis Volume [veh/h]	3	1067	128	154	1724	0	0	0	0	181	0	441
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	43	0	15	49	0	12	40	0	22	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	58	58	11	68	68	0	21	14	35
g / C, Green / Cycle	0.00	0.48	0.48	0.09	0.57	0.57	0.00	0.18	0.12	0.29
(v / s)_i Volume / Saturation Flow Rate	0.00	0.29	0.08	0.09	0.48	0.00	0.00	0.00	0.10	0.27
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1810	1615
c, Capacity [veh/h]	8	1743	778	166	2059	919	1	337	210	473
d1, Uniform Delay [s]	59.59	22.86	17.50	54.11	21.28	0.00	0.00	0.00	52.10	41.29
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.18
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.08	1.62	0.46	19.09	4.25	0.00	0.00	0.00	10.00	13.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.61	0.16	0.93	0.84	0.00	0.00	0.00	0.86	0.93
d, Delay for Lane Group [s/veh]	88.66	24.47	17.96	73.20	25.53	0.00	0.00	0.00	62.10	54.29
Lane Group LOS	F	C	B	E	C	A	A	A	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.15	11.27	2.10	5.49	20.09	0.00	0.00	0.00	5.93	14.26
50th-Percentile Queue Length [ft/ln]	3.83	281.84	52.44	137.27	502.35	0.00	0.00	0.00	148.25	356.49
95th-Percentile Queue Length [veh/ln]	0.28	16.78	3.78	9.33	27.45	0.00	0.00	0.00	9.92	20.45
95th-Percentile Queue Length [ft/ln]	6.90	419.50	94.40	233.34	686.14	0.00	0.00	0.00	248.09	511.32

Movement, Approach, & Intersection Results

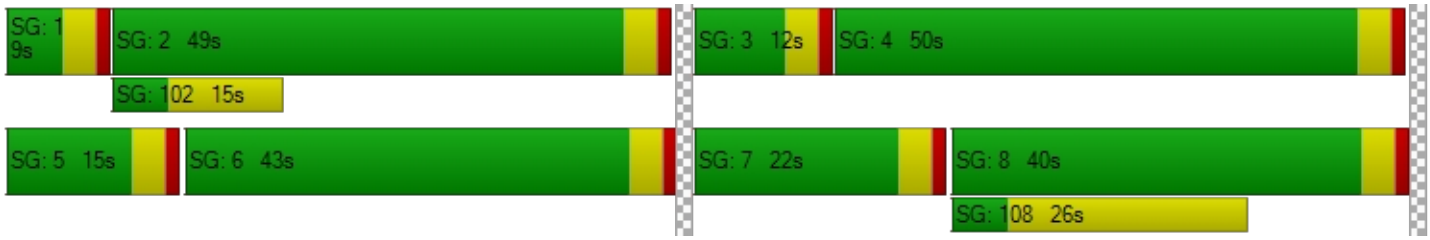
d_M, Delay for Movement [s/veh]	88.66	24.47	17.96	73.20	25.53	0.00	0.00	0.00	0.00	62.10	54.29	54.29
Movement LOS	F	C	B	E	C	A	A	A	A	E	D	D
d_A, Approach Delay [s/veh]	23.94			29.44			0.00			56.56		
Approach LOS	C			C			A			E		
d_I, Intersection Delay [s/veh]	32.22											
Intersection LOS	C											
Intersection V/C	0.751											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.041	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	750	600	767
d_b, Bicycle Delay [s]	27.34	23.44	29.40	22.82
l_b,int, Bicycle LOS Score for Intersection	2.548	3.109	1.560	2.586
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	103.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.342

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	75	251	65	65	241	132	159	143	79	84	397	210
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	11	0	0	0	0	0	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	256	65	65	252	132	159	143	79	84	417	210
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	67	17	17	66	35	42	38	21	22	110	55
Total Analysis Volume [veh/h]	79	269	68	68	265	139	167	151	83	88	439	221
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	383	418	472	374	415	527	429
Degree of Utilization, x	0.91	0.16	1.20	0.85	0.20	1.34	0.52

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	9.46	0.58	19.07	7.97	0.74	24.78	2.88
95th-Percentile Queue Length [ft]	236.50	14.38	476.64	199.32	18.45	619.41	71.93
Approach Delay [s/veh]	49.83		140.11	40.95		143.92	
Approach LOS	E		F	E		F	
Intersection Delay [s/veh]	103.55						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.597

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	74	835	32	68	1077	117	165	186	54	52	265	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	11	0	0	0	0	1	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	840	32	68	1088	117	165	186	54	53	285	115
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	221	8	18	286	31	43	49	14	14	75	30
Total Analysis Volume [veh/h]	78	884	34	72	1145	123	174	196	57	56	300	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	61	0	11	61	0	22	33	0	15	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	68	68	6	67	67	13	25	25	5	17	17
g / C, Green / Cycle	0.05	0.56	0.56	0.05	0.56	0.56	0.11	0.21	0.21	0.04	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.24	0.04	0.34	0.34	0.10	0.05	0.04	0.03	0.11	0.12
s, saturation flow rate [veh/h]	1810	1900	1875	1810	1900	1836	1810	3618	1615	1810	1900	1719
c, Capacity [veh/h]	99	1071	1057	93	1064	1028	204	760	339	75	264	239
d1, Uniform Delay [s]	56.00	15.08	15.08	56.26	17.55	17.60	52.26	39.59	38.81	56.87	50.27	50.43
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.62	1.27	1.28	13.05	2.55	2.67	9.66	0.18	0.23	13.43	6.52	8.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.43	0.43	0.78	0.60	0.61	0.85	0.26	0.17	0.74	0.83	0.85
d, Delay for Lane Group [s/veh]	68.62	16.34	16.36	69.31	20.10	20.27	61.92	39.77	39.04	70.30	56.78	58.58
Lane Group LOS	E	B	B	E	C	C	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.68	7.47	7.38	2.49	12.19	11.89	5.69	2.45	1.41	1.96	6.85	6.47
50th-Percentile Queue Length [ft/ln]	67.03	186.84	184.53	62.27	304.64	297.26	142.21	61.21	35.18	49.04	171.30	161.81
95th-Percentile Queue Length [veh/ln]	4.83	11.96	11.84	4.48	17.91	17.55	9.60	4.41	2.53	3.53	11.14	10.64
95th-Percentile Queue Length [ft/ln]	120.66	298.92	295.93	112.09	447.76	438.64	239.99	110.17	63.33	88.28	278.62	266.12

Movement, Approach, & Intersection Results

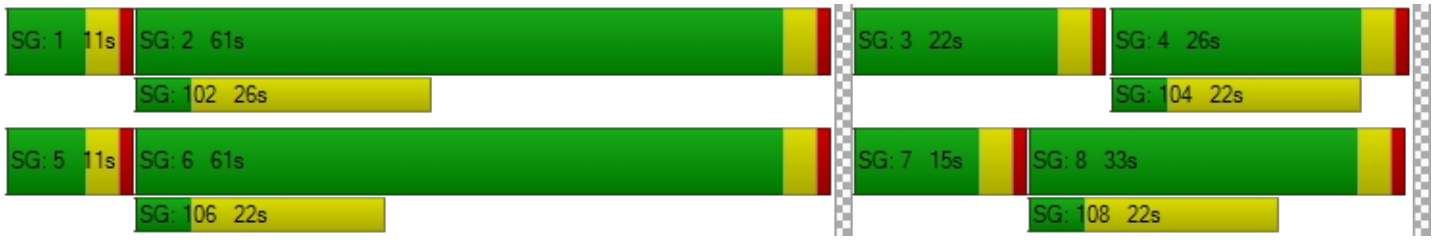
d_M, Delay for Movement [s/veh]	68.62	16.35	16.36	69.31	20.17	20.27	61.92	39.77	39.04	70.30	57.27	58.58
Movement LOS	E	B	B	E	C	C	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	20.45			22.82			48.70			59.13		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	30.85											
Intersection LOS	C											
Intersection V/C	0.597											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.755	2.877	2.619	2.595
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	950	483	367
d_b, Bicycle Delay [s]	16.54	16.54	34.50	40.02
l_b,int, Bicycle LOS Score for Intersection	2.381	2.665	1.912	1.953
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.620

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	65	794	102	51	1141	64	71	387	106	150	418	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	0	0	0	5	31	10	0	0	0	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	794	102	51	1146	95	81	387	106	150	427	58
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	209	27	13	302	25	21	102	28	39	112	15
Total Analysis Volume [veh/h]	74	836	107	54	1206	100	85	407	112	158	449	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	65	0	9	64	0	13	30	0	16	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	47	47	5	45	45	7	41	41	12	45	45
g / C, Green / Cycle	0.05	0.39	0.39	0.04	0.38	0.38	0.06	0.34	0.34	0.10	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.25	0.25	0.03	0.35	0.35	0.05	0.14	0.14	0.09	0.14	0.14
s, saturation flow rate [veh/h]	1810	1900	1825	1810	1900	1849	1810	1900	1761	1810	1900	1822
c, Capacity [veh/h]	90	742	713	70	720	701	109	641	594	181	717	687
d1, Uniform Delay [s]	56.46	29.85	29.85	57.14	35.44	35.52	55.60	30.66	30.72	53.25	26.96	26.98
k, delay calibration	0.11	0.11	0.11	0.11	0.24	0.25	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.13	0.96	1.00	16.05	10.46	11.14	11.32	2.00	2.20	12.19	1.42	1.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.65	0.65	0.77	0.92	0.92	0.78	0.42	0.42	0.87	0.36	0.36
d, Delay for Lane Group [s/veh]	72.59	30.81	30.85	73.19	45.90	46.66	66.92	32.66	32.91	65.44	28.38	28.47
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.63	11.43	10.99	1.94	20.13	19.84	2.88	6.34	5.98	5.31	5.66	5.46
50th-Percentile Queue Length [ft/ln]	65.65	285.72	274.73	48.39	503.29	496.05	72.02	158.57	149.52	132.67	141.42	136.53
95th-Percentile Queue Length [veh/ln]	4.73	16.97	16.43	3.48	27.49	27.15	5.19	10.47	9.99	9.08	9.56	9.29
95th-Percentile Queue Length [ft/ln]	118.18	424.33	410.64	87.11	687.25	678.68	129.63	261.83	249.79	227.12	238.93	232.34

Movement, Approach, & Intersection Results

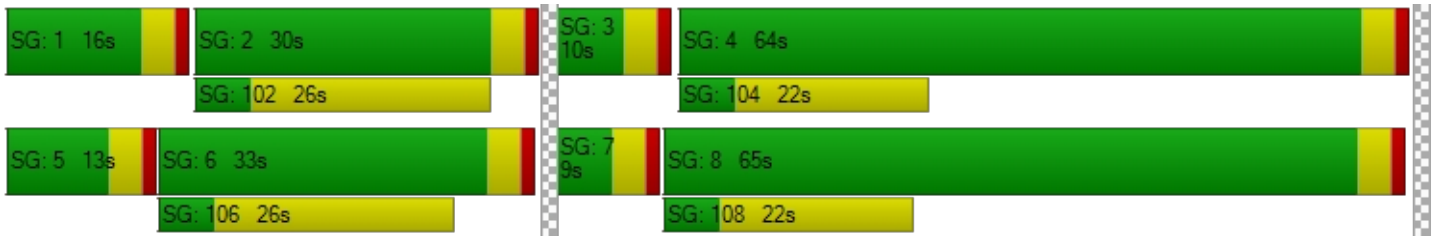
d_M, Delay for Movement [s/veh]	72.59	30.83	30.85	73.19	46.24	46.66	66.92	32.75	32.91	65.44	28.42	28.47
Movement LOS	E	C	C	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	33.87			47.35			37.59			37.18		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	40.11											
Intersection LOS	D											
Intersection V/C	0.620											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.873	2.849	2.554	2.556
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1000	433	483
d_b, Bicycle Delay [s]	14.50	15.00	36.82	34.50
l_b,int, Bicycle LOS Score for Intersection	2.399	2.682	2.058	2.111
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.691

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	47	724	84	26	979	361	230	168	17	88	220	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	4	8	5	10	0	9	16	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	724	84	26	983	369	235	178	17	97	236	40
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	191	22	7	259	97	62	47	4	26	62	11
Total Analysis Volume [veh/h]	49	762	88	27	1035	388	247	187	18	102	248	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	58	0	9	58	0	27	33	0	20	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	65	65	3	64	64	18	28	28	9	18	18
g / C, Green / Cycle	0.04	0.54	0.54	0.02	0.53	0.53	0.15	0.23	0.23	0.07	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.03	0.23	0.23	0.01	0.39	0.40	0.14	0.10	0.01	0.06	0.13	0.03
s, saturation flow rate [veh/h]	1810	1900	1832	1810	1900	1727	1810	1900	1615	1810	1900	1615
c, Capacity [veh/h]	64	1025	988	46	1006	915	277	437	371	130	283	240
d1, Uniform Delay [s]	57.40	16.48	16.48	57.87	21.71	22.02	49.82	39.46	35.98	54.76	50.01	44.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.41	1.28	1.32	11.56	4.73	5.61	10.28	0.66	0.05	9.78	8.54	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.42	0.42	0.59	0.73	0.75	0.89	0.43	0.05	0.78	0.88	0.17
d, Delay for Lane Group [s/veh]	74.81	17.76	17.81	69.43	26.44	27.63	60.10	40.13	36.03	64.54	58.55	44.98
Lane Group LOS	E	B	B	E	C	C	E	D	D	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.78	7.33	7.09	0.96	16.72	15.95	8.04	4.80	0.42	3.39	7.94	1.12
50th-Percentile Queue Length [ft/ln]	44.57	183.36	177.15	23.96	418.09	398.66	201.08	120.12	10.50	84.72	198.59	28.06
95th-Percentile Queue Length [veh/ln]	3.21	11.78	11.45	1.73	23.43	22.50	12.69	8.40	0.76	6.10	12.57	2.02
95th-Percentile Queue Length [ft/ln]	80.22	294.40	286.29	43.13	585.76	562.39	317.36	209.99	18.90	152.49	314.15	50.51

Movement, Approach, & Intersection Results

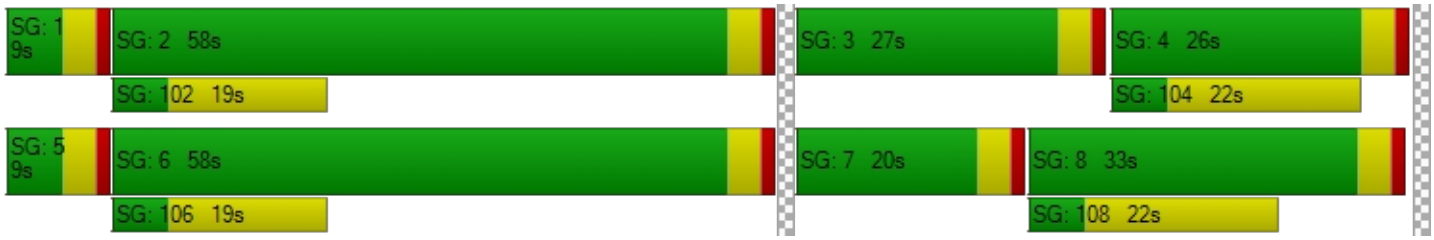
d_M, Delay for Movement [s/veh]	74.81	17.78	17.81	69.43	26.78	27.63	60.10	40.13	36.03	64.54	58.55	44.98
Movement LOS	E	B	B	E	C	C	E	D	D	E	E	D
d_A, Approach Delay [s/veh]	20.89			27.80			50.88			58.65		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	32.91											
Intersection LOS	C											
Intersection V/C	0.691											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.716	2.803	2.423	2.315
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	900	483	367
d_b, Bicycle Delay [s]	18.15	18.15	34.50	40.02
l_b,int, Bicycle LOS Score for Intersection	2.301	2.756	2.305	2.206
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	57.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.871

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	128	838	116	156	1207	9	0	124	96	248	97	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	190	192	0	0	161	41	13	36	156	0	143	54
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	318	1030	116	156	1368	50	13	160	252	248	240	163
Peak Hour Factor	0.9500	0.9150	0.9500	0.9150	0.9150	0.9150	0.9150	0.9500	0.9500	0.9500	0.9500	0.9150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	281	31	43	374	14	4	42	66	65	63	45
Total Analysis Volume [veh/h]	335	1126	122	170	1495	55	14	168	265	261	253	178
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	26	37	0	28	39	0	9	34	0	21	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	44	44	13	35	35	2	30	17	45
g / C, Green / Cycle	0.18	0.36	0.36	0.11	0.29	0.29	0.02	0.25	0.14	0.38
(v / s)_i Volume / Saturation Flow Rate	0.19	0.23	0.23	0.09	0.29	0.03	0.01	0.25	0.14	0.24
s, saturation flow rate [veh/h]	1810	3618	1806	1810	5176	1615	1810	1715	1810	1771
c, Capacity [veh/h]	332	1315	657	202	1510	471	29	429	256	665
d1, Uniform Delay [s]	49.00	31.56	31.56	52.29	42.33	31.17	58.55	45.00	51.50	30.90
k, delay calibration	0.26	0.50	0.50	0.11	0.50	0.50	0.11	0.46	0.14	0.20
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	38.10	2.32	4.60	9.20	20.99	0.50	12.07	44.15	34.38	1.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	0.63	0.63	0.84	0.99	0.12	0.49	1.01	1.02	0.65
d, Delay for Lane Group [s/veh]	87.10	33.88	36.16	61.49	63.32	31.67	70.63	89.15	85.88	32.90
Lane Group LOS	F	C	D	E	E	C	E	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	13.40	10.32	10.73	5.53	17.46	1.25	0.52	17.90	10.13	10.58
50th-Percentile Queue Length [ft/ln]	334.94	258.08	268.22	138.35	436.44	31.15	12.97	447.46	253.29	264.38
95th-Percentile Queue Length [veh/ln]	19.50	15.59	16.10	9.39	24.31	2.24	0.93	24.99	15.48	15.91
95th-Percentile Queue Length [ft/ln]	487.53	389.81	402.52	234.81	607.75	56.08	23.35	624.71	387.00	397.71

Movement, Approach, & Intersection Results

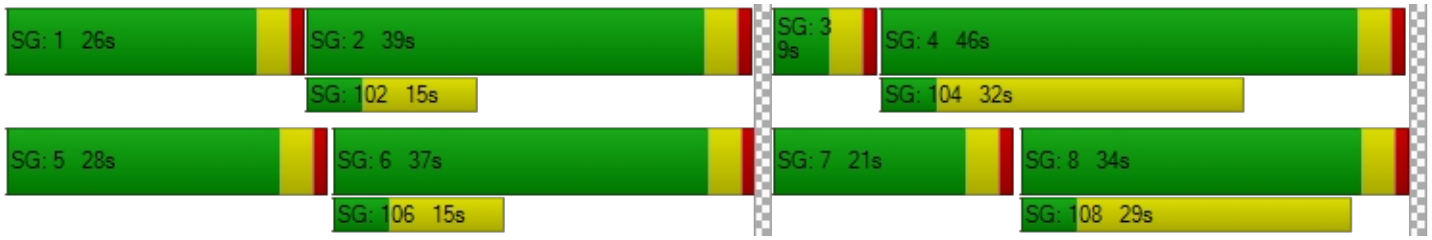
d_M, Delay for Movement [s/veh]	87.10	34.48	36.16	61.49	63.32	31.67	70.63	89.15	89.15	85.88	32.90	32.90
Movement LOS	F	C	D	E	E	C	E	F	F	F	C	C
d_A, Approach Delay [s/veh]	45.74			62.13			88.57			52.88		
Approach LOS	D			E			F			D		
d_I, Intersection Delay [s/veh]	57.51											
Intersection LOS	E											
Intersection V/C	0.871											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.111	3.278	2.310	2.330
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	583	500	700
d_b, Bicycle Delay [s]	31.54	30.10	33.75	25.35
l_b,int, Bicycle LOS Score for Intersection	2.430	2.506	2.297	2.701
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	160.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.512

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	28	290	58	7	302	110	66	258	28	44	296	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	0	0	0	0	11	5	31	0	0	159	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	290	58	7	302	121	71	289	28	44	455	44
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	76	15	2	79	32	19	76	7	12	120	12
Total Analysis Volume [veh/h]	39	305	61	7	318	127	75	304	29	46	479	46
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	405	452	408	571
Degree of Utilization, x	1.07	1.18	1.08	1.51

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	14.04	18.03	14.48	31.06
95th-Percentile Queue Length [ft]	351.03	450.69	362.12	776.52
Approach Delay [s/veh]	97.06	134.39	102.09	268.26
Approach LOS	F	F	F	F
Intersection Delay [s/veh]	160.61			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	180.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.542

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	4	67	242	86	68	1	75	436	32	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	67	242	86	68	1	75	436	32	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	18	64	23	18	0	20	115	8	3
Total Analysis Volume [veh/h]	4	71	255	91	72	1	79	459	34	11
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	493	584
Degree of Utilization, x	1.28	1.54

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	21.97	32.42
95th-Percentile Queue Length [ft]	549.27	810.46
Approach Delay [s/veh]	172.91	281.03
Approach LOS	F	F
Intersection Delay [s/veh]	180.93	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	52	24	211	104	0	30	92	253	27	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	16	10	0	0	0	0	118	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	40	221	104	0	30	92	371	27	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	11	58	27	0	8	24	98	7	1
Total Analysis Volume [veh/h]	55	42	233	109	0	32	97	391	28	4
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	439	552
Degree of Utilization, x	1.15	1.46

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	16.87	28.96
95th-Percentile Queue Length [ft]	421.86	723.98
Approach Delay [s/veh]	123.40	247.26
Approach LOS	F	F
Intersection Delay [s/veh]	180.93	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	2	15	74	26	1	15	50	138	36	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	24	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	15	74	26	1	15	50	138	60	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	19	7	0	4	13	36	16	2
Total Analysis Volume [veh/h]	2	16	78	27	1	16	53	145	63	7
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	397	381	419
Degree of Utilization, x	0.31	0.56	0.17

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.31	3.32	0.59
95th-Percentile Queue Length [ft]	32.80	82.90	14.83
Approach Delay [s/veh]	16.13	20.98	
Approach LOS	C	C	
Intersection Delay [s/veh]	180.93		
Intersection LOS	F		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	35.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	166	662	220	117	951	64	92	183	193	140	163	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	29	0	0	0	0	13	0	5	5	0	76	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	662	220	117	951	77	92	188	198	140	239	95
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	174	58	31	250	20	24	49	52	37	63	25
Total Analysis Volume [veh/h]	205	697	232	123	1001	81	97	198	208	147	252	100
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	59	0	17	52	0	18	26	0	18	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	65	65	10	59	59	8	18	18	12	21	21
g / C, Green / Cycle	0.13	0.54	0.54	0.08	0.49	0.49	0.07	0.15	0.15	0.10	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.11	0.25	0.26	0.07	0.29	0.29	0.05	0.05	0.13	0.08	0.13	0.06
s, saturation flow rate [veh/h]	1810	1900	1740	1810	1900	1850	1810	3618	1615	1810	1900	1615
c, Capacity [veh/h]	235	1023	937	151	934	910	124	536	239	175	335	285
d1, Uniform Delay [s]	51.22	17.16	17.18	54.11	21.79	21.80	55.01	46.05	49.96	53.27	46.90	43.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.64	1.57	1.72	10.23	2.69	2.77	10.22	0.42	9.28	10.17	3.40	0.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.47	0.47	0.82	0.59	0.59	0.78	0.37	0.87	0.84	0.75	0.35
d, Delay for Lane Group [s/veh]	60.87	18.73	18.90	64.34	24.48	24.57	65.24	46.47	59.24	63.44	50.30	44.10
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.67	8.56	7.90	4.08	11.50	11.24	3.24	2.70	6.71	4.85	7.45	2.68
50th-Percentile Queue Length [ft/ln]	166.77	214.00	197.51	102.04	287.48	281.04	81.02	67.59	167.72	121.28	186.29	66.90
95th-Percentile Queue Length [veh/ln]	10.91	13.36	12.51	7.35	17.06	16.74	5.83	4.87	10.96	8.46	11.93	4.82
95th-Percentile Queue Length [ft/ln]	272.66	333.95	312.76	183.68	426.51	418.51	145.84	121.67	273.91	211.59	298.21	120.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.87	18.79	18.90	64.34	24.52	24.57	65.24	46.47	59.24	63.44	50.30	44.10
Movement LOS	E	B	B	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	26.42			28.59			55.37			52.93		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	35.52											
Intersection LOS	D											
Intersection V/C	0.612											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.801	2.724	2.518	2.639
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	800	367	367
d_b, Bicycle Delay [s]	17.60	21.60	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	2.495	2.554	1.975	2.383
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.651

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	55	876	64	30	1276	48	73	247	136	195	253	75
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	32	0	0	0	0	9	0	0	0	0	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	876	64	30	1276	57	73	247	136	195	262	75
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	231	17	8	336	15	19	65	36	51	69	20
Total Analysis Volume [veh/h]	92	922	67	32	1343	60	77	260	143	205	276	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	49	0	9	46	0	26	33	0	29	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	69	69	3	64	64	7	16	16	16	25	25
g / C, Green / Cycle	0.06	0.57	0.57	0.03	0.54	0.54	0.06	0.14	0.14	0.13	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.26	0.02	0.37	0.37	0.04	0.11	0.11	0.11	0.10	0.10
s, saturation flow rate [veh/h]	1810	1900	1855	1810	1900	1872	1810	1900	1679	1810	1900	1757
c, Capacity [veh/h]	115	1086	1060	50	1017	1002	102	260	230	237	401	371
d1, Uniform Delay [s]	55.41	14.94	14.95	57.76	20.60	20.64	55.78	50.30	50.49	51.13	41.34	41.40
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.77	1.41	1.44	12.94	3.89	3.99	10.58	6.04	7.85	9.23	0.81	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.46	0.46	0.64	0.69	0.70	0.75	0.81	0.84	0.87	0.46	0.46
d, Delay for Lane Group [s/veh]	67.18	16.35	16.39	70.70	24.49	24.63	66.36	56.34	58.35	60.36	42.16	42.31
Lane Group LOS	E	B	B	E	C	C	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.12	8.14	7.97	1.14	15.22	15.09	2.60	6.58	6.12	6.64	4.84	4.55
50th-Percentile Queue Length [ft/ln]	78.06	203.62	199.14	28.53	380.41	377.29	65.00	164.51	153.02	166.03	120.96	113.77
95th-Percentile Queue Length [veh/ln]	5.62	12.83	12.59	2.05	21.61	21.46	4.68	10.79	10.18	10.87	8.45	8.05
95th-Percentile Queue Length [ft/ln]	140.52	320.63	314.86	51.36	540.35	536.57	117.00	269.69	254.45	271.69	211.14	201.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.18	16.37	16.39	70.70	24.56	24.63	66.36	56.72	58.35	60.36	42.21	42.31
Movement LOS	E	B	B	E	C	C	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	20.69			25.59			58.75			48.87		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	32.24											
Intersection LOS	C											
Intersection V/C	0.651											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.995	2.876	2.492	2.494
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	700	483	533
d_b, Bicycle Delay [s]	23.44	25.35	34.50	32.27
l_b,int, Bicycle LOS Score for Intersection	2.451	2.743	1.956	2.022
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	45.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	96	58	86	166	276	991	336	452	66	150	1395	330
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	9	0	0	0	116
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	58	86	166	276	991	336	461	66	150	1395	446
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	15	23	44	73	261	88	121	17	39	367	117
Total Analysis Volume [veh/h]	101	61	91	175	291	1043	354	485	69	158	1468	469
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	40	0	18	46	0	18	49	0	13	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	38	38	13	43	43	43	14	45	45	7	39	39
g / C, Green / Cycle	0.07	0.32	0.32	0.11	0.36	0.36	0.36	0.12	0.38	0.38	0.06	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.02	0.06	0.10	0.15	0.32	0.32	0.10	0.09	0.04	0.04	0.28	0.29
s, saturation flow rate [veh/h]	1810	3618	1615	1810	1900	1615	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	121	1143	510	203	687	584	584	407	1946	607	220	1670	521
d1, Uniform Delay [s]	55.36	28.55	29.75	52.37	28.89	36.13	36.13	52.15	25.78	24.41	55.21	38.43	38.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.93	0.09	0.76	10.33	1.91	18.61	18.61	5.77	0.07	0.08	4.36	1.64	16.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.05	0.18	0.86	0.42	0.89	0.89	0.87	0.25	0.11	0.72	0.88	0.90
d, Delay for Lane Group [s/veh]	69.29	28.64	30.51	62.69	30.80	54.75	54.75	57.92	25.85	24.49	59.56	40.07	55.40
Lane Group LOS	E	C	C	E	C	D	D	E	C	C	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.49	0.63	2.03	5.76	6.68	17.18	17.18	5.56	3.21	1.30	2.48	13.72	15.43
50th-Percentile Queue Length [ft/ln]	87.16	15.78	50.66	143.9	167.0	429.4	429.4	138.99	80.15	32.61	62.04	342.92	385.73
95th-Percentile Queue Length [veh/ln]	6.28	1.14	3.65	9.69	10.92	23.98	23.98	9.43	5.77	2.35	4.47	19.79	21.87
95th-Percentile Queue Length [ft/ln]	156.89	28.40	91.19	242.3	273.0	599.4	599.4	235.66	144.27	58.70	111.67	494.76	546.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	69.29	28.64	30.51	62.69	30.80	54.75	57.92	25.85	24.49	59.56	40.07	55.40
Movement LOS	E	C	C	E	C	D	E	C	C	E	D	E
d_A, Approach Delay [s/veh]	45.54			51.05			38.25			44.97		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.65											
Intersection LOS	D											
Intersection V/C	0.770											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.593	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	700	750	667
d_b, Bicycle Delay [s]	29.40	25.35	23.44	26.67
l_b,int, Bicycle LOS Score for Intersection	1.768	2.805	2.059	2.712
Bicycle LOS	A	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	48.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	28	38	424	55	1070	286	468	28	34	372	106
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	149	0	0	0	9	0	0	116	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	28	38	573	55	1070	286	477	28	34	488	106
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	7	10	151	14	282	75	126	7	9	128	28
Total Analysis Volume [veh/h]	52	29	40	603	58	1126	301	502	29	36	514	112
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	48	0	9	23	0	16	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	6	44	44	44	13	51	51	4	42	42
g / C, Green / Cycle	0.05	0.05	0.05	0.37	0.37	0.37	0.11	0.42	0.42	0.03	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.02	0.18	0.18	0.39	0.09	0.10	0.02	0.02	0.12	0.12
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1825	2859	3514	5176	1615	1810	3618	1734
c, Capacity [veh/h]	84	88	75	663	669	1048	372	2197	685	53	1258	603
d1, Uniform Delay [s]	56.18	55.41	55.95	29.44	29.39	38.00	52.47	22.01	20.24	57.69	28.87	28.97
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.12	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.26	2.15	5.80	0.58	0.57	38.55	4.24	0.24	0.12	14.21	0.71	1.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.33	0.53	0.50	0.49	1.07	0.81	0.23	0.04	0.68	0.33	0.34
d, Delay for Lane Group [s/veh]	63.44	57.57	61.76	30.02	29.96	76.55	56.71	22.26	20.36	71.90	29.58	30.51
Lane Group LOS	E	E	E	C	C	F	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.72	0.90	1.31	7.48	7.46	20.69	4.65	3.07	0.50	1.29	4.60	4.68
50th-Percentile Queue Length [ft/ln]	42.92	22.60	32.66	186.93	186.54	517.35	116.19	76.72	12.58	32.29	115.02	117.01
95th-Percentile Queue Length [veh/ln]	3.09	1.63	2.35	11.96	11.94	29.54	8.18	5.52	0.91	2.32	8.12	8.23
95th-Percentile Queue Length [ft/ln]	77.26	40.68	58.79	299.04	298.53	738.52	204.58	138.10	22.65	58.12	202.97	205.71

Movement, Approach, & Intersection Results

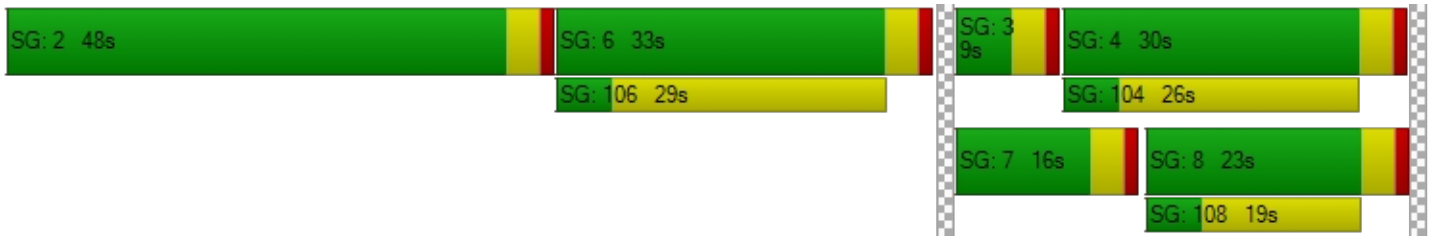
d_M, Delay for Movement [s/veh]	63.44	57.57	61.76	29.99	29.96	76.55	56.71	22.26	20.36	71.90	29.75	30.51
Movement LOS	E	E	E	C	C	F	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	61.48			59.33			34.65			32.17		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	48.09											
Intersection LOS	D											
Intersection V/C	0.627											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.206	2.830	0.000	2.861
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	733	317	433
d_b, Bicycle Delay [s]	34.50	24.07	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.659	4.508	2.017	1.924
Bicycle LOS	A	E	B	A

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	37.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.673

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	298	894	97	69	1010	196	194	196	103	217	502	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	96	12	0	111	0	5	153	0	2	116	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	298	990	109	69	1121	196	199	349	103	219	618	82
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	261	29	18	295	52	52	92	27	58	163	22
Total Analysis Volume [veh/h]	314	1042	115	73	1180	206	209	367	108	231	651	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	56	0	9	48	0	13	36	0	19	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	64	5	56	56	9	26	26	10	27	27
g / C, Green / Cycle	0.10	0.53	0.04	0.46	0.46	0.08	0.21	0.21	0.08	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.09	0.29	0.02	0.33	0.13	0.06	0.10	0.07	0.07	0.20	0.20
s, saturation flow rate [veh/h]	3514	3618	3514	3618	1615	3514	3618	1615	3514	1900	1823
c, Capacity [veh/h]	369	1921	134	1679	750	264	771	344	297	423	406
d1, Uniform Delay [s]	52.78	18.54	56.69	25.57	19.75	54.58	41.34	39.81	53.83	45.21	45.21
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.18	0.18
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.57	1.11	3.42	2.49	0.91	5.35	0.46	0.52	4.41	10.30	10.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.54	0.54	0.70	0.27	0.79	0.48	0.31	0.78	0.89	0.89
d, Delay for Lane Group [s/veh]	58.35	19.64	60.11	28.06	20.66	59.93	41.80	40.33	58.25	55.51	55.88
Lane Group LOS	E	B	E	C	C	E	D	D	E	E	E
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.93	9.61	1.15	13.68	3.72	3.30	4.82	2.75	3.60	12.02	11.57
50th-Percentile Queue Length [ft/ln]	123.29	240.30	28.78	342.02	93.04	82.53	120.41	68.78	90.01	300.40	289.32
95th-Percentile Queue Length [veh/ln]	8.57	14.70	2.07	19.75	6.70	5.94	8.42	4.95	6.48	17.70	17.15
95th-Percentile Queue Length [ft/ln]	214.34	367.41	51.81	493.66	167.47	148.55	210.39	123.80	162.01	442.53	428.79

Movement, Approach, & Intersection Results

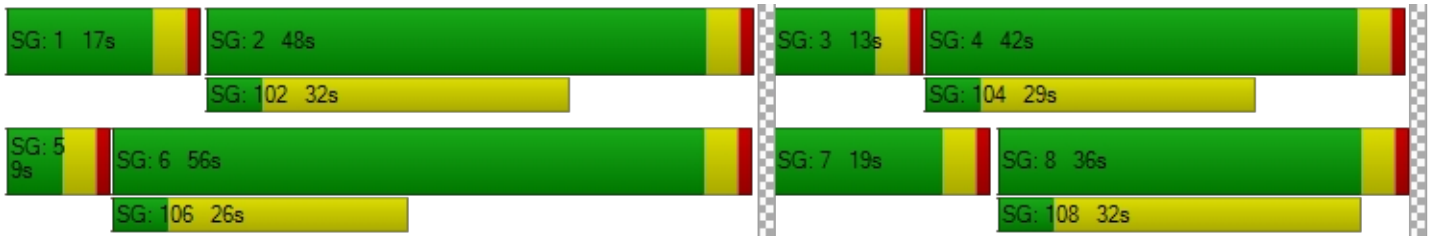
d_M, Delay for Movement [s/veh]	58.35	19.64	0.00	60.11	28.06	20.66	59.93	41.80	40.33	58.25	55.67	55.88
Movement LOS	E	B		E	C	C	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	28.61			28.62			47.11			56.30		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	37.44											
Intersection LOS	D											
Intersection V/C	0.673											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.091	2.999	2.967	2.697
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	733	533	633
d_b, Bicycle Delay [s]	19.27	24.07	32.27	28.02
l_b,int, Bicycle LOS Score for Intersection	2.678	2.763	2.124	2.358
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	36.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	87	3	285	12	9	0	1	260	37	381	808	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	133	0	0	0	0	165	0	40	118	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	3	418	12	9	0	1	425	37	421	926	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	1	110	3	2	0	0	112	10	111	244	1
Total Analysis Volume [veh/h]	92	3	440	13	9	0	1	447	39	443	975	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	52	0	10	33	0	17	26	0	32	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	43	43	35	43	0	34	34	32	65	65
g / C, Green / Cycle	0.35	0.35	0.29	0.35	0.00	0.28	0.28	0.26	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.27	0.02	0.00	0.12	0.02	0.24	0.26	0.26
s, saturation flow rate [veh/h]	1428	1489	1615	1123	1810	3618	1615	1810	1900	1897
c, Capacity [veh/h]	510	645	474	474	3	1019	455	477	1033	1031
d1, Uniform Delay [s]	25.85	25.76	41.14	25.31	59.84	35.31	31.72	43.12	16.85	16.85
k, delay calibration	0.11	0.11	0.20	0.11	0.11	0.50	0.50	0.22	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.05	13.86	0.04	61.02	1.37	0.37	15.10	1.57	1.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.08	0.93	0.05	0.35	0.44	0.09	0.93	0.47	0.47
d, Delay for Lane Group [s/veh]	25.92	25.82	55.01	25.35	120.87	36.69	32.09	58.22	18.42	18.42
Lane Group LOS	C	C	E	C	F	D	C	E	B	B
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.83	1.02	14.32	0.42	0.08	5.56	0.89	14.71	8.60	8.59
50th-Percentile Queue Length [ft/ln]	20.73	25.45	358.02	10.49	1.97	139.09	22.21	367.79	214.89	214.64
95th-Percentile Queue Length [veh/ln]	1.49	1.83	20.53	0.76	0.14	9.43	1.60	21.00	13.40	13.39
95th-Percentile Queue Length [ft/ln]	37.32	45.80	513.18	18.89	3.54	235.80	39.97	525.05	335.10	334.77

Movement, Approach, & Intersection Results

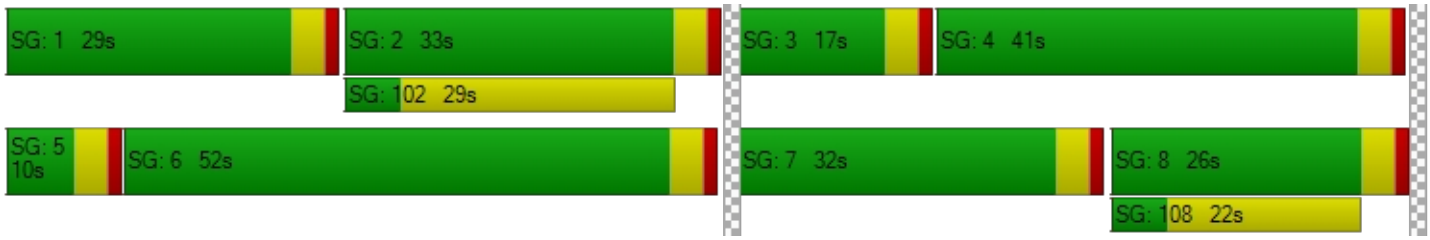
d_M, Delay for Movement [s/veh]	25.92	25.82	55.01	25.35	25.35	25.35	120.87	36.69	32.09	58.22	18.42	18.42
Movement LOS	C	C	E	C	C	C	F	D	C	E	B	B
d_A, Approach Delay [s/veh]	49.83			25.35			36.49			30.81		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	36.01											
Intersection LOS	D											
Intersection V/C	0.660											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.515	0.000	2.961	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	967	367	617
d_b, Bicycle Delay [s]	16.02	16.02	40.02	28.70
l_b,int, Bicycle LOS Score for Intersection	2.442	1.596	1.961	2.734
Bicycle LOS	B	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	21.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.512

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	149	0	505	1059	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	68	212	87	90	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	217	212	592	1149	1
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	57	53	156	302	0
Total Analysis Volume [veh/h]	0	228	212	623	1209	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.51	0.37	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	111.52	21.23	14.94	0.00	0.00	0.00
Movement LOS	F	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	2.84	2.84	1.70	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	71.11	71.11	42.52	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	21.23		3.79		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.52					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	43.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	141	1096	122	111	1143	432	263	90	158	237	457	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	257	0	17	209	90	87	0	0	0	0	39
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	1353	122	128	1352	522	350	90	158	237	457	149
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	356	32	34	356	137	92	24	42	62	120	39
Total Analysis Volume [veh/h]	148	1424	128	135	1423	549	368	95	166	249	481	157
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	40	0	14	39	39	30	40	0	26	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	44	44	10	43	73	26	31	18	24	24
g / C, Green / Cycle	0.09	0.37	0.37	0.08	0.36	0.61	0.22	0.26	0.15	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.08	0.29	0.29	0.07	0.27	0.34	0.20	0.03	0.14	0.18	0.18
s, saturation flow rate [veh/h]	1810	3618	1821	1810	5176	1615	1810	3618	1810	1900	1742
c, Capacity [veh/h]	166	1333	671	151	1865	986	392	944	278	376	345
d1, Uniform Delay [s]	53.91	33.47	33.48	54.48	33.87	13.81	46.22	33.66	49.81	46.78	46.78
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.31	0.11	0.12	0.20	0.20
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.86	4.43	8.51	16.36	3.03	2.27	23.72	0.05	10.76	11.92	12.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.77	0.77	0.90	0.76	0.56	0.94	0.10	0.89	0.88	0.88
d, Delay for Lane Group [s/veh]	68.77	37.90	41.99	70.85	36.89	16.08	69.93	33.71	60.56	58.70	59.67
Lane Group LOS	E	D	D	E	D	B	E	C	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.10	13.92	14.80	4.72	12.58	9.02	13.31	1.07	8.14	10.87	10.07
50th-Percentile Queue Length [ft/ln]	127.50	348.05	369.94	118.06	314.42	225.41	332.81	26.69	203.62	271.79	251.67
95th-Percentile Queue Length [veh/ln]	8.80	20.04	21.11	8.29	18.39	13.94	19.30	1.92	12.83	16.28	15.27
95th-Percentile Queue Length [ft/ln]	220.09	501.03	527.65	207.15	459.82	348.52	482.40	48.04	320.63	406.97	381.75

Movement, Approach, & Intersection Results

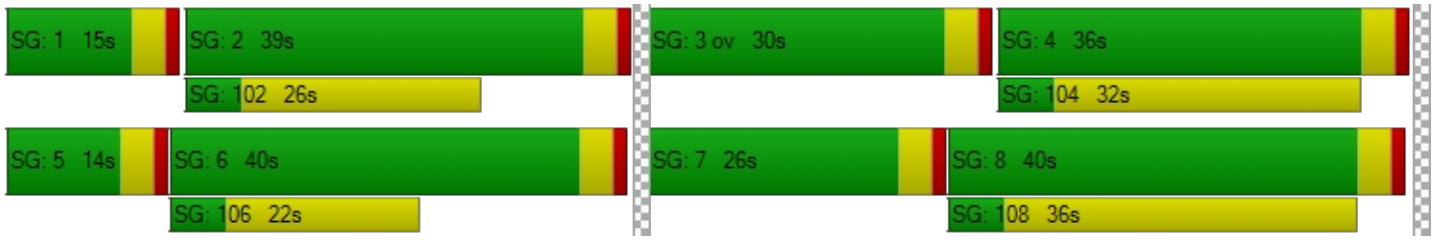
d_M, Delay for Movement [s/veh]	68.77	39.02	41.99	70.85	36.89	16.08	69.93	33.71	0.00	60.56	59.00	59.67
Movement LOS	E	D	D	E	D	B	E	C		E	E	E
d_A, Approach Delay [s/veh]	41.84			33.64			62.50			59.56		
Approach LOS	D			C			E			E		
d_I, Intersection Delay [s/veh]	43.39											
Intersection LOS	D											
Intersection V/C	0.739											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.230	3.235	2.735	2.558
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	583	600	533
d_b, Bicycle Delay [s]	29.40	30.10	29.40	32.27
l_b,int, Bicycle LOS Score for Intersection	2.495	2.718	1.942	2.291
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	32.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	67	217	7	50	285	88	67	248	90	18	456	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	17	0	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	217	7	50	285	88	67	265	90	18	486	74
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	57	2	13	75	23	18	70	24	5	128	19
Total Analysis Volume [veh/h]	71	228	7	53	300	93	71	279	95	19	512	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	30	0	0	30	0	11	81	0	9	79	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	67	67	6	39	2	35	35
g / C, Green / Cycle	0.56	0.56	0.05	0.32	0.02	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.20	0.26	0.04	0.21	0.01	0.27	0.05
s, saturation flow rate [veh/h]	1506	1744	1810	1818	1810	1900	1615
c, Capacity [veh/h]	877	1007	91	585	37	554	471
d1, Uniform Delay [s]	14.22	15.50	56.30	34.74	58.21	41.22	31.64
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.10	1.41	13.13	1.17	10.90	7.08	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.44	0.78	0.64	0.52	0.92	0.17
d, Delay for Lane Group [s/veh]	15.32	16.91	69.44	35.91	69.11	48.30	31.80
Lane Group LOS	B	B	E	D	E	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.70	7.37	2.46	9.48	0.68	15.63	1.72
50th-Percentile Queue Length [ft/ln]	117.38	184.14	61.48	237.07	17.07	390.87	43.06
95th-Percentile Queue Length [veh/ln]	8.25	11.82	4.43	14.53	1.23	22.12	3.10
95th-Percentile Queue Length [ft/ln]	206.22	295.41	110.67	363.32	30.73	552.99	77.50

Movement, Approach, & Intersection Results

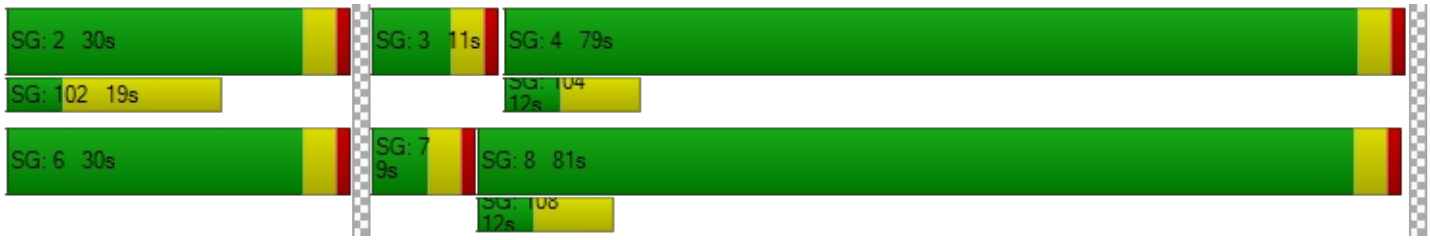
d_M, Delay for Movement [s/veh]	15.32	15.32	15.32	16.91	16.91	16.91	69.44	35.91	35.91	69.11	48.30	31.80
Movement LOS	B	B	B	B	B	B	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	15.32			16.91			41.26			46.83		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	32.73											
Intersection LOS	C											
Intersection V/C	0.564											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.081	2.131	2.521	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	1283	1250
d_b, Bicycle Delay [s]	36.82	36.82	7.70	8.44
l_b,int, Bicycle LOS Score for Intersection	2.065	2.296	2.294	2.564
Bicycle LOS	B	B	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	40.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.679

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	1	87	157	31	9	0	127	439	77	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	17	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	104	157	31	9	0	127	439	77	17
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	27	41	8	2	0	33	116	20	4
Total Analysis Volume [veh/h]	1	109	165	33	9	0	134	462	81	18
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	73	0	0	0	0	73	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	57	57
g / C, Green / Cycle	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.36	0.45
s, saturation flow rate [veh/h]	888	1539
c, Capacity [veh/h]	459	761
d1, Uniform Delay [s]	24.05	31.17
k, delay calibration	0.19	0.31
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	3.24	12.01
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.91
d, Delay for Lane Group [s/veh]	27.29	43.19
Lane Group LOS	C	D
Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	7.42	21.56
50th-Percentile Queue Length [ft/ln]	185.56	538.96
95th-Percentile Queue Length [veh/ln]	11.89	29.17
95th-Percentile Queue Length [ft/ln]	297.26	729.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.29	27.29	27.29	27.29	27.29	43.19	43.19	43.19	43.19	43.19
Movement LOS	C	C	C	C	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	27.29					43.19				
Approach LOS	C					D				
d_I, Intersection Delay [s/veh]	40.84									
Intersection LOS	D									
Intersection V/C	0.679									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.179	2.231
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1150	1150
d_b, Bicycle Delay [s]	10.84	10.84
l_b,int, Bicycle LOS Score for Intersection	1.888	2.456
Bicycle LOS	A	B

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	10	83	179	28	6	1	32	189	30	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	12	5	0	0	0	13	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	83	191	33	6	1	32	202	30	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	22	50	9	2	0	8	53	8	2
Total Analysis Volume [veh/h]	11	87	201	35	6	1	34	213	32	7
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissiv	Permissiv	Permissiv	Permissiv	ProtPerm	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	9	0	19	0	0	9	0	19	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	40	32	40	29	29
g / C, Green / Cycle	0.33	0.27	0.33	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.08	0.13	0.03	0.11	0.02
s, saturation flow rate [veh/h]	1286	1845	1245	1900	1615
c, Capacity [veh/h]	412	498	380	466	396
d1, Uniform Delay [s]	28.84	36.78	28.00	38.48	35.01
k, delay calibration	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.36	3.36	0.10	3.20	0.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.49	0.09	0.46	0.10
d, Delay for Lane Group [s/veh]	30.20	40.14	28.10	41.68	35.50
Lane Group LOS	C	D	C	D	D
Critical Lane Group	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.16	6.44	0.70	5.76	0.95
50th-Percentile Queue Length [ft/ln]	54.12	161.06	17.58	144.05	23.63
95th-Percentile Queue Length [veh/ln]	3.90	10.61	1.27	9.70	1.70
95th-Percentile Queue Length [ft/ln]	97.41	265.13	31.64	242.47	42.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.20	30.20	40.14	40.14	40.14	28.10	28.10	41.68	35.50	35.50
Movement LOS	C	C	D	D	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	37.28					39.18				
Approach LOS	D					D				
d_I, Intersection Delay [s/veh]	40.84									
Intersection LOS	D									
Intersection V/C	0.679									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.380	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250
d_b, Bicycle Delay [s]	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.967	1.966
Bicycle LOS	A	A

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	11	40	13	1	3	16	105	87	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	11	40	13	1	3	16	105	87	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	11	3	0	1	4	28	23	1
Total Analysis Volume [veh/h]	0	12	42	14	1	3	17	111	92	2
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12
g / C, Green / Cycle	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.07	0.07	0.06
s, saturation flow rate [veh/h]	929	1747	1615
c, Capacity [veh/h]	125	204	156
d1, Uniform Delay [s]	51.01	52.72	51.98
k, delay calibration	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	3.76	3.38	3.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.64	0.60
d, Delay for Lane Group [s/veh]	54.77	56.10	55.66
Lane Group LOS	D	E	E
Critical Lane Group	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.08	4.04	2.88
50th-Percentile Queue Length [ft/ln]	52.03	100.92	71.88
95th-Percentile Queue Length [veh/ln]	3.75	7.27	5.18
95th-Percentile Queue Length [ft/ln]	93.65	181.65	129.38

Movement, Approach, & Intersection Results

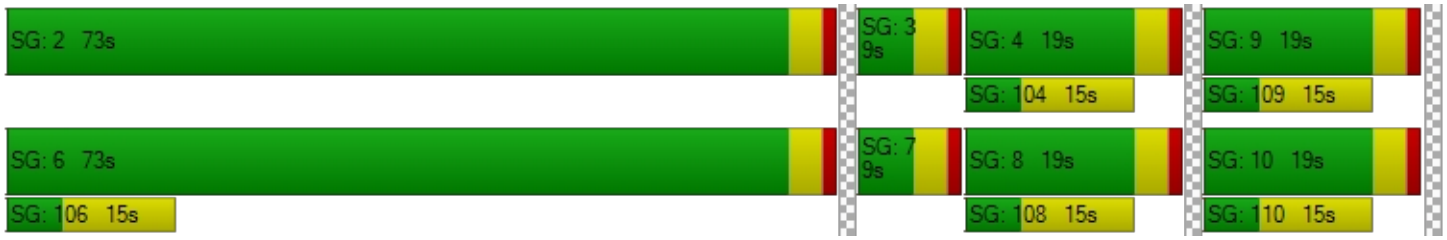
d_M, Delay for Movement [s/veh]	54.77	54.77	54.77	54.77	54.77	56.10	56.10	56.10	55.66	55.66
Movement LOS	D	D	D	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	54.77					55.91				
Approach LOS	D					E				
d_I, Intersection Delay [s/veh]	40.84									
Intersection LOS	D									
Intersection V/C	0.679									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.048	2.311
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250
d_b, Bicycle Delay [s]	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.631	1.923
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	130	691	192	122	911	71	151	134	75	157	172	318
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	5	0	0	0	12	0	0	13	20
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	130	700	192	127	911	71	151	146	75	157	185	338
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	184	51	33	240	19	40	38	20	41	49	89
Total Analysis Volume [veh/h]	137	737	202	134	959	75	159	154	79	165	195	356
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	41	0	15	41	0	16	38	0	26	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	52	52	11	52	52	12	28	28	13	29	29
g / C, Green / Cycle	0.09	0.44	0.44	0.09	0.43	0.43	0.10	0.23	0.23	0.11	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.26	0.07	0.28	0.28	0.09	0.06	0.07	0.09	0.10	0.22
s, saturation flow rate [veh/h]	1810	1900	1761	1810	1900	1852	1810	1900	1690	1810	1900	1615
c, Capacity [veh/h]	163	827	766	160	824	803	181	444	395	197	462	392
d1, Uniform Delay [s]	53.72	25.75	25.75	53.82	26.58	26.59	53.28	37.61	37.72	52.41	38.32	44.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.77	3.07	3.32	10.74	3.73	3.83	12.64	0.33	0.39	8.98	0.62	11.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.59	0.59	0.84	0.64	0.64	0.88	0.27	0.28	0.84	0.42	0.91
d, Delay for Lane Group [s/veh]	64.50	28.82	29.07	64.56	30.30	30.42	65.92	37.94	38.11	61.39	38.94	55.83
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.56	11.14	10.39	4.46	12.40	12.12	5.36	2.97	2.76	5.37	4.94	11.49
50th-Percentile Queue Length [ft/ln]	113.90	278.49	259.70	111.44	309.93	303.08	134.05	74.16	68.98	134.13	123.49	287.29
95th-Percentile Queue Length [veh/ln]	8.06	16.61	15.67	7.92	18.17	17.83	9.16	5.34	4.97	9.16	8.58	17.05
95th-Percentile Queue Length [ft/ln]	201.42	415.33	391.84	198.01	454.29	445.83	228.99	133.48	124.16	229.09	214.61	426.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.50	28.91	29.07	64.56	30.36	30.42	65.92	37.97	38.11	61.39	38.94	55.83
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	33.47			34.28			49.34			52.51		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.68											
Intersection LOS	D											
Intersection V/C	0.660											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.759	2.787	2.471	2.664
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	617	567	733
d_b, Bicycle Delay [s]	28.70	28.70	30.82	24.07
l_b,int, Bicycle LOS Score for Intersection	2.447	2.523	1.883	2.150
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.716

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	57	866	181	15	1414	116	42	212	95	289	344	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	14	16	0	0	0	0	0	0	12	0	2	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	882	181	15	1414	116	42	212	107	289	346	53
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	232	48	4	372	31	11	56	28	76	91	14
Total Analysis Volume [veh/h]	75	928	191	16	1488	122	44	223	113	304	364	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	27	0	9	26	0	33	36	0	48	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	65	65	2	62	62	4	14	14	22	32	32
g / C, Green / Cycle	0.05	0.55	0.55	0.02	0.51	0.51	0.03	0.12	0.12	0.19	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.12	0.01	0.41	0.08	0.02	0.09	0.10	0.17	0.11	0.11
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1691	1810	1900	1813
c, Capacity [veh/h]	90	1972	880	32	1854	828	61	223	198	338	514	490
d1, Uniform Delay [s]	56.49	16.69	14.08	58.45	24.21	15.42	57.42	51.49	51.71	47.67	36.01	36.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.05	0.81	0.57	12.07	3.78	0.38	14.80	5.94	7.95	8.58	0.54	0.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.47	0.22	0.51	0.80	0.15	0.72	0.78	0.82	0.90	0.42	0.42
d, Delay for Lane Group [s/veh]	73.54	17.50	14.64	70.52	28.00	15.79	72.22	57.43	59.66	56.26	36.55	36.59
Lane Group LOS	E	B	B	E	C	B	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.68	7.87	2.79	0.59	17.84	1.85	1.57	5.46	5.19	9.66	5.26	5.04
50th-Percentile Queue Length [ft/ln]	67.02	196.78	69.84	14.70	446.07	46.19	39.36	136.56	129.66	241.44	131.53	126.01
95th-Percentile Queue Length [veh/ln]	4.83	12.47	5.03	1.06	24.77	3.33	2.83	9.30	8.92	14.75	9.02	8.72
95th-Percentile Queue Length [ft/ln]	120.63	311.81	125.71	26.45	619.25	83.15	70.84	232.38	223.04	368.86	225.57	218.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.54	17.50	14.64	70.52	28.00	15.79	72.22	57.92	59.66	56.26	36.57	36.59
Movement LOS	E	B	B	E	C	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	20.57			27.50			60.09			44.84		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	31.74											
Intersection LOS	C											
Intersection V/C	0.716											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.118	2.899	2.499	2.540
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	367	533	783
d_b, Bicycle Delay [s]	39.20	40.02	32.27	22.20
l_b,int, Bicycle LOS Score for Intersection	2.545	2.901	1.873	2.157
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	147.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.588

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	7	221	86	24	381	50	24	138	7	386	263	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	221	86	24	381	50	24	138	7	386	263	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	58	23	6	100	13	6	36	2	102	69	7
Total Analysis Volume [veh/h]	7	233	91	25	401	53	25	145	7	406	277	26
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	454	479	403	683	489
Degree of Utilization, x	0.73	1.01	0.44	1.59	0.05

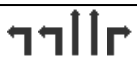
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.86	13.58	2.19	38.30	0.17
95th-Percentile Queue Length [ft]	146.51	339.46	54.66	957.49	4.21
Approach Delay [s/veh]	29.53	70.39	18.79	286.12	
Approach LOS	D	F	C	F	
Intersection Delay [s/veh]	147.22				
Intersection LOS	F				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	327	1213	103	56	1182	48	28	360	143	320	251	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	108	0	0	113	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	327	1321	103	56	1295	48	28	360	143	320	251	128
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	348	27	15	341	13	7	95	38	84	66	34
Total Analysis Volume [veh/h]	344	1391	108	59	1363	51	29	379	151	337	264	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	61	0	9	41	0	15	23	0	27	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	70	70	5	60	60	3	15	15	14	26	26
g / C, Green / Cycle	0.12	0.58	0.58	0.04	0.50	0.50	0.03	0.13	0.13	0.12	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.10	0.27	0.28	0.03	0.26	0.26	0.02	0.10	0.09	0.10	0.07	0.08
s, saturation flow rate [veh/h]	3514	3618	1831	1810	3618	1865	1810	3618	1615	3514	3618	1615
c, Capacity [veh/h]	420	2099	1062	75	1818	937	49	463	207	411	788	352
d1, Uniform Delay [s]	51.57	14.58	14.59	56.96	20.01	20.01	57.75	50.98	50.34	51.76	39.59	40.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.00	0.77	1.52	15.96	1.04	2.01	11.17	3.65	4.92	4.12	0.25	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.47	0.47	0.78	0.51	0.51	0.60	0.82	0.73	0.82	0.33	0.38
d, Delay for Lane Group [s/veh]	55.57	15.35	16.11	72.92	21.05	22.02	68.92	54.63	55.27	55.88	39.84	40.74
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.28	7.83	8.18	2.11	8.86	9.39	1.02	5.78	4.64	5.19	3.33	3.48
50th-Percentile Queue Length [ft/ln]	132.05	195.77	204.39	52.66	221.44	234.63	25.56	144.45	116.12	129.66	83.21	87.06
95th-Percentile Queue Length [veh/ln]	9.05	12.42	12.86	3.79	13.74	14.41	1.84	9.72	8.18	8.92	5.99	6.27
95th-Percentile Queue Length [ft/ln]	226.28	310.51	321.62	94.80	343.47	360.24	46.00	243.01	204.48	223.03	149.77	156.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.57	15.57	16.11	72.92	21.36	22.02	68.92	54.63	55.27	55.88	39.84	40.74
Movement LOS	E	B	B	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	23.06			23.45			55.54			47.35		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	31.00											
Intersection LOS	C											
Intersection V/C	0.556											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	3.031	2.666	2.788
Crosswalk LOS	F	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	617	317	517
d_b, Bicycle Delay [s]	16.54	28.70	42.50	33.00
l_b,int, Bicycle LOS Score for Intersection	2.573	2.370	2.021	2.167
Bicycle LOS	B	B	B	B

Sequence

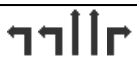
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	31.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.481

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	133	315	446	9	430	47	20	120	46	503	478	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	133	0	0	40	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	448	446	9	470	47	20	120	46	503	478	34
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	118	117	2	124	12	5	32	12	132	126	9
Total Analysis Volume [veh/h]	140	472	469	9	495	49	21	126	48	529	503	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	53	0	9	43	0	9	9	0	49	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	75	75	1	70	70	3	6	6	21	25	25
g / C, Green / Cycle	0.06	0.63	0.63	0.01	0.58	0.58	0.02	0.05	0.05	0.18	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.04	0.25	0.29	0.00	0.15	0.15	0.01	0.03	0.03	0.15	0.14	0.02
s, saturation flow rate [veh/h]	3514	1900	1615	1810	1900	1841	1810	3618	1615	3514	3618	1615
c, Capacity [veh/h]	203	1188	1010	20	1100	1066	39	192	86	621	755	337
d1, Uniform Delay [s]	55.48	11.20	11.86	58.95	12.44	12.45	58.15	55.74	55.45	47.86	43.65	38.44
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.14	0.99	1.53	14.22	0.55	0.57	11.44	3.78	5.62	3.41	1.02	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.40	0.46	0.44	0.25	0.25	0.54	0.66	0.56	0.85	0.67	0.11
d, Delay for Lane Group [s/veh]	59.62	12.19	13.39	73.16	12.98	13.02	69.59	59.52	61.07	51.28	44.67	38.58
Lane Group LOS	E	B	B	E	B	B	E	E	E	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.20	6.34	6.76	0.35	3.75	3.66	0.75	1.97	1.55	7.95	6.97	0.88
50th-Percentile Queue Length [ft/ln]	54.93	158.57	169.02	8.82	93.75	91.58	18.86	49.31	38.81	198.66	174.33	21.96
95th-Percentile Queue Length [veh/ln]	3.96	10.47	11.02	0.63	6.75	6.59	1.36	3.55	2.79	12.57	11.30	1.58
95th-Percentile Queue Length [ft/ln]	98.88	261.83	275.62	15.87	168.76	164.85	33.95	88.76	69.85	314.24	282.60	39.53

Movement, Approach, & Intersection Results

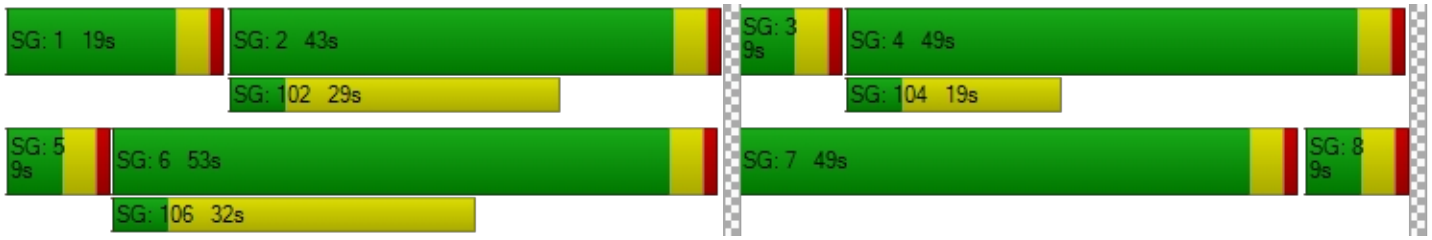
d_M, Delay for Movement [s/veh]	59.62	12.19	13.39	73.16	13.00	13.02	69.59	59.52	61.07	51.28	44.67	38.58
Movement LOS	E	B	B	E	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	18.85			13.98			60.99			47.74		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	31.41											
Intersection LOS	C											
Intersection V/C	0.481											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.410	2.733	2.944
Crosswalk LOS	F	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	650	83	750
d_b, Bicycle Delay [s]	21.00	27.34	55.10	23.44
l_b,int, Bicycle LOS Score for Intersection	3.343	2.016	1.720	2.441
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	44.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.806

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	522	1233	425	118	1405	87	96	130	299	567	375	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	216	0	35	174	0	0	0	0	0	0	40
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	522	1449	425	153	1579	87	96	130	299	567	375	136
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	137	381	112	40	416	23	25	34	79	149	99	36
Total Analysis Volume [veh/h]	549	1525	447	161	1662	92	101	137	315	597	395	143
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	22	42	0	16	36	0	13	40	40	22	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	63	63	12	57	57	5	11	33	18	24	24
g / C, Green / Cycle	0.15	0.52	0.52	0.10	0.47	0.47	0.04	0.09	0.28	0.15	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.16	0.42	0.28	0.09	0.32	0.06	0.03	0.04	0.20	0.17	0.15	0.15
s, saturation flow rate [veh/h]	3514	3618	1615	1810	5176	1615	3514	3618	1615	3514	1900	1730
c, Capacity [veh/h]	527	1896	847	181	2454	766	157	334	445	527	376	342
d1, Uniform Delay [s]	51.00	23.48	18.78	53.35	24.43	17.59	56.37	51.37	39.10	51.00	45.33	45.35
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.29	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	30.15	3.74	2.35	13.61	1.52	0.32	4.32	0.80	5.43	65.41	3.01	3.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.04	0.80	0.53	0.89	0.68	0.12	0.64	0.41	0.71	1.13	0.75	0.75
d, Delay for Lane Group [s/veh]	81.15	27.22	21.13	66.96	25.95	17.91	60.69	52.17	44.52	116.41	48.34	48.68
Lane Group LOS	F	C	C	E	C	B	E	D	D	F	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.10	18.09	8.57	5.48	12.30	1.50	1.60	1.99	8.99	12.68	8.19	7.50
50th-Percentile Queue Length [ft/ln]	252.46	452.25	214.34	136.90	307.39	37.42	40.02	49.64	224.73	316.99	204.64	187.60
95th-Percentile Queue Length [veh/ln]	15.60	25.07	13.38	9.31	18.05	2.69	2.88	3.57	13.91	19.59	12.88	12.00
95th-Percentile Queue Length [ft/ln]	390.02	626.63	334.39	232.85	451.16	67.35	72.03	89.36	347.66	489.66	321.94	299.92

Movement, Approach, & Intersection Results

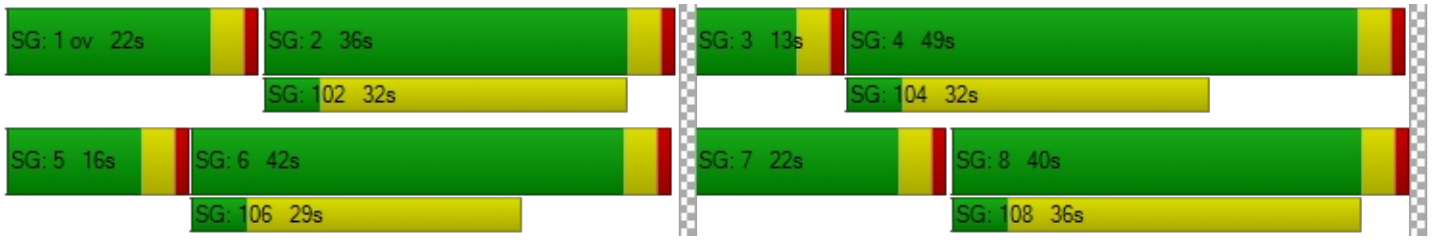
d_M, Delay for Movement [s/veh]	81.15	27.22	21.13	66.96	25.95	17.91	60.69	52.17	44.52	116.41	48.44	48.68
Movement LOS	F	C	C	E	C	B	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	37.88			29.01			49.37			84.22		
Approach LOS	D			C			D			F		
d_I, Intersection Delay [s/veh]	44.74											
Intersection LOS	D											
Intersection V/C	0.806											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.416	3.190	2.934	2.871
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	533	600	750
d_b, Bicycle Delay [s]	28.02	32.27	29.40	23.44
l_b,int, Bicycle LOS Score for Intersection	3.639	2.613	2.016	2.496
Bicycle LOS	D	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	37.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	9	10	4	26	1	149	10	202	29	134	390	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	35	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	10	4	26	1	149	10	202	29	134	425	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	1	7	0	39	3	53	8	35	112	3
Total Analysis Volume [veh/h]	9	11	4	27	1	157	11	213	31	141	447	14
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			
v_di, Inbound Pedestrian Volume crossing th	0				0				0			
v_co, Outbound Pedestrian Volume along th	0				0				0			
v_ci, Inbound Pedestrian Volume along the le	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	35	0	0	0	0	35	0	9	0	26	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	31	31	56	50	50
g / C, Green / Cycle	0.26	0.26	0.47	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.03	0.24	0.20	0.12	0.12
s, saturation flow rate [veh/h]	1591	1562	854	1900	1880
c, Capacity [veh/h]	444	444	366	792	783
d1, Uniform Delay [s]	34.15	43.49	21.06	23.25	23.25
k, delay calibration	0.11	0.41	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	16.48	4.28	0.94	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.86	0.47	0.29	0.29
d, Delay for Lane Group [s/veh]	34.26	59.97	25.34	24.18	24.20
Lane Group LOS	C	E	C	C	C
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.16	13.08	3.24	4.57	4.53
50th-Percentile Queue Length [ft/ln]	29.11	326.92	81.09	114.25	113.25
95th-Percentile Queue Length [veh/ln]	2.10	19.01	5.84	8.08	8.02
95th-Percentile Queue Length [ft/ln]	52.40	475.18	145.97	201.89	200.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.26	34.26	34.26	34.26	59.97	59.97	59.97	59.97	25.34	25.34	24.19	24.20
Movement LOS	C	C	C	C	E	E	E	E	C	C	C	C
d_A, Approach Delay [s/veh]	34.26				59.97				24.50			
Approach LOS	C				E				C			
d_I, Intersection Delay [s/veh]	37.24											
Intersection LOS	D											
Intersection V/C	0.674											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.782	0.000	2.768
Crosswalk LOS	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	517	367
d_b, Bicycle Delay [s]	33.00	33.00	40.02
l_b,int, Bicycle LOS Score for Intersection	1.599	1.931	1.966
Bicycle LOS	A	A	A

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	18	610	55	20	11	10	217	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	40	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	650	55	20	11	10	217	1
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	171	14	5	3	3	57	0
Total Analysis Volume [veh/h]	19	684	58	21	12	11	228	1
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			
v_di, Inbound Pedestrian Volume crossing th	0				0			
v_co, Outbound Pedestrian Volume along th	0				0			
v_ci, Inbound Pedestrian Volume along the le	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	12	29	0	0	0	47	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	47	47	47	21
g / C, Green / Cycle	0.02	0.39	0.39	0.39	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.14	0.22	0.05	0.15
s, saturation flow rate [veh/h]	1810	1900	1900	1615	1634
c, Capacity [veh/h]	36	748	748	635	283
d1, Uniform Delay [s]	58.25	25.69	28.28	23.21	48.50
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.42	1.33	2.99	0.40	9.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.36	0.56	0.12	0.89
d, Delay for Lane Group [s/veh]	69.66	27.02	31.27	23.61	57.89
Lane Group LOS	E	C	C	C	E
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.69	5.67	9.87	1.51	8.09
50th-Percentile Queue Length [ft/ln]	17.16	141.64	246.76	37.75	202.32
95th-Percentile Queue Length [veh/ln]	1.24	9.57	15.02	2.72	12.76
95th-Percentile Queue Length [ft/ln]	30.89	239.24	375.57	67.96	318.96

Movement, Approach, & Intersection Results

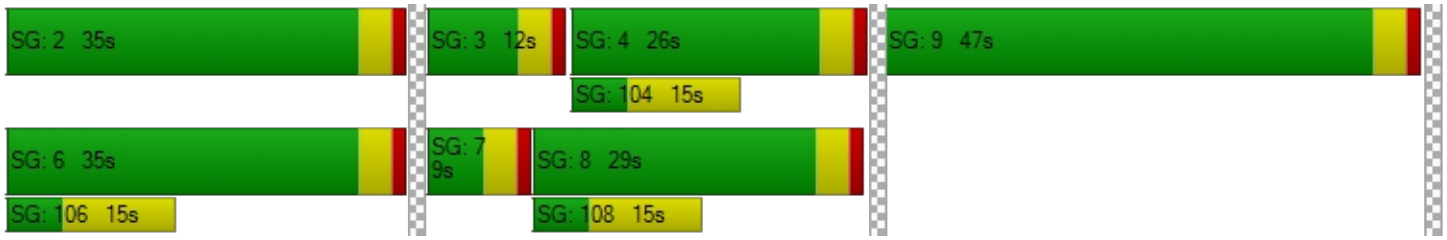
d_M, Delay for Movement [s/veh]	69.66	29.61	31.27	23.61	57.89	57.89	57.89	57.89
Movement LOS	E	C	C	C	E	E	E	E
d_A, Approach Delay [s/veh]	29.98				57.89			
Approach LOS	C				E			
d_I, Intersection Delay [s/veh]	37.24							
Intersection LOS	D							
Intersection V/C	0.674							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.260
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	717
d_b, Bicycle Delay [s]	37.60	24.70
l_b,int, Bicycle LOS Score for Intersection	2.187	1.974
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	18.713

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	187	96	229	162	442	146	59	448	321	238	678	130
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	35	0	0	40	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	96	229	162	442	146	59	483	321	238	718	130
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	25	60	43	116	38	16	127	84	63	189	34
Total Analysis Volume [veh/h]	197	101	241	171	465	154	62	508	338	251	756	137
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	3.51	0.41	0.00	18.71	0.27	0.08	0.01	0.00	0.31	0.01	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	10000.0	10000.0	10000.0	13.74	10.10	0.00	0.00	11.55	0.00	0.00
Movement LOS	F	F	F	F	F	B	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	70.25	70.25	70.25	82.39	82.39	1.10	0.26	0.00	0.00	1.35	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1756.30	1756.30	1756.30	2059.87	2059.87	27.52	6.57	0.00	0.00	33.65	0.00	0.00
d_A, Approach Delay [s/veh]	10000.00			8053.31			0.69			2.53		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	3476.97											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	68.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.916

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	492	681	161	94	882	35	39	316	520	465	421	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	40	9	0	0	0	0	0	0	35	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	532	690	161	94	882	35	39	316	555	465	421	99
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	140	182	42	25	232	9	10	83	146	122	111	26
Total Analysis Volume [veh/h]	560	726	169	99	928	37	41	333	584	489	443	104
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	43	0	12	33	0	11	45	0	20	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	39	39	8	29	29	4	41	41	16	53	53
g / C, Green / Cycle	0.15	0.33	0.33	0.07	0.24	0.24	0.03	0.34	0.34	0.13	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.16	0.20	0.10	0.05	0.26	0.26	0.01	0.09	0.36	0.14	0.15	0.15
s, saturation flow rate [veh/h]	3514	3618	1615	1810	1900	1874	3514	3618	1615	3514	1900	1777
c, Capacity [veh/h]	527	1176	525	121	459	453	112	1236	552	469	842	787
d1, Uniform Delay [s]	51.00	34.20	30.53	55.29	45.50	45.50	56.90	28.64	39.50	52.00	21.86	21.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	37.48	2.44	1.62	12.74	58.14	58.46	1.99	0.12	54.68	31.87	0.23	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.62	0.32	0.82	1.06	1.06	0.37	0.27	1.06	1.04	0.34	0.34
d, Delay for Lane Group [s/veh]	88.48	36.64	32.15	68.03	103.64	103.96	58.88	28.76	94.18	83.87	22.09	22.11
Lane Group LOS	F	D	C	E	F	F	E	C	F	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.64	9.31	3.94	3.38	20.97	20.73	0.64	3.52	24.36	9.10	5.26	4.92
50th-Percentile Queue Length [ft/ln]	265.88	232.66	98.47	84.58	524.36	518.32	16.02	87.88	608.92	227.59	131.39	122.99
95th-Percentile Queue Length [veh/ln]	16.43	14.31	7.09	6.09	29.45	29.16	1.15	6.33	33.72	14.32	9.02	8.56
95th-Percentile Queue Length [ft/ln]	410.86	357.73	177.24	152.24	736.36	729.00	28.83	158.18	843.07	357.91	225.39	213.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	88.48	36.64	32.15	68.03	103.79	103.96	58.88	28.76	94.18	83.87	22.10	22.11
Movement LOS	F	D	C	E	F	F	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	56.07			100.47			69.93			51.26		
Approach LOS	E			F			E			D		
d_I, Intersection Delay [s/veh]	68.38											
Intersection LOS	E											
Intersection V/C	0.916											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.091	2.692	2.887	2.940
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	483	683	833
d_b, Bicycle Delay [s]	27.34	34.50	26.00	20.42
l_b,int, Bicycle LOS Score for Intersection	2.760	2.437	2.350	2.414
Bicycle LOS	C	B	B	B

Sequence

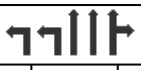
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	222	1373	756	128	1600	132	203	290	191	612	469	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	21	0	0	12	0	0	0	0	0	0	9
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	222	1394	756	128	1612	132	203	290	191	612	469	118
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	367	199	34	424	35	53	76	50	161	123	31
Total Analysis Volume [veh/h]	234	1467	796	135	1697	139	214	305	201	644	494	124
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	40	40	10	37	0	34	43	0	27	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	57	84	6	54	54	10	18	18	23	31	41
g / C, Green / Cycle	0.08	0.48	0.70	0.05	0.45	0.45	0.08	0.15	0.15	0.19	0.26	0.34
(v / s)_i Volume / Saturation Flow Rate	0.07	0.28	0.49	0.04	0.34	0.34	0.06	0.08	0.12	0.18	0.14	0.04
s, saturation flow rate [veh/h]	3514	5176	1615	3514	3618	1827	3514	3618	1615	3514	3618	2859
c, Capacity [veh/h]	264	2469	1134	176	1636	826	287	535	239	674	933	976
d1, Uniform Delay [s]	55.00	22.90	10.50	56.31	27.15	27.22	53.89	47.58	49.76	48.00	38.26	27.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.78	1.06	3.64	6.89	3.12	6.14	3.86	0.96	7.79	8.73	0.47	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.59	0.70	0.77	0.74	0.75	0.75	0.57	0.84	0.96	0.53	0.13
d, Delay for Lane Group [s/veh]	64.78	23.96	14.14	63.20	30.28	33.36	57.75	48.53	57.55	56.73	38.73	27.27
Lane Group LOS	E	C	B	E	C	C	E	D	E	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.86	10.16	12.19	2.19	14.82	15.77	3.31	4.32	6.38	10.30	6.31	1.24
50th-Percentile Queue Length [ft/ln]	96.54	254.07	304.80	54.71	370.48	394.14	82.87	108.07	159.44	257.56	157.73	31.09
95th-Percentile Queue Length [veh/ln]	6.95	15.39	17.92	3.94	21.13	22.28	5.97	7.73	10.52	15.57	10.43	2.24
95th-Percentile Queue Length [ft/ln]	173.77	384.78	447.97	98.48	528.31	556.94	149.17	193.31	262.98	389.16	260.72	55.96

Movement, Approach, & Intersection Results

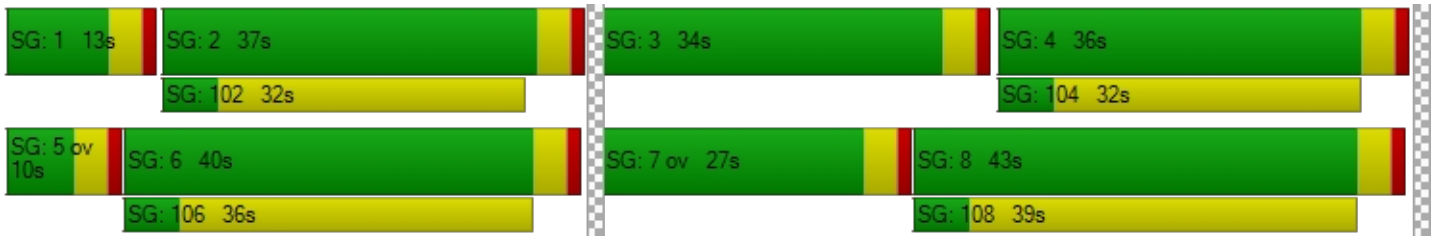
d_M, Delay for Movement [s/veh]	64.78	23.96	14.14	63.20	31.15	33.36	57.75	48.53	57.55	56.73	38.73	27.27
Movement LOS	E	C	B	E	C	C	E	D	E	E	D	C
d_A, Approach Delay [s/veh]	24.65			33.50			53.79			46.79		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.94											
Intersection LOS	C											
Intersection V/C	0.736											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.473	3.201	2.934	3.135
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	550	650	533
d_b, Bicycle Delay [s]	29.40	31.54	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	2.933	2.644	1.956	2.601
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	24.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.617

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1092	445	0	1012	655	0	0	0	637	0	595
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	108	0	0	0	113	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1200	445	0	1012	768	0	0	0	637	0	595
Peak Hour Factor	1.0000	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	316	111	0	266	202	0	0	0	168	0	157
Total Analysis Volume [veh/h]	0	1263	445	0	1065	808	0	0	0	671	0	626
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	67	0	0	67	0	0	0	0	53	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	76	76		36	36	36
g / C, Green / Cycle	0.63	0.63		0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.35	0.21		0.24	0.25	0.27
s, saturation flow rate [veh/h]	3618	5176		1810	1717	1615
c, Capacity [veh/h]	2282	3264		548	520	489
d1, Uniform Delay [s]	12.57	10.30		38.34	39.00	39.84
k, delay calibration	0.50	0.50		0.16	0.18	0.21
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.97	0.27		3.72	5.76	9.94
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.33		0.79	0.83	0.88
d, Delay for Lane Group [s/veh]	13.55	10.57		42.05	44.75	49.78
Lane Group LOS	B	B		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	9.43	4.28		12.15	12.61	13.39
50th-Percentile Queue Length [ft/ln]	235.70	107.05		303.67	315.30	334.64
95th-Percentile Queue Length [veh/ln]	14.46	7.68		17.86	18.44	19.39
95th-Percentile Queue Length [ft/ln]	361.59	191.89		446.57	460.90	484.64

Movement, Approach, & Intersection Results

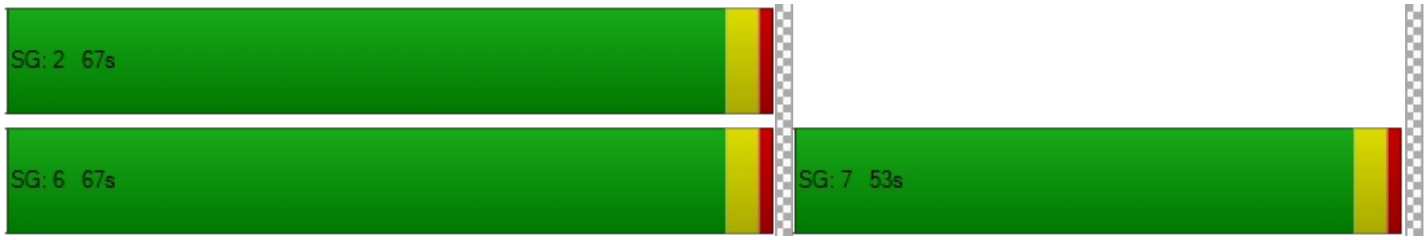
d_M, Delay for Movement [s/veh]	0.00	13.55	0.00	0.00	10.57	0.00	0.00	0.00	0.00	43.01	0.00	48.22
Movement LOS		B			B					D		D
d_A, Approach Delay [s/veh]	13.55			10.57			0.00			45.53		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	24.12											
Intersection LOS	C											
Intersection V/C	0.617											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	1050	0	817
d_b, Bicycle Delay [s]	13.54	13.54	60.00	21.00
l_b,int, Bicycle LOS Score for Intersection	2.602	2.145	4.132	3.700
Bicycle LOS	B	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	51.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.975

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1164	608	0	2082	0	0	0	0	949	0	808
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	55	0	0	172	2	0	0	0	0	0	161
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1219	608	0	2254	2	0	0	0	949	0	969
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	321	160	0	593	1	0	0	0	250	0	255
Total Analysis Volume [veh/h]	0	1283	640	0	2373	2	0	0	0	999	0	1020
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	44	0	0	44	0	0	0	0	76	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	40	40		72	72
g / C, Green / Cycle	0.33	0.33		0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.25	0.34		0.28	0.63
s, saturation flow rate [veh/h]	5176	6901		3514	1615
c, Capacity [veh/h]	1725	2300		2108	969
d1, Uniform Delay [s]	35.46	40.00		13.41	24.00
k, delay calibration	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	2.95	27.46		0.17	43.78
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.74	1.03		0.47	1.05
d, Delay for Lane Group [s/veh]	38.41	67.46		13.58	67.78
Lane Group LOS	D	F		B	F
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	11.47	21.07		7.34	37.10
50th-Percentile Queue Length [ft/ln]	286.69	526.68		183.53	927.44
95th-Percentile Queue Length [veh/ln]	17.02	29.20		11.78	49.20
95th-Percentile Queue Length [ft/ln]	425.53	730.04		294.61	1230.06

Movement, Approach, & Intersection Results

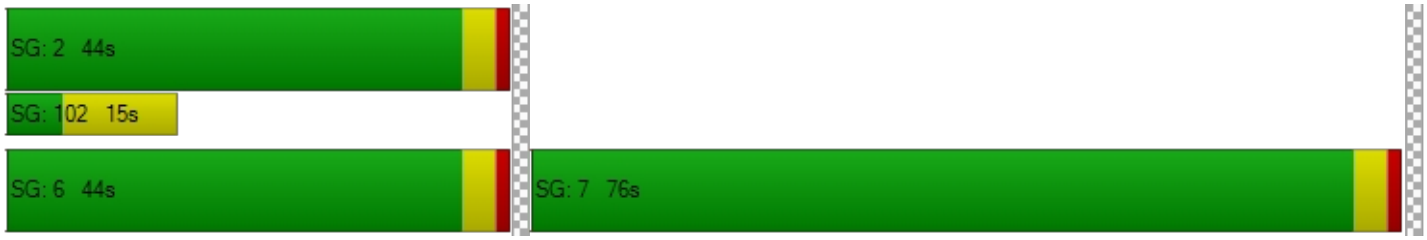
d_M, Delay for Movement [s/veh]	0.00	38.41	0.00	0.00	67.46	0.00	0.00	0.00	0.00	13.58	0.00	67.78
Movement LOS		D			F					B		F
d_A, Approach Delay [s/veh]	38.41			67.46			0.00			40.96		
Approach LOS	D			E			A			D		
d_I, Intersection Delay [s/veh]	51.46											
Intersection LOS	D											
Intersection V/C	0.975											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	667	0	1200
d_b, Bicycle Delay [s]	26.67	26.67	60.00	9.60
I_b,int, Bicycle LOS Score for Intersection	2.265	2.538	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	736	272	0	1133	466	0	0	0	407	0	529
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	0	35	0	0	0	0	0	0	40
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	745	272	0	1168	466	0	0	0	407	0	569
Peak Hour Factor	1.0000	0.9500	0.8680	1.0000	0.9500	1.0000	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	196	78	0	307	117	0	0	0	107	0	150
Total Analysis Volume [veh/h]	0	784	313	0	1229	466	0	0	0	428	0	599
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	53	0	0	53	0	0	0	0	67	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	80	80		32	32
g / C, Green / Cycle	0.66	0.66		0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.15	0.34		0.24	0.21
s, saturation flow rate [veh/h]	5176	3618		1810	2859
c, Capacity [veh/h]	3434	2400		488	772
d1, Uniform Delay [s]	8.01	10.30		41.89	40.46
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.16	0.78		5.16	1.72
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.51		0.88	0.78
d, Delay for Lane Group [s/veh]	8.17	11.08		47.05	42.18
Lane Group LOS	A	B		D	D
Critical Lane Group	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	2.61	7.99		12.74	8.32
50th-Percentile Queue Length [ft/ln]	65.20	199.84		318.53	208.07
95th-Percentile Queue Length [veh/ln]	4.69	12.63		18.60	13.05
95th-Percentile Queue Length [ft/ln]	117.36	315.75		464.88	326.35

Movement, Approach, & Intersection Results

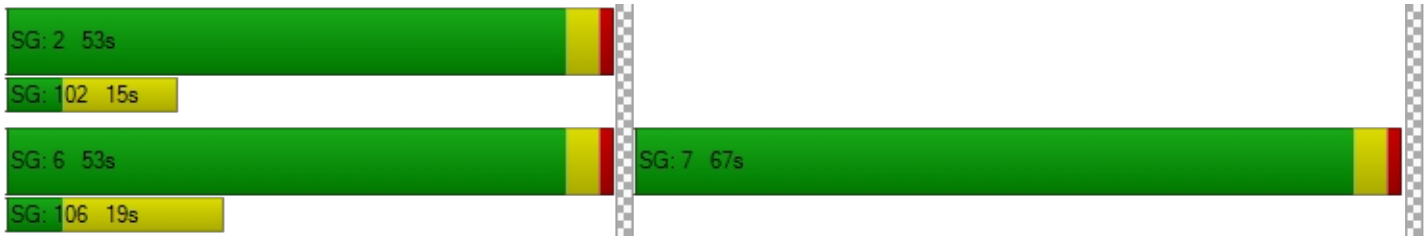
d_M, Delay for Movement [s/veh]	0.00	8.17	0.00	0.00	11.08	0.00	0.00	0.00	0.00	47.05	0.00	42.18
Movement LOS		A			B					D		D
d_A, Approach Delay [s/veh]	8.17			11.08			0.00			44.21		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	21.52											
Intersection LOS	C											
Intersection V/C	0.576											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.397
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	817	0	1050
d_b, Bicycle Delay [s]	21.00	21.00	60.00	13.54
l_b,int, Bicycle LOS Score for Intersection	1.991	2.574	4.132	1.560
Bicycle LOS	A	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1329	381	0	1366	238	308	0	671	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	0	0	0	99	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1338	381	0	1366	238	407	0	671	0	0	0
Peak Hour Factor	1.0000	0.9500	1.0000	1.0000	0.9500	1.0000	0.9270	1.0000	0.9270	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	352	95	0	359	60	110	0	181	0	0	0
Total Analysis Volume [veh/h]	0	1408	381	0	1438	238	439	0	724	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	19	0	0	19	0	101	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	55	55	57	57	
g / C, Green / Cycle	0.46	0.46	0.48	0.48	
(v / s)_i Volume / Saturation Flow Rate	0.27	0.40	0.12	0.45	
s, saturation flow rate [veh/h]	5176	3618	3514	1615	
c, Capacity [veh/h]	2363	1652	1675	770	
d1, Uniform Delay [s]	24.34	29.40	18.78	29.78	
k, delay calibration	0.50	0.50	0.11	0.14	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.12	6.58	0.08	8.06	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.60	0.87	0.26	0.94	
d, Delay for Lane Group [s/veh]	25.45	35.99	18.86	37.84	
Lane Group LOS	C	D	B	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	10.06	19.67	3.67	20.84	
50th-Percentile Queue Length [ft/ln]	251.42	491.83	91.83	521.00	
95th-Percentile Queue Length [veh/ln]	15.26	26.95	6.61	28.33	
95th-Percentile Queue Length [ft/ln]	381.45	673.68	165.29	708.17	

Movement, Approach, & Intersection Results

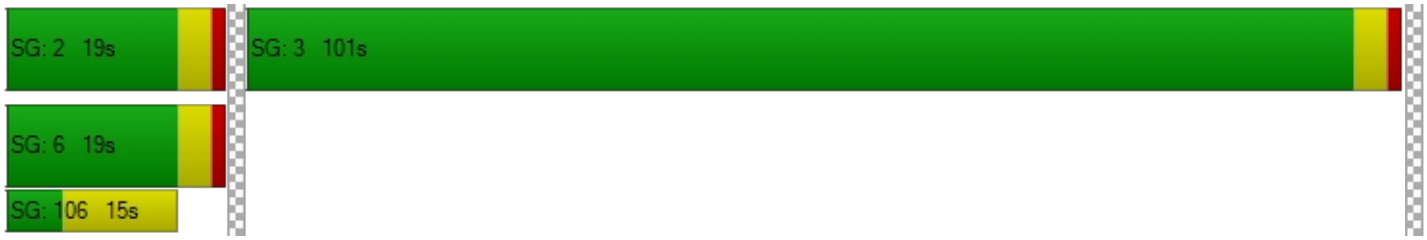
d_M, Delay for Movement [s/veh]	0.00	25.45	0.00	0.00	35.99	0.00	18.86	0.00	37.84	0.00	0.00	0.00
Movement LOS		C			D		B		D			
d_A, Approach Delay [s/veh]	25.45			35.99			30.67			0.00		
Approach LOS	C			D			C			A		
d_I, Intersection Delay [s/veh]	30.75											
Intersection LOS	C											
Intersection V/C	0.846											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	1617	0
d_b, Bicycle Delay [s]	45.94	45.94	2.20	60.00
l_b,int, Bicycle LOS Score for Intersection	2.334	2.746	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1403	541	609	1701	0	543	8	691	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	46	0	167	5	0	8	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1449	541	776	1706	0	551	8	691	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	381	142	204	449	0	145	2	182	0	0	0
Total Analysis Volume [veh/h]	0	1525	569	817	1796	0	580	8	727	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	48	0	34	82	0	0	38	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	44	44	30	78	34	34	34	
g / C, Green / Cycle	0.37	0.37	0.25	0.65	0.28	0.28	0.28	
(v / s)_i Volume / Saturation Flow Rate	0.29	0.35	0.23	0.35	0.24	0.26	0.27	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1810	1678	1615	
c, Capacity [veh/h]	1912	597	869	3364	513	475	458	
d1, Uniform Delay [s]	33.83	36.84	44.30	11.26	40.67	41.71	42.30	
k, delay calibration	0.50	0.50	0.11	0.50	0.35	0.40	0.43	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.57	27.05	5.80	0.61	12.18	21.96	29.67	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.80	0.95	0.94	0.53	0.85	0.92	0.96	
d, Delay for Lane Group [s/veh]	37.40	63.89	50.09	11.87	52.84	63.67	71.97	
Lane Group LOS	D	E	D	B	D	E	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	13.69	20.41	12.52	8.24	13.88	15.36	16.41	
50th-Percentile Queue Length [ft/ln]	342.37	510.17	313.11	206.06	347.11	384.07	410.22	
95th-Percentile Queue Length [veh/ln]	19.76	27.82	18.33	12.95	20.00	21.79	23.05	
95th-Percentile Queue Length [ft/ln]	494.09	695.38	458.21	323.76	499.88	544.77	576.30	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	37.40	63.89	50.09	11.87	0.00	55.49	63.67	68.68	0.00	0.00	0.00
Movement LOS		D	E	D	B		E	E	E			
d_A, Approach Delay [s/veh]	44.60			23.82			62.83			0.00		
Approach LOS	D			C			E			A		
d_I, Intersection Delay [s/veh]	39.56											
Intersection LOS	D											
Intersection V/C	0.856											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.467	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	1300	567	0
d_b, Bicycle Delay [s]	24.07	7.35	30.82	60.00
I_b,int, Bicycle LOS Score for Intersection	2.711	2.997	3.729	4.132
Bicycle LOS	B	C	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.756

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	733	372	624	959	0	340	9	478	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	35	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	742	372	659	959	0	340	9	478	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	195	98	173	252	0	89	2	126	0	0	0
Total Analysis Volume [veh/h]	0	781	392	694	1009	0	358	9	503	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	9	0	33	42	0	0	78	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	41	41	26	71	41	41	
g / C, Green / Cycle	0.34	0.34	0.22	0.59	0.34	0.34	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.24	0.20	0.28	0.10	0.32	
s, saturation flow rate [veh/h]	3618	1615	3514	3618	3514	1619	
c, Capacity [veh/h]	1226	547	764	2134	1207	556	
d1, Uniform Delay [s]	33.43	34.62	45.79	14.00	28.79	37.81	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.53	7.81	4.54	0.75	0.14	6.79	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.64	0.72	0.91	0.47	0.30	0.92	
d, Delay for Lane Group [s/veh]	35.97	42.43	50.32	14.76	28.92	44.60	
Lane Group LOS	D	D	D	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.96	11.09	10.52	7.77	3.81	15.28	
50th-Percentile Queue Length [ft/ln]	249.03	277.32	262.89	194.15	95.27	382.02	
95th-Percentile Queue Length [veh/ln]	15.14	16.56	15.83	12.34	6.86	21.69	
95th-Percentile Queue Length [ft/ln]	378.43	413.88	395.85	308.41	171.49	542.29	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	35.97	42.43	50.32	14.76	0.00	28.92	44.60	44.60	0.00	0.00	0.00
Movement LOS		D	D	D	B		C	D	D			
d_A, Approach Delay [s/veh]	38.13			29.25			38.15			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	34.10											
Intersection LOS	C											
Intersection V/C	0.756											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	83	633	1233	0
d_b, Bicycle Delay [s]	55.10	28.02	8.82	60.00
l_b,int, Bicycle LOS Score for Intersection	2.205	2.965	2.995	4.132
Bicycle LOS	B	C	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	470	808	400	610	984	920	958	0	561	493	0	665
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	12	0	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	470	817	400	622	984	920	958	0	561	493	0	677
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	124	215	105	164	259	242	252	0	148	130	0	178
Total Analysis Volume [veh/h]	495	860	421	655	1036	968	1008	0	591	519	0	713
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	72	0	0	72	0	48	0	0	48	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	74	74	74	74	38	38
g / C, Green / Cycle	0.62	0.62	0.62	0.62	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.46	0.17	0.52	0.20	0.29	0.15
s, saturation flow rate [veh/h]	1074	5176	1268	5176	3514	3514
c, Capacity [veh/h]	597	3206	719	3206	1103	1103
d1, Uniform Delay [s]	27.83	10.43	28.63	10.87	39.60	33.13
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.57	0.21	17.78	0.27	3.43	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.27	0.91	0.32	0.91	0.47
d, Delay for Lane Group [s/veh]	40.40	10.63	46.41	11.14	43.02	33.44
Lane Group LOS	D	B	D	B	D	C
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.36	3.43	10.66	4.31	14.66	6.14
50th-Percentile Queue Length [ft/ln]	184.10	85.67	266.47	107.66	366.43	153.41
95th-Percentile Queue Length [veh/ln]	11.81	6.17	16.01	7.71	20.94	10.20
95th-Percentile Queue Length [ft/ln]	295.36	154.21	400.33	192.75	523.39	254.97

Movement, Approach, & Intersection Results

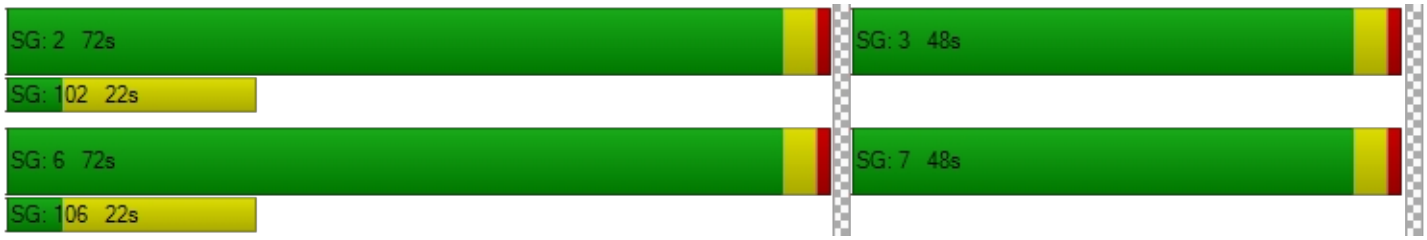
d_M, Delay for Movement [s/veh]	40.40	10.63	0.00	46.41	11.14	0.00	43.02	0.00	0.00	33.44	0.00	0.00
Movement LOS	D	B		D	B		D			C		
d_A, Approach Delay [s/veh]	21.51			24.80			43.02			33.44		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	28.82											
Intersection LOS	C											
Intersection V/C	0.804											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.312	3.476
Crosswalk LOS	F	F	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1133	1133	733	733
d_b, Bicycle Delay [s]	11.27	11.27	24.07	24.07
l_b,int, Bicycle LOS Score for Intersection	2.305	2.490	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	37.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	197	373	94	132	920	254	86	462	132	181	1240	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	9	9	0	0	0	9	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	373	103	141	920	254	86	471	132	181	1240	121
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	98	27	37	242	67	23	124	35	48	326	32
Total Analysis Volume [veh/h]	207	393	108	148	968	267	91	496	139	191	1305	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	27	0	13	27	0	11	57	0	23	69	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	42	42	7	40	40	7	41	41	15	48	48
g / C, Green / Cycle	0.07	0.35	0.35	0.06	0.33	0.33	0.06	0.34	0.34	0.12	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.07	0.04	0.19	0.17	0.05	0.14	0.09	0.11	0.36	0.08
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	262	1788	558	208	1708	533	106	1227	548	222	1460	652
d1, Uniform Delay [s]	54.60	27.81	27.54	55.45	33.12	32.26	56.02	30.37	28.68	51.60	33.37	23.16
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.29	0.28	0.77	4.49	1.37	3.34	17.88	0.22	0.24	9.27	2.14	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.22	0.19	0.71	0.57	0.50	0.86	0.40	0.25	0.86	0.89	0.19
d, Delay for Lane Group [s/veh]	59.89	28.09	28.31	59.94	34.49	35.60	73.90	30.59	28.92	60.87	35.51	23.30
Lane Group LOS	E	C	C	E	C	D	E	C	C	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.27	2.73	2.31	2.33	7.93	6.71	3.26	5.53	2.95	6.21	17.79	2.37
50th-Percentile Queue Length [ft/ln]	81.70	68.18	57.70	58.27	198.26	167.79	81.39	138.37	73.66	155.14	444.73	59.25
95th-Percentile Queue Length [veh/ln]	5.88	4.91	4.15	4.20	12.55	10.96	5.86	9.39	5.30	10.29	24.71	4.27
95th-Percentile Queue Length [ft/ln]	147.05	122.72	103.85	104.88	313.72	274.01	146.50	234.83	132.58	257.27	617.66	106.64

Movement, Approach, & Intersection Results

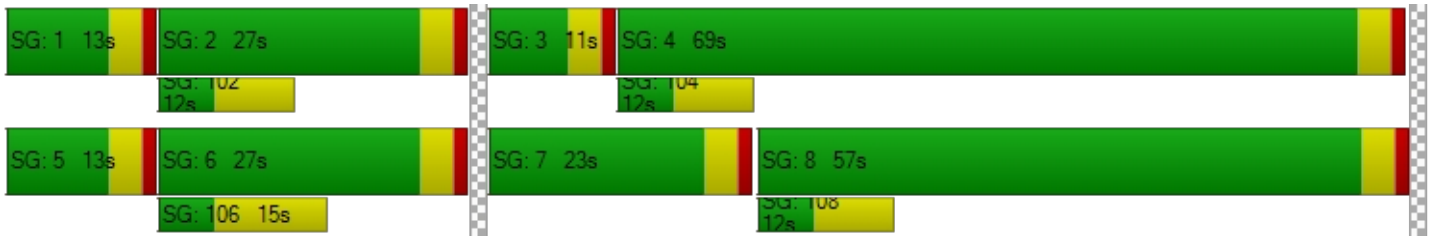
d_M, Delay for Movement [s/veh]	59.89	28.09	28.31	59.94	34.49	35.60	73.90	30.59	28.92	60.87	35.51	23.30
Movement LOS	E	C	C	E	C	D	E	C	C	E	D	C
d_A, Approach Delay [s/veh]	37.42			37.43			35.70			37.54		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	37.19											
Intersection LOS	D											
Intersection V/C	0.657											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.082	3.080	2.875	2.854
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	383	883	1083
d_b, Bicycle Delay [s]	39.20	39.20	18.70	12.60
l_b,int, Bicycle LOS Score for Intersection	1.949	2.320	2.159	2.899
Bicycle LOS	A	B	B	C

Sequence

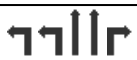
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	88.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	55	190	187	444	437	302	132	757	77	310	1498	326
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	27	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	190	187	444	437	302	132	784	77	310	1498	326
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	50	49	117	115	79	35	206	20	82	394	86
Total Analysis Volume [veh/h]	58	200	197	467	460	318	139	825	81	326	1577	343
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	33	0	29	50	50	12	41	0	17	46	46
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	29	29	25	49	61	8	37	37	13	42	71
g / C, Green / Cycle	0.04	0.24	0.24	0.21	0.41	0.51	0.07	0.31	0.31	0.11	0.35	0.59
(v / s)_i Volume / Saturation Flow Rate	0.03	0.06	0.12	0.26	0.13	0.20	0.08	0.24	0.24	0.09	0.44	0.21
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1841	3514	3618	1615
c, Capacity [veh/h]	78	874	390	377	1473	819	121	587	568	379	1266	956
d1, Uniform Delay [s]	56.78	36.52	39.30	47.50	24.16	18.15	56.00	37.83	37.84	52.63	39.00	12.70
k, delay calibration	0.11	0.50	0.50	0.47	0.50	0.50	0.11	0.30	0.30	0.11	0.18	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.25	0.61	4.61	127.30	0.55	1.39	87.59	6.28	6.48	5.74	113.04	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.23	0.50	1.24	0.31	0.39	1.15	0.78	0.78	0.86	1.25	0.36
d, Delay for Lane Group [s/veh]	70.04	37.13	43.90	174.80	24.72	19.54	143.59	44.12	44.32	58.37	152.04	13.06
Lane Group LOS	E	D	D	F	C	B	F	D	D	E	F	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.03	2.44	5.52	24.52	4.55	5.67	6.58	13.26	12.88	5.13	38.17	4.77
50th-Percentile Queue Length [ft/ln]	50.65	61.11	138.09	613.09	113.87	141.75	164.59	331.56	322.10	128.17	954.31	119.17
95th-Percentile Queue Length [veh/ln]	3.65	4.40	9.38	36.39	8.05	9.58	11.27	19.23	18.77	8.84	55.38	8.35
95th-Percentile Queue Length [ft/ln]	91.18	110.00	234.45	909.86	201.37	239.38	281.73	480.87	469.27	221.00	1384.54	208.68

Movement, Approach, & Intersection Results

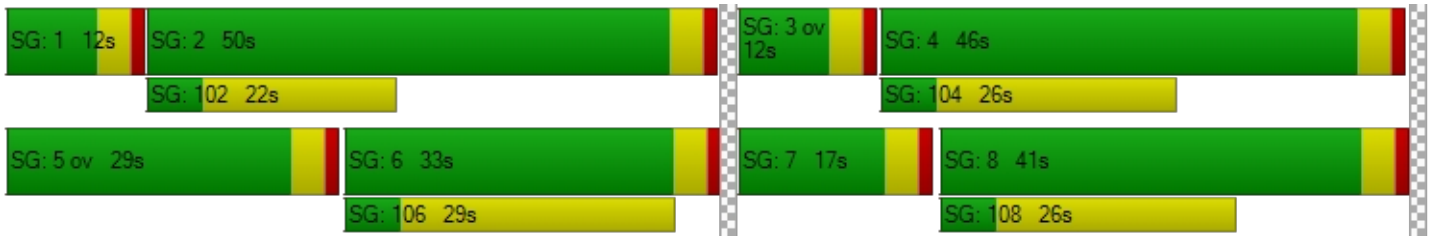
d_M, Delay for Movement [s/veh]	70.04	37.13	43.90	174.80	24.72	19.54	143.59	44.21	44.32	58.37	152.04	13.06
Movement LOS	E	D	D	F	C	B	F	D	D	E	F	B
d_A, Approach Delay [s/veh]	44.26			79.69			57.43			117.22		
Approach LOS	D			E			E			F		
d_I, Intersection Delay [s/veh]	88.69											
Intersection LOS	F											
Intersection V/C	0.893											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.683	2.781	2.900	3.129
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	767	617	700
d_b, Bicycle Delay [s]	34.50	22.82	28.70	25.35
l_b,int, Bicycle LOS Score for Intersection	1.935	2.587	2.422	3.413
Bicycle LOS	A	B	B	C

Sequence

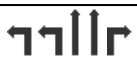
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.679

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	37	1144	67	458	1531	613	460	246	52	68	289	393
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	37	0	0	5	0	9	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	1181	67	458	1536	613	469	246	52	68	289	393
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	311	18	121	404	161	123	65	14	18	76	103
Total Analysis Volume [veh/h]	39	1243	71	482	1617	645	494	259	55	72	304	414
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	33	0	21	41	41	23	57	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	4	53	53	17	66	89	19	30	30	5	15	36
g / C, Green / Cycle	0.03	0.44	0.44	0.14	0.55	0.74	0.16	0.25	0.25	0.04	0.13	0.30
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.24	0.14	0.31	0.40	0.14	0.09	0.09	0.02	0.08	0.26
s, saturation flow rate [veh/h]	1810	3618	1848	3514	5176	1615	3514	1900	1786	3514	3618	1615
c, Capacity [veh/h]	56	1588	811	498	2844	1197	556	472	443	133	462	489
d1, Uniform Delay [s]	57.58	24.87	24.88	51.23	17.71	6.69	49.46	37.06	37.07	56.69	49.83	39.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.30
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.30	1.36	2.66	12.63	0.83	1.74	5.03	0.43	0.46	3.37	1.60	10.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.55	0.55	0.97	0.57	0.54	0.89	0.34	0.34	0.54	0.66	0.85
d, Delay for Lane Group [s/veh]	71.88	26.24	27.53	63.86	18.54	8.44	54.49	37.49	37.53	60.06	51.42	49.91
Lane Group LOS	E	C	C	E	B	A	D	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.40	9.36	9.85	8.06	9.72	6.74	7.62	3.98	3.75	1.14	4.45	12.78
50th-Percentile Queue Length [ft/ln]	34.90	233.97	246.34	201.48	243.04	168.41	190.58	99.39	93.70	28.38	111.20	319.60
95th-Percentile Queue Length [veh/ln]	2.51	14.38	15.00	12.72	14.83	10.99	12.15	7.16	6.75	2.04	7.91	18.65
95th-Percentile Queue Length [ft/ln]	62.82	359.40	375.04	317.88	370.87	274.82	303.78	178.90	168.65	51.08	197.68	466.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.88	26.63	27.53	63.86	18.54	8.44	54.49	37.51	37.53	60.06	51.42	49.91
Movement LOS	E	C	C	E	B	A	D	D	D	E	D	D
d_A, Approach Delay [s/veh]	27.98			24.13			47.89			51.42		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	32.20											
Intersection LOS	C											
Intersection V/C	0.679											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.118	3.459	2.760	2.832
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	617	883	650
d_b, Bicycle Delay [s]	34.50	28.70	18.70	27.34
l_b,int, Bicycle LOS Score for Intersection	2.304	3.069	2.226	2.211
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	675.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	40.179

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	54	857	20	142	812	377	278	62	106	31	70	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	5	0	0	9	0	0	0	0	19
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	866	20	147	812	377	287	62	106	31	70	163
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	228	5	39	214	99	76	16	28	8	18	43
Total Analysis Volume [veh/h]	57	912	21	155	855	397	302	65	112	33	74	172
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	12	12	5	12	12	91	91	91	91
g / C, Green / Cycle	0.04	0.10	0.10	0.04	0.10	0.10	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.03	0.17	0.17	0.09	0.24	0.25	39.90	0.07	1.11	0.11
s, saturation flow rate [veh/h]	1810	3618	1878	1810	3618	1615	9	1615	97	1615
c, Capacity [veh/h]	74	367	191	75	371	166	62	1222	112	1222
d1, Uniform Delay [s]	57.01	53.90	53.90	57.50	53.85	53.85	52.99	3.81	45.48	3.97
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.65	313.48	324.51	484.95	595.63	646.89	2263.53	0.03	72.61	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	1.67	1.67	2.06	2.30	2.40	5.95	0.09	0.95	0.14
d, Delay for Lane Group [s/veh]	72.66	367.38	378.41	542.45	649.48	700.74	2316.52	3.85	118.09	4.03
Lane Group LOS	E	F	F	F	F	F	F	A	F	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.03	21.54	22.95	12.44	36.28	34.75	40.64	0.64	4.19	1.02
50th-Percentile Queue Length [ft/ln]	50.81	538.51	573.78	311.07	907.00	868.77	1015.95	15.91	104.65	25.46
95th-Percentile Queue Length [veh/ln]	3.66	34.19	36.19	20.82	56.84	54.79	73.15	1.15	7.53	1.83
95th-Percentile Queue Length [ft/ln]	91.46	854.79	904.63	520.42	1421.02	1369.71	1828.71	28.64	188.36	45.82

Movement, Approach, & Intersection Results

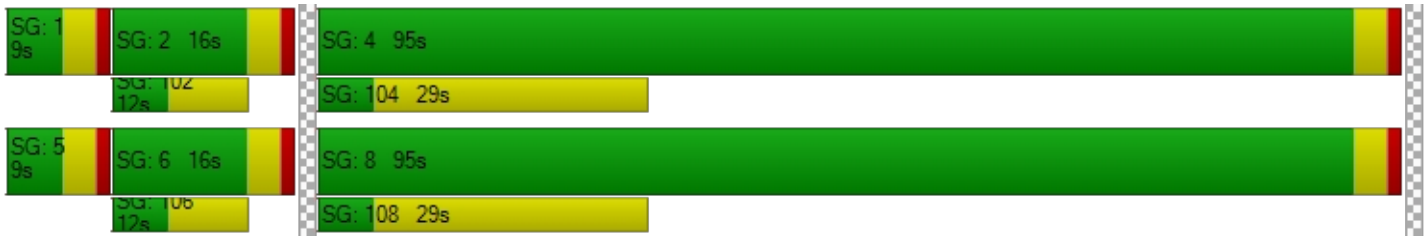
d_M, Delay for Movement [s/veh]	72.66	370.99	378.41	542.45	649.48	700.74	2316.52	2316.52	3.85	118.09	118.09	4.03
Movement LOS	E	F	F	F	F	F	F	F	A	F	F	A
d_A, Approach Delay [s/veh]	353.97			652.15			1775.77			47.77		
Approach LOS	F			F			F			D		
d_I, Intersection Delay [s/veh]	675.73											
Intersection LOS	F											
Intersection V/C	40.179											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.933	3.428	2.283	2.124
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	2.104	2.333	2.350	2.020
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.374

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	246	13	0	0	41	317	148	0	161	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	246	13	0	0	41	317	148	0	161	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	3	0	0	10	79	37	0	40	0	0	0
Total Analysis Volume [veh/h]	246	13	0	0	41	317	148	0	161	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	55	69	0	9	23	23	0	33	0	0	9	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	94	94	0	75	93	10	10	10	0	0
g / C, Green / Cycle	0.16	0.78	0.78	0.00	0.62	0.78	0.09	0.09	0.09	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.14	0.00	0.00	0.00	0.01	0.20	0.04	0.04	0.06	0.00	0.00
s, saturation flow rate [veh/h]	1781	3560	1870	1781	3560	1589	1781	1781	2813	1781	1870
c, Capacity [veh/h]	279	2778	1459	0	2220	1234	154	154	243	0	0
d1, Uniform Delay [s]	49.49	2.91	2.91	0.00	8.61	3.74	52.27	52.27	53.14	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.84	0.00	0.00	0.00	0.02	0.50	2.33	2.33	3.10	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.00	0.00	0.00	0.02	0.26	0.48	0.48	0.66	0.00	0.00
d, Delay for Lane Group [s/veh]	58.33	2.91	2.91	0.00	8.62	4.25	54.60	54.60	56.24	0.00	0.00
Lane Group LOS	E	A	A	A	A	A	D	D	E	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.89	0.02	0.02	0.00	0.20	1.98	2.23	2.23	2.46	0.00	0.00
50th-Percentile Queue Length [ft/ln]	197.15	0.49	0.54	0.00	5.12	49.46	55.72	55.72	61.49	0.00	0.00
95th-Percentile Queue Length [veh/ln]	12.49	0.04	0.04	0.00	0.37	3.56	4.01	4.01	4.43	0.00	0.00
95th-Percentile Queue Length [ft/ln]	312.28	0.89	0.96	0.00	9.22	89.02	100.30	100.30	110.67	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.33	2.91	2.91	0.00	8.62	4.25	54.60	54.60	56.24	0.00	0.00	0.00
Movement LOS	E	A	A	A	A	A	D	D	E	A	A	A
d_A, Approach Delay [s/veh]	55.55			4.75			55.45			0.00		
Approach LOS	E			A			E			A		
d_I, Intersection Delay [s/veh]	35.88											
Intersection LOS	D											
Intersection V/C	0.374											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.673	0.000	2.610	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1083	317	483	83
d_b, Bicycle Delay [s]	12.60	42.50	34.50	55.10
l_b,int, Bicycle LOS Score for Intersection	1.702	1.855	2.069	1.560
Bicycle LOS	A	A	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 998543: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	99	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	99	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	25	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	99	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Level Of Service Report
Intersection 998552: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Crosswalk	Yes		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Level Of Service Report
Intersection 998555: New Intersection

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Left	Thru	Left	Thru	Right	Left	Thru	Right	Thru	Thru	Right
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Cherry Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.715	35.7	D
2	Citrus Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.651	26.3	C
3	Sierra Ave at SR-210 WB Ramps	Signalized	HCM 6th Edition	WB Right	0.456	16.4	B
4	Cherry Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.697	28.2	C
5	Citrus Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	SB Left	0.743	31.4	C
6	Sierra Ave at SR-210 EB Ramps	Signalized	HCM 6th Edition	EB Right	0.494	15.7	B
7	Beech Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.526	36.1	D
8	Citrus Ave at Highland Ave	Signalized	HCM 6th Edition	NB Left	0.714	41.0	D
9	Sierra Ave at Highland Ave	Signalized	HCM 6th Edition	NB Thru	0.848	51.4	D
10	Etiwanda Ave at Baseline Rd	Signalized	HCM 6th Edition	SB Left	0.508	39.9	D
11	I-15 SB Ramps at Baseline Rd	Signalized	HCM 6th Edition	SB Right	0.567	19.4	B
12	I-15 NB Ramps at Baseline Rd	Signalized	HCM 6th Edition	EB Left	0.632	33.8	C
13	Cherry Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.788	42.4	D
14	Beech Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.597	42.8	D
15	Citrus Ave at Baseline Ave	Signalized	HCM 6th Edition	SB Left	0.757	42.1	D
16	Sierra Ave at Baseline Ave	Signalized	HCM 6th Edition	WB Left	0.585	36.8	D
17	Etiwanda Ave at Church St/Miller Ave	Signalized	HCM 6th Edition	SB Left	0.554	43.0	D
	Foothill Blvd at I-15 SB		HCM 6th				

18	Foothill Blvd at I-15 SB Ramps	Signalized	HCM 6th Edition	SB Right	0.892	23.1	C
19	Foothill Blvd at I-15 NB Ramps	Signalized	HCM 6th Edition	NB Right	0.615	22.1	C
20	Foothill Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	NB Left	0.830	80.9	F
21	Foothill Blvd at Cherry Ave	Signalized	HCM 6th Edition	NB Left	0.829	62.1	E
22	Beech Ave at Foothill Blvd	Two-way stop	HCM 6th Edition	NB Left	49.654	10,000.0	F
23	Foothill Blvd at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.967	84.1	F
24	Sierra Ave at Foothill Blvd	Signalized	HCM 6th Edition	WB Left	0.916	63.7	E
25	Arrow Rte at Etiwanda Ave	Signalized	HCM 6th Edition	EB Thru	1.399	170.1	F
26	Arrow Rte at Cherry Ave	Signalized	HCM 6th Edition	SB Left	1.031	102.1	F
27	Beech Ave at Arrow Blvd	Signalized	HCM 6th Edition	NB Left	0.700	29.9	C
28	Citrus Ave at Arrow Blvd	Signalized	HCM 6th Edition	SB Left	0.762	46.8	D
29	Sierra Ave at Arrow Blvd	Signalized	HCM 6th Edition	WB Left	0.662	38.5	D
30	Whittram Ave at Etiwanda Ave	Signalized	HCM 6th Edition	NB Thru	1.016	65.6	E
31	Whittram Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Left	1.015	96.8	F
32	Beech Ave at Whittram Ave	Two-way stop	HCM 6th Edition	EB Left	1.532	415.8	F
33	Napa St at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.966	85.9	F
34	Merrill Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	0.943	62.7	E
35	Beech Ave at Merrill Ave	All-way stop	HCM 6th Edition	SB Thru	1.966	248.1	F
36	Merill Ave at Citrus Ave	Signalized	HCM 6th Edition	WB Left	0.579	31.3	C
37	Sierra Ave at Merrill Ave	Signalized	HCM 6th Edition	SB Left	0.702	44.9	D
38	Fontana Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.675	36.8	D
			HCM 6th				

39	Randall Ave at Cherry Ave	Signalized	HCM 6th Edition	SB Left	1.048	127.4	F
40	Beech Ave at Randall Ave	All-way stop	HCM 6th Edition	EB Thru	2.041	309.2	F
41	Randall Ave at Fontana Ave/Catawaba Ave	All-way stop	HCM 6th Edition	NB Thru	1.739	244.5	F
42	Randall Ave at Citrus Ave	Signalized	HCM 6th Edition	EB Left	0.574	32.1	C
43	Sierra Ave at Randall Ave	Signalized	HCM 6th Edition	SB Left	0.730	37.8	D
44	Fourth St at I-15 SB Ramps/Ontario Mills Dr	Signalized	HCM 6th Edition	NB Right	1.031	77.4	E
45	Fourth St at I-15 NB Ramps	Signalized	HCM 6th Edition	WB Left	0.577	39.7	D
46	Fourth St/San Bernardino Ave at Etiwanda Ave	Signalized	HCM 6th Edition	WB Left	0.722	40.1	D
47	San Bernardino Ave at Commerce Dr	Signalized	HCM 6th Edition	EB Thru	1.202	187.5	F
48	San Bernardino Ave at Access Rd/Vip Rd	Two-way stop	HCM 6th Edition	SB Right	0.769	25.6	D
49	San Bernardino Ave at Cherry Ave	Signalized	HCM 6th Edition	EB Left	0.997	76.1	E
50	Beech Ave at San Bernardino Ave	Signalized	HCM 6th Edition	WB Left	0.833	39.7	D
51	San Bernardino Ave at Fontana Ave/Elm Ave	Signalized	HCM 6th Edition	EB Thru	0.900	61.0	E
52	San Bernardino Ave at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.593	34.0	C
53	Sierra Ave at San Bernardino Ave	Signalized	HCM 6th Edition	SB Left	0.745	42.4	D
54	Beech Ave at Fontana Ave	All-way stop	HCM 6th Edition	NB Thru	2.025	249.1	F
55	Valley Blvd at Etiwanda Ave	Signalized	HCM 6th Edition	SB Left	0.710	38.6	D
56	Valley Blvd at Commerce Dr/I-10 Ramps	Signalized	HCM 6th Edition	EB Right	1.019	84.7	F
57	Valley Blvd at Cherry Ave	Signalized	HCM 6th Edition	WB Left	1.086	75.0	E
58	Valley Blvd at Fontana Ave	Signalized	HCM 6th Edition	WB Left	0.490	15.9	B
59	Beech Ave at Valley Blvd	Two-way stop	HCM 6th Edition	NB Thru	551.544	10,000.0	F

60	Valley Blvd at Citrus Ave	Signalized	HCM 6th Edition	SB Left	0.803	48.6	D
61	Sierra Ave at Valley Blvd	Signalized	HCM 6th Edition	SB Left	0.897	53.5	D
62	I-10 WB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	WB Right	0.719	22.3	C
63	I-10 WB Ramps at Cherry Ave	Signalized	HCM 6th Edition	WB Right	0.943	49.5	D
64	I-10 WB Ramps at Citrus Ave	Signalized	HCM 6th Edition	WB Right	0.565	19.5	B
65	I-10 EB Ramps at Etiwanda Ave	Signalized	HCM 6th Edition	EB Right	0.681	21.1	C
66	I-10 EB Ramps at Cherry Ave	Signalized	HCM 6th Edition	NB Right	0.958	57.1	E
67	I-10 EB Ramps at Citrus Ave	Signalized	HCM 6th Edition	EB Right	0.731	31.5	C
68	Sierra Ave at I-10 EB/WB Ramps	Signalized	HCM 6th Edition	SB Left	1.189	72.8	E
69	Milliken Ave at Arrow Rte	Signalized	HCM 6th Edition	WB Left	0.766	40.6	D
70	Rochester Ave at Arrow Rte	Signalized	HCM 6th Edition	EB Left	1.004	92.6	F
71	Cherry Ave at Slover Ave	Signalized	HCM 6th Edition	NB Left	0.745	37.3	D
72	Cherry Ave at Santa Ana Ave	Signalized	HCM 6th Edition	EB Left	63.406	746.0	F
73	Cherry Ave at Sunset Dr	Signalized	HCM 6th Edition	NB Left	0.550	36.9	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Cherry Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	353	822	0	0	680	253	0	0	0	347	0	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	56	12	0	0	12	0	0	0	0	130	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	409	834	0	0	692	253	0	0	0	477	0	204
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	108	219	0	0	182	67	0	0	0	126	0	54
Total Analysis Volume [veh/h]	431	878	0	0	728	266	0	0	0	502	0	215
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	40	74	0	0	34	0	0	0	0	0	46	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	3	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	31	76	42	42		36	36
g / C, Green / Cycle	0.25	0.64	0.35	0.35		0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.24	0.24	0.18	0.20		0.28	0.13
s, saturation flow rate [veh/h]	1810	3618	3618	1664		1810	1615
c, Capacity [veh/h]	462	2299	1256	578		539	481
d1, Uniform Delay [s]	43.70	10.52	31.31	31.94		40.95	34.13
k, delay calibration	0.31	0.50	0.50	0.50		0.31	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	20.05	0.48	1.59	4.10		17.82	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.38	0.53	0.57		0.93	0.45
d, Delay for Lane Group [s/veh]	63.75	11.01	32.90	36.04		58.77	34.78
Lane Group LOS	E	B	C	D		E	C
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	14.99	5.52	7.93	8.47		16.93	5.18
50th-Percentile Queue Length [ft/ln]	374.73	138.05	198.29	211.63		423.22	129.46
95th-Percentile Queue Length [veh/ln]	21.34	9.38	12.55	13.24		23.68	8.91
95th-Percentile Queue Length [ft/ln]	533.47	234.40	313.76	330.92		591.91	222.76

Movement, Approach, & Intersection Results

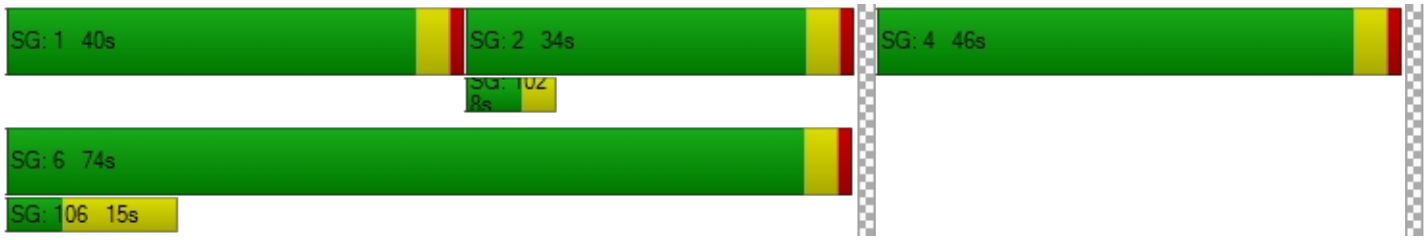
d_M, Delay for Movement [s/veh]	63.75	11.01	0.00	0.00	33.19	36.04	0.00	0.00	0.00	58.77	58.77	34.78
Movement LOS	E	B			C	D				E	E	C
d_A, Approach Delay [s/veh]	28.37			33.95			0.00			51.58		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	35.72											
Intersection LOS	D											
Intersection V/C	0.715											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.118	2.188
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1167	500	0	700
d_b, Bicycle Delay [s]	10.42	33.75	60.00	25.35
l_b,int, Bicycle LOS Score for Intersection	2.640	2.106	4.132	2.743
Bicycle LOS	B	B	D	B

Sequence

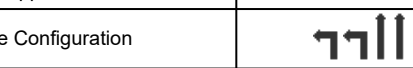
Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Citrus Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	26.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.651

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	362	1187	0	0	857	460	0	0	0	389	0	372
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	12	0	0	0	0	12	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	362	1199	0	0	869	460	0	0	0	401	0	372
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	316	0	0	229	121	0	0	0	106	0	98
Total Analysis Volume [veh/h]	381	1262	0	0	915	484	0	0	0	422	0	392
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	21	59	0	0	38	0	0	0	0	0	61	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	120	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	15	80	61	61		32	32	32
g / C, Green / Cycle	0.13	0.66	0.51	0.51		0.27	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.11	0.35	0.25	0.30		0.12	0.12	0.24
s, saturation flow rate [veh/h]	3514	3618	3618	1615		1810	1810	1615
c, Capacity [veh/h]	442	2400	1824	814		489	489	436
d1, Uniform Delay [s]	51.44	10.45	19.74	21.05		36.19	36.19	42.22
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	5.11	0.83	0.99	3.18		0.60	0.60	6.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.53	0.50	0.59		0.43	0.43	0.90
d, Delay for Lane Group [s/veh]	56.55	11.27	20.72	24.24		36.80	36.80	49.11
Lane Group LOS	E	B	C	C		D	D	D
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.93	8.34	8.59	10.13		5.21	5.21	11.95
50th-Percentile Queue Length [ft/ln]	148.13	208.42	214.68	253.21		130.25	130.25	298.69
95th-Percentile Queue Length [veh/ln]	9.92	13.07	13.39	15.35		8.95	8.95	17.62
95th-Percentile Queue Length [ft/ln]	247.93	326.81	334.83	383.70		223.83	223.83	440.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.55	11.27	0.00	0.00	20.72	24.24	0.00	0.00	0.00	36.80	36.80	49.11
Movement LOS	E	B			C	C				D	D	D
d_A, Approach Delay [s/veh]	21.77			21.94			0.00			42.72		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	26.26											
Intersection LOS	C											
Intersection V/C	0.651											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.152	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	567	0	950
d_b, Bicycle Delay [s]	17.60	30.82	60.00	16.54
l_b,int, Bicycle LOS Score for Intersection	2.915	2.714	4.132	2.903
Bicycle LOS	C	B	D	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Sierra Ave at SR-210 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	16.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.456

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1273	0	0	1404	0	0	0	0	337	0	448
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	12	0	0	0	0	7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1285	0	0	1416	0	0	0	0	344	0	448
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	338	0	0	373	0	0	0	0	91	0	118
Total Analysis Volume [veh/h]	0	1353	0	0	1491	0	0	0	0	362	0	472
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Split	Split	Split
Signal Group	0	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	52	0	0	52	0	0	0	0	0	68	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	88	88		24	24	24
g / C, Green / Cycle	0.74	0.74		0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.26	0.29		0.16	0.17	0.17
s, saturation flow rate [veh/h]	5176	5176		1810	1663	1615
c, Capacity [veh/h]	3801	3801		360	331	321
d1, Uniform Delay [s]	5.73	5.94		45.78	46.15	46.28
k, delay calibration	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	0.31		4.11	5.44	6.04
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.39		0.80	0.83	0.84
d, Delay for Lane Group [s/veh]	5.99	6.25		49.89	51.59	52.31
Lane Group LOS	A	A		D	D	D
Critical Lane Group	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.72	4.25		8.56	8.37	8.31
50th-Percentile Queue Length [ft/ln]	92.98	106.36		214.05	209.24	207.71
95th-Percentile Queue Length [veh/ln]	6.69	7.64		13.36	13.11	13.04
95th-Percentile Queue Length [ft/ln]	167.37	190.93		334.02	327.86	325.89

Movement, Approach, & Intersection Results

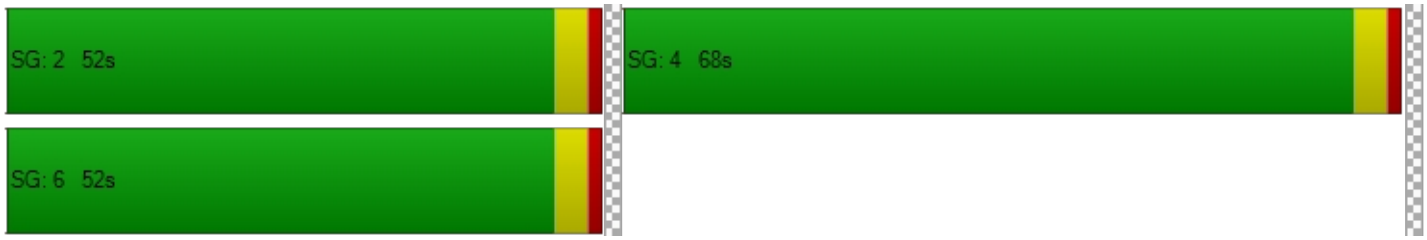
d_M, Delay for Movement [s/veh]	0.00	5.99	0.00	0.00	6.25	0.00	0.00	0.00	0.00	50.27	51.59	52.01
Movement LOS		A			A					D	D	D
d_A, Approach Delay [s/veh]	5.99			6.25			0.00			51.24		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	16.36											
Intersection LOS	B											
Intersection V/C	0.456											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	800	0	1067
d_b, Bicycle Delay [s]	21.60	21.60	60.00	13.07
l_b,int, Bicycle LOS Score for Intersection	2.304	2.380	4.132	2.936
Bicycle LOS	B	B	D	C

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Cherry Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	854	366	121	819	0	288	3	418	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	68	107	0	142	0	0	0	70	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	922	473	121	961	0	288	3	488	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	243	124	32	253	0	76	1	128	0	0	0
Total Analysis Volume [veh/h]	0	971	498	127	1012	0	303	3	514	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	44	0	14	58	0	0	62	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	57	57	10	71	41	41	
g / C, Green / Cycle	0.47	0.47	0.08	0.59	0.34	0.34	
(v / s)_i Volume / Saturation Flow Rate	0.27	0.31	0.07	0.28	0.17	0.32	
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1810	1615	
c, Capacity [veh/h]	1713	765	151	2135	621	554	
d1, Uniform Delay [s]	22.74	24.06	54.22	14.00	31.14	37.96	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.22	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.37	4.28	11.80	0.76	0.61	12.78	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.57	0.65	0.84	0.47	0.49	0.93	
d, Delay for Lane Group [s/veh]	24.11	28.34	66.03	14.76	31.75	50.74	
Lane Group LOS	C	C	E	B	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	10.05	11.46	4.27	7.79	7.11	16.31	
50th-Percentile Queue Length [ft/ln]	251.20	286.47	106.85	194.64	177.76	407.82	
95th-Percentile Queue Length [veh/ln]	15.25	17.01	7.66	12.36	11.48	22.94	
95th-Percentile Queue Length [ft/ln]	381.16	425.26	191.61	309.04	287.08	573.41	

Movement, Approach, & Intersection Results

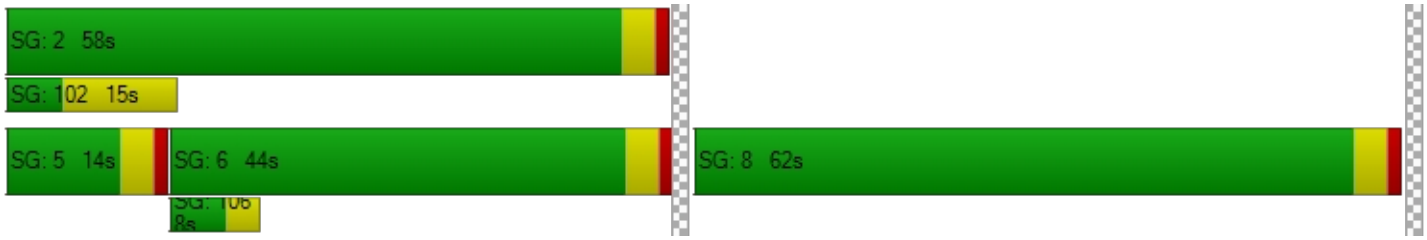
d_M, Delay for Movement [s/veh]	0.00	24.11	28.34	66.03	14.76	0.00	31.75	31.75	50.74	0.00	0.00	0.00
Movement LOS		C	C	E	B		C	C	D			
d_A, Approach Delay [s/veh]	25.54			20.47			43.65			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	28.19											
Intersection LOS	C											
Intersection V/C	0.697											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.222	2.051
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	900	967	0
d_b, Bicycle Delay [s]	26.67	18.15	16.02	60.00
l_b,int, Bicycle LOS Score for Intersection	2.368	2.499	2.913	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Citrus Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	31.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.743

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1173	308	287	779	0	578	0	385	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	12	0	24	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1185	320	287	803	0	578	0	385	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	312	84	76	211	0	152	0	101	0	0	0
Total Analysis Volume [veh/h]	0	1247	337	302	845	0	608	0	405	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	64	0	16	80	0	0	40	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	68	68	12	84	28	28	28	
g / C, Green / Cycle	0.56	0.56	0.10	0.70	0.24	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.42	0.45	0.09	0.23	0.19	0.19	0.21	
s, saturation flow rate [veh/h]	1900	1767	3514	3618	1810	1767	1615	
c, Capacity [veh/h]	1068	993	351	2516	431	420	384	
d1, Uniform Delay [s]	19.73	20.85	53.17	7.26	42.84	43.07	44.05	
k, delay calibration	0.50	0.50	0.11	0.50	0.18	0.19	0.23	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.65	6.65	6.16	0.36	5.14	6.17	12.83	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.74	0.80	0.86	0.34	0.78	0.80	0.88	
d, Delay for Lane Group [s/veh]	24.39	27.50	59.33	7.63	47.97	49.25	56.89	
Lane Group LOS	C	C	E	A	D	D	E	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	17.25	18.61	4.78	4.12	9.97	10.13	10.99	
50th-Percentile Queue Length [ft/ln]	431.32	465.16	119.51	102.97	249.33	253.29	274.87	
95th-Percentile Queue Length [veh/ln]	24.06	25.68	8.37	7.41	15.15	15.35	16.43	
95th-Percentile Queue Length [ft/ln]	601.62	642.01	209.15	185.35	378.81	383.80	410.82	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	25.52	27.50	59.33	7.63	0.00	48.54	49.25	55.62	0.00	0.00	0.00
Movement LOS		C	C	E	A		D	D	E			
d_A, Approach Delay [s/veh]	25.94			21.24			51.37			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	31.38											
Intersection LOS	C											
Intersection V/C	0.743											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.393	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	1267	600	0
d_b, Bicycle Delay [s]	15.00	8.07	29.40	60.00
l_b,int, Bicycle LOS Score for Intersection	2.866	2.506	3.231	4.132
Bicycle LOS	C	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Sierra Ave at SR-210 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.494

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1592	1202	0	1465	41	333	0	458	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	6	0	19	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1604	1208	0	1484	41	333	0	458	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	422	318	0	391	11	88	0	121	0	0	0
Total Analysis Volume [veh/h]	0	1688	1272	0	1562	43	351	0	482	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	77	0	0	77	0	0	43	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	88	88	24	24	24	
g / C, Green / Cycle	0.74	0.74	0.20	0.20	0.20	
(v / s)_i Volume / Saturation Flow Rate	0.33	0.30	0.16	0.17	0.17	
s, saturation flow rate [veh/h]	5176	5176	1810	1656	1615	
c, Capacity [veh/h]	3807	3807	358	328	319	
d1, Uniform Delay [s]	6.23	6.01	45.90	46.29	46.40	
k, delay calibration	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.38	0.33	4.23	5.71	6.24	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.44	0.41	0.80	0.84	0.85	
d, Delay for Lane Group [s/veh]	6.60	6.34	50.14	51.99	52.63	
Lane Group LOS	A	A	D	D	D	
Critical Lane Group	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	5.06	4.52	8.58	8.38	8.33	
50th-Percentile Queue Length [ft/ln]	126.56	112.97	214.55	209.53	208.24	
95th-Percentile Queue Length [veh/ln]	8.75	8.00	13.39	13.13	13.06	
95th-Percentile Queue Length [ft/ln]	218.81	200.12	334.66	328.23	326.56	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.60	0.00	0.00	6.34	0.00	50.51	51.99	52.36	0.00	0.00	0.00
Movement LOS		A			A		D	D	D			
d_A, Approach Delay [s/veh]	6.60			6.34			51.56			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	15.67											
Intersection LOS	B											
Intersection V/C	0.494											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.349	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1217	1217	650	0
d_b, Bicycle Delay [s]	9.20	9.20	27.34	60.00
l_b,int, Bicycle LOS Score for Intersection	2.488	2.419	2.934	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Beech Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	36.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.526

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	66	588	161	112	524	60	73	432	146	133	275	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	588	161	112	524	60	73	432	146	133	275	92
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	155	42	29	138	16	19	114	38	35	72	24
Total Analysis Volume [veh/h]	69	619	169	118	552	63	77	455	154	140	289	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	30	0	14	33	0	26	59	0	17	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	60	60	10	64	64	7	23	23	11	28	28
g / C, Green / Cycle	0.05	0.50	0.50	0.08	0.53	0.53	0.06	0.19	0.19	0.09	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.22	0.07	0.16	0.16	0.04	0.17	0.17	0.08	0.11	0.11
s, saturation flow rate [veh/h]	1810	1900	1761	1810	1900	1833	1810	1900	1738	1810	1900	1740
c, Capacity [veh/h]	89	953	884	144	1011	975	102	367	336	167	435	399
d1, Uniform Delay [s]	56.41	18.99	18.99	54.40	15.73	15.74	55.78	46.87	46.94	53.56	39.84	39.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.47	1.41	1.52	10.95	0.80	0.83	10.58	6.09	6.92	10.44	0.76	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.43	0.43	0.82	0.31	0.31	0.75	0.86	0.87	0.84	0.46	0.47
d, Delay for Lane Group [s/veh]	69.87	20.40	20.52	65.35	16.53	16.57	66.36	52.96	53.86	64.00	40.60	40.78
Lane Group LOS	E	C	C	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.40	7.51	7.00	3.95	4.97	4.82	2.60	9.76	9.08	4.64	5.18	4.85
50th-Percentile Queue Length [ft/ln]	59.98	187.72	174.95	98.67	124.36	120.46	65.00	244.02	227.06	115.95	129.57	121.29
95th-Percentile Queue Length [veh/ln]	4.32	12.00	11.34	7.10	8.63	8.42	4.68	14.88	14.02	8.17	8.92	8.46
95th-Percentile Queue Length [ft/ln]	107.96	300.07	283.41	177.60	215.80	210.45	117.00	372.12	350.62	204.25	222.90	211.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	69.87	20.44	20.52	65.35	16.55	16.57	66.36	53.24	53.86	64.00	40.65	40.78
Movement LOS	E	C	C	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	24.43			24.40			54.85			46.89		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.09											
Intersection LOS	D											
Intersection V/C	0.526											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.647	2.613	2.531	2.674
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	483	917	767
d_b, Bicycle Delay [s]	36.82	34.50	17.60	22.82
l_b,int, Bicycle LOS Score for Intersection	2.267	2.164	2.126	1.994
Bicycle LOS	B	B	B	A

Sequence

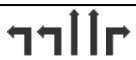
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Citrus Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	41.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.714

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	73	852	92	329	715	119	245	480	81	177	435	441
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	0	24	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	876	92	329	739	119	245	480	81	177	435	441
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	231	24	87	194	31	64	126	21	47	114	116
Total Analysis Volume [veh/h]	77	922	97	346	778	125	258	505	85	186	458	464
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	26	0	18	31	0	15	48	0	28	61	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	21	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	42	42	14	49	49	11	34	34	14	38	38
g / C, Green / Cycle	0.05	0.35	0.35	0.11	0.41	0.41	0.09	0.28	0.28	0.12	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.04	0.25	0.06	0.10	0.22	0.08	0.07	0.14	0.05	0.10	0.24	0.29
s, saturation flow rate [veh/h]	1810	3618	1615	3514	3618	1615	3514	3618	1615	1810	1900	1615
c, Capacity [veh/h]	99	1263	564	400	1477	659	313	1022	456	219	598	508
d1, Uniform Delay [s]	55.98	34.11	27.04	52.26	26.77	22.78	53.73	35.89	32.59	51.67	37.15	39.56
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.09	3.74	0.66	5.67	1.35	0.64	5.43	0.37	0.19	8.88	2.09	10.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.73	0.17	0.86	0.53	0.19	0.82	0.49	0.19	0.85	0.77	0.91
d, Delay for Lane Group [s/veh]	68.07	37.85	27.70	57.92	28.12	23.41	59.16	36.26	32.79	60.56	39.25	49.76
Lane Group LOS	E	D	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.64	12.29	2.04	5.43	8.61	2.40	4.06	6.22	1.91	6.02	12.40	14.44
50th-Percentile Queue Length [ft/ln]	65.90	307.16	51.09	135.74	215.34	59.90	101.55	155.48	47.75	150.55	310.06	361.11
95th-Percentile Queue Length [veh/ln]	4.74	18.03	3.68	9.25	13.43	4.31	7.31	10.31	3.44	10.05	18.18	20.68
95th-Percentile Queue Length [ft/ln]	118.62	450.87	91.97	231.28	335.68	107.82	182.80	257.72	85.95	251.16	454.45	516.94

Movement, Approach, & Intersection Results

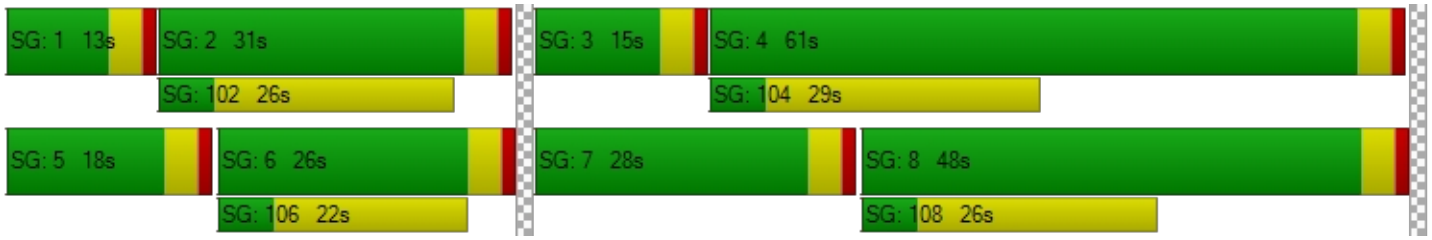
d_M, Delay for Movement [s/veh]	68.07	37.85	27.70	57.92	28.12	23.41	59.16	36.26	32.79	60.56	39.25	49.76
Movement LOS	E	D	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	39.07			35.90			42.88			47.23		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.00											
Intersection LOS	D											
Intersection V/C	0.714											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.817	3.012	2.819	2.802
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	450	733	950
d_b, Bicycle Delay [s]	40.02	36.04	24.07	16.54
l_b,int, Bicycle LOS Score for Intersection	2.464	2.590	2.259	3.388
Bicycle LOS	B	B	B	C

Sequence

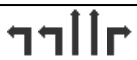
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Sierra Ave at Highland Ave

Control Type:	Signalized	Delay (sec / veh):	51.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.848

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	172	1482	118	400	1207	318	551	526	162	132	347	396
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	18	0	0	19	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	172	1500	118	400	1226	318	551	526	162	132	347	396
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	395	31	105	323	84	145	138	43	35	91	104
Total Analysis Volume [veh/h]	181	1579	124	421	1291	335	580	554	171	139	365	417
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	37	0	19	45	0	24	51	0	13	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	36	36	15	44	44	20	46	46	7	33	33
g / C, Green / Cycle	0.06	0.30	0.30	0.13	0.37	0.37	0.17	0.39	0.39	0.06	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.05	0.31	0.08	0.12	0.25	0.21	0.17	0.15	0.11	0.04	0.10	0.26
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	205	1544	482	439	1889	589	586	1399	625	199	1001	447
d1, Uniform Delay [s]	56.09	42.10	32.00	52.19	32.23	30.53	49.90	26.65	25.24	55.60	34.92	42.32
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.36
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.71	28.81	1.29	12.31	2.03	3.94	15.16	0.18	0.23	4.39	0.22	22.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	1.02	0.26	0.96	0.68	0.57	0.99	0.40	0.27	0.70	0.36	0.93
d, Delay for Lane Group [s/veh]	67.80	70.91	33.29	64.50	34.26	34.47	65.06	26.83	25.47	59.98	35.14	65.09
Lane Group LOS	E	F	C	E	C	C	E	C	C	E	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.05	19.15	2.93	7.04	10.83	8.37	9.88	5.78	3.40	2.19	4.34	14.76
50th-Percentile Queue Length [ft/ln]	76.33	478.83	73.14	175.91	270.81	209.23	246.98	144.39	84.92	54.73	108.53	369.08
95th-Percentile Queue Length [veh/ln]	5.50	26.72	5.27	11.39	16.23	13.11	15.03	9.72	6.11	3.94	7.76	21.06
95th-Percentile Queue Length [ft/ln]	137.39	667.88	131.65	284.67	405.75	327.84	375.85	242.92	152.86	98.52	193.96	526.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.80	70.91	33.29	64.50	34.26	34.47	65.06	26.83	25.47	59.98	35.14	65.09
Movement LOS	E	F	C	E	C	C	E	C	C	E	D	E
d_A, Approach Delay [s/veh]	68.14			40.51			43.64			52.45		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	51.41											
Intersection LOS	D											
Intersection V/C	0.848											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.242	3.365	2.914	2.891
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	683	783	600
d_b, Bicycle Delay [s]	31.54	26.00	22.20	29.40
l_b,int, Bicycle LOS Score for Intersection	2.596	2.685	2.636	2.319
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Etiwanda Ave at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	122	193	231	55	113	71	104	1286	170	169	787	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	12	0	0	12	0	0	0	12	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	205	231	55	125	71	104	1286	182	169	787	58
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	54	61	14	33	19	27	338	48	44	207	15
Total Analysis Volume [veh/h]	141	216	243	58	132	75	109	1354	192	178	828	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	6	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups			6,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	36	36	9	30	0	13	64	0	11	62	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	27	0	21	0	0	21	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	53	64	5	51	51	9	39	39	7	38	38
g / C, Green / Cycle	0.06	0.44	0.53	0.04	0.42	0.42	0.07	0.33	0.33	0.06	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.15	0.03	0.06	0.06	0.06	0.29	0.29	0.05	0.24	0.24
s, saturation flow rate [veh/h]	3514	1900	1615	1810	1900	1679	1810	3618	1782	3514	1900	1855
c, Capacity [veh/h]	202	832	855	75	801	708	134	1191	587	205	596	581
d1, Uniform Delay [s]	55.53	21.40	15.64	56.96	21.26	21.34	54.74	37.83	37.84	56.04	37.05	37.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.15	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.31	0.76	0.83	15.43	0.34	0.42	11.18	2.10	5.67	10.61	1.98	2.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.26	0.28	0.77	0.13	0.14	0.81	0.87	0.87	0.87	0.76	0.76
d, Delay for Lane Group [s/veh]	59.84	22.16	16.47	72.39	21.61	21.76	65.93	39.93	43.52	66.65	39.03	39.08
Lane Group LOS	E	C	B	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.22	4.04	3.86	2.06	1.93	1.83	3.66	14.48	14.87	2.97	12.12	11.84
50th-Percentile Queue Length [ft/ln]	55.45	100.93	96.42	51.58	48.14	45.75	91.54	362.05	371.72	74.36	303.02	296.05
95th-Percentile Queue Length [veh/ln]	3.99	7.27	6.94	3.71	3.47	3.29	6.59	20.72	21.19	5.35	17.83	17.49
95th-Percentile Queue Length [ft/ln]	99.80	181.67	173.56	92.84	86.64	82.35	164.77	518.08	529.82	133.85	445.76	437.14

Movement, Approach, & Intersection Results

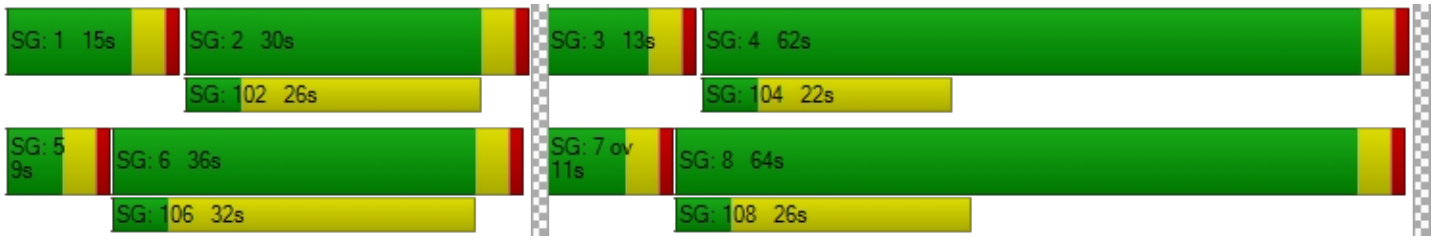
d_M, Delay for Movement [s/veh]	59.84	22.16	16.47	72.39	21.64	21.76	65.93	40.77	43.52	66.65	39.05	39.08
Movement LOS	E	C	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	28.71			32.78			42.75			43.66		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	39.93											
Intersection LOS	D											
Intersection V/C	0.508											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.647	2.442	2.907	3.072
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	433	1000	967
d_b, Bicycle Delay [s]	32.27	36.82	15.00	16.02
l_b,int, Bicycle LOS Score for Intersection	2.550	1.778	2.470	2.440
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: I-15 SB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	289	0	633	0	1642	189	0	625	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	37	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	326	0	633	0	1642	189	0	625	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	86	0	167	0	432	50	0	164	0
Total Analysis Volume [veh/h]	0	0	0	343	0	666	0	1728	199	0	658	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	65	0	0	0	55	0	0	55	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	C
C, Cycle Length [s]		120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		32	32	80	80
g / C, Green / Cycle		0.27	0.27	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate		0.10	0.23	0.33	0.13
s, saturation flow rate [veh/h]		3514	2859	5176	5176
c, Capacity [veh/h]		942	766	3444	3444
d1, Uniform Delay [s]		35.63	41.92	10.09	7.70
k, delay calibration		0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.24	3.20	0.53	0.12
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.36	0.87	0.50	0.19
d, Delay for Lane Group [s/veh]		35.86	45.12	10.61	7.82
Lane Group LOS		D	D	B	A
Critical Lane Group		No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		4.13	9.69	7.30	2.11
50th-Percentile Queue Length [ft/ln]		103.13	242.35	182.40	52.77
95th-Percentile Queue Length [veh/ln]		7.43	14.80	11.73	3.80
95th-Percentile Queue Length [ft/ln]		185.64	370.01	293.14	94.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	35.86	0.00	45.12	0.00	10.61	0.00	0.00	7.82	0.00
Movement LOS				D		D		B			A	
d_A, Approach Delay [s/veh]	0.00			41.98			10.61			7.82		
Approach LOS	A			D			B			A		
d_I, Intersection Delay [s/veh]	19.39											
Intersection LOS	B											
Intersection V/C	0.567											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.512	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1017	850	850
d_b, Bicycle Delay [s]	60.00	14.50	19.84	19.84
l_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.510	1.922
Bicycle LOS	D	A	B	A

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: I-15 NB Ramps at Baseline Rd

Control Type:	Signalized	Delay (sec / veh):	33.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.632

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	445	0	853	0	0	0	627	1074	0	0	1061	269
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	37	0	0	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	445	0	853	0	0	0	627	1111	0	0	1061	303
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	0	224	0	0	0	165	292	0	0	279	80
Total Analysis Volume [veh/h]	468	0	898	0	0	0	660	1169	0	0	1117	319
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	45	0	0	0	0	48	75	0	0	27	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	14	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	58	58	58		26	54	24
g / C, Green / Cycle	0.48	0.48	0.48		0.22	0.45	0.20
(v / s)_i Volume / Saturation Flow Rate	0.25	0.28	0.28		0.19	0.23	0.16
s, saturation flow rate [veh/h]	1810	1620	1615		3514	5176	6901
c, Capacity [veh/h]	870	779	777		759	2341	1401
d1, Uniform Delay [s]	21.59	22.48	22.50		45.41	23.25	45.48
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.24	3.19	3.22		3.24	0.17	1.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.58	0.59		0.87	0.50	0.80
d, Delay for Lane Group [s/veh]	23.84	25.67	25.73		48.65	23.42	46.56
Lane Group LOS	C	C	C		D	C	D
Critical Lane Group	No	No	Yes		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	9.31	9.81	9.83		9.80	7.78	7.99
50th-Percentile Queue Length [ft/ln]	232.65	245.34	245.73		244.97	194.49	199.77
95th-Percentile Queue Length [veh/ln]	14.31	14.95	14.97		14.93	12.35	12.63
95th-Percentile Queue Length [ft/ln]	357.73	373.78	374.27		373.31	308.85	315.67

Movement, Approach, & Intersection Results

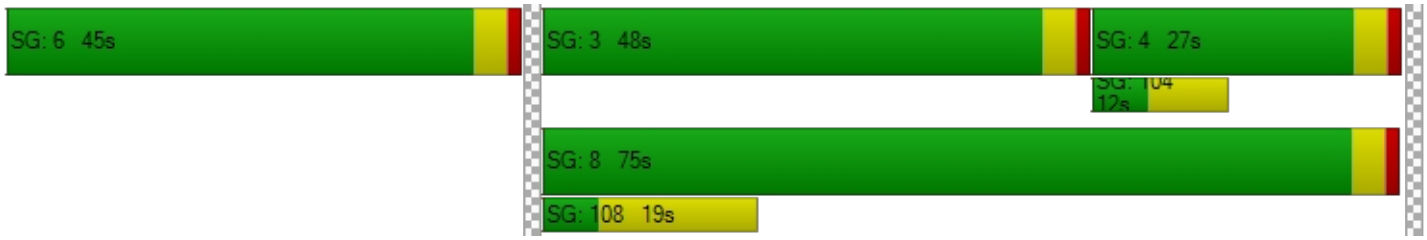
d_M, Delay for Movement [s/veh]	23.89	25.67	25.70	0.00	0.00	0.00	48.65	23.42	0.00	0.00	46.56	0.00
Movement LOS	C	C	C				D	C			D	
d_A, Approach Delay [s/veh]	25.08			0.00			32.52			46.56		
Approach LOS	C			A			C			D		
d_I, Intersection Delay [s/veh]	33.80											
Intersection LOS	C											
Intersection V/C	0.632											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.479	2.052	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	0	1183	383
d_b, Bicycle Delay [s]	26.00	60.00	10.00	39.20
l_b,int, Bicycle LOS Score for Intersection	3.814	4.132	2.566	2.020
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Cherry Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	42.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.788

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	232	1079	418	120	537	113	394	1263	141	390	687	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	175	111	0	212	0	0	0	37	113	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	266	1254	529	120	749	113	394	1263	178	503	687	68
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	330	139	32	197	30	104	332	47	132	181	18
Total Analysis Volume [veh/h]	280	1320	557	126	788	119	415	1329	187	529	723	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	48	0	9	40	0	23	40	0	23	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	34	0	0	31	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	46	46	5	39	39	16	34	34	19	37	37
g / C, Green / Cycle	0.10	0.38	0.38	0.04	0.33	0.33	0.14	0.28	0.28	0.16	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.34	0.04	0.15	0.07	0.12	0.26	0.12	0.15	0.14	0.04
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	340	1975	616	146	1691	528	481	1475	460	556	1587	495
d1, Uniform Delay [s]	53.20	30.80	35.02	57.15	32.09	29.37	50.70	41.27	34.69	50.04	33.53	30.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.06	1.81	19.04	13.49	0.93	0.99	4.76	2.28	0.58	9.46	0.20	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.67	0.90	0.86	0.47	0.23	0.86	0.90	0.41	0.95	0.46	0.15
d, Delay for Lane Group [s/veh]	58.26	32.61	54.06	70.64	33.01	30.36	55.46	43.55	35.27	59.49	33.74	30.33
Lane Group LOS	E	C	D	E	C	C	E	D	D	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.38	10.80	18.33	2.17	6.20	2.66	6.41	12.80	4.51	8.57	5.69	1.54
50th-Percentile Queue Length [ft/ln]	109.55	269.94	458.14	54.33	154.99	66.39	160.33	320.07	112.65	214.22	142.37	38.56
95th-Percentile Queue Length [veh/ln]	7.82	16.19	25.35	3.91	10.28	4.78	10.57	18.67	7.99	13.37	9.61	2.78
95th-Percentile Queue Length [ft/ln]	195.38	404.66	633.65	97.79	257.08	119.50	264.15	466.77	199.68	334.23	240.21	69.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.26	32.61	54.06	70.64	33.01	30.36	55.46	43.55	35.27	59.49	33.74	30.33
Movement LOS	E	C	D	E	C	C	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	41.48			37.30			45.31			43.84		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.44											
Intersection LOS	D											
Intersection V/C	0.788											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.261	3.172	3.364	3.307
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	600	600	600
d_b, Bicycle Delay [s]	24.07	29.40	29.40	29.40
l_b,int, Bicycle LOS Score for Intersection	2.746	2.128	2.622	2.288
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Beech Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	42.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.597

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	170	542	61	179	413	101	236	1129	129	150	672	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	82	0	0	85	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	170	542	61	179	413	101	236	1211	129	150	757	150
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	143	16	47	109	27	62	319	34	39	199	39
Total Analysis Volume [veh/h]	179	571	64	188	435	106	248	1275	136	158	797	158
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	38	0	20	40	0	32	43	0	19	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	31	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	43	43	14	43	43	19	34	34	13	28	28
g / C, Green / Cycle	0.11	0.36	0.36	0.12	0.36	0.36	0.15	0.29	0.29	0.10	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.10	0.16	0.04	0.10	0.15	0.15	0.14	0.25	0.09	0.09	0.18	0.18
s, saturation flow rate [veh/h]	1810	3618	1615	1810	1870	1745	1810	5176	1589	1781	3618	1744
c, Capacity [veh/h]	206	1288	575	216	676	631	281	1484	456	186	853	411
d1, Uniform Delay [s]	52.29	29.54	25.90	51.92	28.74	28.76	49.60	40.50	33.38	52.81	42.62	42.66
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.11	0.11	0.11	0.11	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.62	1.11	0.39	10.26	1.86	2.00	9.65	1.56	0.36	10.27	1.38	4.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.44	0.11	0.87	0.41	0.41	0.88	0.86	0.30	0.85	0.75	0.76
d, Delay for Lane Group [s/veh]	62.91	30.65	26.30	62.18	30.60	30.77	59.26	42.06	33.74	63.08	44.00	47.08
Lane Group LOS	E	C	C	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.90	6.49	1.30	6.17	6.38	6.01	8.02	11.99	3.15	5.21	9.00	9.07
50th-Percentile Queue Length [ft/ln]	147.57	162.32	32.50	154.24	159.62	150.31	200.55	299.87	78.82	130.20	224.93	226.76
95th-Percentile Queue Length [veh/ln]	9.89	10.67	2.34	10.24	10.53	10.03	12.67	17.67	5.68	8.95	13.92	14.01
95th-Percentile Queue Length [ft/ln]	247.18	266.79	58.50	256.08	263.22	250.85	316.67	441.86	141.88	223.76	347.91	350.24

Movement, Approach, & Intersection Results

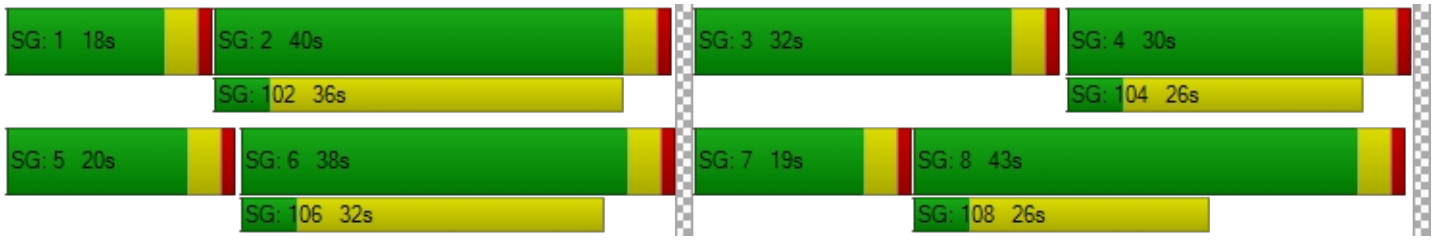
d_M, Delay for Movement [s/veh]	62.91	30.65	26.30	62.18	30.66	30.77	59.26	42.06	33.74	63.08	44.59	47.08
Movement LOS	E	C	C	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	37.40			38.80			43.95			47.57		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.78											
Intersection LOS	D											
Intersection V/C	0.597											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.719	2.745	3.161	3.062
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	600	650	433
d_b, Bicycle Delay [s]	30.82	29.40	27.34	36.82
l_b,int, Bicycle LOS Score for Intersection	2.231	2.161	2.472	2.172
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Citrus Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	42.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	106	682	97	188	496	134	345	1701	129	202	625	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	18	0	0	24	23	48	0	16	49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	684	115	188	496	158	368	1749	129	218	674	77
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	180	30	49	131	42	97	460	34	57	177	20
Total Analysis Volume [veh/h]	112	720	121	198	522	166	387	1841	136	229	709	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	40	0	18	45	0	20	49	0	13	42	42
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	36	36	14	41	41	15	45	45	9	39	57
g / C, Green / Cycle	0.08	0.30	0.30	0.12	0.34	0.34	0.13	0.37	0.37	0.08	0.32	0.47
(v / s)_i Volume / Saturation Flow Rate	0.06	0.23	0.23	0.11	0.14	0.10	0.11	0.36	0.08	0.07	0.14	0.05
s, saturation flow rate [veh/h]	1810	1900	1806	1810	3618	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	136	572	544	211	1240	553	448	1936	604	264	1664	761
d1, Uniform Delay [s]	54.72	37.92	37.92	52.57	30.30	28.89	51.33	36.49	25.68	54.92	32.01	17.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.77	8.92	9.35	17.22	1.05	1.39	5.09	3.39	0.19	8.54	0.17	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.75	0.75	0.94	0.42	0.30	0.86	0.95	0.23	0.87	0.43	0.11
d, Delay for Lane Group [s/veh]	66.50	46.84	47.28	69.78	31.35	30.28	56.42	39.88	25.86	63.46	32.18	17.70
Lane Group LOS	E	D	D	E	C	C	E	D	C	E	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.78	12.80	12.23	6.91	5.98	3.73	6.02	17.74	2.70	3.74	5.42	1.27
50th-Percentile Queue Length [ft/ln]	94.52	320.03	305.82	172.87	149.57	93.32	150.48	443.50	67.57	93.40	135.61	31.68
95th-Percentile Queue Length [veh/ln]	6.81	18.67	17.97	11.23	9.99	6.72	10.04	24.65	4.86	6.72	9.24	2.28
95th-Percentile Queue Length [ft/ln]	170.13	466.72	449.22	280.68	249.86	167.97	251.08	616.19	121.62	168.12	231.10	57.03

Movement, Approach, & Intersection Results

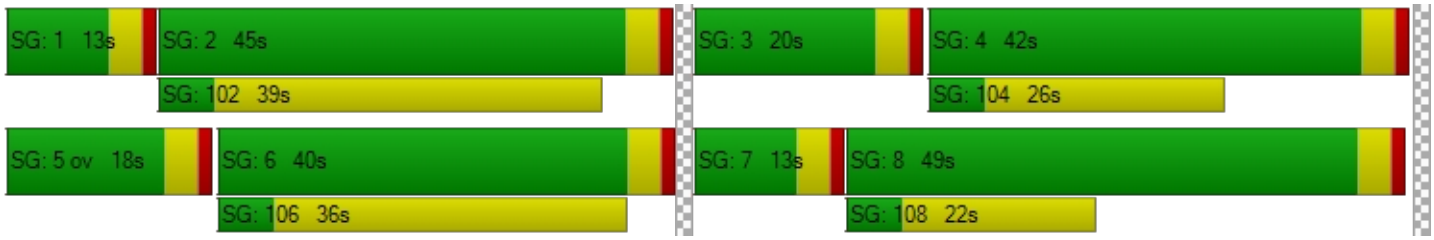
d_M, Delay for Movement [s/veh]	66.50	47.02	47.28	69.78	31.35	30.28	56.42	39.88	25.86	63.46	32.18	17.70
Movement LOS	E	D	D	E	C	C	E	D	C	E	C	B
d_A, Approach Delay [s/veh]	49.34			39.74			41.78			38.06		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.09											
Intersection LOS	D											
Intersection V/C	0.757											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.674	2.805	3.227	3.292
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	683	750	633
d_b, Bicycle Delay [s]	29.40	26.00	23.44	28.02
l_b,int, Bicycle LOS Score for Intersection	2.346	2.291	2.860	2.120
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Sierra Ave at Baseline Ave

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.585

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	151	1259	100	335	814	76	161	804	131	139	791	263
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	6	25	25	12	0	0	12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	151	1264	100	335	820	101	186	816	131	139	803	263
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	333	26	88	216	27	49	215	34	37	211	69
Total Analysis Volume [veh/h]	159	1331	105	353	863	106	196	859	138	146	845	277
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	40	0	21	48	0	12	49	0	10	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	34	0	0	31	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	57	57	14	63	63	8	27	27	6	25	25
g / C, Green / Cycle	0.06	0.47	0.47	0.12	0.53	0.53	0.07	0.23	0.23	0.05	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.07	0.10	0.24	0.07	0.06	0.17	0.09	0.04	0.16	0.17
s, saturation flow rate [veh/h]	3514	5176	1615	3514	3618	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	216	2442	762	416	1912	853	234	1173	366	176	1087	339
d1, Uniform Delay [s]	55.35	22.54	17.91	51.86	17.52	14.28	55.35	43.02	39.24	56.50	44.75	45.20
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.81	0.88	0.38	4.93	0.77	0.30	7.70	0.90	0.64	9.65	1.23	4.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.55	0.14	0.85	0.45	0.12	0.84	0.73	0.38	0.83	0.78	0.82
d, Delay for Lane Group [s/veh]	60.15	23.42	18.28	56.79	18.29	14.58	63.05	43.92	39.88	66.15	45.99	50.03
Lane Group LOS	E	C	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.51	8.98	1.73	5.49	7.47	1.53	3.18	7.96	3.52	2.43	8.02	8.30
50th-Percentile Queue Length [ft/ln]	62.73	224.59	43.29	137.15	186.73	38.13	79.50	199.04	88.04	60.69	200.55	207.48
95th-Percentile Queue Length [veh/ln]	4.52	13.90	3.12	9.33	11.95	2.75	5.72	12.59	6.34	4.37	12.67	13.02
95th-Percentile Queue Length [ft/ln]	112.91	347.47	77.92	233.19	298.78	68.63	143.10	314.73	158.47	109.25	316.67	325.59

Movement, Approach, & Intersection Results

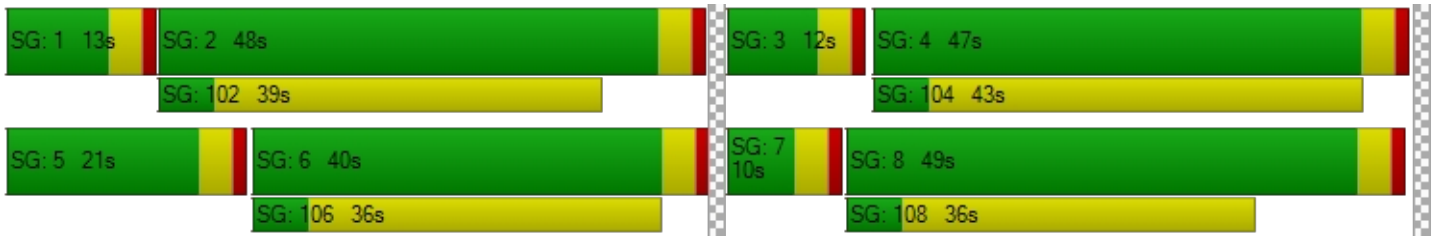
d_M, Delay for Movement [s/veh]	60.15	23.42	18.28	56.79	18.29	14.58	63.05	43.92	39.88	66.15	45.99	50.03
Movement LOS	E	C	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	26.74			28.27			46.60			49.19		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.82											
Intersection LOS	D											
Intersection V/C	0.585											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.162	3.370	3.206	3.144
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	733	750	717
d_b, Bicycle Delay [s]	29.40	24.07	23.44	24.70
l_b,int, Bicycle LOS Score for Intersection	2.437	2.650	2.216	2.257
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: Etiwanda Ave at Church St/Miller Ave

Control Type:	Signalized	Delay (sec / veh):	43.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.554

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	149	321	146	39	315	108	153	500	187	53	287	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	2	0	24	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	345	148	39	339	108	153	500	187	55	287	38
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	91	39	10	89	28	40	132	49	14	76	10
Total Analysis Volume [veh/h]	157	363	156	41	357	114	161	526	197	58	302	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	16	25	0	14	23	23	0	51	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	14	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	50	50	4	42	42	34	34	16	16
g / C, Green / Cycle	0.10	0.42	0.42	0.03	0.35	0.35	0.28	0.28	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.09	0.14	0.14	0.02	0.10	0.07	0.26	0.26	0.11	0.11
s, saturation flow rate [veh/h]	1810	1900	1709	1810	3618	1615	1868	1593	1874	1667
c, Capacity [veh/h]	181	795	716	58	1268	566	527	449	251	223
d1, Uniform Delay [s]	53.22	23.67	23.71	57.54	28.09	27.24	41.52	41.53	50.70	50.75
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.12	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.76	1.17	1.32	14.90	0.56	0.80	6.96	8.04	7.35	8.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.34	0.35	0.71	0.28	0.20	0.90	0.91	0.84	0.85
d, Delay for Lane Group [s/veh]	64.98	24.84	25.03	72.44	28.64	28.04	48.48	49.57	58.04	59.27
Lane Group LOS	E	C	C	E	C	C	D	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.25	5.49	5.02	1.47	3.81	2.43	14.50	12.51	6.69	6.07
50th-Percentile Queue Length [ft/ln]	131.32	137.16	125.44	36.80	95.29	60.65	362.57	312.67	167.26	151.79
95th-Percentile Queue Length [veh/ln]	9.01	9.33	8.69	2.65	6.86	4.37	20.75	18.31	10.93	10.11
95th-Percentile Queue Length [ft/ln]	225.29	233.19	217.28	66.24	171.53	109.17	518.71	457.67	273.32	252.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.98	24.89	25.03	72.44	28.64	28.04	48.48	48.91	49.57	58.04	58.65	59.27
Movement LOS	E	C	C	E	C	C	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	34.23			32.01			48.98			58.62		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	42.99											
Intersection LOS	D											
Intersection V/C	0.554											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.566	2.643	2.501	2.420
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	350	317	783	433
d_b, Bicycle Delay [s]	40.84	42.50	22.20	36.82
l_b,int, Bicycle LOS Score for Intersection	2.117	1.982	2.289	1.890
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Foothill Blvd at I-15 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.892

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	229	0	600	0	2163	1046	0	1526	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	137	0	0	0	40	0	0	41	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	366	0	600	0	2203	1046	0	1567	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	96	0	158	0	580	275	0	412	0
Total Analysis Volume [veh/h]	0	0	0	385	0	632	0	2319	1101	0	1649	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	0	5	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	31	0	0	0	89	0	0	89	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		27	27	27	85	85	85
g / C, Green / Cycle		0.22	0.22	0.22	0.71	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate		0.19	0.21	0.21	0.45	0.68	0.32
s, saturation flow rate [veh/h]		1810	1639	1615	5176	1615	5176
c, Capacity [veh/h]		405	367	362	3671	1146	3671
d1, Uniform Delay [s]		44.46	45.55	45.73	9.19	15.93	7.44
k, delay calibration		0.27	0.32	0.33	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		10.58	22.98	25.81	0.84	18.75	0.40
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.84	0.92	0.94	0.63	0.96	0.45
d, Delay for Lane Group [s/veh]		55.04	68.53	71.54	10.02	34.68	7.84
Lane Group LOS		E	E	E	B	C	A
Critical Lane Group		No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		10.78	12.17	12.46	9.81	29.49	5.62
50th-Percentile Queue Length [ft/ln]		269.51	304.20	311.41	245.24	737.34	140.55
95th-Percentile Queue Length [veh/ln]		16.16	17.89	18.24	14.95	38.40	9.51
95th-Percentile Queue Length [ft/ln]		404.12	447.21	456.11	373.65	960.00	237.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	56.65	0.00	70.14	0.00	10.02	34.68	0.00	7.84	0.00
Movement LOS				E		E		B	C		A	
d_A, Approach Delay [s/veh]	0.00			65.04			17.96			7.84		
Approach LOS	A			E			B			A		
d_I, Intersection Delay [s/veh]	23.08											
Intersection LOS	C											
Intersection V/C	0.892											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.394	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	450	1417	1417
d_b, Bicycle Delay [s]	60.00	36.04	5.10	5.10
l_b,int, Bicycle LOS Score for Intersection	4.132	3.238	3.441	2.467
Bicycle LOS	D	C	C	B

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Foothill Blvd at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	22.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	819	0	521	0	0	0	0	1415	0	0	1401	362
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	177	0	0	41	117
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	819	0	521	0	0	0	0	1592	0	0	1442	479
Peak Hour Factor	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000	1.0000	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	216	0	137	0	0	0	0	419	0	0	379	126
Total Analysis Volume [veh/h]	862	0	548	0	0	0	0	1676	0	0	1518	504
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	0	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	0	0	5	0	0	5	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	60	0	0	0	0	0	0	60	0	0	60	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	5	0	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	24	0	0	0	0	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		C	C	R
C, Cycle Length [s]	120	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	39	39	39		73	73	73
g / C, Green / Cycle	0.33	0.33	0.33		0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.29		0.32	0.29	0.31
s, saturation flow rate [veh/h]	1810	1774	1615		5176	5176	1615
c, Capacity [veh/h]	594	582	530		3133	3133	977
d1, Uniform Delay [s]	36.59	36.85	38.21		13.83	13.23	13.59
k, delay calibration	0.14	0.15	0.19		0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	3.06	3.63	8.58		0.66	0.54	1.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.81	0.89		0.54	0.48	0.52
d, Delay for Lane Group [s/veh]	39.66	40.48	46.79		14.49	13.77	15.53
Lane Group LOS	D	D	D		B	B	B
Critical Lane Group	No	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.91	13.08	14.22		8.66	7.49	8.04
50th-Percentile Queue Length [ft/ln]	322.78	327.01	355.42		216.45	187.34	200.88
95th-Percentile Queue Length [veh/ln]	18.80	19.01	20.40		13.48	11.98	12.68
95th-Percentile Queue Length [ft/ln]	470.10	475.29	510.01		337.09	299.58	317.11

Movement, Approach, & Intersection Results

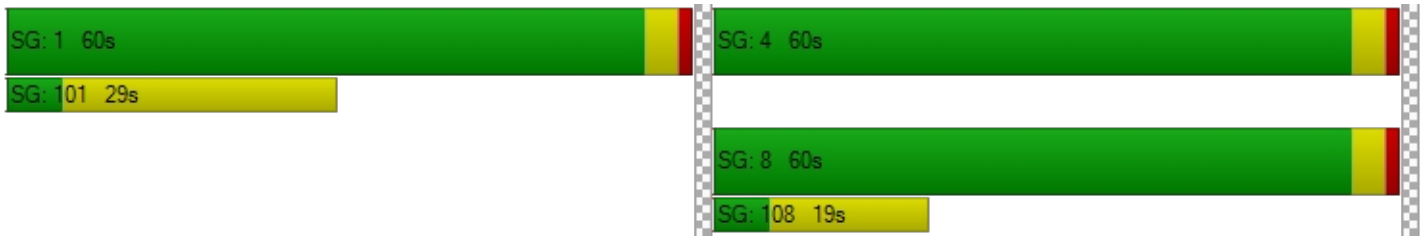
d_M, Delay for Movement [s/veh]	40.03	0.00	45.89	0.00	0.00	0.00	0.00	14.49	0.00	0.00	13.77	15.53
Movement LOS	D		D					B			B	B
d_A, Approach Delay [s/veh]	42.31			0.00			14.49			14.21		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	22.06											
Intersection LOS	C											
Intersection V/C	0.615											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.490	0.000	0.000	3.201
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	0	933	933
d_b, Bicycle Delay [s]	17.07	60.00	17.07	17.07
l_b,int, Bicycle LOS Score for Intersection	3.886	4.132	2.481	2.672
Bicycle LOS	D	D	B	B

Sequence

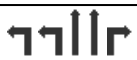
Ring 1	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Foothill Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	80.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	382	400	224	69	251	174	266	1164	287	140	957	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	158	26	2	0	26	0	0	0	177	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	540	426	226	69	277	174	266	1164	464	142	957	53
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	142	112	59	18	73	46	70	306	122	37	252	14
Total Analysis Volume [veh/h]	568	448	238	73	292	183	280	1225	488	149	1007	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	36	63	0	9	36	0	13	39	39	9	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	0	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	32	59	59	5	32	32	9	35	71	5	31	31
g / C, Green / Cycle	0.27	0.49	0.49	0.04	0.27	0.27	0.08	0.29	0.59	0.04	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.31	0.24	0.15	0.04	0.13	0.14	0.08	0.34	0.30	0.04	0.28	0.03
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1900	1661	3514	3618	1615	3514	3618	1615
c, Capacity [veh/h]	483	934	794	75	507	443	264	1055	956	146	935	417
d1, Uniform Delay [s]	44.00	20.29	18.18	57.42	37.17	37.31	55.50	42.50	14.34	57.50	44.50	34.19
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.15	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	99.55	1.76	0.97	40.79	3.42	4.10	44.08	75.89	1.95	39.06	40.14	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.18	0.48	0.30	0.97	0.49	0.51	1.06	1.16	0.51	1.02	1.08	0.13
d, Delay for Lane Group [s/veh]	143.55	22.05	19.15	98.21	40.59	41.41	99.58	118.39	16.28	96.56	84.64	34.33
Lane Group LOS	F	C	B	F	D	D	F	F	B	F	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	27.53	8.70	4.14	3.06	6.70	6.10	5.60	26.56	8.02	3.01	18.97	1.28
50th-Percentile Queue Length [ft/ln]	688.25	217.49	103.45	76.62	167.62	152.48	139.88	663.96	200.47	75.36	474.21	32.09
95th-Percentile Queue Length [veh/ln]	39.72	13.54	7.45	5.52	10.95	10.15	9.66	38.30	12.66	5.43	27.29	2.31
95th-Percentile Queue Length [ft/ln]	993.04	338.43	186.21	137.92	273.79	253.73	241.58	957.49	316.57	135.65	682.22	57.76

Movement, Approach, & Intersection Results

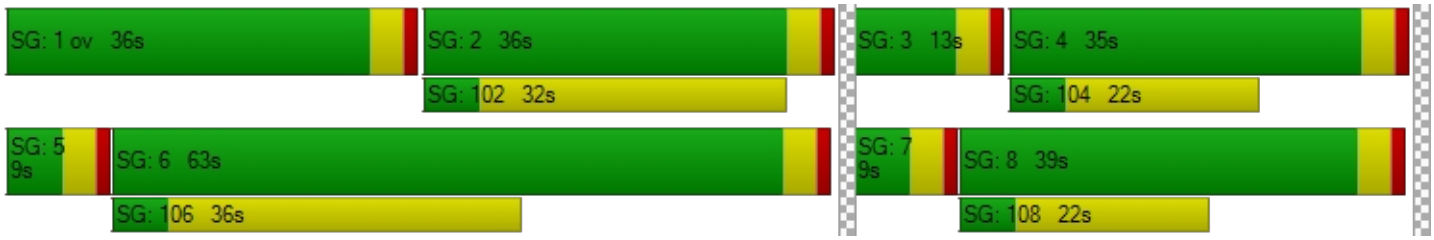
d_M, Delay for Movement [s/veh]	143.55	22.05	19.15	98.21	40.71	41.41	99.58	118.39	16.28	96.56	84.64	34.33
Movement LOS	F	C	B	F	D	D	F	F	B	F	F	C
d_A, Approach Delay [s/veh]	76.53			48.60			90.74			83.78		
Approach LOS	E			D			F			F		
d_I, Intersection Delay [s/veh]	80.89											
Intersection LOS	F											
Intersection V/C	0.830											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.741	2.575	3.198	3.162
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	533	583	517
d_b, Bicycle Delay [s]	15.50	32.27	30.10	33.00
l_b,int, Bicycle LOS Score for Intersection	3.629	2.012	3.204	2.560
Bicycle LOS	D	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Foothill Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	62.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	461	1014	285	315	855	219	288	1137	236	200	635	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	345	57	0	387	2	2	0	0	57	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	461	1359	342	315	1242	221	290	1137	236	257	635	138
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	358	90	83	327	58	76	299	62	68	167	36
Total Analysis Volume [veh/h]	485	1431	360	332	1307	233	305	1197	248	271	668	145
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	28	41	0	27	40	40	12	38	0	14	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	0	0	31	31	0	27	0	0	31	31
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	24	40	40	23	39	51	8	31	31	10	33	60
g / C, Green / Cycle	0.20	0.33	0.33	0.19	0.32	0.42	0.07	0.26	0.26	0.08	0.28	0.50
(v / s)_i Volume / Saturation Flow Rate	0.27	0.28	0.22	0.18	0.25	0.14	0.09	0.23	0.15	0.08	0.13	0.09
s, saturation flow rate [veh/h]	1810	5176	1615	1810	5176	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	362	1708	533	347	1664	681	234	1355	423	293	1441	813
d1, Uniform Delay [s]	48.00	37.24	34.67	48.01	36.94	23.46	56.00	42.54	38.63	54.63	35.87	16.26
k, delay calibration	0.50	0.50	0.50	0.26	0.50	0.50	0.11	0.11	0.12	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	170.64	5.10	6.73	25.52	3.81	1.37	142.67	2.09	1.41	12.11	0.23	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.34	0.84	0.68	0.96	0.79	0.34	1.30	0.88	0.59	0.93	0.46	0.18
d, Delay for Lane Group [s/veh]	218.64	42.34	41.40	73.53	40.75	24.83	198.67	44.63	40.04	66.74	36.10	16.36
Lane Group LOS	F	D	D	E	D	C	F	D	D	E	D	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	27.91	13.62	10.00	12.24	12.08	4.72	8.18	11.54	6.53	4.56	5.45	2.20
50th-Percentile Queue Length [ft/ln]	697.82	340.57	250.04	306.04	301.98	118.01	204.62	288.61	163.34	113.88	136.15	55.07
95th-Percentile Queue Length [veh/ln]	42.05	19.68	15.19	17.98	17.78	8.28	13.90	17.12	10.73	8.06	9.27	3.96
95th-Percentile Queue Length [ft/ln]	1051.23	491.90	379.71	449.49	444.48	207.08	347.56	427.92	268.14	201.39	231.83	99.12

Movement, Approach, & Intersection Results

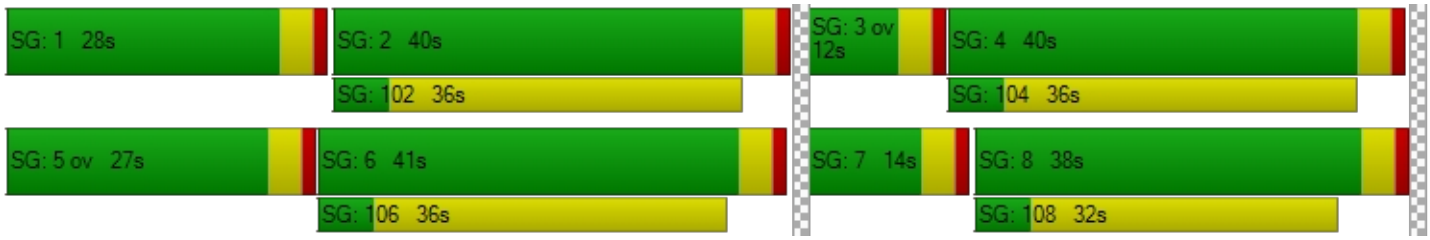
d_M, Delay for Movement [s/veh]	218.64	42.34	41.40	73.53	40.75	24.83	198.67	44.63	40.04	66.74	36.10	16.36
Movement LOS	F	D	D	E	D	C	F	D	D	E	D	B
d_A, Approach Delay [s/veh]	79.76			44.58			70.83			41.12		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	62.09											
Intersection LOS	E											
Intersection V/C	0.829											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.241	3.271	3.204	3.187
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	600	567	600
d_b, Bicycle Delay [s]	28.70	29.40	30.82	29.40
l_b,int, Bicycle LOS Score for Intersection	2.811	2.589	2.522	2.156
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Beech Ave at Foothill Blvd

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	49.654

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	214	0	211	0	0	0	0	1511	226	195	887	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	17	0	0	0	0	57	0	16	57	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	214	0	228	0	0	0	0	1568	226	211	944	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	0	60	0	0	0	0	413	59	56	248	0
Total Analysis Volume [veh/h]	225	0	240	0	0	0	0	1651	238	222	994	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	49.65	0.00	0.90	0.00	0.00	0.00	0.00	0.02	0.00	0.69	0.01	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	10000.0	3582.44	1396.34	11.87	10.11	0.00	0.00	37.98	0.00	0.00
Movement LOS	F	F	F	F	F	B	B	A	A	E	A	A
95th-Percentile Queue Length [veh/ln]	59.89	59.89	59.89	0.00	0.00	0.00	0.00	0.00	0.00	4.84	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1497.17	1497.17	1497.17	0.00	0.00	0.00	0.00	0.00	0.00	120.99	0.00	0.00
d_A, Approach Delay [s/veh]	10000.00			1663.55			0.00			6.93		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	1304.88											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: Foothill Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	84.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.967

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	155	758	152	189	618	80	287	1101	198	444	647	154
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	0	0	16	0	0	45	0	0	45	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	778	152	189	634	80	287	1146	198	444	692	154
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	205	40	50	167	21	76	302	52	117	182	41
Total Analysis Volume [veh/h]	163	819	160	199	667	84	302	1206	208	467	728	162
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	34	0	16	36	0	28	39	0	31	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	30	30	12	32	32	22	35	35	27	40	40
g / C, Green / Cycle	0.08	0.25	0.25	0.10	0.27	0.27	0.18	0.29	0.29	0.23	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.09	0.26	0.27	0.11	0.20	0.20	0.17	0.33	0.13	0.26	0.20	0.10
s, saturation flow rate [veh/h]	1810	1900	1794	1810	1900	1826	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	151	475	448	181	507	487	332	1055	471	407	1206	538
d1, Uniform Delay [s]	55.00	45.00	45.00	54.00	40.41	40.41	48.04	42.50	34.55	46.50	33.38	29.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.21	0.14	0.11	0.47	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	58.04	57.90	59.65	62.03	10.07	10.44	16.27	67.95	0.65	90.18	0.49	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	1.06	1.06	1.10	0.76	0.76	0.91	1.14	0.44	1.15	0.60	0.30
d, Delay for Lane Group [s/veh]	113.04	102.90	104.65	116.03	50.48	50.85	64.31	110.45	35.21	136.68	33.87	29.95
Lane Group LOS	F	F	F	F	D	D	E	F	D	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.98	21.65	20.65	8.57	11.76	11.35	10.33	25.40	5.03	22.26	8.88	3.52
50th-Percentile Queue Length [ft/ln]	174.58	541.17	516.29	214.24	293.91	283.80	258.27	634.90	125.84	556.39	222.07	88.10
95th-Percentile Queue Length [veh/ln]	11.63	30.31	29.12	13.86	17.38	16.88	15.60	36.50	8.71	32.33	13.77	6.34
95th-Percentile Queue Length [ft/ln]	290.69	757.83	728.03	346.51	434.49	421.94	390.05	912.56	217.83	808.35	344.27	158.57

Movement, Approach, & Intersection Results

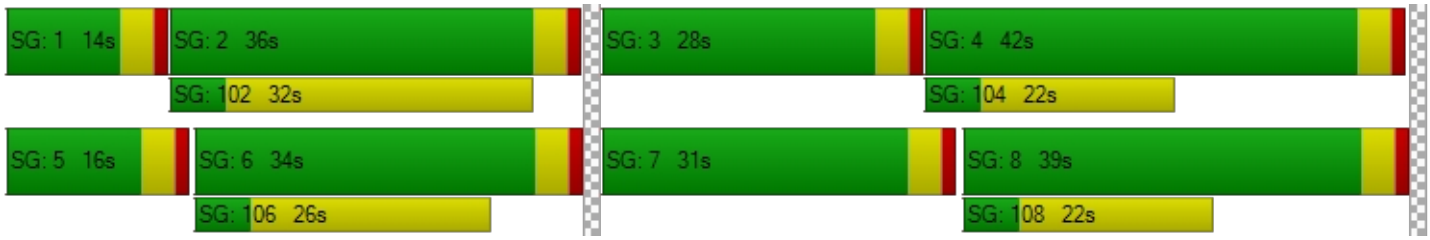
d_M, Delay for Movement [s/veh]	113.04	103.58	104.65	116.03	50.64	50.85	64.31	110.45	35.21	136.68	33.87	29.95
Movement LOS	F	F	F	F	D	D	E	F	D	F	C	C
d_A, Approach Delay [s/veh]	105.08			64.36			93.21			68.78		
Approach LOS	F			E			F			E		
d_I, Intersection Delay [s/veh]	84.11											
Intersection LOS	F											
Intersection V/C	0.967											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.799	2.751	2.905	2.943
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	533	583	633
d_b, Bicycle Delay [s]	33.75	32.27	30.10	28.02
l_b,int, Bicycle LOS Score for Intersection	2.502	2.343	2.975	2.679
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Sierra Ave at Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	63.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.916

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	160	1095	230	220	750	156	227	958	199	287	615	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	25	17	0	25	9	9	24	0	16	24	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	1120	247	220	775	165	236	982	199	303	639	181
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	295	65	58	204	43	62	258	52	80	168	48
Total Analysis Volume [veh/h]	168	1179	260	232	816	174	248	1034	209	319	673	191
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	41	0	19	43	0	24	36	0	24	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	37	37	15	39	39	18	32	32	20	34	34
g / C, Green / Cycle	0.11	0.31	0.31	0.13	0.33	0.33	0.15	0.27	0.27	0.17	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.09	0.33	0.16	0.13	0.23	0.11	0.14	0.29	0.13	0.18	0.19	0.12
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	195	1115	498	226	1178	526	277	965	431	302	1013	452
d1, Uniform Delay [s]	52.66	41.50	34.21	52.50	35.23	30.58	49.84	44.00	37.06	50.00	38.21	35.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.11	0.11	0.23	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.66	43.35	3.88	34.54	3.36	1.68	10.63	37.66	0.85	51.72	0.76	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	1.06	0.52	1.03	0.69	0.33	0.89	1.07	0.49	1.06	0.66	0.42
d, Delay for Lane Group [s/veh]	63.32	84.85	38.09	87.04	38.59	32.26	60.47	81.66	37.91	101.72	38.97	35.90
Lane Group LOS	E	F	D	F	D	C	E	F	D	F	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.55	22.98	6.79	8.96	10.87	4.07	8.11	19.23	5.28	13.34	8.83	4.65
50th-Percentile Queue Length [ft/ln]	138.79	574.53	169.69	224.10	271.80	101.67	202.68	480.67	131.94	333.55	220.68	116.21
95th-Percentile Queue Length [veh/ln]	9.42	31.98	11.06	14.03	16.28	7.32	12.78	27.54	9.04	19.88	13.70	8.18
95th-Percentile Queue Length [ft/ln]	235.39	799.44	276.50	350.67	406.99	183.00	319.42	688.55	226.12	496.92	342.49	204.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.32	84.85	38.09	87.04	38.59	32.26	60.47	81.66	37.91	101.72	38.97	35.90
Movement LOS	E	F	D	F	D	C	E	F	D	F	D	D
d_A, Approach Delay [s/veh]	75.04			46.89			72.00			55.40		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	63.74											
Intersection LOS	E											
Intersection V/C	0.916											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.020	3.087	2.875	2.908
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	650	533	533
d_b, Bicycle Delay [s]	28.70	27.34	32.27	32.27
l_b,int, Bicycle LOS Score for Intersection	2.885	2.568	2.790	2.536
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Arrow Rte at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	170.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.399

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	216	751	240	192	353	128	391	1737	457	177	973	180
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	36	186	0	0	205	0	0	0	36	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	252	937	240	192	558	128	391	1737	493	177	973	180
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	247	63	51	147	34	103	457	130	47	256	47
Total Analysis Volume [veh/h]	265	986	253	202	587	135	412	1828	519	186	1024	189
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	12	30	30	12	30	30	33	69	69	9	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	26	35	8	26	47	17	65	77	5	53	53
g / C, Green / Cycle	0.07	0.22	0.29	0.07	0.22	0.39	0.14	0.54	0.64	0.04	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.08	0.27	0.16	0.11	0.16	0.08	0.12	0.96	0.32	0.05	0.33	0.33
s, saturation flow rate [veh/h]	3514	3618	1615	1810	3618	1615	3514	1900	1615	3514	1900	1799
c, Capacity [veh/h]	234	784	471	121	784	634	502	1029	1036	146	837	793
d1, Uniform Delay [s]	56.00	47.00	35.70	56.00	43.95	24.14	49.95	27.50	11.35	57.50	27.87	28.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.28	0.28
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	70.93	126.37	4.34	311.32	6.48	0.77	3.42	353.24	1.73	133.05	3.30	3.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.13	1.26	0.54	1.67	0.75	0.21	0.82	1.78	0.50	1.27	0.74	0.75
d, Delay for Lane Group [s/veh]	126.93	173.37	40.04	367.32	50.43	24.91	53.37	380.74	13.08	190.55	31.17	31.70
Lane Group LOS	F	F	D	F	D	C	D	F	B	F	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.85	25.38	6.79	14.08	8.84	2.69	6.24	128.81	7.43	4.93	15.26	14.75
50th-Percentile Queue Length [ft/ln]	146.27	634.43	169.66	352.01	221.07	67.34	155.91	3220.37	185.67	123.14	381.56	368.66
95th-Percentile Queue Length [veh/ln]	10.19	37.81	11.06	23.12	13.72	4.85	10.33	203.47	11.90	8.87	21.67	21.04
95th-Percentile Queue Length [ft/ln]	254.77	945.26	276.47	577.92	342.99	121.22	258.30	5086.64	297.40	221.66	541.74	526.11

Movement, Approach, & Intersection Results

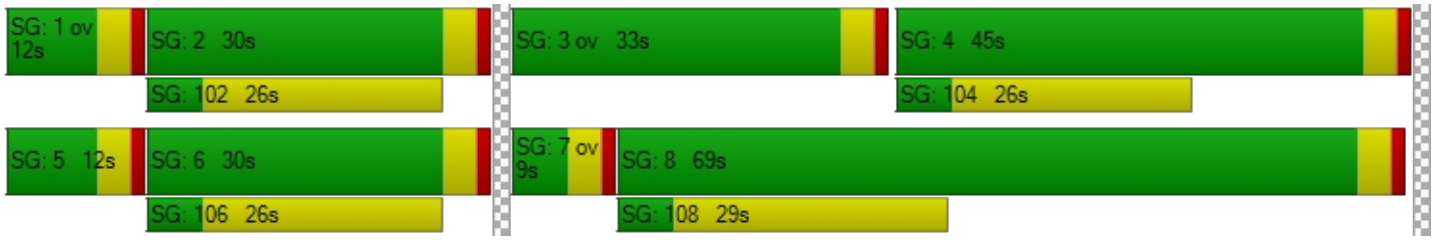
d_M, Delay for Movement [s/veh]	126.93	173.37	40.04	367.32	50.43	24.91	53.37	380.74	13.08	190.55	31.38	31.70
Movement LOS	F	F	D	F	D	C	D	F	B	F	C	C
d_A, Approach Delay [s/veh]	142.76			115.97			262.70			52.59		
Approach LOS	F			F			F			D		
d_I, Intersection Delay [s/veh]	170.09											
Intersection LOS	F											
Intersection V/C	1.399											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.999	2.876	3.192	3.066
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	433	1083	683
d_b, Bicycle Delay [s]	36.82	36.82	12.60	26.00
l_b,int, Bicycle LOS Score for Intersection	2.800	2.322	6.112	2.714
Bicycle LOS	C	B	F	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Arrow Rte at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	102.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.031

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	162	1374	310	103	1160	115	95	758	123	160	607	67
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	402	50	0	444	0	0	0	0	50	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	1776	360	103	1604	115	95	758	123	210	607	67
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	467	95	27	422	30	25	199	32	55	160	18
Total Analysis Volume [veh/h]	171	1869	379	108	1688	121	100	798	129	221	639	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	47	0	10	43	0	21	46	0	17	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	43	43	6	39	39	8	42	42	13	47	47
g / C, Green / Cycle	0.08	0.36	0.36	0.05	0.33	0.33	0.07	0.35	0.35	0.11	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.09	0.41	0.43	0.06	0.33	0.33	0.06	0.42	0.08	0.12	0.34	0.04
s, saturation flow rate [veh/h]	1810	3618	1744	1810	3618	1836	1810	1900	1615	1810	1900	1615
c, Capacity [veh/h]	151	1296	625	90	1176	597	127	665	565	196	737	627
d1, Uniform Delay [s]	55.00	38.50	38.50	57.00	40.50	40.50	54.91	39.00	27.55	53.50	33.84	23.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.37	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	77.32	79.39	104.29	108.45	31.26	42.78	10.24	104.05	0.20	71.41	10.01	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.13	1.16	1.20	1.19	1.02	1.02	0.79	1.20	0.23	1.13	0.87	0.11
d, Delay for Lane Group [s/veh]	132.32	117.89	142.79	165.45	71.76	83.28	65.15	143.05	27.75	124.91	43.86	23.57
Lane Group LOS	F	F	F	F	F	F	E	F	C	F	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.79	32.99	36.13	5.47	22.19	24.43	3.34	38.44	2.67	9.79	18.90	1.31
50th-Percentile Queue Length [ft/ln]	194.77	824.64	903.32	136.67	554.70	610.71	83.45	960.90	66.63	244.72	472.44	32.83
95th-Percentile Queue Length [veh/ln]	12.91	46.67	51.70	9.74	30.31	33.04	6.01	54.66	4.80	15.63	26.03	2.36
95th-Percentile Queue Length [ft/ln]	322.83	1166.66	1292.39	243.57	757.74	826.12	150.22	1366.45	119.93	390.85	650.67	59.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	132.32	122.82	142.79	165.45	75.10	83.28	65.15	143.05	27.75	124.91	43.86	23.57
Movement LOS	F	F	F	F	E	F	E	F	C	F	D	C
d_A, Approach Delay [s/veh]	126.62			80.71			120.98			61.55		
Approach LOS	F			F			F			E		
d_I, Intersection Delay [s/veh]	102.09											
Intersection LOS	F											
Intersection V/C	1.031											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.284	3.160	2.786	2.686
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	650	700	633
d_b, Bicycle Delay [s]	24.70	27.34	25.35	28.02
l_b,int, Bicycle LOS Score for Intersection	2.890	2.614	3.254	3.096
Bicycle LOS	C	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: Beech Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	29.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	124	345	276	34	368	42	73	830	117	142	510	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	17	3	0	16	0	0	50	0	3	50	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	362	279	34	384	42	73	880	117	145	560	56
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	95	73	9	101	11	19	232	31	38	147	15
Total Analysis Volume [veh/h]	131	381	294	36	404	44	77	926	123	153	589	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	42	0	0	42	0	0	78	0	0	78	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	14	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	38	38	38	38	38	38	74	74	74	74	74	74
g / C, Green / Cycle	0.32	0.32	0.32	0.32	0.32	0.32	0.62	0.62	0.62	0.62	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.14	0.20	0.18	0.05	0.21	0.03	0.10	0.49	0.08	0.28	0.31	0.04
s, saturation flow rate [veh/h]	957	1900	1615	776	1900	1615	796	1900	1615	546	1900	1615
c, Capacity [veh/h]	171	602	511	160	602	511	400	1172	996	189	1172	996
d1, Uniform Delay [s]	54.16	35.04	34.25	47.78	35.58	28.80	21.75	17.20	9.54	48.11	12.78	9.15
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.32	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	27.66	5.01	4.65	3.25	5.88	0.33	0.23	3.56	0.06	8.07	0.34	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.63	0.57	0.23	0.67	0.09	0.19	0.79	0.12	0.81	0.50	0.06
d, Delay for Lane Group [s/veh]	81.82	40.06	38.90	51.02	41.46	29.13	21.98	20.76	9.60	56.18	13.11	9.18
Lane Group LOS	F	D	D	D	D	C	C	C	A	E	B	A
Critical Lane Group	No	No	No	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	5.30	10.32	7.81	1.13	11.19	0.95	1.41	19.03	1.33	5.08	8.55	0.61
50th-Percentile Queue Length [ft/ln]	132.48	257.96	195.26	28.29	279.76	23.67	35.15	475.78	33.31	127.04	213.86	15.32
95th-Percentile Queue Length [veh/ln]	9.07	15.59	12.39	2.04	16.68	1.70	2.53	26.19	2.40	8.78	13.35	1.10
95th-Percentile Queue Length [ft/ln]	226.86	389.66	309.85	50.93	416.91	42.61	63.27	654.64	59.96	219.46	333.78	27.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	81.82	40.06	38.90	51.02	41.46	29.13	21.98	20.76	9.60	56.18	13.11	9.18
Movement LOS	F	D	D	D	D	C	C	C	A	E	B	A
d_A, Approach Delay [s/veh]	46.42			41.05			19.63			21.05		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	29.92											
Intersection LOS	C											
Intersection V/C	0.700											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.726	2.500	2.793	2.767
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	633	633	1233	1233
d_b, Bicycle Delay [s]	28.02	28.02	8.82	8.82
l_b,int, Bicycle LOS Score for Intersection	2.890	2.358	3.418	2.881
Bicycle LOS	C	B	C	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Citrus Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	46.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.762

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	222	968	191	155	817	90	111	779	237	164	390	103
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	3	0	16	0	0	29	0	3	29	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	222	988	194	155	833	90	111	808	237	167	419	103
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	260	51	41	219	24	29	213	62	44	110	27
Total Analysis Volume [veh/h]	234	1040	204	163	877	95	117	851	249	176	441	108
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	47	0	16	41	0	23	40	0	17	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	48	48	12	42	42	10	31	31	13	35	35
g / C, Green / Cycle	0.14	0.40	0.40	0.10	0.35	0.35	0.08	0.26	0.26	0.11	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.13	0.33	0.34	0.09	0.26	0.26	0.06	0.24	0.15	0.10	0.23	0.07
s, saturation flow rate [veh/h]	1810	1900	1794	1810	1900	1836	1810	3618	1615	1810	1900	1615
c, Capacity [veh/h]	261	755	713	181	671	648	146	944	422	196	549	466
d1, Uniform Delay [s]	50.48	32.74	32.99	53.41	33.93	33.94	54.22	42.84	38.73	52.84	39.52	32.52
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.25	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.59	10.97	12.45	14.68	7.08	7.33	9.75	3.48	1.32	13.48	6.17	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.84	0.85	0.90	0.74	0.74	0.80	0.90	0.59	0.90	0.80	0.23
d, Delay for Lane Group [s/veh]	61.06	43.71	45.44	68.10	41.01	41.28	63.97	46.32	40.06	66.32	45.69	32.77
Lane Group LOS	E	D	D	E	D	D	E	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.66	18.71	18.32	5.60	13.79	13.39	3.87	12.56	6.56	5.97	12.89	2.44
50th-Percentile Queue Length [ft/ln]	191.48	467.87	458.01	139.89	344.77	334.63	96.74	313.94	163.94	149.16	322.30	61.03
95th-Percentile Queue Length [veh/ln]	12.20	25.81	25.34	9.47	19.88	19.39	6.97	18.37	10.76	9.97	18.78	4.39
95th-Percentile Queue Length [ft/ln]	304.95	645.23	633.50	236.87	497.02	484.63	174.13	459.23	268.93	249.31	469.51	109.85

Movement, Approach, & Intersection Results

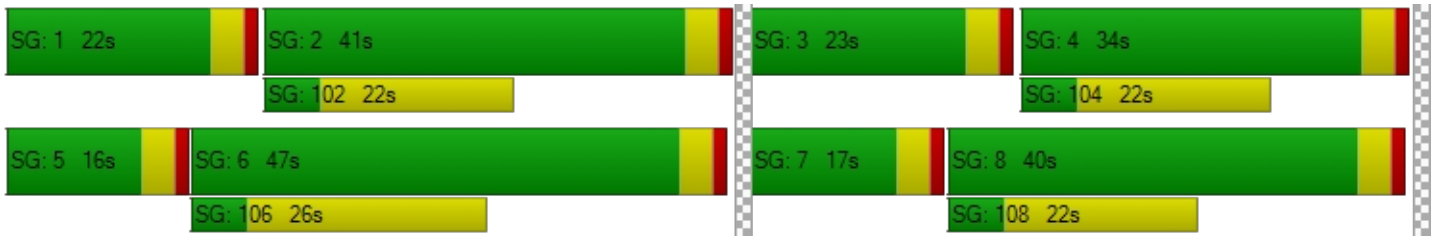
d_M, Delay for Movement [s/veh]	61.06	44.38	45.44	68.10	41.12	41.28	63.97	46.32	40.06	66.32	45.69	32.77
Movement LOS	E	D	D	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	47.17			45.01			46.74			48.78		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	46.77											
Intersection LOS	D											
Intersection V/C	0.762											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.857	2.783	2.703	2.784
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	617	600	500
d_b, Bicycle Delay [s]	24.70	28.70	29.40	33.75
l_b,int, Bicycle LOS Score for Intersection	2.779	2.496	2.564	2.756
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: Sierra Ave at Arrow Blvd

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.662

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	125	1135	65	121	824	141	183	535	142	75	353	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	42	3	0	41	0	0	9	0	3	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	1177	68	121	865	141	183	544	142	78	362	59
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	310	18	32	228	37	48	143	37	21	95	16
Total Analysis Volume [veh/h]	132	1239	72	127	911	148	193	573	149	82	381	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	50	0	14	49	0	26	44	0	12	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	60	60	10	60	60	15	27	27	7	19	19
g / C, Green / Cycle	0.09	0.50	0.50	0.08	0.50	0.50	0.12	0.22	0.22	0.06	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.07	0.35	0.35	0.07	0.29	0.29	0.11	0.20	0.20	0.05	0.12	0.12
s, saturation flow rate [veh/h]	1810	1900	1864	1810	1900	1809	1810	1900	1766	1810	1900	1809
c, Capacity [veh/h]	158	956	938	151	948	903	225	422	393	104	296	282
d1, Uniform Delay [s]	53.88	22.68	22.74	54.22	21.06	21.08	51.52	45.19	45.19	55.80	48.53	48.60
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.15	0.15	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.73	4.08	4.21	11.80	2.50	2.64	9.20	8.33	8.90	12.11	4.07	4.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.69	0.69	0.84	0.57	0.57	0.86	0.89	0.89	0.79	0.76	0.77
d, Delay for Lane Group [s/veh]	64.61	26.76	26.95	66.03	23.55	23.71	60.72	53.53	54.10	67.92	52.60	53.05
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.39	14.90	14.74	4.27	11.11	10.64	6.26	11.72	10.96	2.80	6.81	6.58
50th-Percentile Queue Length [ft/ln]	109.81	372.43	368.52	106.85	277.78	266.09	156.56	292.97	274.01	70.04	170.21	164.58
95th-Percentile Queue Length [veh/ln]	7.83	21.23	21.04	7.66	16.58	15.99	10.37	17.33	16.39	5.04	11.09	10.79
95th-Percentile Queue Length [ft/ln]	195.74	530.68	525.93	191.61	414.44	399.86	259.17	433.33	409.75	126.08	277.18	269.77

Movement, Approach, & Intersection Results

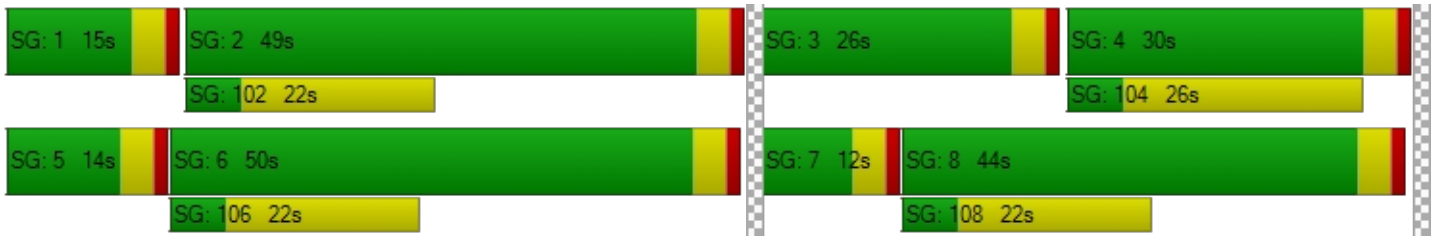
d_M, Delay for Movement [s/veh]	64.61	26.85	26.95	66.03	23.62	23.71	60.72	53.72	54.10	67.92	52.78	53.05
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	30.31			28.17			55.26			55.18		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	38.51											
Intersection LOS	D											
Intersection V/C	0.662											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.819	2.904	2.622	2.568
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	750	667	433
d_b, Bicycle Delay [s]	22.82	23.44	26.67	36.82
l_b,int, Bicycle LOS Score for Intersection	2.750	2.538	2.314	1.993
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: Whittram Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	65.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.016

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1053	317	220	769	0	0	0	0	225	0	107
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	222	0	0	241	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1275	317	220	1010	0	0	0	0	225	0	107
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	336	83	58	266	0	0	0	0	59	0	28
Total Analysis Volume [veh/h]	0	1342	334	232	1063	0	0	0	0	237	0	113
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	30	76	0	18	64	0	0	26	0	0	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	72	72	14	86	86	22	22	22	22
g / C, Green / Cycle	0.00	0.60	0.60	0.12	0.72	0.72	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.71	0.21	0.13	0.56	0.00	0.00	0.00	0.18	0.07
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1900	1615	1728	1615	1309	1615
c, Capacity [veh/h]	2	1140	969	211	1360	1156	347	296	300	296
d1, Uniform Delay [s]	0.00	24.00	12.10	53.00	11.00	0.00	0.00	0.00	49.88	43.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	89.12	0.97	59.77	4.53	0.00	0.00	0.00	10.13	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	1.18	0.34	1.10	0.78	0.00	0.00	0.00	0.79	0.38
d, Delay for Lane Group [s/veh]	0.00	113.12	13.08	112.77	15.53	0.00	0.00	0.00	60.01	43.84
Lane Group LOS	A	F	B	F	B	A	A	A	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	58.00	4.66	9.85	17.57	0.00	0.00	0.00	7.91	3.02
50th-Percentile Queue Length [ft/ln]	0.00	1450.05	116.55	246.32	439.36	0.00	0.00	0.00	197.66	75.59
95th-Percentile Queue Length [veh/ln]	0.00	80.37	8.20	15.59	24.45	0.00	0.00	0.00	12.52	5.44
95th-Percentile Queue Length [ft/ln]	0.00	2009.29	205.08	389.72	611.24	0.00	0.00	0.00	312.94	136.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	113.12	13.08	112.77	15.53	0.00	0.00	0.00	0.00	60.01	60.01	43.84
Movement LOS	A	F	B	F	B	A	A	A	A	E	E	D
d_A, Approach Delay [s/veh]	93.18			32.95			0.00			54.78		
Approach LOS	F			C			A			D		
d_I, Intersection Delay [s/veh]	65.65											
Intersection LOS	E											
Intersection V/C	1.016											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.233	0.000	1.955	2.253
Crosswalk LOS	C	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	1000	367	367
d_b, Bicycle Delay [s]	9.60	15.00	40.02	40.02
l_b,int, Bicycle LOS Score for Intersection	4.325	3.696	1.560	2.137
Bicycle LOS	E	D	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: Whittram Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	96.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.015

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	160	1769	125	43	1113	69	105	158	379	139	75	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	452	0	0	494	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	2221	125	43	1607	69	105	158	379	139	75	82
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	584	33	11	423	18	28	42	100	37	20	22
Total Analysis Volume [veh/h]	168	2338	132	45	1692	73	111	166	399	146	79	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	67	0	10	63	0	10	30	0	13	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	65	65	4	59	59	6	26	26	9	29
g / C, Green / Cycle	0.08	0.54	0.54	0.03	0.49	0.49	0.05	0.22	0.22	0.08	0.24
(v / s)_i Volume / Saturation Flow Rate	0.09	0.65	0.66	0.02	0.47	0.05	0.06	0.09	0.25	0.08	0.09
s, saturation flow rate [veh/h]	1810	1900	1865	1810	3618	1615	1810	1900	1615	1810	1740
c, Capacity [veh/h]	151	1029	1010	61	1779	794	90	412	350	136	420
d1, Uniform Delay [s]	55.00	27.51	27.51	57.48	29.13	16.24	57.00	40.34	47.00	55.50	38.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.44	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	69.86	99.62	109.30	16.27	12.56	0.23	121.60	0.64	89.28	58.02	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.11	1.20	1.22	0.74	0.95	0.09	1.23	0.40	1.14	1.08	0.39
d, Delay for Lane Group [s/veh]	124.86	127.13	136.81	73.75	41.69	16.47	178.60	40.98	136.28	113.52	38.71
Lane Group LOS	F	F	F	E	D	B	F	D	F	F	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	7.48	56.26	57.93	1.63	25.45	1.13	5.80	4.30	19.05	6.29	4.15
50th-Percentile Queue Length [ft/ln]	186.95	1406.39	1448.22	40.71	636.26	28.14	144.93	107.44	476.33	157.19	103.79
95th-Percentile Queue Length [veh/ln]	12.42	78.81	81.92	2.93	33.72	2.03	10.28	7.70	28.11	10.65	7.47
95th-Percentile Queue Length [ft/ln]	310.42	1970.18	2047.88	73.27	843.09	50.65	256.93	192.44	702.83	266.36	186.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	124.86	131.70	136.81	73.75	41.69	16.47	178.60	40.98	136.28	113.52	38.71	38.71
Movement LOS	F	F	F	E	D	B	F	D	F	F	D	D
d_A, Approach Delay [s/veh]	131.52			41.47			119.83			73.83		
Approach LOS	F			D			F			E		
d_I, Intersection Delay [s/veh]	96.77											
Intersection LOS	F											
Intersection V/C	1.015											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.260	3.214	2.389	2.168
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	983	433	483
d_b, Bicycle Delay [s]	13.54	15.50	36.82	34.50
l_b,int, Bicycle LOS Score for Intersection	3.736	3.053	2.675	2.073
Bicycle LOS	D	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: Beech Ave at Whittram Ave

Control Type:	Two-way stop	Delay (sec / veh):	415.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.532

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	99	681	0	0	642	46	90	0	185	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	0	0	19	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	701	0	0	661	46	90	0	185	0	0	0
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	184	0	0	174	12	24	0	49	0	0	0
Total Analysis Volume [veh/h]	104	738	0	0	696	48	95	0	195	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.01	0.00	0.00	0.01	0.00	1.53	0.00	0.45	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.68	0.00	0.00	0.00	0.00	0.00	415.79	0.00	20.06	0.00	0.00	0.00
Movement LOS	A	A			A	A	F		C			
95th-Percentile Queue Length [veh/ln]	0.40	0.40	0.00	0.00	0.00	0.00	8.38	0.00	2.30	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	10.10	10.10	0.00	0.00	0.00	0.00	209.40	0.00	57.44	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1.20			0.00			149.69			0.00		
Approach LOS	A			A			F			A		
d_I, Intersection Delay [s/veh]	23.68											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 33: Napa St at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	85.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.966

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1216	155	206	939	0	6	0	34	223	0	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	172	241	0	0	0	0	0	134	0	222
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1216	327	447	939	0	6	0	34	357	0	353
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	320	86	118	247	0	2	0	9	94	0	93
Total Analysis Volume [veh/h]	0	1280	344	471	988	0	6	0	36	376	0	372
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	29	50	0	32	53	0	0	9	0	0	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	47	47	28	75	75	4	4	25	25
g / C, Green / Cycle	0.00	0.39	0.39	0.23	0.63	0.63	0.03	0.03	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.00	0.44	0.45	0.26	0.26	0.26	0.00	0.02	0.21	0.23
s, saturation flow rate [veh/h]	1810	1900	1765	1810	1900	1900	1810	1470	1781	1615
c, Capacity [veh/h]	1	748	695	422	1190	1190	57	46	371	336
d1, Uniform Delay [s]	0.00	36.39	36.39	46.00	11.34	11.34	56.47	57.70	47.50	47.50
k, delay calibration	0.11	0.50	0.50	0.48	0.50	0.50	0.11	0.11	0.34	0.39
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	66.73	81.47	78.30	1.07	1.07	0.80	23.95	41.73	75.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	1.11	1.14	1.12	0.42	0.42	0.11	0.78	1.01	1.11
d, Delay for Lane Group [s/veh]	0.00	103.11	117.86	124.30	12.41	12.41	57.28	81.65	89.23	122.83
Lane Group LOS	A	F	F	F	B	B	E	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.00	35.23	35.58	21.67	6.74	6.74	0.19	1.39	15.32	17.03
50th-Percentile Queue Length [ft/ln]	0.00	880.72	889.40	541.71	168.48	168.48	4.74	34.81	382.92	425.74
95th-Percentile Queue Length [veh/ln]	0.00	48.37	49.80	31.17	11.00	11.00	0.34	2.51	21.90	25.10
95th-Percentile Queue Length [ft/ln]	0.00	1209.26	1244.91	779.27	274.91	274.91	8.54	62.66	547.46	627.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	108.31	117.86	124.30	12.41	12.41	57.28	57.28	81.65	89.23	89.23	122.83
Movement LOS	A	F	F	F	B	B	E	E	F	F	F	F
d_A, Approach Delay [s/veh]	110.33			48.53			78.17			105.94		
Approach LOS	F			D			E			F		
d_I, Intersection Delay [s/veh]	85.85											
Intersection LOS	F											
Intersection V/C	0.966											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	817	83	417
d_b, Bicycle Delay [s]	22.82	21.00	55.10	37.60
l_b,int, Bicycle LOS Score for Intersection	2.899	2.763	1.594	2.794
Bicycle LOS	C	C	A	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: Merrill Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	62.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.943

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	1	1458	200	372	841	1	0	1	0	107	0	258
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	452	28	0	494	0	0	0	0	28	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1910	228	372	1335	1	0	1	0	135	0	258
Peak Hour Factor	0.9460	0.9460	0.9460	0.9500	0.9460	0.9500	0.9500	0.9500	0.9460	0.9460	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	505	60	98	353	0	0	0	0	36	0	68
Total Analysis Volume [veh/h]	1	2019	241	392	1411	1	0	1	0	143	0	272
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	35	49	0	24	38	0	31	30	0	17	16	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	62	62	20	81	81	0	11	11	22
g / C, Green / Cycle	0.00	0.51	0.51	0.17	0.68	0.68	0.00	0.09	0.09	0.19
(v / s)_i Volume / Saturation Flow Rate	0.00	0.56	0.15	0.22	0.39	0.00	0.00	0.00	0.08	0.17
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1810	1615
c, Capacity [veh/h]	3	1858	829	302	2456	1096	0	176	170	301
d1, Uniform Delay [s]	59.85	29.18	16.68	50.00	10.15	6.19	0.00	49.45	53.48	47.78
k, delay calibration	0.11	0.50	0.50	0.35	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	68.34	48.70	0.89	151.20	0.99	0.00	0.00	0.01	10.53	9.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	1.09	0.29	1.30	0.57	0.00	0.00	0.01	0.84	0.90
d, Delay for Lane Group [s/veh]	128.19	77.88	17.57	201.20	11.13	6.20	0.00	49.46	64.01	57.69
Lane Group LOS	F	F	B	F	B	A	A	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.08	38.05	3.98	21.68	9.39	0.01	0.00	0.03	4.74	8.75
50th-Percentile Queue Length [ft/ln]	2.04	951.16	99.57	541.90	234.83	0.21	0.00	0.70	118.48	218.84
95th-Percentile Queue Length [veh/ln]	0.15	51.44	7.17	32.97	14.42	0.01	0.00	0.05	8.31	13.61
95th-Percentile Queue Length [ft/ln]	3.67	1286.08	179.22	824.19	360.49	0.37	0.00	1.26	207.73	340.14

Movement, Approach, & Intersection Results

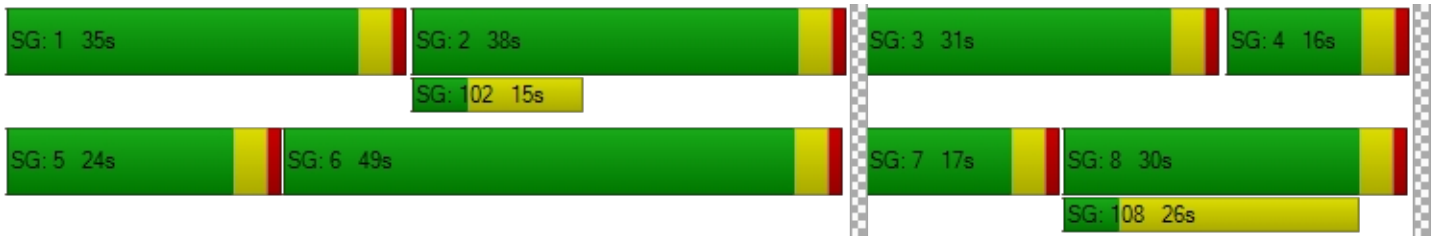
d_M, Delay for Movement [s/veh]	128.19	77.88	17.57	201.20	11.13	6.20	0.00	49.46	49.46	64.01	57.69	57.69
Movement LOS	F	F	B	F	B	A	A	D	D	E	E	E
d_A, Approach Delay [s/veh]	71.48			52.43			49.46			59.87		
Approach LOS	E			D			D			E		
d_I, Intersection Delay [s/veh]	62.73											
Intersection LOS	E											
Intersection V/C	0.943											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.141	0.000	1.956	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	567	433	200
d_b, Bicycle Delay [s]	23.44	30.82	36.82	48.60
l_b,int, Bicycle LOS Score for Intersection	3.425	3.048	1.561	2.244
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: Beech Ave at Merrill Ave

Control Type:	All-way stop	Delay (sec / veh):	248.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.966

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	49	360	65	223	346	92	235	278	51	36	296	159
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	0	0	19	0	0	28	0	0	28	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	380	65	223	365	92	235	306	51	36	324	159
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	100	17	59	96	24	62	81	13	9	85	42
Total Analysis Volume [veh/h]	52	400	68	235	384	97	247	322	54	38	341	167
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	452	405	716	569	405	379	406
Degree of Utilization, x	1.21	0.17	1.97	1.55	0.13	1.01	0.41

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	18.79	0.60	49.40	31.86	0.46	12.20	1.97
95th-Percentile Queue Length [ft]	469.63	14.91	1235.01	796.40	11.42	305.05	49.21
Approach Delay [s/veh]	128.32		466.64	260.41		61.75	
Approach LOS	F		F	F		F	
Intersection Delay [s/veh]	248.15						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 36: Merill Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.579

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	62	1046	50	87	896	112	156	331	78	40	235	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	23	1	0	19	0	0	28	0	1	28	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	1069	51	87	915	112	156	359	78	41	263	152
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	281	13	23	241	29	41	94	21	11	69	40
Total Analysis Volume [veh/h]	65	1125	54	92	963	118	164	378	82	43	277	160
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	53	0	12	50	0	19	37	0	18	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	66	66	8	68	68	13	26	26	4	18	18
g / C, Green / Cycle	0.05	0.55	0.55	0.06	0.57	0.57	0.11	0.22	0.22	0.03	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.04	0.31	0.31	0.05	0.29	0.29	0.09	0.10	0.05	0.02	0.12	0.12
s, saturation flow rate [veh/h]	1810	1900	1870	1810	1900	1828	1810	3618	1615	1810	1900	1673
c, Capacity [veh/h]	85	1045	1028	115	1077	1036	192	795	355	60	279	246
d1, Uniform Delay [s]	56.52	17.67	17.68	55.41	15.86	15.87	52.72	40.78	38.47	57.46	49.66	49.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.14	2.24	2.28	11.77	1.73	1.81	10.26	0.44	0.33	14.88	5.96	7.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.57	0.57	0.80	0.51	0.51	0.85	0.48	0.23	0.72	0.82	0.85
d, Delay for Lane Group [s/veh]	69.66	19.91	19.97	67.18	17.59	17.68	62.98	41.22	38.80	72.34	55.62	57.75
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.26	11.10	10.95	3.12	9.46	9.14	5.40	4.93	2.03	1.54	7.12	6.61
50th-Percentile Queue Length [ft/ln]	56.47	277.55	273.87	78.06	236.39	228.47	135.03	123.19	50.73	38.52	177.98	165.27
95th-Percentile Queue Length [veh/ln]	4.07	16.57	16.38	5.62	14.50	14.10	9.21	8.57	3.65	2.77	11.50	10.83
95th-Percentile Queue Length [ft/ln]	101.64	414.16	409.57	140.52	362.46	352.42	230.32	214.20	91.32	69.34	287.38	270.69

Movement, Approach, & Intersection Results

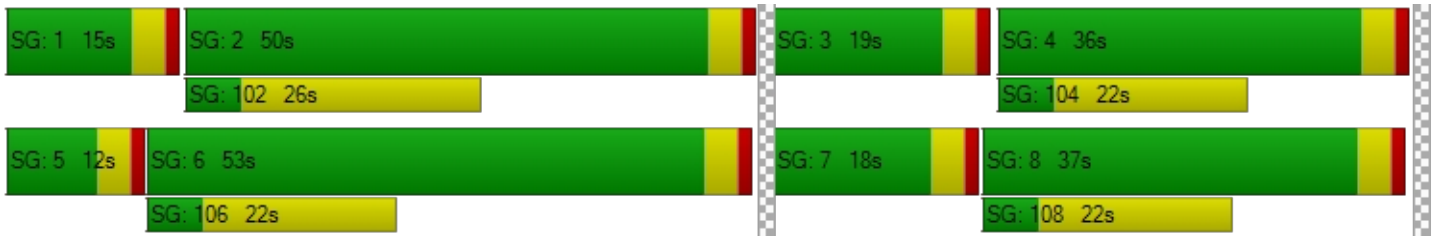
d_M, Delay for Movement [s/veh]	69.66	19.94	19.97	67.18	17.63	17.68	62.98	41.22	38.80	72.34	55.99	57.75
Movement LOS	E	B	B	E	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	22.54			21.52			46.62			58.04		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	31.31											
Intersection LOS	C											
Intersection V/C	0.579											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.770	2.894	2.644	2.631
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	767	550	533
d_b, Bicycle Delay [s]	21.00	22.82	31.54	32.27
l_b,int, Bicycle LOS Score for Intersection	2.586	2.527	2.074	1.956
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 37: Sierra Ave at Merrill Ave

Control Type:	Signalized	Delay (sec / veh):	44.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.702

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	131	1197	184	82	935	94	124	512	115	124	310	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	5	0	0	5	51	52	12	7	0	12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	1202	184	82	940	145	176	524	122	124	322	55
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	316	48	22	247	38	46	138	32	33	85	14
Total Analysis Volume [veh/h]	145	1265	194	86	989	153	185	552	128	131	339	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	61	0	11	57	0	18	30	0	18	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	51	51	7	47	47	14	36	36	11	32	32
g / C, Green / Cycle	0.09	0.42	0.42	0.06	0.39	0.39	0.12	0.30	0.30	0.09	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.08	0.39	0.40	0.05	0.31	0.31	0.10	0.18	0.18	0.07	0.11	0.11
s, saturation flow rate [veh/h]	1810	1900	1814	1810	1900	1812	1810	1900	1778	1810	1900	1805
c, Capacity [veh/h]	166	804	768	106	741	707	211	563	527	161	510	484
d1, Uniform Delay [s]	53.82	32.66	33.07	55.86	32.22	32.26	52.15	36.45	36.46	53.71	35.96	36.00
k, delay calibration	0.11	0.34	0.35	0.11	0.24	0.24	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.21	12.70	15.68	13.89	4.16	4.45	10.91	5.15	5.50	9.62	2.31	2.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.92	0.94	0.81	0.79	0.79	0.88	0.62	0.62	0.82	0.40	0.40
d, Delay for Lane Group [s/veh]	67.02	45.36	48.75	69.75	36.38	36.71	63.06	41.60	41.96	63.33	38.26	38.47
Lane Group LOS	E	D	D	E	D	D	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.93	22.62	22.83	2.98	15.56	14.96	6.11	9.66	9.10	4.31	5.20	5.02
50th-Percentile Queue Length [ft/ln]	123.17	565.45	570.87	74.52	388.90	373.96	152.83	241.40	227.38	107.87	130.05	125.46
95th-Percentile Queue Length [veh/ln]	8.57	30.42	30.67	5.37	22.02	21.30	10.17	14.75	14.04	7.72	8.94	8.69
95th-Percentile Queue Length [ft/ln]	214.17	760.44	766.79	134.14	550.60	532.53	254.20	368.81	351.03	193.03	223.56	217.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.02	46.77	48.75	69.75	36.52	36.71	63.06	41.73	41.96	63.33	38.35	38.47
Movement LOS	E	D	D	E	D	D	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	48.84			38.87			46.33			44.56		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.89											
Intersection LOS	D											
Intersection V/C	0.702											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.932	2.913	2.608	2.580
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	883	433	433
d_b, Bicycle Delay [s]	16.54	18.70	36.82	36.82
l_b,int, Bicycle LOS Score for Intersection	2.883	2.573	2.273	1.995
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 38: Fontana Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	32	974	77	41	767	297	352	370	16	57	188	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	0	4	16	22	43	0	10	32	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	976	77	41	771	313	374	413	16	67	220	24
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	257	20	11	203	82	98	109	4	18	58	6
Total Analysis Volume [veh/h]	34	1027	81	43	812	329	394	435	17	71	232	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	23	0	9	23	0	62	63	0	25	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	55	55	4	55	55	28	39	39	6	17	17
g / C, Green / Cycle	0.03	0.46	0.46	0.03	0.46	0.46	0.24	0.33	0.33	0.05	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.30	0.30	0.02	0.31	0.32	0.22	0.23	0.01	0.04	0.12	0.02
s, saturation flow rate [veh/h]	1810	1900	1852	1810	1900	1716	1810	1900	1615	1810	1900	1615
c, Capacity [veh/h]	52	867	844	58	873	789	430	620	527	95	268	228
d1, Uniform Delay [s]	57.72	25.19	25.20	57.60	25.58	25.64	44.58	35.32	27.52	56.07	50.42	44.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.48	3.73	3.83	17.16	4.35	4.87	8.14	1.46	0.02	11.08	8.21	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.65	0.65	0.75	0.69	0.69	0.92	0.70	0.03	0.75	0.87	0.11
d, Delay for Lane Group [s/veh]	71.20	28.91	29.03	74.76	29.94	30.51	52.72	36.78	27.55	67.15	58.63	45.17
Lane Group LOS	E	C	C	E	C	C	D	D	C	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.22	13.02	12.72	1.57	14.25	13.07	12.33	11.29	0.34	2.42	7.42	0.67
50th-Percentile Queue Length [ft/ln]	30.38	325.43	318.07	39.24	356.24	326.65	308.13	282.20	8.49	60.38	185.41	16.68
95th-Percentile Queue Length [veh/ln]	2.19	18.93	18.57	2.83	20.44	18.99	18.08	16.80	0.61	4.35	11.88	1.20
95th-Percentile Queue Length [ft/ln]	54.68	473.35	464.31	70.63	511.01	474.85	452.07	419.95	15.29	108.68	297.07	30.02

Movement, Approach, & Intersection Results

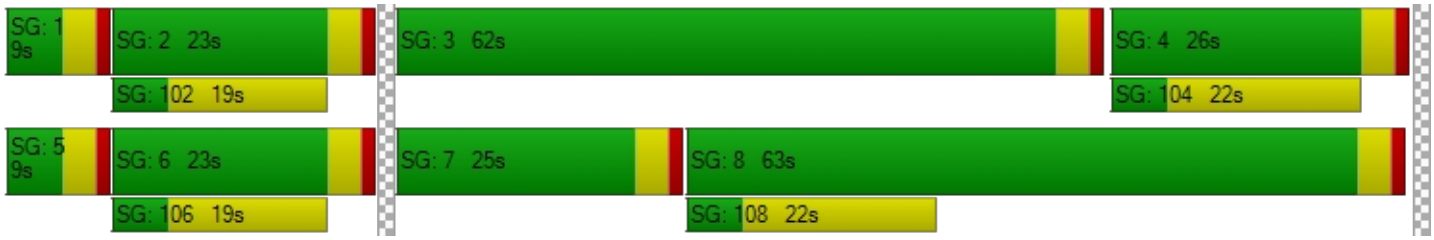
d_M, Delay for Movement [s/veh]	71.20	28.96	29.03	74.76	30.09	30.51	52.72	36.78	27.55	67.15	58.63	45.17
Movement LOS	E	C	C	E	C	C	D	D	C	E	E	D
d_A, Approach Delay [s/veh]	30.23			31.83			44.02			59.45		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	36.84											
Intersection LOS	D											
Intersection V/C	0.675											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.713	2.828	2.498	2.363
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	983	367
d_b, Bicycle Delay [s]	42.50	42.50	15.50	40.02
l_b,int, Bicycle LOS Score for Intersection	2.502	2.536	2.956	2.101
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Randall Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	127.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.048

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	2	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	162	1461	183	160	882	2	5	108	99	185	116	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	295	275	0	69	229	66	52	235	284	0	224	69
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	457	1736	183	229	1111	68	57	343	383	185	340	193
Peak Hour Factor	0.9500	0.9720	0.9500	0.9720	0.9720	0.9720	0.9720	0.9500	0.9500	0.9500	0.9500	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	447	48	59	286	17	15	90	101	49	89	50
Total Analysis Volume [veh/h]	481	1786	193	236	1143	70	59	361	403	195	358	199
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	41	0	17	27	0	9	47	0	15	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	37	37	13	23	23	5	43	11	49
g / C, Green / Cycle	0.23	0.31	0.31	0.11	0.19	0.19	0.04	0.36	0.09	0.41
(v / s)_i Volume / Saturation Flow Rate	0.27	0.36	0.37	0.13	0.22	0.04	0.03	0.44	0.11	0.31
s, saturation flow rate [veh/h]	1810	3618	1808	1810	5176	1615	1810	1738	1810	1787
c, Capacity [veh/h]	407	1115	557	196	992	310	75	623	166	730
d1, Uniform Delay [s]	46.50	41.50	41.50	53.50	48.50	40.98	56.96	38.50	54.50	30.51
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.29
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	104.10	87.93	106.87	102.26	80.23	1.69	15.96	115.76	92.44	4.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.18	1.17	1.20	1.20	1.15	0.23	0.78	1.23	1.18	0.76
d, Delay for Lane Group [s/veh]	150.60	129.43	148.37	155.76	128.73	42.67	72.92	154.26	146.94	34.95
Lane Group LOS	F	F	F	F	F	D	E	F	F	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	23.83	29.89	32.81	11.47	17.21	1.91	2.11	37.99	9.26	14.52
50th-Percentile Queue Length [ft/ln]	595.73	747.19	820.17	286.72	430.29	47.65	52.66	949.74	231.54	363.12
95th-Percentile Queue Length [veh/ln]	34.83	42.88	47.18	18.27	25.78	3.43	3.79	54.76	15.09	20.78
95th-Percentile Queue Length [ft/ln]	870.73	1071.90	1179.51	456.72	644.62	85.77	94.80	1369.11	377.37	519.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	150.60	134.49	148.37	155.76	128.73	42.67	72.92	154.26	154.26	146.94	34.95	34.95
Movement LOS	F	F	F	F	F	D	E	F	F	F	C	C
d_A, Approach Delay [s/veh]	138.73			128.97			148.42			63.99		
Approach LOS	F			F			F			E		
d_I, Intersection Delay [s/veh]	127.36											
Intersection LOS	F											
Intersection V/C	1.048											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.194	3.322	2.518	2.457
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	617	383	717	817
d_b, Bicycle Delay [s]	28.70	39.20	24.70	21.00
l_b,int, Bicycle LOS Score for Intersection	2.913	2.357	2.918	2.800
Bicycle LOS	C	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Beech Ave at Randall Ave

Control Type:	All-way stop	Delay (sec / veh):	309.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.041

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	31	376	24	45	336	43	77	327	48	19	271	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	0	0	0	0	19	20	246	14	0	238	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	376	24	45	336	62	97	573	62	19	509	47
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	99	6	12	88	16	26	151	16	5	134	12
Total Analysis Volume [veh/h]	45	396	25	47	354	65	102	603	65	20	536	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	466	466	770	605
Degree of Utilization, x	1.24	1.23	2.04	1.60

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	19.91	19.74	54.39	34.87
95th-Percentile Queue Length [ft]	497.83	493.50	1359.77	871.86
Approach Delay [s/veh]	155.98	153.29	498.82	306.03
Approach LOS	F	F	F	F
Intersection Delay [s/veh]	309.22			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 41: Randall Ave at Fontana Ave/Catawaba Ave

Control Type:	All-way stop	Delay (sec / veh):	244.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.739

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	65	444	87	22	4	34	320	22	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	65	444	87	22	4	34	320	22	1
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	17	117	23	6	1	9	84	6	0
Total Analysis Volume [veh/h]	0	68	467	92	23	4	36	337	23	1
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	650	401
Degree of Utilization, x	1.74	1.08

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	40.53	14.26
95th-Percentile Queue Length [ft]	1013.29	356.53
Approach Delay [s/veh]	366.31	101.69
Approach LOS	F	F
Intersection Delay [s/veh]	244.51	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	No					Yes				

Volumes

Name										
Base Volume Input [veh/h]	44	15	275	49	4	13	68	291	22	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	65	152	0	0	0	0	162	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	80	427	49	4	13	68	453	22	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	21	112	13	1	3	18	119	6	2
Total Analysis Volume [veh/h]	46	84	449	52	4	14	72	477	23	6
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	635	592
Degree of Utilization, x	1.71	1.60

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	39.08	34.16
95th-Percentile Queue Length [ft]	976.97	854.06
Approach Delay [s/veh]	354.52	305.24
Approach LOS	F	F
Intersection Delay [s/veh]	244.51	
Intersection LOS	F	

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	3	18	269	45	0	6	44	106	38	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	48	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	18	269	45	0	6	44	106	86	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	71	12	0	2	12	28	23	2
Total Analysis Volume [veh/h]	3	19	283	47	0	6	46	112	91	8
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	400	360	394
Degree of Utilization, x	0.88	0.46	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.87	2.30	0.98
95th-Percentile Queue Length [ft]	221.73	57.40	24.55
Approach Delay [s/veh]	50.47	18.58	
Approach LOS	F	C	
Intersection Delay [s/veh]	244.51		
Intersection LOS	F		

Intersection Level Of Service Report
Intersection 42: Randall Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.574

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	105	979	130	96	710	29	24	239	104	64	235	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	42	0	0	0	0	14	2	109	41	0	106	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	979	130	96	710	43	26	348	145	64	341	71
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	258	34	25	187	11	7	92	38	17	90	19
Total Analysis Volume [veh/h]	155	1031	137	101	747	45	27	366	153	67	359	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	46	0	14	32	0	10	42	0	18	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	68	68	8	64	64	3	22	22	6	25	25
g / C, Green / Cycle	0.10	0.56	0.56	0.07	0.53	0.53	0.02	0.19	0.19	0.05	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.09	0.31	0.31	0.06	0.21	0.21	0.01	0.10	0.09	0.04	0.19	0.05
s, saturation flow rate [veh/h]	1810	1900	1823	1810	1900	1862	1810	3618	1615	1810	1900	1615
c, Capacity [veh/h]	186	1069	1026	126	1007	987	45	673	300	88	398	338
d1, Uniform Delay [s]	52.85	16.69	16.73	55.03	16.81	16.81	57.91	44.23	43.92	56.43	46.24	39.33
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.42	2.09	2.20	11.23	1.17	1.20	12.06	0.69	1.34	12.92	7.68	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.56	0.56	0.80	0.40	0.40	0.60	0.54	0.51	0.77	0.90	0.22
d, Delay for Lane Group [s/veh]	62.27	18.77	18.92	66.26	17.98	18.00	69.97	44.92	45.25	69.35	53.92	39.65
Lane Group LOS	E	B	B	E	B	B	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.07	10.72	10.40	3.40	6.80	6.67	0.96	5.00	4.21	2.32	11.24	1.88
50th-Percentile Queue Length [ft/ln]	126.73	268.11	259.92	85.05	170.00	166.82	24.07	125.04	105.25	58.03	280.96	46.92
95th-Percentile Queue Length [veh/ln]	8.76	16.09	15.68	6.12	11.08	10.91	1.73	8.67	7.58	4.18	16.74	3.38
95th-Percentile Queue Length [ft/ln]	219.04	402.37	392.12	153.08	276.92	272.73	43.33	216.73	189.38	104.45	418.41	84.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.27	18.84	18.92	66.26	17.99	18.00	69.97	44.92	45.25	69.35	53.92	39.65
Movement LOS	E	B	B	E	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	23.93			23.45			46.25			53.84		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	32.13											
Intersection LOS	C											
Intersection V/C	0.574											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.762	2.710	2.531	2.648
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	467	633	767
d_b, Bicycle Delay [s]	25.35	35.27	28.02	22.82
l_b,int, Bicycle LOS Score for Intersection	2.651	2.296	2.010	2.386
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: Sierra Ave at Randall Ave

Control Type:	Signalized	Delay (sec / veh):	37.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	111	1336	182	118	923	78	93	302	104	153	203	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	0	0	0	0	10	10	12	46	0	12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	1336	182	118	923	88	103	314	150	153	215	96
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	352	48	31	243	23	27	83	39	40	57	25
Total Analysis Volume [veh/h]	163	1406	192	124	972	93	108	331	158	161	226	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	30	56	0	13	39	0	13	35	0	16	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	64	64	9	60	60	9	19	19	12	22	22
g / C, Green / Cycle	0.11	0.53	0.53	0.08	0.50	0.50	0.07	0.16	0.16	0.10	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.09	0.42	0.44	0.07	0.28	0.28	0.06	0.13	0.14	0.09	0.09	0.09
s, saturation flow rate [veh/h]	1810	1900	1822	1810	1900	1842	1810	1900	1697	1810	1900	1706
c, Capacity [veh/h]	194	1012	971	136	951	922	133	302	270	181	353	317
d1, Uniform Delay [s]	52.55	22.74	23.21	55.11	20.93	20.94	54.78	49.05	49.18	53.35	43.71	43.82
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.29	6.46	7.59	20.02	2.46	2.55	11.22	6.57	7.99	13.61	1.02	1.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.80	0.82	0.91	0.57	0.57	0.81	0.85	0.86	0.89	0.48	0.50
d, Delay for Lane Group [s/veh]	61.84	29.19	30.80	75.13	23.39	23.49	66.00	55.63	57.17	66.96	44.74	45.02
Lane Group LOS	E	C	C	E	C	C	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.32	19.53	19.87	4.48	11.04	10.75	3.63	8.01	7.38	5.48	4.64	4.30
50th-Percentile Queue Length [ft/ln]	132.91	488.33	496.75	111.88	275.94	268.64	90.76	200.14	184.51	136.90	115.92	107.39
95th-Percentile Queue Length [veh/ln]	9.10	26.78	27.18	7.94	16.49	16.12	6.53	12.65	11.84	9.31	8.17	7.69
95th-Percentile Queue Length [ft/ln]	227.44	669.54	679.51	198.62	412.15	403.03	163.36	316.15	295.90	232.85	204.21	192.37

Movement, Approach, & Intersection Results

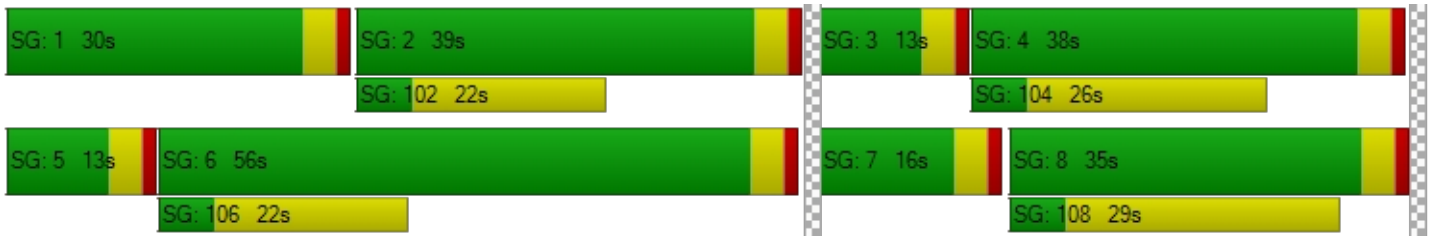
d_M, Delay for Movement [s/veh]	61.84	29.88	30.80	75.13	23.43	23.49	66.00	55.98	57.17	66.96	44.81	45.02
Movement LOS	E	C	C	E	C	C	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	32.94			28.83			58.11			52.16		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	37.78											
Intersection LOS	D											
Intersection V/C	0.730											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.034	2.924	2.525	2.536
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	583	517	567
d_b, Bicycle Delay [s]	19.27	30.10	33.00	30.82
l_b,int, Bicycle LOS Score for Intersection	3.012	2.541	2.052	1.962
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: Fourth St at I-15 SB Ramps/Ontario Mills Dr

Control Type:	Signalized	Delay (sec / veh):	77.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.031

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	133	233	434	131	316	598	915	1261	105	170	683	394
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	12	0	0	12	216
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	233	434	131	316	598	915	1273	105	170	695	610
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	61	114	34	83	157	241	335	28	45	183	161
Total Analysis Volume [veh/h]	140	245	457	138	333	629	963	1340	111	179	732	642
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	32	0	12	31	0	32	64	0	12	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	28	28	8	27	27	27	28	60	60	8	40	40
g / C, Green / Cycle	0.08	0.23	0.23	0.07	0.23	0.23	0.23	0.23	0.50	0.50	0.07	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.08	0.07	0.28	0.08	0.18	0.19	0.19	0.27	0.26	0.07	0.05	0.14	0.40
s, saturation flow rate [veh/h]	1810	3618	1615	1810	1900	1615	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	136	844	377	121	428	363	363	820	2588	808	234	1725	538
d1, Uniform Delay [s]	55.50	37.83	46.00	56.00	43.70	44.75	44.75	46.00	20.24	16.10	55.08	31.06	40.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.12	0.11	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	44.26	0.87	117.85	84.43	13.11	23.08	23.08	81.87	0.16	0.08	5.15	0.17	103.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.29	1.21	1.14	0.78	0.87	0.87	1.17	0.52	0.14	0.76	0.42	1.19
d, Delay for Lane Group [s/veh]	99.76	38.70	163.85	140.4	56.81	67.83	67.83	127.87	20.40	16.18	60.23	31.23	143.92
Lane Group LOS	F	D	F	F	E	E	E	F	C	B	E	C	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.77	3.08	23.48	6.48	10.82	11.29	11.29	21.45	8.34	1.66	2.83	5.52	31.16
50th-Percentile Queue Length [ft/ln]	144.23	77.02	586.99	161.9	270.5	282.3	282.3	536.19	208.60	41.49	70.74	138.06	778.89
95th-Percentile Queue Length [veh/ln]	9.81	5.55	34.83	11.10	16.22	16.80	16.80	31.68	13.08	2.99	5.09	9.38	44.99
95th-Percentile Queue Length [ft/ln]	245.25	138.64	870.68	277.4	405.4	420.0	420.0	792.08	327.04	74.69	127.33	234.41	1124.81

Movement, Approach, & Intersection Results

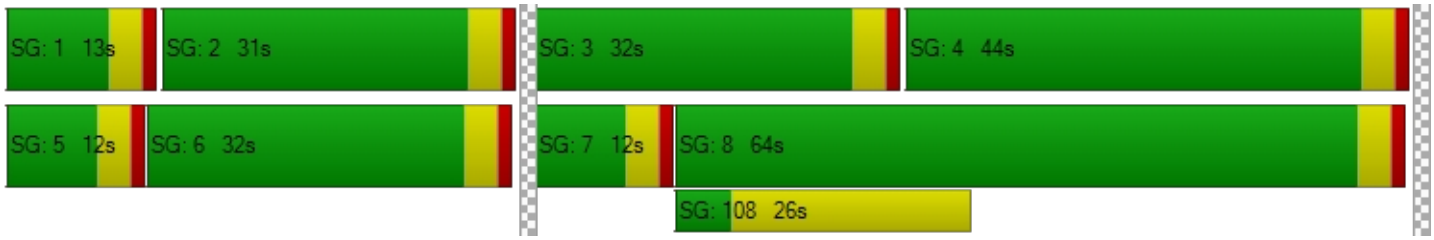
d_M, Delay for Movement [s/veh]	99.76	38.70	163.85	140.43	56.81	67.83	127.87	20.40	16.18	60.23	31.23	143.92
Movement LOS	F	D	F	F	E	E	F	C	B	E	C	F
d_A, Approach Delay [s/veh]	116.78			73.60			63.08			81.16		
Approach LOS	F			E			E			F		
d_I, Intersection Delay [s/veh]	77.44											
Intersection LOS	E											
Intersection V/C	1.031											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.706	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	450	1000	667
d_b, Bicycle Delay [s]	35.27	36.04	15.00	26.67
I_b,int, Bicycle LOS Score for Intersection	2.254	2.467	2.887	2.414
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Fourth St at I-15 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.577

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	83	54	51	179	47	402	755	367	71	41	381	165
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	237	0	0	0	12	0	0	228	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	54	51	416	47	402	755	379	71	41	609	165
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	14	13	109	12	106	199	100	19	11	160	43
Total Analysis Volume [veh/h]	87	57	54	438	49	423	795	399	75	43	641	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	27	0	30	23	0	37	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	10	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	8	20	20	20	31	72	72	4	45	45
g / C, Green / Cycle	0.07	0.07	0.07	0.17	0.17	0.17	0.26	0.60	0.60	0.03	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.03	0.13	0.13	0.15	0.23	0.08	0.05	0.02	0.15	0.16
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1827	2859	3514	5176	1615	1810	3618	1702
c, Capacity [veh/h]	122	129	109	307	310	485	896	3087	963	59	1354	637
d1, Uniform Delay [s]	54.79	53.77	53.96	47.77	47.72	48.53	43.03	10.58	10.24	57.51	27.72	27.81
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.39	2.39	3.43	4.71	4.41	5.00	3.21	0.09	0.16	15.56	0.91	1.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.44	0.49	0.79	0.79	0.87	0.89	0.13	0.08	0.73	0.41	0.41
d, Delay for Lane Group [s/veh]	62.18	56.16	57.39	52.48	52.13	53.53	46.24	10.67	10.40	73.07	28.63	29.80
Lane Group LOS	E	E	E	D	D	D	D	B	B	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.83	1.74	1.68	7.37	7.35	6.49	11.67	1.54	0.87	1.55	6.01	5.96
50th-Percentile Queue Length [ft/ln]	70.72	43.56	41.99	184.17	183.85	162.26	291.83	38.59	21.78	38.74	150.31	149.12
95th-Percentile Queue Length [veh/ln]	5.09	3.14	3.02	11.82	11.80	10.67	17.28	2.78	1.57	2.79	10.03	9.97
95th-Percentile Queue Length [ft/ln]	127.29	78.41	75.58	295.45	295.03	266.71	431.92	69.47	39.21	69.73	250.84	249.25

Movement, Approach, & Intersection Results

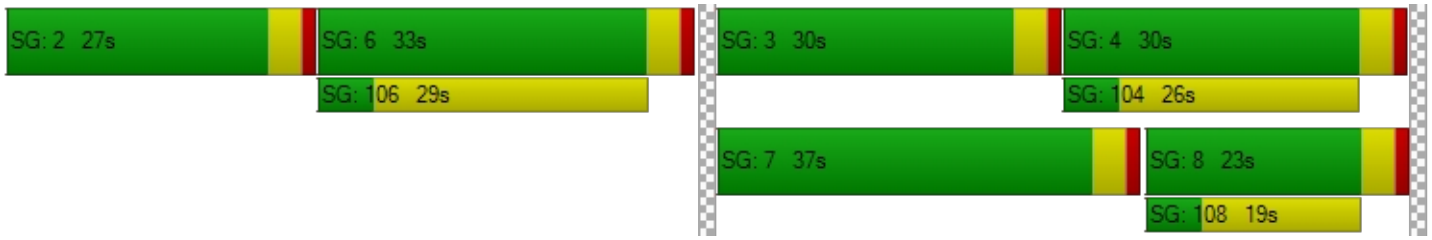
d_M, Delay for Movement [s/veh]	62.18	56.16	57.39	52.32	52.13	53.53	46.24	10.67	10.40	73.07	28.80	29.80
Movement LOS	E	E	E	D	D	D	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	59.14			52.87			32.94			31.22		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	39.69											
Intersection LOS	D											
Intersection V/C	0.577											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.235	2.783	0.000	2.853
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	383	317	433
d_b, Bicycle Delay [s]	34.50	39.20	42.50	36.82
l_b,int, Bicycle LOS Score for Intersection	1.723	3.061	2.258	2.032
Bicycle LOS	A	C	B	B

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: Fourth St/San Bernardino Ave at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	199	967	109	185	893	223	257	767	358	138	354	108
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	153	16	0	115	7	7	242	0	20	221	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	199	1120	125	185	1008	230	264	1009	358	158	575	108
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	295	33	49	265	61	69	266	94	42	151	28
Total Analysis Volume [veh/h]	209	1179	132	195	1061	242	278	1062	377	166	605	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	46	0	12	45	0	18	51	0	11	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	50	8	49	49	12	39	39	7	35	35
g / C, Green / Cycle	0.08	0.41	0.07	0.40	0.40	0.10	0.33	0.33	0.06	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.06	0.33	0.06	0.29	0.15	0.08	0.29	0.23	0.05	0.19	0.19
s, saturation flow rate [veh/h]	3514	3618	3514	3618	1615	3514	3618	1615	3514	1900	1797
c, Capacity [veh/h]	264	1493	234	1463	653	341	1190	531	205	551	521
d1, Uniform Delay [s]	54.58	30.69	55.34	30.11	25.03	53.12	38.25	35.25	55.84	37.53	37.53
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.16	0.11	0.13	0.13
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.35	4.33	7.50	3.17	1.61	4.76	2.58	2.67	7.43	1.70	1.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.79	0.83	0.73	0.37	0.82	0.89	0.71	0.81	0.67	0.67
d, Delay for Lane Group [s/veh]	59.93	35.02	62.83	33.28	26.65	57.88	40.83	37.92	63.27	39.23	39.33
Lane Group LOS	E	D	E	C	C	E	D	D	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.30	15.48	3.16	13.37	5.12	4.34	15.08	9.98	2.69	9.79	9.28
50th-Percentile Queue Length [ft/ln]	82.53	386.99	78.94	334.23	127.96	108.39	377.10	249.60	67.37	244.73	231.90
95th-Percentile Queue Length [veh/ln]	5.94	21.93	5.68	19.37	8.83	7.75	21.45	15.17	4.85	14.92	14.27
95th-Percentile Queue Length [ft/ln]	148.55	548.30	142.10	484.14	220.72	193.77	536.34	379.15	121.27	373.01	356.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.93	35.02	0.00	62.83	33.28	26.65	57.88	40.83	37.92	63.27	39.27	39.33
Movement LOS	E	D		E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	38.77			36.06			42.95			43.78		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.15											
Intersection LOS	D											
Intersection V/C	0.722											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.105	3.037	3.079	2.816
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	683	783	667
d_b, Bicycle Delay [s]	25.35	26.00	22.20	26.67
l_b,int, Bicycle LOS Score for Intersection	2.705	2.795	2.976	2.290
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 47: San Bernardino Ave at Commerce Dr

Control Type:	Signalized	Delay (sec / veh):	187.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.202

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	87	3	612	4	0	1	0	1147	50	247	378	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	195	0	0	0	0	258	0	200	241	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	3	807	4	0	1	0	1405	50	447	619	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	1	212	1	0	0	0	370	13	118	163	1
Total Analysis Volume [veh/h]	92	3	849	4	0	1	0	1479	53	471	652	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	5	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	47	0	9	47	0	9	38	0	26	55	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	24	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	47	52	0	34	34	22	56	56
g / C, Green / Cycle	0.43	0.43	0.39	0.43	0.00	0.28	0.28	0.18	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.53	0.01	0.00	0.41	0.03	0.26	0.17	0.17
s, saturation flow rate [veh/h]	1439	1509	1615	692	1810	3618	1615	1810	1900	1896
c, Capacity [veh/h]	655	769	632	395	0	1021	456	335	888	886
d1, Uniform Delay [s]	19.96	19.86	36.51	19.42	0.00	43.07	31.96	48.90	20.59	20.59
k, delay calibration	0.13	0.17	0.50	0.11	0.11	0.50	0.50	0.48	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.05	164.66	0.01	0.00	207.52	0.52	199.48	1.19	1.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.07	1.34	0.01	0.00	1.45	0.12	1.41	0.37	0.37
d, Delay for Lane Group [s/veh]	20.02	19.92	201.17	19.43	0.00	250.59	32.48	248.38	21.78	21.78
Lane Group LOS	C	B	F	B	A	F	C	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.75	0.84	46.99	0.08	0.00	44.38	1.22	28.54	6.20	6.19
50th-Percentile Queue Length [ft/ln]	18.66	21.11	1174.80	2.04	0.00	1109.38	30.45	713.38	154.99	154.68
95th-Percentile Queue Length [veh/ln]	1.34	1.52	69.80	0.15	0.00	67.01	2.19	43.44	10.28	10.27
95th-Percentile Queue Length [ft/ln]	33.58	37.99	1744.91	3.68	0.00	1675.15	54.81	1086.00	257.08	256.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.02	19.92	201.17	19.43	19.43	19.43	0.00	250.59	32.48	248.38	21.78	21.78
Movement LOS	C	B	F	B	B	B	A	F	C	F	C	C
d_A, Approach Delay [s/veh]	182.94			19.43			243.04			116.48		
Approach LOS	F			B			F			F		
d_I, Intersection Delay [s/veh]	187.47											
Intersection LOS	F											
Intersection V/C	1.202											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.601	0.000	3.061	0.000
Crosswalk LOS	B	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	567	850
d_b, Bicycle Delay [s]	19.27	19.27	30.82	19.84
l_b,int, Bicycle LOS Score for Intersection	3.117	1.568	2.824	2.489
Bicycle LOS	C	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 48: San Bernardino Ave at Access Rd/Vip Rd

Control Type:	Two-way stop	Delay (sec / veh):	25.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	153	0	1569	511	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	346	316	137	95	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	499	316	1706	606	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	131	83	449	159	0
Total Analysis Volume [veh/h]	0	525	333	1796	638	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.77	0.35	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	163.58	25.58	10.90	0.00	0.00	0.00
Movement LOS	F	D	B	A	A	A
95th-Percentile Queue Length [veh/ln]	7.29	7.29	1.61	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	182.30	182.30	40.18	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	25.58		1.70		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	5.18					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 49: San Bernardino Ave at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	76.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.997

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	73	1312	187	100	1027	253	606	874	361	108	206	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	375	0	58	359	95	137	0	0	0	0	59
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	1687	187	158	1386	348	743	874	361	108	206	147
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	444	49	42	365	92	196	230	95	28	54	39
Total Analysis Volume [veh/h]	77	1776	197	166	1459	366	782	920	380	114	217	155
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	32	0	12	34	34	40	62	0	14	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	45	45	8	47	87	36	42	9	15	15
g / C, Green / Cycle	0.05	0.37	0.37	0.07	0.39	0.72	0.30	0.35	0.08	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.04	0.36	0.37	0.09	0.28	0.23	0.43	0.25	0.06	0.10	0.11
s, saturation flow rate [veh/h]	1810	3618	1805	1810	5176	1615	1810	3618	1810	1900	1644
c, Capacity [veh/h]	90	1343	670	121	2007	1165	543	1273	140	245	212
d1, Uniform Delay [s]	56.56	37.24	37.42	56.00	31.32	6.03	42.00	33.81	54.54	50.78	50.98
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.11	19.79	31.48	180.30	2.34	0.71	208.54	0.79	10.98	6.01	8.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.98	0.99	1.38	0.73	0.31	1.44	0.72	0.82	0.80	0.83
d, Delay for Lane Group [s/veh]	75.67	57.03	68.89	236.30	33.66	6.74	250.54	34.60	65.52	56.78	59.06
Lane Group LOS	E	E	E	F	C	A	F	C	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.80	22.29	24.66	9.69	12.29	3.25	47.31	11.70	3.82	6.14	5.63
50th-Percentile Queue Length [ft/ln]	69.88	557.31	616.55	242.25	307.25	81.35	1182.64	292.53	95.44	153.41	140.64
95th-Percentile Queue Length [veh/ln]	5.03	30.04	32.81	16.21	18.04	5.86	71.17	17.31	6.87	10.20	9.52
95th-Percentile Queue Length [ft/ln]	125.78	750.89	820.16	405.28	450.98	146.43	1779.16	432.78	171.79	254.98	237.89

Movement, Approach, & Intersection Results

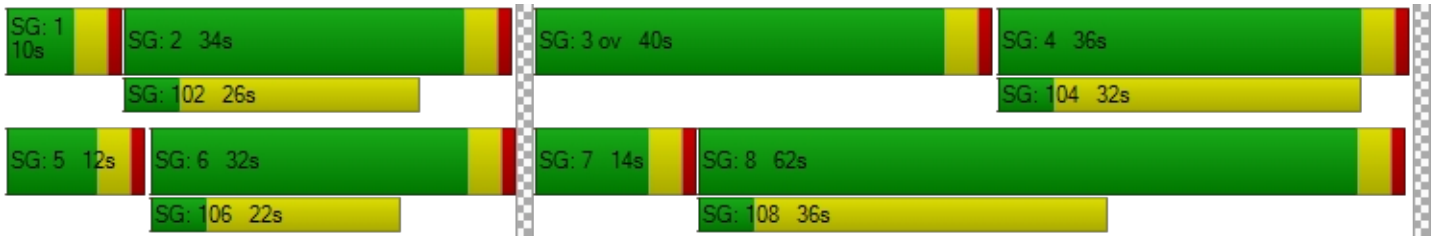
d_M, Delay for Movement [s/veh]	75.67	60.12	68.89	236.30	33.66	6.74	250.54	34.60	0.00	65.52	57.00	59.06
Movement LOS	E	E	E	F	C	A	F	C		E	E	E
d_A, Approach Delay [s/veh]	61.55			45.61			133.82			59.65		
Approach LOS	E			D			F			E		
d_I, Intersection Delay [s/veh]	76.05											
Intersection LOS	E											
Intersection V/C	0.997											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.257	3.314	2.852	2.660
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	500	967	533
d_b, Bicycle Delay [s]	35.27	33.75	16.02	32.27
l_b,int, Bicycle LOS Score for Intersection	2.687	2.655	2.964	1.961
Bicycle LOS	B	B	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 50: Beech Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.833

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	97	357	57	45	276	80	87	703	47	21	298	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	2	0	0	0	46	0	0	47	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	357	57	47	276	80	87	749	47	21	345	39
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	94	15	12	73	21	23	197	12	6	91	10
Total Analysis Volume [veh/h]	102	376	60	49	291	84	92	788	49	22	363	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	23	0	0	23	0	81	88	0	9	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	50	50	8	56	3	51	51
g / C, Green / Cycle	0.41	0.41	0.07	0.47	0.02	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.38	0.28	0.05	0.45	0.01	0.19	0.03
s, saturation flow rate [veh/h]	1432	1505	1810	1881	1810	1900	1615
c, Capacity [veh/h]	626	654	121	876	39	799	679
d1, Uniform Delay [s]	33.90	27.37	55.06	30.86	58.13	24.89	20.66
k, delay calibration	0.50	0.50	0.11	0.19	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.28	4.91	9.45	10.88	11.85	0.40	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.65	0.76	0.96	0.56	0.45	0.06
d, Delay for Lane Group [s/veh]	48.18	32.28	64.51	41.74	69.98	25.29	20.69
Lane Group LOS	D	C	E	D	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	17.20	10.39	3.06	25.16	0.79	7.45	0.70
50th-Percentile Queue Length [ft/ln]	430.00	259.63	76.39	628.92	19.79	186.23	17.42
95th-Percentile Queue Length [veh/ln]	24.00	15.67	5.50	33.38	1.42	11.93	1.25
95th-Percentile Queue Length [ft/ln]	600.04	391.76	137.50	834.56	35.62	298.13	31.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.18	48.18	48.18	32.28	32.28	32.28	64.51	41.74	41.74	69.98	25.29	20.69
Movement LOS	D	D	D	C	C	C	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	48.18			32.28			43.99			27.16		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	39.73											
Intersection LOS	D											
Intersection V/C	0.833											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.169	2.185	2.652	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	317	317	1400	200
d_b, Bicycle Delay [s]	42.50	42.50	5.40	48.60
l_b,int, Bicycle LOS Score for Intersection	2.447	2.259	3.092	2.263
Bicycle LOS	B	B	C	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: San Bernardino Ave at Fontana Ave/Elm Ave

Control Type:	Signalized	Delay (sec / veh):	61.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.900

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	6	64	410	82	3	0	52	296	32	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	92	410	82	3	0	52	296	32	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	24	108	22	1	0	14	78	8	3
Total Analysis Volume [veh/h]	6	97	432	86	3	0	55	312	34	14
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	52	0	0	0	0	52	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C
C, Cycle Length [s]	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00
g_i, Effective Green Time [s]	48	48
g / C, Green / Cycle	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.43	0.30
s, saturation flow rate [veh/h]	1460	1405
c, Capacity [veh/h]	619	596
d1, Uniform Delay [s]	37.96	28.68
k, delay calibration	0.50	0.27
I, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	38.20	3.66
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	0.70
d, Delay for Lane Group [s/veh]	76.16	32.34
Lane Group LOS	F	C
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	25.04	10.27
50th-Percentile Queue Length [ft/ln]	625.93	256.72
95th-Percentile Queue Length [veh/ln]	33.45	15.52
95th-Percentile Queue Length [ft/ln]	836.14	388.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.16	76.16	76.16	76.16	76.16	32.34	32.34	32.34	32.34	32.34
Movement LOS	E	E	E	E	E	C	C	C	C	C
d_A, Approach Delay [s/veh]	76.16					32.34				
Approach LOS	E					C				
d_I, Intersection Delay [s/veh]	61.01									
Intersection LOS	E									
Intersection V/C	0.900									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.279	2.343
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	800
d_b, Bicycle Delay [s]	21.60	21.60
l_b,int, Bicycle LOS Score for Intersection	2.424	2.131
Bicycle LOS	B	B

Intersection Setup

Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					No				

Volumes

Name										
Base Volume Input [veh/h]	9	292	450	59	1	7	36	207	38	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	19	29	0	0	0	19	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	292	469	88	1	7	36	226	38	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	77	123	23	0	2	9	59	10	3
Total Analysis Volume [veh/h]	9	307	494	93	1	7	38	238	40	11
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissiv	Permissiv	Permissiv	Permissiv	ProtPerm	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	15	0	40	0	0	9	0	34	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	45	37	45	30	30
g / C, Green / Cycle	0.38	0.31	0.38	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.24	0.32	0.05	0.13	0.03
s, saturation flow rate [veh/h]	1310	1848	971	1900	1615
c, Capacity [veh/h]	463	569	198	475	404
d1, Uniform Delay [s]	31.55	41.51	29.90	38.58	34.85
k, delay calibration	0.50	0.50	0.34	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.95	46.38	1.79	3.74	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	1.03	0.23	0.50	0.13
d, Delay for Lane Group [s/veh]	39.49	87.89	31.69	42.33	35.49
Lane Group LOS	D	F	C	D	D
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.89	23.93	0.93	6.51	1.24
50th-Percentile Queue Length [ft/ln]	197.33	598.15	23.18	162.78	30.92
95th-Percentile Queue Length [veh/ln]	12.50	32.64	1.67	10.70	2.23
95th-Percentile Queue Length [ft/ln]	312.51	816.04	41.73	267.40	55.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.49	39.49	87.89	87.89	87.89	31.69	31.69	42.33	35.49	35.49
Movement LOS	D	D	F	F	F	C	C	D	D	D
d_A, Approach Delay [s/veh]	70.97					39.85				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	61.01									
Intersection LOS	E									
Intersection V/C	0.900									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.574	0.000
Crosswalk LOS	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	500
d_b, Bicycle Delay [s]	29.40	33.75
l_b,int, Bicycle LOS Score for Intersection	2.543	2.030
Bicycle LOS	B	B

Intersection Setup

Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	No					No				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	8	18	170	13	4	4	8	58	69	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	18	170	13	4	4	8	58	69	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	5	45	3	1	1	2	15	18	1
Total Analysis Volume [veh/h]	8	19	179	14	4	4	8	61	73	2
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0					0				
v_di, Inbound Pedestrian Volume crossing th	0					0				
v_co, Outbound Pedestrian Volume along th	0					0				
v_ci, Inbound Pedestrian Volume along the le	0					0				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R
C, Cycle Length [s]	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	15
g / C, Green / Cycle	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.14	0.04	0.05
s, saturation flow rate [veh/h]	1629	1765	1615
c, Capacity [veh/h]	237	256	202
d1, Uniform Delay [s]	53.29	47.77	48.17
k, delay calibration	0.12	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	18.00	0.61	1.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.29	0.37
d, Delay for Lane Group [s/veh]	71.28	48.38	49.31
Lane Group LOS	E	D	D
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.01	2.04	2.13
50th-Percentile Queue Length [ft/ln]	200.16	50.96	53.27
95th-Percentile Queue Length [veh/ln]	12.65	3.67	3.84
95th-Percentile Queue Length [ft/ln]	316.17	91.73	95.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.28	71.28	71.28	71.28	71.28	48.38	48.38	48.38	49.31	49.31
Movement LOS	E	E	E	E	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	71.28					48.85				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	61.01									
Intersection LOS	E									
Intersection V/C	0.900									

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.075	2.399
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250
d_b, Bicycle Delay [s]	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	1.875	1.794
Bicycle LOS	A	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: San Bernardino Ave at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	34.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.593

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	194	1108	111	68	694	28	59	392	72	86	246	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	29	12	0	0	19	0	0	19	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	194	1120	111	97	706	28	59	411	72	86	265	122
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	295	29	26	186	7	16	108	19	23	70	32
Total Analysis Volume [veh/h]	204	1179	117	102	743	29	62	433	76	91	279	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	61	0	12	39	0	21	35	0	12	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	69	69	8	62	62	5	19	19	8	21	21
g / C, Green / Cycle	0.13	0.58	0.58	0.07	0.51	0.51	0.05	0.16	0.16	0.06	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.11	0.34	0.35	0.06	0.20	0.20	0.03	0.14	0.14	0.05	0.11	0.11
s, saturation flow rate [veh/h]	1810	1900	1841	1810	1900	1875	1810	1900	1803	1810	1900	1703
c, Capacity [veh/h]	237	1095	1061	121	973	960	83	305	289	114	338	302
d1, Uniform Delay [s]	51.06	16.43	16.51	55.39	17.95	17.95	56.56	49.00	49.07	55.45	45.67	45.82
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.86	2.42	2.55	14.59	1.22	1.24	12.48	6.74	7.44	11.81	1.93	2.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.60	0.60	0.85	0.40	0.40	0.75	0.85	0.86	0.80	0.63	0.64
d, Delay for Lane Group [s/veh]	59.93	18.84	19.06	69.97	19.18	19.19	69.04	55.75	56.51	67.26	47.60	48.12
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.58	11.96	11.78	3.54	6.85	6.77	2.15	8.14	7.85	3.09	6.03	5.59
50th-Percentile Queue Length [ft/ln]	164.60	298.99	294.50	88.50	171.29	169.17	53.64	203.44	196.27	77.27	150.85	139.72
95th-Percentile Queue Length [veh/ln]	10.79	17.63	17.41	6.37	11.14	11.03	3.86	12.82	12.45	5.56	10.06	9.47
95th-Percentile Queue Length [ft/ln]	269.81	440.78	435.22	159.30	278.61	275.83	96.56	320.39	311.15	139.08	251.57	236.65

Movement, Approach, & Intersection Results

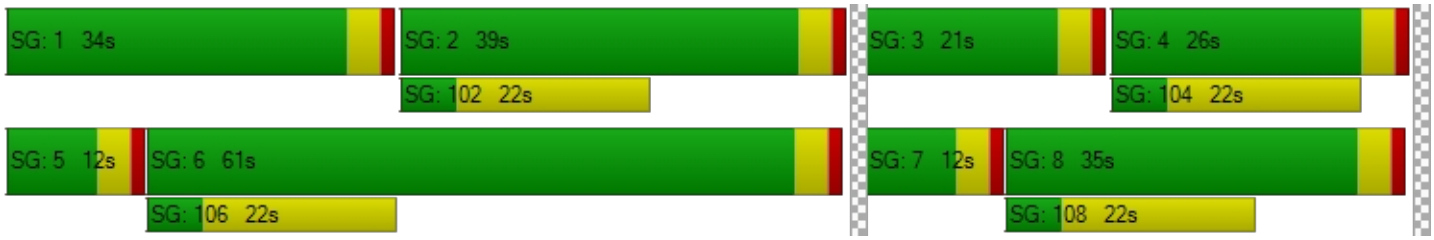
d_M, Delay for Movement [s/veh]	59.93	18.94	19.06	69.97	19.18	19.19	69.04	56.05	56.51	67.26	47.72	48.12
Movement LOS	E	B	B	E	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	24.52			25.11			57.52			51.39		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	34.03											
Intersection LOS	C											
Intersection V/C	0.593											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.785	2.752	2.526	2.655
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	950	583	517	367
d_b, Bicycle Delay [s]	16.54	30.10	33.00	40.02
l_b,int, Bicycle LOS Score for Intersection	2.797	2.281	2.031	1.970
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: Sierra Ave at San Bernardino Ave

Control Type:	Signalized	Delay (sec / veh):	42.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	206	1262	412	79	1007	70	156	382	154	260	317	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	19	22	0	10	24	0	0	2	17	0	2	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	225	1284	412	89	1031	70	156	384	171	260	319	104
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	338	108	23	271	18	41	101	45	68	84	27
Total Analysis Volume [veh/h]	237	1352	434	94	1085	74	164	404	180	274	336	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	50	0	11	40	0	29	36	0	23	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	17	0	0	27	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	56	56	7	46	46	13	22	22	19	28	28
g / C, Green / Cycle	0.14	0.47	0.47	0.06	0.38	0.38	0.11	0.18	0.18	0.16	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.13	0.37	0.27	0.05	0.30	0.05	0.09	0.16	0.16	0.15	0.12	0.12
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1705	1810	1900	1743
c, Capacity [veh/h]	256	1682	751	106	1381	616	196	352	315	287	447	410
d1, Uniform Delay [s]	50.87	27.43	23.49	56.12	32.77	24.04	52.47	47.53	47.58	50.09	39.97	40.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.16	0.17	0.16	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.34	4.19	3.23	21.01	4.57	0.40	9.11	9.83	11.30	21.29	0.93	1.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.80	0.58	0.89	0.79	0.12	0.84	0.87	0.88	0.96	0.52	0.52
d, Delay for Lane Group [s/veh]	64.21	31.61	26.72	77.13	37.34	24.44	61.58	57.36	58.88	71.38	40.90	41.03
Lane Group LOS	E	C	C	E	D	C	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.97	17.11	9.54	3.44	14.61	1.44	5.34	9.85	9.02	9.82	6.07	5.62
50th-Percentile Queue Length [ft/ln]	199.16	427.68	238.54	86.06	365.21	36.06	133.48	246.36	225.55	245.56	151.82	140.43
95th-Percentile Queue Length [veh/ln]	12.60	23.89	14.61	6.20	20.88	2.60	9.13	15.00	13.95	14.96	10.11	9.50
95th-Percentile Queue Length [ft/ln]	314.88	597.26	365.19	154.90	521.91	64.91	228.22	375.06	348.71	374.05	252.86	237.60

Movement, Approach, & Intersection Results

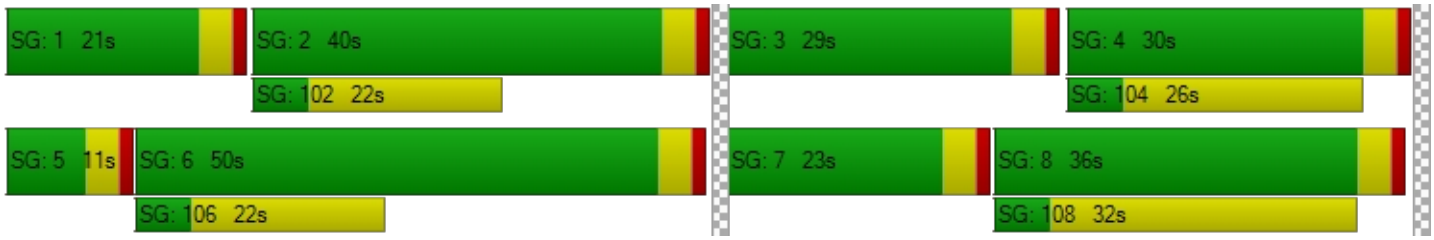
d_M, Delay for Movement [s/veh]	64.21	31.61	26.72	77.13	37.34	24.44	61.58	57.72	58.88	71.38	40.94	41.03
Movement LOS	E	C	C	E	D	C	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	34.38			39.56			58.85			52.55		
Approach LOS	C			D			E			D		
d_I, Intersection Delay [s/veh]	42.36											
Intersection LOS	D											
Intersection V/C	0.745											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.175	2.936	2.587	2.637
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	600	533	433
d_b, Bicycle Delay [s]	22.82	29.40	32.27	36.82
l_b,int, Bicycle LOS Score for Intersection	3.229	2.593	2.177	2.153
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 54: Beech Ave at Fontana Ave

Control Type:	All-way stop	Delay (sec / veh):	249.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.025

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	426	330	4	363	26	55	337	11	244	86	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	426	330	4	363	26	55	337	11	244	86	50
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	112	87	1	96	7	14	89	3	64	23	13
Total Analysis Volume [veh/h]	0	448	347	4	382	27	58	355	12	257	91	53
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	795	413	425	359	401
Degree of Utilization, x	2.03	1.08	1.13	0.97	0.13

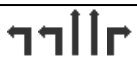
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	55.66	14.44	15.95	10.77	0.45
95th-Percentile Queue Length [ft]	1391.56	361.04	398.65	269.14	11.29
Approach Delay [s/veh]	490.98	99.56	116.02	64.59	
Approach LOS	F	F	F	F	
Intersection Delay [s/veh]	249.10				
Intersection LOS	F				

Intersection Level Of Service Report
Intersection 55: Valley Blvd at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	38.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.710

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	288	1211	252	138	1319	34	84	523	381	198	281	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	169	0	0	135	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	1380	252	138	1454	34	84	523	381	198	281	122
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	363	66	36	383	9	22	138	100	52	74	32
Total Analysis Volume [veh/h]	303	1453	265	145	1531	36	88	551	401	208	296	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	45	0	15	44	0	19	48	0	12	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	10	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	52	52	11	51	51	8	33	33	8	33	33
g / C, Green / Cycle	0.10	0.43	0.43	0.09	0.43	0.43	0.06	0.27	0.27	0.07	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.09	0.32	0.32	0.08	0.29	0.29	0.05	0.15	0.25	0.06	0.08	0.08
s, saturation flow rate [veh/h]	3514	3618	1755	1810	3618	1878	1810	3618	1615	3514	3618	1615
c, Capacity [veh/h]	351	1567	760	166	1537	798	115	996	445	234	1008	450
d1, Uniform Delay [s]	53.19	28.30	28.45	53.82	27.78	27.78	55.33	37.18	41.92	55.55	34.01	33.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.22	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.29	3.12	6.52	13.21	2.35	4.48	10.23	0.48	12.91	10.82	0.16	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.74	0.74	0.87	0.67	0.67	0.77	0.55	0.90	0.89	0.29	0.28
d, Delay for Lane Group [s/veh]	59.47	31.42	34.97	67.02	30.13	32.26	65.56	37.66	54.83	66.38	34.17	34.26
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.80	14.21	14.73	4.93	12.25	13.19	2.95	6.98	12.95	3.47	3.43	2.98
50th-Percentile Queue Length [ft/ln]	120.07	355.31	368.21	123.17	306.21	329.79	73.73	174.59	323.69	86.81	85.77	74.56
95th-Percentile Queue Length [veh/ln]	8.40	20.40	21.02	8.57	17.99	19.15	5.31	11.32	18.85	6.25	6.18	5.37
95th-Percentile Queue Length [ft/ln]	209.92	509.88	525.56	214.17	449.70	478.70	132.72	282.94	471.22	156.26	154.38	134.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.47	32.15	34.97	67.02	30.82	32.26	65.56	37.66	54.83	66.38	34.17	34.26
Movement LOS	E	C	C	E	C	C	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	36.62			33.92			46.64			44.79		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	38.65											
Intersection LOS	D											
Intersection V/C	0.710											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	3.080	2.740	2.831
Crosswalk LOS	F	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	683	667	733	617
d_b, Bicycle Delay [s]	26.00	26.67	24.07	28.70
l_b,int, Bicycle LOS Score for Intersection	2.671	2.501	2.418	2.081
Bicycle LOS	B	B	B	B

Sequence

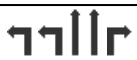
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 56: Valley Blvd at Commerce Dr/I-10 Ramps

Control Type:	Signalized	Delay (sec / veh):	84.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.019

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	245	803	754	12	855	73	143	496	334	804	496	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	195	0	0	200	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	245	998	754	12	1055	73	143	496	334	804	496	80
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	263	198	3	278	19	38	131	88	212	131	21
Total Analysis Volume [veh/h]	258	1051	794	13	1111	77	151	522	352	846	522	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	56	0	9	51	0	32	26	0	29	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	55	55	2	47	47	12	22	22	25	35	35
g / C, Green / Cycle	0.08	0.46	0.46	0.01	0.39	0.39	0.10	0.18	0.18	0.21	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.07	0.55	0.49	0.01	0.32	0.32	0.08	0.14	0.22	0.24	0.14	0.05
s, saturation flow rate [veh/h]	3514	1900	1615	1810	1900	1857	1810	3618	1615	3514	3618	1615
c, Capacity [veh/h]	293	874	743	27	744	727	183	663	296	732	1050	469
d1, Uniform Delay [s]	54.41	32.40	32.40	58.63	32.46	32.48	52.87	46.76	49.00	47.50	35.31	31.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.36	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.49	102.14	53.02	12.34	9.14	9.39	8.89	2.12	106.73	73.75	0.37	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	1.20	1.07	0.48	0.81	0.81	0.82	0.79	1.19	1.16	0.50	0.18
d, Delay for Lane Group [s/veh]	62.90	134.54	85.42	70.96	41.60	41.87	61.76	48.89	155.73	121.25	35.68	32.06
Lane Group LOS	E	F	F	E	D	D	E	D	F	F	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.20	49.24	31.72	0.49	17.16	16.85	4.92	7.62	17.60	18.37	6.38	1.86
50th-Percentile Queue Length [ft/ln]	104.94	1231.07	793.05	12.14	428.96	421.17	122.91	190.47	440.05	459.19	159.56	46.56
95th-Percentile Queue Length [veh/ln]	7.56	69.33	43.10	0.87	23.95	23.58	8.55	12.15	26.62	27.37	10.53	3.35
95th-Percentile Queue Length [ft/ln]	188.90	1733.36	1077.40	21.86	598.79	589.45	213.82	303.64	665.49	684.34	263.14	83.80

Movement, Approach, & Intersection Results

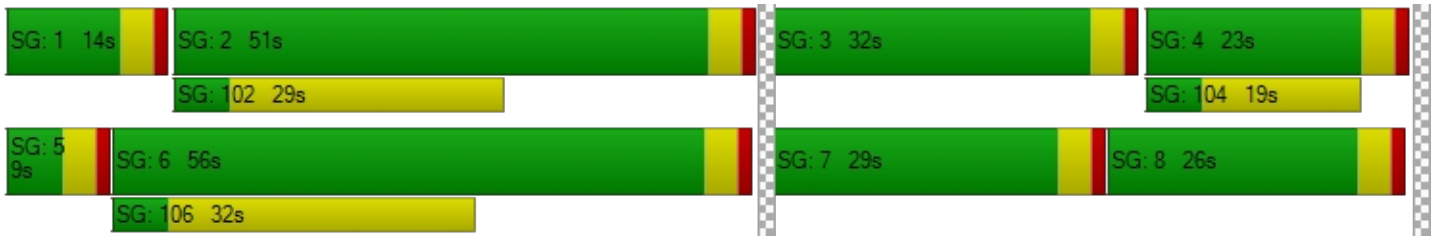
d_M, Delay for Movement [s/veh]	62.90	134.54	85.42	70.96	41.73	41.87	61.76	48.89	155.73	121.25	35.68	32.06
Movement LOS	E	F	F	E	D	D	E	D	F	F	D	C
d_A, Approach Delay [s/veh]	107.21			42.05			87.47			85.33		
Approach LOS	F			D			F			F		
d_I, Intersection Delay [s/veh]	84.68											
Intersection LOS	F											
Intersection V/C	1.019											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.753	2.871	3.080
Crosswalk LOS	F	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	783	367	317
d_b, Bicycle Delay [s]	19.27	22.20	40.02	42.50
l_b,int, Bicycle LOS Score for Intersection	5.030	2.550	2.405	2.758
Bicycle LOS	F	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 57: Valley Blvd at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	75.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.086

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	277	1194	889	112	1219	75	199	506	396	638	407	166
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	313	0	65	295	0	0	0	0	0	0	62
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	277	1507	889	177	1514	75	199	506	396	638	407	228
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	397	234	47	398	20	52	133	104	168	107	60
Total Analysis Volume [veh/h]	292	1586	936	186	1594	79	209	533	417	672	428	240
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	44	0	14	41	0	14	40	40	22	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	0	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	55	55	10	52	52	9	21	38	18	30	30
g / C, Green / Cycle	0.11	0.45	0.45	0.08	0.43	0.43	0.08	0.18	0.32	0.15	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.44	0.58	0.10	0.31	0.05	0.06	0.15	0.26	0.19	0.19	0.19
s, saturation flow rate [veh/h]	3514	3618	1615	1810	5176	1615	3514	3618	1615	3514	1900	1675
c, Capacity [veh/h]	381	1643	734	151	2222	693	266	648	518	527	482	425
d1, Uniform Delay [s]	52.03	31.82	32.74	55.00	28.24	20.55	54.51	47.42	37.32	51.00	41.05	41.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.48	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.26	15.33	134.58	117.27	2.03	0.33	5.12	2.70	12.00	127.02	2.16	2.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.97	1.28	1.23	0.72	0.11	0.79	0.82	0.81	1.27	0.73	0.74
d, Delay for Lane Group [s/veh]	55.29	47.15	167.33	172.27	30.27	20.88	59.63	50.12	49.32	178.02	43.21	43.81
Lane Group LOS	E	D	F	F	C	C	E	D	D	F	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.45	25.10	47.99	9.46	12.80	1.40	3.29	7.90	12.84	17.19	9.80	8.87
50th-Percentile Queue Length [ft/ln]	111.15	627.38	1199.70	236.60	319.99	35.10	82.30	197.44	321.00	429.76	245.11	221.85
95th-Percentile Queue Length [veh/ln]	7.90	33.31	69.95	15.56	18.67	2.53	5.93	12.51	18.72	26.62	14.94	13.76
95th-Percentile Queue Length [ft/ln]	197.60	832.77	1748.68	389.00	466.68	63.17	148.15	312.67	467.91	665.40	373.49	343.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.29	47.15	167.33	172.27	30.27	20.88	59.63	50.12	49.32	178.02	43.32	43.81
Movement LOS	E	D	F	F	C	C	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	87.97			44.08			51.55			110.96		
Approach LOS	F			D			D			F		
d_I, Intersection Delay [s/veh]	75.00											
Intersection LOS	E											
Intersection V/C	1.086											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.460	3.215	2.979	3.026
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	617	600	733
d_b, Bicycle Delay [s]	26.67	28.70	29.40	24.07
l_b,int, Bicycle LOS Score for Intersection	3.881	2.582	2.516	2.665
Bicycle LOS	D	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 58: Valley Blvd at Fontana Ave

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.490

Intersection Setup

Name												
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	No				No				No			
Crosswalk	Yes				No				Yes			

Volumes

Name												
Base Volume Input [veh/h]	15	9	4	26	3	46	4	21	48	412	1196	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	65	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	9	4	26	3	46	4	21	48	412	1261	16
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	2	1	7	1	12	1	6	13	108	332	4
Total Analysis Volume [veh/h]	16	9	4	27	3	48	4	22	51	434	1327	17
Presence of On-Street Parking	No			No	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			
v_di, Inbound Pedestrian Volume crossing th	0				0				0			
v_co, Outbound Pedestrian Volume along th	0				0				0			
v_ci, Inbound Pedestrian Volume along the le	0				0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	0				0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	0	0	6	0	7	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	0	5	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	0	5	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0
Split [s]	0	19	0	0	0	0	19	0	9	0	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	10	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Minimum Recall		No					No		Yes		No	
Maximum Recall		No					No		No		No	
Pedestrian Recall		No					No		No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	89	84	84
g / C, Green / Cycle	0.06	0.06	0.74	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.03	0.05	0.57	0.35	0.36
s, saturation flow rate [veh/h]	1780	1508	854	1900	1892
c, Capacity [veh/h]	146	141	660	1324	1319
d1, Uniform Delay [s]	54.70	55.76	7.46	8.52	8.54
k, delay calibration	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.63	3.25	7.12	1.39	1.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.55	0.73	0.51	0.51
d, Delay for Lane Group [s/veh]	56.34	59.01	14.58	9.91	9.95
Lane Group LOS	E	E	B	A	A
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.71	2.43	5.04	8.01	8.02
50th-Percentile Queue Length [ft/ln]	42.73	60.78	126.02	200.36	200.62
95th-Percentile Queue Length [veh/ln]	3.08	4.38	8.72	12.66	12.67
95th-Percentile Queue Length [ft/ln]	76.92	109.40	218.08	316.43	316.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.34	56.34	56.34	56.34	59.01	59.01	59.01	59.01	14.58	14.58	9.93	9.95
Movement LOS	E	E	E	E	E	E	E	E	B	B	A	A
d_A, Approach Delay [s/veh]	56.34				59.01				11.16			
Approach LOS	E				E				B			
d_I, Intersection Delay [s/veh]	15.89											
Intersection LOS	B											
Intersection V/C	0.490											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	1.777	0.000	2.919
Crosswalk LOS	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	250	500
d_b, Bicycle Delay [s]	45.94	45.94	33.75
l_b,int, Bicycle LOS Score for Intersection	1.607	1.607	2.710
Bicycle LOS	A	A	B

Intersection Setup

Name								
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Curb Present	No				No			
Crosswalk	No				Yes			

Volumes

Name								
Base Volume Input [veh/h]	11	559	148	26	6	7	105	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	62	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	621	148	26	6	7	105	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	163	39	7	2	2	28	1
Total Analysis Volume [veh/h]	12	654	156	27	6	7	111	2
Presence of On-Street Parking	No			No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			
v_di, Inbound Pedestrian Volume crossing th	0				0			
v_co, Outbound Pedestrian Volume along th	0				0			
v_ci, Inbound Pedestrian Volume along the le	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	0	0	0	9	0	0
Auxiliary Signal Groups								
Lead / Lag	Lead	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	0	5	0	0
Maximum Green [s]	30	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	9	34	0	0	0	58	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No		
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	No	No				No		
Maximum Recall	No	No				No		
Pedestrian Recall	No	No				No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	73	73	73	11
g / C, Green / Cycle	0.01	0.61	0.61	0.61	0.09
(v / s)_i Volume / Saturation Flow Rate	0.01	0.15	0.19	0.11	0.08
s, saturation flow rate [veh/h]	1810	1900	1900	1615	1637
c, Capacity [veh/h]	25	1152	1152	979	156
d1, Uniform Delay [s]	58.73	11.01	11.49	10.50	53.23
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.21	0.53	0.71	0.42	9.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.25	0.31	0.19	0.81
d, Delay for Lane Group [s/veh]	71.93	11.54	12.20	10.92	62.81
Lane Group LOS	E	B	B	B	E
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.45	3.73	4.79	2.23	4.14
50th-Percentile Queue Length [ft/ln]	11.37	93.33	119.87	55.83	103.54
95th-Percentile Queue Length [veh/ln]	0.82	6.72	8.39	4.02	7.45
95th-Percentile Queue Length [ft/ln]	20.47	168.00	209.64	100.50	186.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.93	11.91	12.20	10.92	62.81	62.81	62.81	62.81
Movement LOS	E	B	B	B	E	E	E	E
d_A, Approach Delay [s/veh]	12.54				62.81			
Approach LOS	B				E			
d_I, Intersection Delay [s/veh]	15.89							
Intersection LOS	B							
Intersection V/C	0.490							

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.521
Crosswalk LOS	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	900
d_b, Bicycle Delay [s]	33.75	18.15
l_b,int, Bicycle LOS Score for Intersection	2.238	1.764
Bicycle LOS	B	A

Sequence

Ring 1	-	2	3	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 59: Beech Ave at Valley Blvd

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	551.544

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	211	275	422	360	0	219	325	1125	551	265	571	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	65	0	0	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	211	275	422	360	0	219	325	1190	551	265	633	167
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	72	111	95	0	58	86	313	145	70	167	44
Total Analysis Volume [veh/h]	222	289	444	379	0	231	342	1253	580	279	666	176
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	334.50	551.54	1.59	0.00	0.00	0.39	0.43	0.01	0.01	0.83	0.01	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	10000.0	10000.0	10000.0	15.06	12.78	0.00	0.00	50.84	0.00	0.00
Movement LOS	F	F	F	F	F	C	B	A	A	F	A	A
95th-Percentile Queue Length [veh/ln]	122.17	122.17	122.17	50.21	50.21	1.87	2.15	0.00	0.00	7.21	0.00	0.00
95th-Percentile Queue Length [ft/ln]	3054.30	3054.30	3054.30	1255.15	1255.15	46.73	53.71	0.00	0.00	180.36	0.00	0.00
d_A, Approach Delay [s/veh]	10000.00			6218.82			2.01			12.65		
Approach LOS	F			F			A			B		
d_I, Intersection Delay [s/veh]	2748.82											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: Valley Blvd at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	48.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.803

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	619	1120	319	108	655	46	78	1189	454	177	844	208
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	62	12	0	0	12	0	0	0	65	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	681	1132	319	108	667	46	78	1189	519	177	844	208
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	179	298	84	28	176	12	21	313	137	47	222	55
Total Analysis Volume [veh/h]	717	1192	336	114	702	48	82	1252	546	186	888	219
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	50	0	12	33	0	16	47	0	11	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	46	46	8	29	29	5	43	43	7	45	45
g / C, Green / Cycle	0.21	0.38	0.38	0.07	0.24	0.24	0.04	0.36	0.36	0.06	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.20	0.33	0.21	0.06	0.20	0.20	0.02	0.35	0.34	0.05	0.30	0.30
s, saturation flow rate [veh/h]	3514	3618	1615	1810	1900	1858	3514	3618	1615	3514	1900	1772
c, Capacity [veh/h]	732	1388	620	121	460	450	140	1295	578	205	715	667
d1, Uniform Delay [s]	47.24	33.98	28.77	55.78	43.06	43.06	56.63	37.83	37.37	56.18	33.36	33.47
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.42	0.11	0.32	0.32
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.35	7.08	3.38	26.66	15.37	15.69	3.82	6.21	23.25	13.93	5.91	6.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.86	0.54	0.95	0.82	0.82	0.58	0.97	0.94	0.91	0.80	0.80
d, Delay for Lane Group [s/veh]	58.59	41.06	32.15	82.45	58.42	58.75	60.45	44.04	60.62	70.11	39.27	40.07
Lane Group LOS	E	D	C	F	E	E	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.74	17.06	8.07	4.33	12.56	12.33	1.30	18.85	19.01	3.20	15.77	14.98
50th-Percentile Queue Length [ft/ln]	293.51	426.50	201.84	108.19	314.12	308.20	32.44	471.15	475.23	79.89	394.21	374.50
95th-Percentile Queue Length [veh/ln]	17.36	23.83	12.73	7.74	18.38	18.09	2.34	25.97	26.16	5.75	22.28	21.33
95th-Percentile Queue Length [ft/ln]	433.99	595.85	318.33	193.49	459.46	452.15	58.39	649.14	653.99	143.80	557.02	533.18

Movement, Approach, & Intersection Results

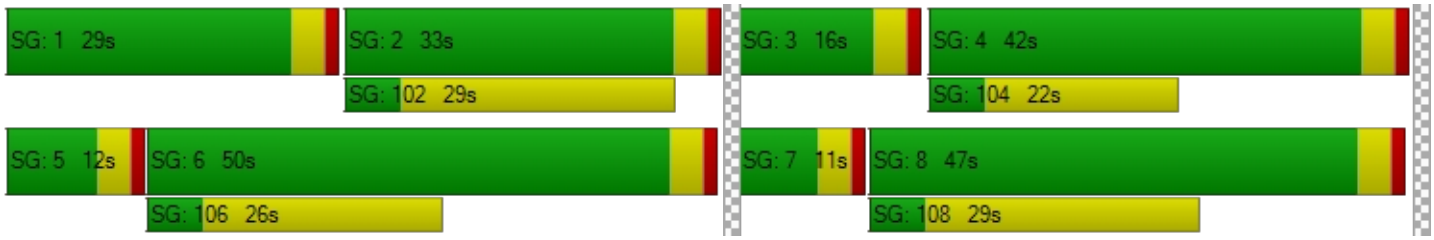
d_M, Delay for Movement [s/veh]	58.59	41.06	32.15	82.45	58.57	58.75	60.45	44.04	60.62	70.11	39.56	40.07
Movement LOS	E	D	C	F	E	E	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	45.33			61.73			49.57			44.04		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	48.59											
Intersection LOS	D											
Intersection V/C	0.803											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.122	2.775	3.101	3.106
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	483	717	633
d_b, Bicycle Delay [s]	22.82	34.50	24.70	28.02
l_b,int, Bicycle LOS Score for Intersection	3.412	2.272	3.111	2.626
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: Sierra Ave at Valley Blvd

Control Type:	Signalized	Delay (sec / veh):	53.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.897

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	288	1361	814	177	1363	102	333	967	247	709	715	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	29	0	12	29	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	1390	814	189	1392	102	333	967	247	709	715	139
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	366	214	50	366	27	88	254	65	187	188	37
Total Analysis Volume [veh/h]	303	1463	857	199	1465	107	351	1018	260	746	753	146
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	14	40	40	10	36	0	34	43	0	27	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	27	0	0	34	0	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	10	43	70	6	39	39	15	32	32	23	41	51
g / C, Green / Cycle	0.08	0.35	0.58	0.05	0.32	0.32	0.12	0.27	0.27	0.19	0.34	0.42
(v / s)_i Volume / Saturation Flow Rate	0.09	0.28	0.53	0.06	0.29	0.29	0.10	0.24	0.24	0.21	0.21	0.05
s, saturation flow rate [veh/h]	3514	5176	1615	3514	3618	1835	3514	3618	1709	3514	3618	2859
c, Capacity [veh/h]	293	1833	935	176	1161	589	431	980	463	674	1229	1210
d1, Uniform Delay [s]	55.00	34.89	22.64	57.00	38.88	38.91	51.31	41.97	41.98	48.50	33.02	21.04
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.27	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.87	3.73	15.04	74.75	11.03	19.22	3.78	2.91	12.96	53.77	0.50	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.80	0.92	1.13	0.90	0.90	0.81	0.89	0.89	1.11	0.61	0.12
d, Delay for Lane Group [s/veh]	88.87	38.62	37.68	131.75	49.91	58.13	55.09	44.87	54.95	102.27	33.52	21.08
Lane Group LOS	F	D	D	F	D	E	E	D	D	F	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.80	13.31	24.25	4.49	16.24	17.85	5.37	12.62	13.24	15.05	9.17	1.26
50th-Percentile Queue Length [ft/ln]	144.94	332.64	606.28	112.15	406.04	446.14	134.24	315.53	330.95	376.34	229.23	31.59
95th-Percentile Queue Length [veh/ln]	9.86	19.29	32.33	8.07	22.85	24.77	9.17	18.45	19.21	22.56	14.14	2.27
95th-Percentile Queue Length [ft/ln]	246.55	482.20	808.19	201.87	571.27	619.34	229.25	461.19	480.13	563.96	353.38	56.86

Movement, Approach, & Intersection Results

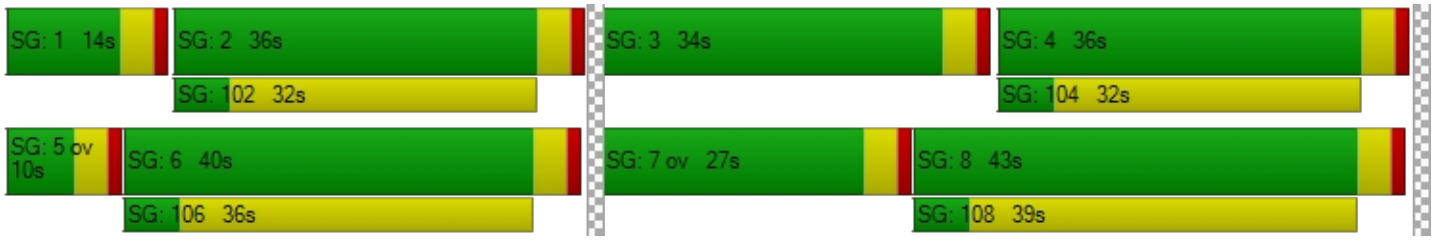
d_M, Delay for Movement [s/veh]	88.87	38.62	37.68	131.75	52.28	58.13	55.09	46.36	54.95	102.27	33.52	21.08
Movement LOS	F	D	D	F	D	E	E	D	D	F	C	C
d_A, Approach Delay [s/veh]	44.12			61.56			49.61			63.59		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	53.49											
Intersection LOS	D											
Intersection V/C	0.897											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.478	3.195	3.081	3.267
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	533	650	533
d_b, Bicycle Delay [s]	29.40	32.27	27.34	32.27
l_b,int, Bicycle LOS Score for Intersection	3.002	2.534	2.456	2.917
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: I-10 WB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1505	622	0	1210	819	0	0	0	585	0	484
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	169	0	0	12	123	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1674	622	0	1222	942	0	0	0	585	0	484
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	441	164	0	322	248	0	0	0	154	0	127
Total Analysis Volume [veh/h]	0	1762	655	0	1286	992	0	0	0	616	0	509
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	76	0	0	76	0	0	0	0	44	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	C	R
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	81	81		31	31	31
g / C, Green / Cycle	0.67	0.67		0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.49	0.25		0.21	0.22	0.23
s, saturation flow rate [veh/h]	3618	5176		1810	1735	1615
c, Capacity [veh/h]	2425	3469		476	456	425
d1, Uniform Delay [s]	12.71	8.68		41.11	41.58	42.45
k, delay calibration	0.50	0.50		0.18	0.20	0.24
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	1.94	0.31		4.82	6.73	12.25
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.37		0.79	0.82	0.88
d, Delay for Lane Group [s/veh]	14.65	8.98		45.93	48.30	54.69
Lane Group LOS	B	A		D	D	D
Critical Lane Group	Yes	No		No	No	Yes
50th-Percentile Queue Length [veh/ln]	14.53	4.71		10.91	11.24	12.05
50th-Percentile Queue Length [ft/ln]	363.24	117.65		272.66	280.95	301.18
95th-Percentile Queue Length [veh/ln]	20.78	8.26		16.32	16.74	17.74
95th-Percentile Queue Length [ft/ln]	519.52	206.59		408.06	418.40	443.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	14.65	0.00	0.00	8.98	0.00	0.00	0.00	0.00	46.86	0.00	53.01
Movement LOS		B			A					D		D
d_A, Approach Delay [s/veh]	14.65			8.98			0.00			49.64		
Approach LOS	B			A			A			D		
d_I, Intersection Delay [s/veh]	22.34											
Intersection LOS	C											
Intersection V/C	0.719											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	1200	0	667
d_b, Bicycle Delay [s]	9.60	9.60	60.00	26.67
l_b,int, Bicycle LOS Score for Intersection	3.013	2.267	4.132	3.416
Bicycle LOS	C	B	D	C

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 63: I-10 WB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	49.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.943

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1679	436	0	2172	0	0	0	0	581	0	633
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	72	0	0	282	12	0	0	0	0	0	240
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1751	436	0	2454	12	0	0	0	581	0	873
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	461	115	0	646	3	0	0	0	153	0	230
Total Analysis Volume [veh/h]	0	1843	459	0	2583	13	0	0	0	612	0	919
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	49	0	0	49	0	0	0	0	71	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	45	45		67	67
g / C, Green / Cycle	0.38	0.38		0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.36	0.37		0.17	0.57
s, saturation flow rate [veh/h]	5176	6901		3514	1615
c, Capacity [veh/h]	1941	2588		1962	902
d1, Uniform Delay [s]	36.40	37.46		14.17	26.50
k, delay calibration	0.50	0.50		0.11	0.49
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	11.57	17.26		0.09	34.63
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.95	1.00		0.31	1.02
d, Delay for Lane Group [s/veh]	47.97	54.72		14.26	61.13
Lane Group LOS	D	D		B	F
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	19.20	21.63		4.41	32.84
50th-Percentile Queue Length [ft/ln]	480.10	540.67		110.27	821.09
95th-Percentile Queue Length [veh/ln]	26.39	29.25		7.86	42.93
95th-Percentile Queue Length [ft/ln]	659.77	731.34		196.38	1073.28

Movement, Approach, & Intersection Results

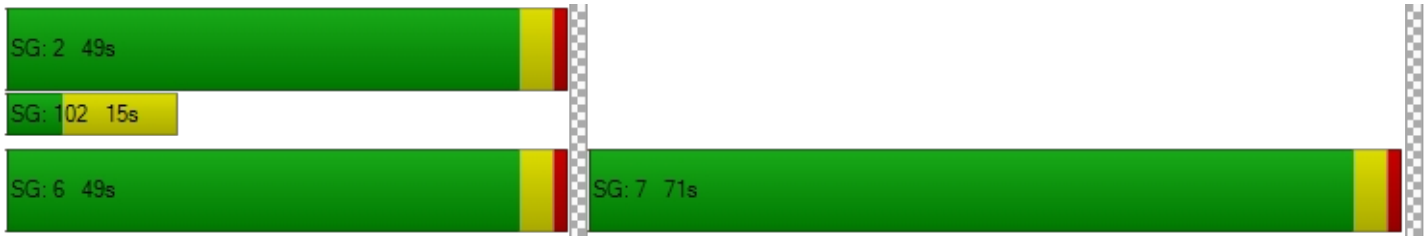
d_M, Delay for Movement [s/veh]	0.00	47.97	0.00	0.00	54.72	0.00	0.00	0.00	0.00	14.26	0.00	61.13
Movement LOS		D			D					B		F
d_A, Approach Delay [s/veh]	47.97			54.72			0.00			42.40		
Approach LOS	D			D			A			D		
d_I, Intersection Delay [s/veh]	49.46											
Intersection LOS	D											
Intersection V/C	0.943											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.730	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	750	750	0	1117
d_b, Bicycle Delay [s]	23.44	23.44	60.00	11.70
l_b,int, Bicycle LOS Score for Intersection	2.573	2.625	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: I-10 WB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.565

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1212	256	0	1049	555	0	0	0	269	0	584
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	77	0	0	0	0	0	0	62
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1224	256	0	1126	555	0	0	0	269	0	646
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	322	67	0	296	146	0	0	0	71	0	170
Total Analysis Volume [veh/h]	0	1288	269	0	1185	584	0	0	0	283	0	680
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	53	0	0	53	0	0	0	0	67	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		L	R
C, Cycle Length [s]	120	120		120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	80	80		32	32
g / C, Green / Cycle	0.66	0.66		0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.25	0.33		0.16	0.24
s, saturation flow rate [veh/h]	5176	3618		1810	2859
c, Capacity [veh/h]	3430	2397		490	774
d1, Uniform Delay [s]	9.09	10.15		37.83	41.88
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.32	0.73		1.08	3.43
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.49		0.58	0.88
d, Delay for Lane Group [s/veh]	9.41	10.89		38.91	45.31
Lane Group LOS	A	B		D	D
Critical Lane Group	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	4.86	7.59		7.34	9.94
50th-Percentile Queue Length [ft/ln]	121.58	189.66		183.60	248.50
95th-Percentile Queue Length [veh/ln]	8.48	12.10		11.79	15.11
95th-Percentile Queue Length [ft/ln]	212.00	302.58		294.71	377.76

Movement, Approach, & Intersection Results

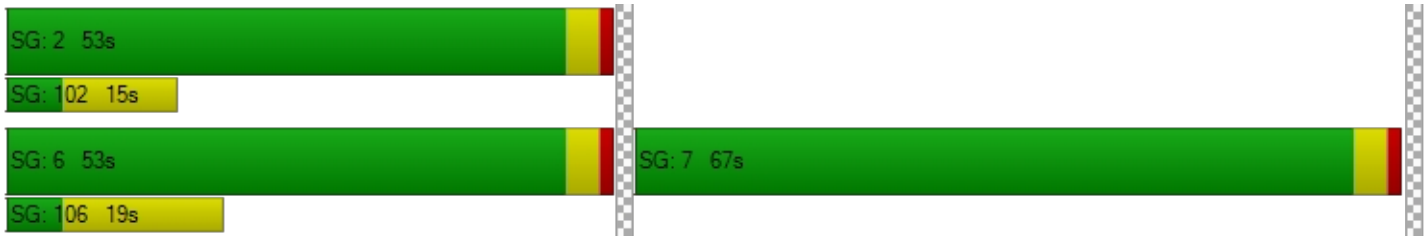
d_M, Delay for Movement [s/veh]	0.00	9.41	0.00	0.00	10.89	0.00	0.00	0.00	0.00	38.91	0.00	45.31
Movement LOS		A			B					D		D
d_A, Approach Delay [s/veh]	9.41			10.89			0.00			43.43		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	19.45											
Intersection LOS	B											
Intersection V/C	0.565											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.439	2.381
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	817	817	0	1050
d_b, Bicycle Delay [s]	21.00	21.00	60.00	13.54
l_b,int, Bicycle LOS Score for Intersection	2.268	2.537	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: I-10 EB Ramps at Etiwanda Ave

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.681

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	1713	562	0	1344	394	344	0	439	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	12	0	157	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1725	562	0	1356	394	501	0	439	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	454	148	0	357	104	132	0	116	0	0	0
Total Analysis Volume [veh/h]	0	1816	592	0	1427	415	527	0	462	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	62	0	0	62	0	58	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	74	74	38	38	
g / C, Green / Cycle	0.62	0.62	0.32	0.32	
(v / s)_i Volume / Saturation Flow Rate	0.35	0.39	0.15	0.29	
s, saturation flow rate [veh/h]	5176	3618	3514	1615	
c, Capacity [veh/h]	3191	2230	1113	512	
d1, Uniform Delay [s]	13.59	14.57	32.95	39.23	
k, delay calibration	0.50	0.50	0.11	0.20	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.74	1.42	0.31	10.40	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.57	0.64	0.47	0.90	
d, Delay for Lane Group [s/veh]	14.33	15.99	33.26	49.63	
Lane Group LOS	B	B	C	D	
Critical Lane Group	No	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	9.42	12.07	6.22	14.37	
50th-Percentile Queue Length [ft/ln]	235.60	301.76	155.56	359.18	
95th-Percentile Queue Length [veh/ln]	14.46	17.77	10.31	20.58	
95th-Percentile Queue Length [ft/ln]	361.46	444.21	257.83	514.58	

Movement, Approach, & Intersection Results

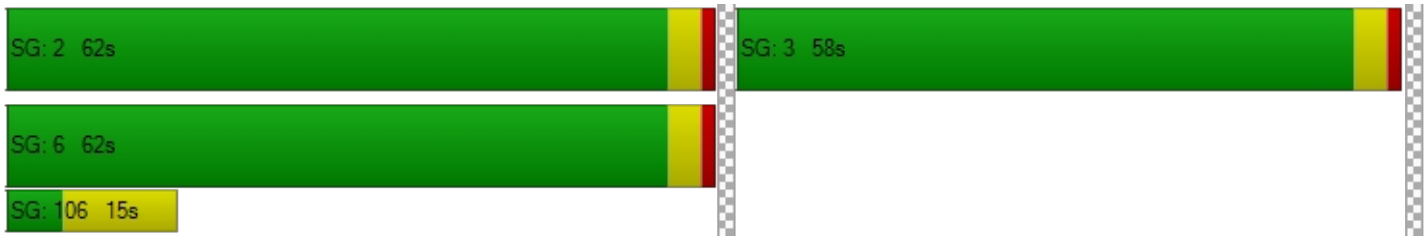
d_M, Delay for Movement [s/veh]	0.00	14.33	0.00	0.00	15.99	0.00	33.26	0.00	49.63	0.00	0.00	0.00
Movement LOS		B			B		C		D			
d_A, Approach Delay [s/veh]	14.33			15.99			40.91			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	21.10											
Intersection LOS	C											
Intersection V/C	0.681											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.439
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	967	900	0
d_b, Bicycle Delay [s]	16.02	16.02	18.15	60.00
l_b,int, Bicycle LOS Score for Intersection	2.558	2.737	1.560	4.132
Bicycle LOS	B	B	A	D

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: I-10 EB Ramps at Cherry Ave

Control Type:	Signalized	Delay (sec / veh):	57.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.958

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1423	533	759	1352	0	741	75	630	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	60	0	222	60	0	10	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1483	533	981	1412	0	751	75	630	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	390	140	258	372	0	198	20	166	0	0	0
Total Analysis Volume [veh/h]	0	1561	561	1033	1486	0	791	79	663	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	43	0	37	80	0	0	40	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	39	39	33	76	36	36	36	
g / C, Green / Cycle	0.33	0.33	0.28	0.63	0.30	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.30	0.35	0.29	0.29	0.28	0.29	0.32	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1810	1759	1615	
c, Capacity [veh/h]	1682	525	966	3278	543	528	485	
d1, Uniform Delay [s]	39.14	40.50	43.50	11.32	40.97	41.43	42.00	
k, delay calibration	0.50	0.50	0.11	0.50	0.42	0.44	0.50	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	10.44	58.95	36.48	0.45	23.41	29.49	56.04	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.93	1.07	1.07	0.45	0.94	0.97	1.05	
d, Delay for Lane Group [s/veh]	49.58	99.45	79.98	11.77	64.38	70.92	98.04	
Lane Group LOS	D	F	F	B	E	E	F	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	16.24	23.85	19.08	6.63	18.09	19.05	21.70	
50th-Percentile Queue Length [ft/ln]	406.00	596.20	477.01	165.66	452.29	476.25	542.39	
95th-Percentile Queue Length [veh/ln]	22.85	33.29	27.33	10.85	25.07	26.21	30.36	
95th-Percentile Queue Length [ft/ln]	571.22	832.17	683.22	271.20	626.68	655.20	758.88	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	49.58	99.45	79.98	11.77	0.00	66.70	70.92	91.82	0.00	0.00	0.00
Movement LOS		D	F	F	B		E	E	F			
d_A, Approach Delay [s/veh]	62.76			39.74			77.78			0.00		
Approach LOS	E			D			E			A		
d_I, Intersection Delay [s/veh]	57.10											
Intersection LOS	E											
Intersection V/C	0.958											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.520	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	1267	600	0
d_b, Bicycle Delay [s]	27.34	8.07	29.40	60.00
l_b,int, Bicycle LOS Score for Intersection	2.727	2.945	4.089	4.132
Bicycle LOS	B	C	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 67: I-10 EB Ramps at Citrus Ave

Control Type:	Signalized	Delay (sec / veh):	31.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.731

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	1008	570	606	730	0	505	8	237	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	65	12	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1020	570	671	742	0	505	8	237	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	268	150	177	195	0	133	2	62	0	0	0
Total Analysis Volume [veh/h]	0	1074	600	706	781	0	532	8	249	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	50	0	37	87	0	0	33	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	59	59	27	90	22	22	
g / C, Green / Cycle	0.49	0.49	0.22	0.75	0.18	0.18	
(v / s)_i Volume / Saturation Flow Rate	0.30	0.37	0.20	0.22	0.15	0.16	
s, saturation flow rate [veh/h]	3618	1615	3514	3618	3514	1623	
c, Capacity [veh/h]	1773	791	789	2706	651	301	
d1, Uniform Delay [s]	22.19	24.82	45.14	4.86	46.93	47.32	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.18	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.55	6.71	3.86	0.27	2.59	10.98	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.61	0.76	0.89	0.29	0.82	0.85	
d, Delay for Lane Group [s/veh]	23.74	31.54	48.99	5.13	49.52	58.30	
Lane Group LOS	C	C	D	A	D	E	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	11.14	14.93	10.57	2.84	7.85	8.33	
50th-Percentile Queue Length [ft/ln]	278.56	373.19	264.24	71.01	196.17	208.33	
95th-Percentile Queue Length [veh/ln]	16.62	21.26	15.90	5.11	12.44	13.07	
95th-Percentile Queue Length [ft/ln]	415.42	531.60	397.53	127.82	311.02	326.68	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	23.74	31.54	48.99	5.13	0.00	49.52	58.30	58.30	0.00	0.00	0.00
Movement LOS		C	C	D	A		D	E	E			
d_A, Approach Delay [s/veh]	26.53			25.95			52.38			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	31.48											
Intersection LOS	C											
Intersection V/C	0.731											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	1383	483	0
d_b, Bicycle Delay [s]	22.82	5.70	34.50	60.00
l_b,int, Bicycle LOS Score for Intersection	2.480	2.786	2.861	4.132
Bicycle LOS	B	C	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 68: Sierra Ave at I-10 EB/WB Ramps

Control Type:	Signalized	Delay (sec / veh):	72.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.189

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	573	1426	523	554	969	892	1024	0	512	540	0	706
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	17	12	0	0	0	0	0	0	17
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	573	1438	523	571	981	892	1024	0	512	540	0	723
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	151	378	138	150	258	235	269	0	135	142	0	190
Total Analysis Volume [veh/h]	603	1514	551	601	1033	939	1078	0	539	568	0	761
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	88	0	0	88	0	32	0	0	32	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	L
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	84	84	84	84	28	28
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.56	0.29	0.88	0.20	0.31	0.16
s, saturation flow rate [veh/h]	1077	5176	681	5176	3514	3514
c, Capacity [veh/h]	717	3623	442	3623	820	820
d1, Uniform Delay [s]	20.77	7.63	30.89	6.75	46.00	42.07
k, delay calibration	0.50	0.50	0.50	0.50	0.17	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.48	0.36	175.71	0.20	144.62	1.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.42	1.36	0.29	1.31	0.69
d, Delay for Lane Group [s/veh]	32.25	7.99	206.61	6.94	190.62	43.13
Lane Group LOS	C	A	F	A	F	D
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.08	5.20	17.53	3.13	28.59	7.80
50th-Percentile Queue Length [ft/ln]	201.99	129.89	438.14	78.19	714.82	195.02
95th-Percentile Queue Length [veh/ln]	12.74	8.93	29.78	5.63	42.94	12.38
95th-Percentile Queue Length [ft/ln]	318.53	223.34	744.58	140.74	1073.62	309.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.25	7.99	0.00	206.61	6.94	0.00	190.62	0.00	0.00	43.13	0.00	0.00
Movement LOS	C	A		F	A		F			D		
d_A, Approach Delay [s/veh]	14.90			80.38			190.62			43.13		
Approach LOS	B			F			F			D		
d_I, Intersection Delay [s/veh]	72.79											
Intersection LOS	E											
Intersection V/C	1.189											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.501	3.398
Crosswalk LOS	F	F	D	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1400	1400	467	467
d_b, Bicycle Delay [s]	5.40	5.40	35.27	35.27
l_b,int, Bicycle LOS Score for Intersection	2.724	2.458	1.560	1.560
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 69: Milliken Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	40.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.766

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	195	1644	376	77	598	132	265	1104	208	125	611	119
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	12	12	0	0	0	12	0	12	12	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	1644	388	89	598	132	265	1116	208	137	623	131
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	433	102	23	157	35	70	294	55	36	164	34
Total Analysis Volume [veh/h]	205	1731	408	94	629	139	279	1175	219	144	656	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	26	47	0	9	30	0	37	49	0	15	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	46	46	5	42	42	21	42	42	11	32	32
g / C, Green / Cycle	0.08	0.38	0.38	0.04	0.35	0.35	0.17	0.35	0.35	0.09	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.06	0.33	0.25	0.03	0.12	0.09	0.15	0.32	0.14	0.08	0.18	0.09
s, saturation flow rate [veh/h]	3514	5176	1615	3514	5176	1615	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	276	1983	619	145	1790	559	312	1268	566	166	976	436
d1, Uniform Delay [s]	54.11	34.30	30.54	56.68	29.23	28.09	48.58	37.47	29.27	53.78	39.08	34.98
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.13	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.94	5.66	5.43	4.85	0.54	1.06	10.40	3.49	0.43	12.71	0.81	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.87	0.66	0.65	0.35	0.25	0.89	0.93	0.39	0.87	0.67	0.32
d, Delay for Lane Group [s/veh]	58.05	39.96	35.98	61.52	29.77	29.16	58.98	40.96	29.70	66.50	39.89	35.39
Lane Group LOS	E	D	D	E	C	C	E	D	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.18	16.36	10.58	1.50	4.60	3.04	9.05	16.94	4.82	4.87	8.70	3.29
50th-Percentile Queue Length [ft/ln]	79.57	409.08	264.58	37.54	115.02	75.99	226.31	423.49	120.54	121.79	217.57	82.15
95th-Percentile Queue Length [veh/ln]	5.73	23.00	15.92	2.70	8.12	5.47	13.99	23.69	8.42	8.49	13.54	5.92
95th-Percentile Queue Length [ft/ln]	143.23	574.94	397.95	67.57	202.97	136.78	349.67	592.24	210.57	212.28	338.52	147.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.05	39.96	35.98	61.52	29.77	29.16	58.98	40.96	29.70	66.50	39.89	35.39
Movement LOS	E	D	D	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	40.85			33.13			42.49			43.31		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	40.58											
Intersection LOS	D											
Intersection V/C	0.766											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.226	3.191	2.902	2.893
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	717	433	750	383
d_b, Bicycle Delay [s]	24.70	36.82	23.44	39.20
l_b,int, Bicycle LOS Score for Intersection	2.849	2.034	2.940	2.333
Bicycle LOS	C	B	C	B

Sequence

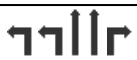
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 70: Rochester Ave at Arrow Rte

Control Type:	Signalized	Delay (sec / veh):	92.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.004

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	62	886	503	344	245	200	389	1463	24	117	762	509
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	36	0	0	36	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	886	503	344	245	200	389	1499	24	117	798	509
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	233	132	91	64	53	102	394	6	31	210	134
Total Analysis Volume [veh/h]	65	933	529	362	258	211	409	1578	25	123	840	536
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	37	38	0	25	26	26	27	48	0	9	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	34	34	21	49	76	23	44	44	5	26	51
g / C, Green / Cycle	0.05	0.28	0.28	0.18	0.41	0.64	0.19	0.37	0.37	0.04	0.22	0.43
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.33	0.20	0.07	0.13	0.23	0.42	0.42	0.04	0.23	0.33
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1890	3514	3618	1615
c, Capacity [veh/h]	88	1025	458	317	1483	1025	347	697	693	146	784	686
d1, Uniform Delay [s]	56.35	41.53	43.00	49.50	22.50	9.20	48.50	38.00	38.00	57.10	47.00	29.69
k, delay calibration	0.11	0.50	0.50	0.30	0.50	0.50	0.38	0.50	0.50	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.59	13.38	92.38	85.28	0.26	0.45	101.35	83.70	86.25	11.96	38.48	8.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.91	1.16	1.14	0.17	0.21	1.18	1.15	1.16	0.84	1.07	0.78
d, Delay for Lane Group [s/veh]	67.94	54.91	135.38	134.78	22.75	9.65	149.85	121.70	124.25	69.06	85.48	38.29
Lane Group LOS	E	D	F	F	C	A	F	F	F	E	F	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.23	15.11	25.15	16.95	2.38	2.38	20.09	36.25	36.54	2.10	15.81	14.70
50th-Percentile Queue Length [ft/ln]	55.70	377.72	628.85	423.75	59.52	59.43	502.19	906.16	913.47	52.38	395.23	367.55
95th-Percentile Queue Length [veh/ln]	4.01	21.48	36.38	25.31	4.29	4.28	29.81	50.69	51.22	3.77	23.19	20.99
95th-Percentile Queue Length [ft/ln]	100.25	537.09	909.62	632.65	107.14	106.97	745.22	1267.27	1280.62	94.29	579.78	524.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.94	54.91	135.38	134.78	22.75	9.65	149.85	122.95	124.25	69.06	85.48	38.29
Movement LOS	E	D	F	F	C	A	F	F	F	E	F	D
d_A, Approach Delay [s/veh]	83.34			68.23			128.44			67.26		
Approach LOS	F			E			F			E		
d_I, Intersection Delay [s/veh]	92.55											
Intersection LOS	F											
Intersection V/C	1.004											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.782	2.908	2.925	3.162
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	367	733	433
d_b, Bicycle Delay [s]	30.82	40.02	24.07	36.82
l_b,int, Bicycle LOS Score for Intersection	2.819	2.245	3.220	2.796
Bicycle LOS	C	B	C	C

Sequence

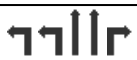
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 71: Cherry Ave at Slover Ave

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	50	1279	86	422	1277	459	540	753	117	71	198	408
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	48	0	0	48	12	12	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	1327	86	422	1325	471	552	753	117	71	198	408
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	349	23	111	349	124	145	198	31	19	52	107
Total Analysis Volume [veh/h]	53	1397	91	444	1395	496	581	793	123	75	208	429
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups						2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	9	33	0	20	44	44	24	58	0	9	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	0	0	21	21	0	24	0	0	34	34
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	50	50	16	62	86	20	33	33	5	18	38
g / C, Green / Cycle	0.04	0.42	0.42	0.13	0.51	0.71	0.17	0.28	0.28	0.04	0.15	0.31
(v / s)_i Volume / Saturation Flow Rate	0.03	0.27	0.27	0.13	0.27	0.31	0.17	0.25	0.25	0.02	0.06	0.27
s, saturation flow rate [veh/h]	1810	3618	1841	3514	5176	1615	3514	1900	1813	3514	3618	1615
c, Capacity [veh/h]	69	1516	771	469	2662	1154	586	524	500	135	534	508
d1, Uniform Delay [s]	57.20	27.85	27.85	51.58	19.38	7.07	49.92	41.66	41.84	56.70	46.24	38.41
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.12	0.13	0.11	0.11	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.42	2.18	4.23	10.41	0.74	1.17	15.51	6.07	7.28	3.56	0.46	10.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.65	0.65	0.95	0.52	0.43	0.99	0.89	0.90	0.56	0.39	0.84
d, Delay for Lane Group [s/veh]	73.63	30.03	32.08	62.00	20.12	8.24	65.43	47.73	49.12	60.25	46.71	49.29
Lane Group LOS	E	C	C	E	C	A	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.91	11.62	12.27	7.29	8.64	5.11	9.93	14.00	13.75	1.18	2.85	13.21
50th-Percentile Queue Length [ft/ln]	47.68	290.49	306.70	182.14	216.00	127.84	248.15	350.09	343.80	29.61	71.33	330.29
95th-Percentile Queue Length [veh/ln]	3.43	17.21	18.01	11.71	13.46	8.82	15.09	20.14	19.83	2.13	5.14	19.17
95th-Percentile Queue Length [ft/ln]	85.82	430.25	450.31	292.81	336.52	220.55	377.32	503.51	495.85	53.30	128.39	479.32

Movement, Approach, & Intersection Results

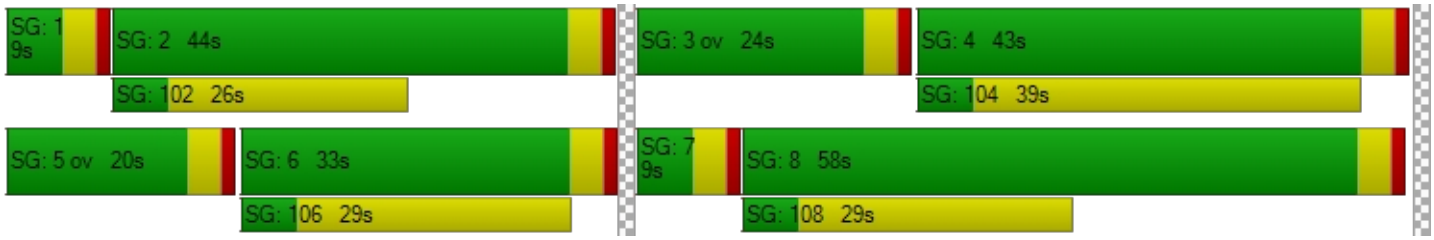
d_M, Delay for Movement [s/veh]	73.63	30.63	32.08	62.00	20.12	8.24	65.43	48.31	49.12	60.25	46.71	49.29
Movement LOS	E	C	C	E	C	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	32.20			25.56			55.02			49.69		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	37.31											
Intersection LOS	D											
Intersection V/C	0.745											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.123	3.444	2.834	2.893
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	667	900	650
d_b, Bicycle Delay [s]	34.50	26.67	18.15	27.34
l_b,int, Bicycle LOS Score for Intersection	2.407	2.844	2.795	2.147
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 72: Cherry Ave at Santa Ana Ave

Control Type:	Signalized	Delay (sec / veh):	746.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	63.406

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	12	681	87	107	1002	151	280	122	45	36	50	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	24	12	12	12	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	693	87	131	1014	163	292	122	45	36	50	151
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	182	23	34	267	43	77	32	12	9	13	40
Total Analysis Volume [veh/h]	13	729	92	138	1067	172	307	128	47	38	53	159
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	9	16	0	0	95	0	0	95	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	12	12	5	15	15	91	91	91	91
g / C, Green / Cycle	0.01	0.10	0.10	0.04	0.13	0.13	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.01	0.15	0.15	0.08	0.23	0.23	63.17	0.03	1.51	0.10
s, saturation flow rate [veh/h]	1810	3618	1794	1810	3618	1768	7	1615	60	1615
c, Capacity [veh/h]	27	366	182	75	464	227	56	1223	88	1223
d1, Uniform Delay [s]	58.68	53.93	53.93	57.50	52.31	52.31	54.50	3.65	43.36	3.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.33	236.31	255.65	384.69	365.94	374.67	3057.83	0.01	104.69	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	1.49	1.51	1.83	1.79	1.79	7.71	0.04	1.03	0.13
d, Delay for Lane Group [s/veh]	72.01	290.24	309.58	442.19	418.24	426.97	3112.33	3.66	148.04	3.97
Lane Group LOS	E	F	F	F	F	F	F	A	F	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.49	17.53	18.36	10.34	30.54	30.40	49.61	0.26	3.82	0.93
50th-Percentile Queue Length [ft/ln]	12.26	438.36	459.08	258.58	763.56	760.12	1240.28	6.39	95.50	23.29
95th-Percentile Queue Length [veh/ln]	0.88	27.89	29.11	17.60	47.93	47.74	89.30	0.46	6.88	1.68
95th-Percentile Queue Length [ft/ln]	22.07	697.17	727.68	440.01	1198.25	1193.39	2232.51	11.50	171.89	41.93

Movement, Approach, & Intersection Results

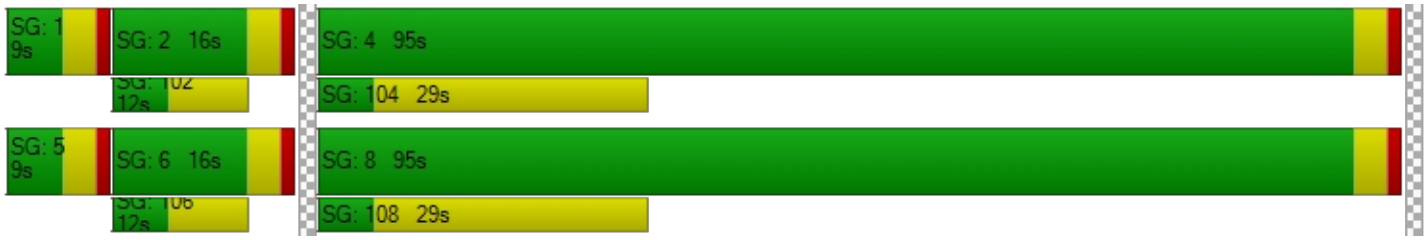
d_M, Delay for Movement [s/veh]	72.01	295.07	309.58	442.19	420.16	426.97	3112.33	3112.33	3.66	148.04	148.04	3.97
Movement LOS	E	F	F	F	F	F	F	F	A	F	F	A
d_A, Approach Delay [s/veh]	293.19			423.22			2809.20			56.41		
Approach LOS	F			F			F			E		
d_I, Intersection Delay [s/veh]	745.99											
Intersection LOS	F											
Intersection V/C	63.406											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.940	3.404	2.189	2.153
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	200	200	1517	1517
d_b, Bicycle Delay [s]	48.60	48.60	3.50	3.50
l_b,int, Bicycle LOS Score for Intersection	2.018	2.317	2.355	1.972
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 73: Cherry Ave at Sunset Dr

Control Type:	Signalized	Delay (sec / veh):	36.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	344	52	0	0	66	456	428	0	298	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	344	52	0	0	66	456	428	0	298	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	13	0	0	17	114	107	0	75	0	0	0
Total Analysis Volume [veh/h]	344	52	0	0	66	456	428	0	298	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	2	0	8	0	0	4	0
Auxiliary Signal Groups						2,8						
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	55	69	0	9	23	23	0	33	0	0	9	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	14	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No	No		No			No	
Maximum Recall	No	No		No	No	No		No			No	
Pedestrian Recall	No	No		No	No	No		No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	85	85	0	60	87	19	19	19	0	0
g / C, Green / Cycle	0.21	0.71	0.71	0.00	0.50	0.72	0.16	0.16	0.16	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.19	0.01	0.01	0.00	0.02	0.29	0.12	0.12	0.11	0.00	0.00
s, saturation flow rate [veh/h]	1781	3560	1870	1781	3560	1589	1781	1781	2813	1781	1870
c, Capacity [veh/h]	378	2519	1323	1	1764	1146	282	282	446	1	1
d1, Uniform Delay [s]	46.13	5.18	5.18	0.00	15.56	6.55	48.29	48.29	47.52	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.55	0.01	0.02	0.00	0.04	1.03	4.16	4.16	1.74	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.01	0.01	0.00	0.04	0.40	0.76	0.76	0.67	0.00	0.00
d, Delay for Lane Group [s/veh]	54.68	5.19	5.20	0.00	15.60	7.58	52.46	52.46	49.26	0.00	0.00
Lane Group LOS	D	A	A	A	B	A	D	D	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	10.86	0.12	0.13	0.00	0.48	4.43	6.45	6.45	4.30	0.00	0.00
50th-Percentile Queue Length [ft/ln]	271.61	3.03	3.27	0.00	11.94	110.73	161.21	161.21	107.56	0.00	0.00
95th-Percentile Queue Length [veh/ln]	16.27	0.22	0.24	0.00	0.86	7.88	10.61	10.61	7.70	0.00	0.00
95th-Percentile Queue Length [ft/ln]	406.75	5.46	5.88	0.00	21.50	197.01	265.33	265.33	192.60	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.68	5.19	5.20	0.00	15.60	7.58	52.46	52.46	49.26	0.00	0.00	0.00
Movement LOS	D	A	A	A	B	A	D	D	D	A	A	A
d_A, Approach Delay [s/veh]	48.18			8.60			51.15			0.00		
Approach LOS	D			A			D			A		
d_I, Intersection Delay [s/veh]	36.92											
Intersection LOS	D											
Intersection V/C	0.550											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	51.34	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.715	0.000	2.716	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1083	317	483	83
d_b, Bicycle Delay [s]	12.60	42.50	34.50	55.10
l_b,int, Bicycle LOS Score for Intersection	1.777	1.990	2.758	1.560
Bicycle LOS	A	A	C	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX E

B-TURNS WORKSHEETS

Intersection: Cherry Ave SR-210 WB Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	166	SOUTH LEG	
	THRU	303	IN ...	675
	RIGHT	0	OUT ...	1,317
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	712	IN ...	1,128
	RIGHT	200	OUT ...	820
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	400
WEST BOUND	LEFT	360	EAST LEG	
	THRU	4	IN ...	735
	RIGHT	252	OUT ...	0
		1,997		5,075

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	166	186
	THRU	303	489
	RIGHT	0	0
SOUTH BOUND	LEFT	0	0
	THRU	712	917
	RIGHT	200	211
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	360	400
	THRU	4	4
	RIGHT	252	331
		1,997	2,537

Intersection: Cherry Ave SR-210 WB Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	302	SOUTH LEG	
	THRU	571	IN ...	1,135
	RIGHT	0	OUT ...	948
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	461	IN ...	935
	RIGHT	146	OUT ...	1,026
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	568
WEST BOUND	LEFT	287	EAST LEG	
	THRU	0	IN ...	472
	RIGHT	135	OUT ...	0
		1,902		5,084

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	302	315
	THRU	571	822
	RIGHT	0	0
SOUTH BOUND	LEFT	0	0
	THRU	461	680
	RIGHT	146	253
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	287	267
	THRU	0	0
	RIGHT	135	204
		1,902	2,542

Intersection: Citrus Ave SR-210 WB Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	302	SOUTH LEG	
	THRU	906	IN ...	1,302
	RIGHT	0	OUT ...	1,354
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	822	IN ...	1,269
	RIGHT	355	OUT ...	1,468
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	659
WEST BOUND	LEFT	421	EAST LEG	
	THRU	1	IN ...	912
	RIGHT	309	OUT ...	0
		3,116		6,964

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	302	273
	THRU	906	1,029
	RIGHT	0	0
SOUTH BOUND	LEFT	0	0
	THRU	822	883
	RIGHT	355	385
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	421	471
	THRU	1	1
	RIGHT	309	439
		3,116	3,482

Intersection: Citrus Ave SR-210 WB Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	323	SOUTH LEG	
	THRU	1,038	IN ...	1,532
	RIGHT	0	OUT ...	1,200
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	732	IN ...	1,318
	RIGHT	395	OUT ...	1,543
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	806
WEST BOUND	LEFT	341	EAST LEG	
	THRU	0	IN ...	699
	RIGHT	332	OUT ...	0
		3,161		7,098

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	323	346
	THRU	1,038	1,187
	RIGHT	0	0
SOUTH BOUND	LEFT	0	0
	THRU	732	857
	RIGHT	395	460
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	341	343
	THRU	0	0
	RIGHT	332	356
		3,161	3,549

Intersection: Sierra Ave SR-210 WB Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	792	IN ...	1,004
	RIGHT	0	OUT ...	1,710
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	1079	IN ...	1,133
	RIGHT	0	OUT ...	1,379
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
WEST BOUND	LEFT	510	EAST LEG	
	THRU	0	IN ...	952
	RIGHT	291	OUT ...	0
		2,672		6,178

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	792	1,006
	RIGHT	0	0
SOUTH BOUND	LEFT	0	0
	THRU	1,079	1,130
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	510	580
	THRU	0	0
	RIGHT	291	373
		2,672	3,089

Intersection: Sierra Ave SR-210 WB Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	1,132	IN ...	1,228
	RIGHT	0	OUT ...	1,683
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	1,172	IN ...	1,409
	RIGHT	0	OUT ...	1,647
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
WEST BOUND	LEFT	297	EAST LEG	
	THRU	0	IN ...	693
	RIGHT	400	OUT ...	0
		3,001		6,659

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	1,132	1,232
	RIGHT	0	0
SOUTH BOUND	LEFT	0	0
	THRU	1,172	1,404
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	297	279
	THRU	0	0
	RIGHT	400	415
		3,001	3,330

Intersection: Cherry Ave SR-210 EB Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	427	IN ...	847
	RIGHT	319	OUT ...	1,314
SOUTH BOUND	LEFT	160	NORTH LEG	
	THRU	805	IN ...	1,210
	RIGHT	0	OUT ...	786
EAST BOUND	LEFT	153	WEST LEG	
	THRU	5	IN ...	593
	RIGHT	296	OUT ...	0
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	551
		2,165		5,302

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	427	533
	RIGHT	319	316
SOUTH BOUND	LEFT	160	228
	THRU	805	981
	RIGHT	0	0
EAST BOUND	LEFT	153	253
	THRU	5	7
	RIGHT	296	333
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		2,165	2,651

Intersection: Cherry Ave SR-210 EB Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	687	IN ...	1,170
	RIGHT	307	OUT ...	1,144
SOUTH BOUND	LEFT	72	NORTH LEG	
	THRU	673	IN ...	945
	RIGHT	0	OUT ...	1,142
EAST BOUND	LEFT	193	WEST LEG	
	THRU	2	IN ...	616
	RIGHT	359	OUT ...	0
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	445
		2,293		5,461

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	687	854
	RIGHT	307	321
SOUTH BOUND	LEFT	72	121
	THRU	673	819
	RIGHT	0	0
EAST BOUND	LEFT	193	288
	THRU	2	3
	RIGHT	359	325
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		2,293	2,730

Intersection: Citrus Ave SR-210 EB Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	817	IN ...	1,294
	RIGHT	408	OUT ...	1,452
SOUTH BOUND	LEFT	302	NORTH LEG	
	THRU	931	IN ...	1,344
	RIGHT	0	OUT ...	1,322
EAST BOUND	LEFT	411	WEST LEG	
	THRU	3	IN ...	886
	RIGHT	402	OUT ...	0
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	750
		3,274		7,049

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	817	872
	RIGHT	408	422
SOUTH BOUND	LEFT	302	325
	THRU	931	1,019
	RIGHT	0	0
EAST BOUND	LEFT	411	449
	THRU	3	3
	RIGHT	402	433
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		3,274	3,524

Intersection: Citrus Ave SR-210 EB Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	1,043	IN ...	1,423
	RIGHT	269	OUT ...	1,027
SOUTH BOUND	LEFT	204	NORTH LEG	
	THRU	682	IN ...	1,013
	RIGHT	0	OUT ...	1,710
EAST BOUND	LEFT	496	WEST LEG	
	THRU	3	IN ...	883
	RIGHT	344	OUT ...	0
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	581
		3,041		6,638

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	1,043	1,133
	RIGHT	269	291
SOUTH BOUND	LEFT	204	287
	THRU	682	725
	RIGHT	0	0
EAST BOUND	LEFT	496	578
	THRU	3	3
	RIGHT	344	302
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		3,041	3,319

Intersection: Sierra Ave SR-210 EB Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	946	IN ...	1,841
	RIGHT	463	OUT ...	2,024
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	1265	IN ...	1,533
	RIGHT	26	OUT ...	1,306
EAST BOUND	LEFT	160	WEST LEG	
	THRU	0	IN ...	881
	RIGHT	553	OUT ...	26
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	899
		3,413		8,511

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	946	1,007
	RIGHT	463	899
SOUTH BOUND	LEFT	0	0
	THRU	1,265	1,454
	RIGHT	26	26
EAST BOUND	LEFT	160	299
	THRU	0	0
	RIGHT	553	570
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		3,413	4,256

Intersection: Sierra Ave SR-210 EB Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	1,417	IN ...	2,474
	RIGHT	643	OUT ...	1,832
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	1,189	IN ...	1,581
	RIGHT	41	OUT ...	1,689
EAST BOUND	LEFT	193	WEST LEG	
	THRU	0	IN ...	710
	RIGHT	409	OUT ...	41
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	1,202
		3,892		9,528

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	1,417	1,356
	RIGHT	643	1,202
SOUTH BOUND	LEFT	0	0
	THRU	1,189	1,465
	RIGHT	41	41
EAST BOUND	LEFT	193	333
	THRU	0	0
	RIGHT	409	368
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		3,892	4,764

Intersection: Beech Ave Highland Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	37	SOUTH LEG	
	THRU	570	IN ...	915
	RIGHT	67	OUT ...	899
SOUTH BOUND	LEFT	55	NORTH LEG	
	THRU	502	IN ...	790
	RIGHT	93	OUT ...	897
EAST BOUND	LEFT	117	WEST LEG	
	THRU	199	IN ...	465
	RIGHT	75	OUT ...	507
WEST BOUND	LEFT	90	EAST LEG	
	THRU	208	IN ...	530
	RIGHT	61	OUT ...	399
		2,074		5,402

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	37	74
	THRU	570	727
	RIGHT	67	109
SOUTH BOUND	LEFT	55	53
	THRU	502	632
	RIGHT	93	110
EAST BOUND	LEFT	117	110
	THRU	199	237
	RIGHT	75	118
WEST BOUND	LEFT	90	149
	THRU	208	323
	RIGHT	61	60
		2,074	2,701

Intersection: Beech Ave Highland Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	26	SOUTH LEG	
	THRU	384	IN ...	819
	RIGHT	87	OUT ...	803
SOUTH BOUND	LEFT	100	NORTH LEG	
	THRU	386	IN ...	651
	RIGHT	54	OUT ...	732
EAST BOUND	LEFT	65	WEST LEG	
	THRU	324	IN ...	649
	RIGHT	60	OUT ...	396
WEST BOUND	LEFT	68	EAST LEG	
	THRU	185	IN ...	480
	RIGHT	82	OUT ...	667
		1,821		5,197

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	26	66
	THRU	384	588
	RIGHT	87	161
SOUTH BOUND	LEFT	100	75
	THRU	386	524
	RIGHT	54	55
EAST BOUND	LEFT	65	72
	THRU	324	432
	RIGHT	60	146
WEST BOUND	LEFT	68	133
	THRU	185	275
	RIGHT	82	73
		1,821	2,599

Intersection: Citrus Ave Highland Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	75	SOUTH LEG	
	THRU	725	IN ...	939
	RIGHT	72	OUT ...	1,104
SOUTH BOUND	LEFT	337	NORTH LEG	
	THRU	942	IN ...	1,548
	RIGHT	150	OUT ...	1,255
EAST BOUND	LEFT	215	WEST LEG	
	THRU	192	IN ...	551
	RIGHT	53	OUT ...	606
WEST BOUND	LEFT	91	EAST LEG	
	THRU	197	IN ...	724
	RIGHT	246	OUT ...	796
		3,295		7,523

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	75	102
	THRU	725	737
	RIGHT	72	99
SOUTH BOUND	LEFT	337	428
	THRU	942	932
	RIGHT	150	189
EAST BOUND	LEFT	215	224
	THRU	192	269
	RIGHT	53	58
WEST BOUND	LEFT	91	114
	THRU	197	315
	RIGHT	246	294
		3,295	3,761

Intersection: Citrus Ave Highland Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	62	SOUTH LEG	
	THRU	750	IN ...	896
	RIGHT	75	OUT ...	869
SOUTH BOUND	LEFT	294	NORTH LEG	
	THRU	625	IN ...	1,026
	RIGHT	106	OUT ...	1,416
EAST BOUND	LEFT	192	WEST LEG	
	THRU	300	IN ...	805
	RIGHT	54	OUT ...	615
WEST BOUND	LEFT	124	EAST LEG	
	THRU	296	IN ...	1,053
	RIGHT	363	OUT ...	880
		3,241		7,559

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	62	73
	THRU	750	731
	RIGHT	75	92
SOUTH BOUND	LEFT	294	308
	THRU	625	611
	RIGHT	106	107
EAST BOUND	LEFT	192	245
	THRU	300	480
	RIGHT	54	81
WEST BOUND	LEFT	124	177
	THRU	296	435
	RIGHT	363	441
		3,241	3,779

Intersection: Sierra Ave Highland Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	160	SOUTH LEG	
	THRU	919	IN ...	1,491
	RIGHT	38	OUT ...	1,601
SOUTH BOUND	LEFT	219	NORTH LEG	
	THRU	1191	IN ...	2,019
	RIGHT	403	OUT ...	1,535
EAST BOUND	LEFT	291	WEST LEG	
	THRU	252	IN ...	912
	RIGHT	173	OUT ...	1,226
WEST BOUND	LEFT	16	EAST LEG	
	THRU	252	IN ...	591
	RIGHT	199	OUT ...	651
		4,113		10,026

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	160	339
	THRU	919	1,082
	RIGHT	38	67
SOUTH BOUND	LEFT	219	222
	THRU	1,191	1,309
	RIGHT	403	492
EAST BOUND	LEFT	291	280
	THRU	252	362
	RIGHT	173	270
WEST BOUND	LEFT	16	23
	THRU	252	395
	RIGHT	199	173
		4,113	5,012

Intersection: Sierra Ave Highland Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	59	SOUTH LEG	
	THRU	1,316	IN ...	1,767
	RIGHT	65	OUT ...	1,501
SOUTH BOUND	LEFT	357	NORTH LEG	
	THRU	973	IN ...	1,805
	RIGHT	241	OUT ...	2,294
EAST BOUND	LEFT	426	WEST LEG	
	THRU	251	IN ...	1,242
	RIGHT	51	OUT ...	837
WEST BOUND	LEFT	69	EAST LEG	
	THRU	171	IN ...	754
	RIGHT	354	OUT ...	936
		4,333		11,135

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	59	172
	THRU	1,316	1,468
	RIGHT	65	118
SOUTH BOUND	LEFT	357	292
	THRU	973	1,207
	RIGHT	241	318
EAST BOUND	LEFT	426	551
	THRU	251	526
	RIGHT	51	162
WEST BOUND	LEFT	69	132
	THRU	171	347
	RIGHT	354	275
		4,333	5,568

Intersection: Etiwanda Ave Baseline Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	113	SOUTH LEG	
	THRU	268	IN ...	519
	RIGHT	102	OUT ...	747
SOUTH BOUND	LEFT	147	NORTH LEG	
	THRU	286	IN ...	726
	RIGHT	257	OUT ...	632
EAST BOUND	LEFT	107	WEST LEG	
	THRU	507	IN ...	863
	RIGHT	78	OUT ...	1,725
WEST BOUND	LEFT	172	EAST LEG	
	THRU	1112	IN ...	1,935
	RIGHT	236	OUT ...	939
		3,385		8,088

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	113	122
	THRU	268	264
	RIGHT	102	134
SOUTH BOUND	LEFT	147	157
	THRU	286	344
	RIGHT	257	226
EAST BOUND	LEFT	107	103
	THRU	507	649
	RIGHT	78	113
WEST BOUND	LEFT	172	291
	THRU	1,112	1,377
	RIGHT	236	266
		3,385	4,044

Intersection: Etiwanda Ave Baseline Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	102	SOUTH LEG	
	THRU	163	IN ...	541
	RIGHT	206	OUT ...	452
SOUTH BOUND	LEFT	49	NORTH LEG	
	THRU	94	IN ...	236
	RIGHT	61	OUT ...	354
EAST BOUND	LEFT	74	WEST LEG	
	THRU	991	IN ...	1,560
	RIGHT	115	OUT ...	981
WEST BOUND	LEFT	128	EAST LEG	
	THRU	620	IN ...	1,012
	RIGHT	46	OUT ...	1,563
		2,649		6,699

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	102	122
	THRU	163	193
	RIGHT	206	226
SOUTH BOUND	LEFT	49	52
	THRU	94	113
	RIGHT	61	71
EAST BOUND	LEFT	74	104
	THRU	991	1,286
	RIGHT	115	170
WEST BOUND	LEFT	128	169
	THRU	620	787
	RIGHT	46	58
		2,649	3,350

Intersection: I-15 SB Ramps Baseline Rd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	(194)
SOUTH BOUND	LEFT	367	NORTH LEG	
	THRU	0	IN ...	1,355
	RIGHT	567	OUT ...	0
EAST BOUND	LEFT	0	WEST LEG	
	THRU	537	IN ...	972
	RIGHT	236	OUT ...	1,943
WEST BOUND	LEFT	0	EAST LEG	
	THRU	946	IN ...	617
	RIGHT	0	OUT ...	1,195
		2,653		5,888

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	367	106
	THRU	0	0
	RIGHT	567	1,297
EAST BOUND	LEFT	0	0
	THRU	537	1,088
	RIGHT	236	(194)
WEST BOUND	LEFT	0	0
	THRU	946	646
	RIGHT	0	0
		2,653	2,944

Intersection: I-15 SB Ramps Baseline Rd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	(182)
SOUTH BOUND	LEFT	258	NORTH LEG	
	THRU	0	IN ...	615
	RIGHT	250	OUT ...	0
EAST BOUND	LEFT	0	WEST LEG	
	THRU	1,047	IN ...	1,583
	RIGHT	169	OUT ...	1,032
WEST BOUND	LEFT	0	EAST LEG	
	THRU	558	IN ...	349
	RIGHT	0	OUT ...	1,698
		2,282		5,094

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	258	55
	THRU	0	0
	RIGHT	250	633
EAST BOUND	LEFT	0	0
	THRU	1,047	1,642
	RIGHT	169	(182)
WEST BOUND	LEFT	0	0
	THRU	558	398
	RIGHT	0	0
		2,282	2,547

Intersection: I-15 NB Ramps Baseline Rd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	278	SOUTH LEG	
	THRU	2	IN ...	793
	RIGHT	306	OUT ...	0
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	602
EAST BOUND	LEFT	354	WEST LEG	
	THRU	565	IN ...	1,032
	RIGHT	0	OUT ...	2,318
WEST BOUND	LEFT	0	EAST LEG	
	THRU	1595	IN ...	2,174
	RIGHT	179	OUT ...	1,079
		3,279		7,996

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	278	363
	THRU	2	3
	RIGHT	306	427
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
EAST BOUND	LEFT	354	381
	THRU	565	652
	RIGHT	0	0
WEST BOUND	LEFT	0	0
	THRU	1,595	1,954
	RIGHT	179	219
		3,279	3,998

Intersection: I-15 NB Ramps Baseline Rd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	276	SOUTH LEG	
	THRU	0	IN ...	1,298
	RIGHT	514	OUT ...	0
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	895
EAST BOUND	LEFT	439	WEST LEG	
	THRU	912	IN ...	1,700
	RIGHT	0	OUT ...	1,506
WEST BOUND	LEFT	0	EAST LEG	
	THRU	798	IN ...	1,330
	RIGHT	162	OUT ...	1,927
		3,101		8,656

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	276	445
	THRU	0	0
	RIGHT	514	853
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
EAST BOUND	LEFT	439	627
	THRU	912	1,074
	RIGHT	0	0
WEST BOUND	LEFT	0	0
	THRU	798	1,061
	RIGHT	162	269
		3,101	4,328

Intersection: Cherry Ave Baseline Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	63	SOUTH LEG	
	THRU	529	IN ...	962
	RIGHT	155	OUT ...	1,489
SOUTH BOUND	LEFT	69	NORTH LEG	
	THRU	828	IN ...	1,431
	RIGHT	410	OUT ...	970
EAST BOUND	LEFT	232	WEST LEG	
	THRU	502	IN ...	970
	RIGHT	139	OUT ...	2,125
WEST BOUND	LEFT	414	EAST LEG	
	THRU	1336	IN ...	1,997
	RIGHT	66	OUT ...	774
		4,743		10,718

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	63	107
	THRU	529	661
	RIGHT	155	187
SOUTH BOUND	LEFT	69	59
	THRU	828	885
	RIGHT	410	492
EAST BOUND	LEFT	232	253
	THRU	502	529
	RIGHT	139	183
WEST BOUND	LEFT	414	421
	THRU	1,336	1,527
	RIGHT	66	56
		4,743	5,359

Intersection: Cherry Ave Baseline Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	154	SOUTH LEG	
	THRU	926	IN ...	1,534
	RIGHT	338	OUT ...	993
SOUTH BOUND	LEFT	107	NORTH LEG	
	THRU	435	IN ...	734
	RIGHT	86	OUT ...	1,415
EAST BOUND	LEFT	305	WEST LEG	
	THRU	1,060	IN ...	1,803
	RIGHT	81	OUT ...	1,033
WEST BOUND	LEFT	292	EAST LEG	
	THRU	590	IN ...	1,049
	RIGHT	61	OUT ...	1,680
		4,435		10,240

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	154	232
	THRU	926	971
	RIGHT	338	327
SOUTH BOUND	LEFT	107	90
	THRU	435	534
	RIGHT	86	113
EAST BOUND	LEFT	305	394
	THRU	1,060	1,263
	RIGHT	81	141
WEST BOUND	LEFT	292	318
	THRU	590	687
	RIGHT	61	49
		4,435	5,120

Intersection: Beech Baseline Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	65	SOUTH LEG	
	THRU	239	IN ...	552
	RIGHT	13	OUT ...	600
SOUTH BOUND	LEFT	94	NORTH LEG	
	THRU	239	IN ...	728
	RIGHT	197	OUT ...	686
EAST BOUND	LEFT	132	WEST LEG	
	THRU	419	IN ...	653
	RIGHT	37	OUT ...	971
WEST BOUND	LEFT	45	EAST LEG	
	THRU	589	IN ...	921
	RIGHT	82	OUT ...	597
		2,151		5,708

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	65	95
	THRU	239	432
	RIGHT	13	25
SOUTH BOUND	LEFT	94	114
	THRU	239	434
	RIGHT	197	180
EAST BOUND	LEFT	132	135
	THRU	419	458
	RIGHT	37	61
WEST BOUND	LEFT	45	105
	THRU	589	695
	RIGHT	82	120
		2,151	2,854

Intersection: Beech Baseline Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	94	SOUTH LEG	
	THRU	250	IN ...	775
	RIGHT	24	OUT ...	691
SOUTH BOUND	LEFT	131	NORTH LEG	
	THRU	191	IN ...	678
	RIGHT	90	OUT ...	892
EAST BOUND	LEFT	211	WEST LEG	
	THRU	979	IN ...	1,414
	RIGHT	73	OUT ...	830
WEST BOUND	LEFT	65	EAST LEG	
	THRU	552	IN ...	875
	RIGHT	121	OUT ...	1,328
		2,781		7,483

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	94	170
	THRU	250	542
	RIGHT	24	61
SOUTH BOUND	LEFT	131	179
	THRU	191	413
	RIGHT	90	87
EAST BOUND	LEFT	211	200
	THRU	979	1,088
	RIGHT	73	129
WEST BOUND	LEFT	65	150
	THRU	552	573
	RIGHT	121	150
		2,781	3,742

Intersection: Citrus Ave Baseline Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	120	SOUTH LEG	
	THRU	571	IN ...	1,524
	RIGHT	733	OUT ...	1,081
SOUTH BOUND	LEFT	124	NORTH LEG	
	THRU	771	IN ...	1,203
	RIGHT	237	OUT ...	1,054
EAST BOUND	LEFT	274	WEST LEG	
	THRU	346	IN ...	816
	RIGHT	109	OUT ...	1,222
WEST BOUND	LEFT	156	EAST LEG	
	THRU	659	IN ...	1,072
	RIGHT	102	OUT ...	1,257
		4,202		9,228

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	120	144
	THRU	571	624
	RIGHT	733	754
SOUTH BOUND	LEFT	124	126
	THRU	771	796
	RIGHT	237	281
EAST BOUND	LEFT	274	317
	THRU	346	377
	RIGHT	109	121
WEST BOUND	LEFT	156	164
	THRU	659	796
	RIGHT	102	112
		4,202	4,614

Intersection: Citrus Ave Baseline Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	95	SOUTH LEG	
	THRU	607	IN ...	863
	RIGHT	69	OUT ...	804
SOUTH BOUND	LEFT	127	NORTH LEG	
	THRU	443	IN ...	795
	RIGHT	106	OUT ...	1,049
EAST BOUND	LEFT	299	WEST LEG	
	THRU	720	IN ...	1,372
	RIGHT	115	OUT ...	903
WEST BOUND	LEFT	160	EAST LEG	
	THRU	526	IN ...	962
	RIGHT	58	OUT ...	1,237
		3,325		7,986

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	95	102
	THRU	607	665
	RIGHT	69	97
SOUTH BOUND	LEFT	127	188
	THRU	443	488
	RIGHT	106	120
EAST BOUND	LEFT	299	308
	THRU	720	953
	RIGHT	115	113
WEST BOUND	LEFT	160	202
	THRU	526	681
	RIGHT	58	77
		3,325	3,993

Intersection: Sierra Ave Baseline Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	157	SOUTH LEG	
	THRU	629	IN ...	1,196
	RIGHT	56	OUT ...	1,492
SOUTH BOUND	LEFT	220	NORTH LEG	
	THRU	1054	IN ...	1,577
	RIGHT	104	OUT ...	1,245
EAST BOUND	LEFT	94	WEST LEG	
	THRU	405	IN ...	667
	RIGHT	109	OUT ...	932
WEST BOUND	LEFT	90	EAST LEG	
	THRU	492	IN ...	1,000
	RIGHT	139	OUT ...	772
		3,549		8,881

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	157	192
	THRU	629	923
	RIGHT	56	81
SOUTH BOUND	LEFT	220	250
	THRU	1,054	1,228
	RIGHT	104	100
EAST BOUND	LEFT	94	104
	THRU	405	441
	RIGHT	109	122
WEST BOUND	LEFT	90	141
	THRU	492	640
	RIGHT	139	218
		3,549	4,441

Intersection: Sierra Ave Baseline Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	104	SOUTH LEG	
	THRU	974	IN ...	1,516
	RIGHT	61	OUT ...	1,084
SOUTH BOUND	LEFT	226	NORTH LEG	
	THRU	510	IN ...	1,216
	RIGHT	55	OUT ...	1,662
EAST BOUND	LEFT	136	WEST LEG	
	THRU	597	IN ...	1,076
	RIGHT	90	OUT ...	1,014
WEST BOUND	LEFT	92	EAST LEG	
	THRU	640	IN ...	1,191
	RIGHT	235	OUT ...	1,239
		3,720		9,998

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	104	151
	THRU	974	1,259
	RIGHT	61	100
SOUTH BOUND	LEFT	226	335
	THRU	510	814
	RIGHT	55	72
EAST BOUND	LEFT	136	144
	THRU	597	804
	RIGHT	90	131
WEST BOUND	LEFT	92	139
	THRU	640	791
	RIGHT	235	258
		3,720	4,999

Intersection: Etiwanda Ave Church St/Miller Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	141	SOUTH LEG	
	THRU	239	IN ...	563
	RIGHT	145	OUT ...	723
SOUTH BOUND	LEFT	76	NORTH LEG	
	THRU	282	IN ...	670
	RIGHT	121	OUT ...	440
EAST BOUND	LEFT	87	WEST LEG	
	THRU	249	IN ...	486
	RIGHT	108	OUT ...	769
WEST BOUND	LEFT	94	EAST LEG	
	THRU	464	IN ...	683
	RIGHT	69	OUT ...	470
		2,075		4,804

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	141	149
	THRU	239	269
	RIGHT	145	145
SOUTH BOUND	LEFT	76	84
	THRU	282	444
	RIGHT	121	142
EAST BOUND	LEFT	87	95
	THRU	249	241
	RIGHT	108	149
WEST BOUND	LEFT	94	130
	THRU	464	478
	RIGHT	69	76
		2,075	2,402

Intersection: Etiwanda Ave Church St/Miller Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	133	SOUTH LEG	
	THRU	256	IN ...	603
	RIGHT	98	OUT ...	526
SOUTH BOUND	LEFT	23	NORTH LEG	
	THRU	224	IN ...	462
	RIGHT	93	OUT ...	491
EAST BOUND	LEFT	137	WEST LEG	
	THRU	439	IN ...	789
	RIGHT	167	OUT ...	509
WEST BOUND	LEFT	42	EAST LEG	
	THRU	256	IN ...	356
	RIGHT	30	OUT ...	685
		1,898		4,420

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	133	136
	THRU	256	321
	RIGHT	98	146
SOUTH BOUND	LEFT	23	39
	THRU	224	315
	RIGHT	93	108
EAST BOUND	LEFT	137	131
	THRU	439	500
	RIGHT	167	158
WEST BOUND	LEFT	42	53
	THRU	256	265
	RIGHT	30	38
		1,898	2,210

Intersection: I-15 SB Ramps Foothill Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	745
SOUTH BOUND	LEFT	150	NORTH LEG	
	THRU	0	IN ...	1,083
	RIGHT	849	OUT ...	647
EAST BOUND	LEFT	0	WEST LEG	
	THRU	520	IN ...	1,450
	RIGHT	798	OUT ...	2,692
WEST BOUND	LEFT	0	EAST LEG	
	THRU	1435	IN ...	2,412
	RIGHT	647	OUT ...	860
		4,399		9,888

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	150	167
	THRU	0	0
	RIGHT	849	918
EAST BOUND	LEFT	0	0
	THRU	520	693
	RIGHT	798	745
WEST BOUND	LEFT	0	0
	THRU	1,435	1,774
	RIGHT	647	647
		4,399	4,944

Intersection: I-15 SB Ramps Foothill Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	1,016
SOUTH BOUND	LEFT	167	NORTH LEG	
	THRU	0	IN ...	685
	RIGHT	536	OUT ...	461
EAST BOUND	LEFT	0	WEST LEG	
	THRU	1,898	IN ...	3,178
	RIGHT	934	OUT ...	1,997
WEST BOUND	LEFT	0	EAST LEG	
	THRU	1,348	IN ...	1,936
	RIGHT	461	OUT ...	2,325
		5,344		11,598

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	167	162
	THRU	0	0
	RIGHT	536	523
EAST BOUND	LEFT	0	0
	THRU	1,898	2,163
	RIGHT	934	1,016
WEST BOUND	LEFT	0	0
	THRU	1,348	1,474
	RIGHT	461	461
		5,344	5,799

Intersection: I-15 NB Ramps Foothill Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	873	SOUTH LEG	
	THRU	0	IN ...	1,427
	RIGHT	494	OUT ...	259
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	228
EAST BOUND	LEFT	0	WEST LEG	
	THRU	441	IN ...	906
	RIGHT	259	OUT ...	2,447
WEST BOUND	LEFT	0	EAST LEG	
	THRU	1219	IN ...	1,702
	RIGHT	197	OUT ...	1,100
		3,483		8,068

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	873	967
	THRU	0	0
	RIGHT	494	460
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	441	640
	RIGHT	259	259
WEST BOUND	LEFT	0	0
	THRU	1,219	1,480
	RIGHT	197	228
		3,483	4,034

Intersection: I-15 NB Ramps Foothill Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	731	SOUTH LEG	
	THRU	0	IN ...	1,141
	RIGHT	465	OUT ...	986
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	322
EAST BOUND	LEFT	0	WEST LEG	
	THRU	1,092	IN ...	2,394
	RIGHT	986	OUT ...	2,044
WEST BOUND	LEFT	0	EAST LEG	
	THRU	1,114	IN ...	1,730
	RIGHT	292	OUT ...	1,912
		4,680		10,529

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	731	642
	THRU	0	0
	RIGHT	465	497
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	1,092	1,415
	RIGHT	986	986
WEST BOUND	LEFT	0	0
	THRU	1,114	1,401
	RIGHT	292	322
		4,680	5,264

Intersection: Etiwanda Ave Foothill Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	153	SOUTH LEG	
	THRU	199	IN ...	484
	RIGHT	67	OUT ...	1,082
SOUTH BOUND	LEFT	50	NORTH LEG	
	THRU	341	IN ...	773
	RIGHT	230	OUT ...	444
EAST BOUND	LEFT	100	WEST LEG	
	THRU	448	IN ...	959
	RIGHT	210	OUT ...	1,890
WEST BOUND	LEFT	342	EAST LEG	
	THRU	1200	IN ...	1,892
	RIGHT	115	OUT ...	691
		3,455		8,215

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	153	195
	THRU	199	213
	RIGHT	67	76
SOUTH BOUND	LEFT	50	57
	THRU	341	419
	RIGHT	230	296
EAST BOUND	LEFT	100	118
	THRU	448	558
	RIGHT	210	282
WEST BOUND	LEFT	342	381
	THRU	1,200	1,399
	RIGHT	115	113
		3,455	4,107

Intersection: Etiwanda Ave Foothill Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	260	SOUTH LEG	
	THRU	348	IN ...	978
	RIGHT	189	OUT ...	666
SOUTH BOUND	LEFT	62	NORTH LEG	
	THRU	209	IN ...	462
	RIGHT	155	OUT ...	682
EAST BOUND	LEFT	236	WEST LEG	
	THRU	931	IN ...	1,719
	RIGHT	176	OUT ...	1,508
WEST BOUND	LEFT	104	EAST LEG	
	THRU	748	IN ...	1,139
	RIGHT	47	OUT ...	1,443
		3,465		8,598

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	260	382
	THRU	348	372
	RIGHT	189	224
SOUTH BOUND	LEFT	62	54
	THRU	209	239
	RIGHT	155	169
EAST BOUND	LEFT	236	266
	THRU	931	1,164
	RIGHT	176	287
WEST BOUND	LEFT	104	140
	THRU	748	957
	RIGHT	47	44
		3,465	4,299

Intersection: Cherry Ave Foothill Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	214	SOUTH LEG	
	THRU	404	IN ...	1,128
	RIGHT	115	OUT ...	1,387
SOUTH BOUND	LEFT	164	NORTH LEG	
	THRU	793	IN ...	1,233
	RIGHT	203	OUT ...	862
EAST BOUND	LEFT	183	WEST LEG	
	THRU	414	IN ...	869
	RIGHT	153	OUT ...	1,908
WEST BOUND	LEFT	284	EAST LEG	
	THRU	1138	IN ...	1,719
	RIGHT	98	OUT ...	791
		4,163		9,895

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	214	380
	THRU	404	575
	RIGHT	115	172
SOUTH BOUND	LEFT	164	151
	THRU	793	860
	RIGHT	203	222
EAST BOUND	LEFT	183	197
	THRU	414	468
	RIGHT	153	204
WEST BOUND	LEFT	284	323
	THRU	1,138	1,306
	RIGHT	98	90
		4,163	4,947

Intersection: Cherry Ave Foothill Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	276	SOUTH LEG	
	THRU	828	IN ...	1,655
	RIGHT	230	OUT ...	1,291
SOUTH BOUND	LEFT	281	NORTH LEG	
	THRU	634	IN ...	1,265
	RIGHT	195	OUT ...	1,286
EAST BOUND	LEFT	247	WEST LEG	
	THRU	860	IN ...	1,662
	RIGHT	100	OUT ...	1,294
WEST BOUND	LEFT	135	EAST LEG	
	THRU	567	IN ...	925
	RIGHT	123	OUT ...	1,635
		4,476		11,013

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	276	461
	THRU	828	907
	RIGHT	230	285
SOUTH BOUND	LEFT	281	213
	THRU	634	855
	RIGHT	195	198
EAST BOUND	LEFT	247	288
	THRU	860	1,137
	RIGHT	100	236
WEST BOUND	LEFT	135	200
	THRU	567	635
	RIGHT	123	90
		4,476	5,506

Intersection: Beech Ave Foothill Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	21	SOUTH LEG	
	THRU	0	IN ...	306
	RIGHT	102	OUT ...	405
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	0	IN ...	368
	RIGHT	0	OUT ...	269
EAST BOUND	LEFT	0	WEST LEG	
	THRU	621	IN ...	766
	RIGHT	36	OUT ...	1,821
WEST BOUND	LEFT	198	EAST LEG	
	THRU	1526	IN ...	1,898
	RIGHT	0	OUT ...	843
		2,504		6,675

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	21	108
	THRU	0	0
	RIGHT	102	202
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	621	641
	RIGHT	36	123
WEST BOUND	LEFT	198	282
	THRU	1,526	1,713
	RIGHT	0	0
		2,504	3,068

Intersection: Beech Ave Foothill Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	60	SOUTH LEG	
	THRU	0	IN ...	444
	RIGHT	118	OUT ...	421
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	0	IN ...	394
	RIGHT	0	OUT ...	540
EAST BOUND	LEFT	0	WEST LEG	
	THRU	1,326	IN ...	1,764
	RIGHT	54	OUT ...	958
WEST BOUND	LEFT	104	EAST LEG	
	THRU	760	IN ...	970
	RIGHT	0	OUT ...	1,652
		2,422		7,142

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	60	214
	THRU	0	0
	RIGHT	118	211
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	1,326	1,441
	RIGHT	54	226
WEST BOUND	LEFT	104	195
	THRU	760	744
	RIGHT	0	0
		2,422	3,031

Intersection: Citrus Ave Foothill Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	143	SOUTH LEG	
	THRU	515	IN ...	853
	RIGHT	78	OUT ...	1,169
SOUTH BOUND	LEFT	132	NORTH LEG	
	THRU	724	IN ...	970
	RIGHT	162	OUT ...	820
EAST BOUND	LEFT	149	WEST LEG	
	THRU	428	IN ...	726
	RIGHT	114	OUT ...	1,271
WEST BOUND	LEFT	235	EAST LEG	
	THRU	797	IN ...	1,472
	RIGHT	78	OUT ...	762
		3,555		8,042

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	143	148
	THRU	515	586
	RIGHT	78	120
SOUTH BOUND	LEFT	132	151
	THRU	724	694
	RIGHT	162	125
EAST BOUND	LEFT	149	127
	THRU	428	491
	RIGHT	114	109
WEST BOUND	LEFT	235	365
	THRU	797	998
	RIGHT	78	107
		3,555	4,021

Intersection: Citrus Ave Foothill Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	138	SOUTH LEG	
	THRU	673	IN ...	967
	RIGHT	87	OUT ...	1,167
SOUTH BOUND	LEFT	131	NORTH LEG	
	THRU	551	IN ...	801
	RIGHT	71	OUT ...	1,045
EAST BOUND	LEFT	256	WEST LEG	
	THRU	837	IN ...	1,459
	RIGHT	177	OUT ...	786
WEST BOUND	LEFT	287	EAST LEG	
	THRU	553	IN ...	1,212
	RIGHT	119	OUT ...	1,442
		3,880		8,880

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	138	122
	THRU	673	693
	RIGHT	87	152
SOUTH BOUND	LEFT	131	189
	THRU	551	560
	RIGHT	71	52
EAST BOUND	LEFT	256	198
	THRU	837	1,101
	RIGHT	177	164
WEST BOUND	LEFT	287	444
	THRU	553	612
	RIGHT	119	154
		3,880	4,440

Intersection: Sierra Ave Foothill Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	79	SOUTH LEG	
	THRU	436	IN ...	988
	RIGHT	79	OUT ...	1,355
SOUTH BOUND	LEFT	192	NORTH LEG	
	THRU	814	IN ...	1,344
	RIGHT	126	OUT ...	1,121
EAST BOUND	LEFT	211	WEST LEG	
	THRU	375	IN ...	787
	RIGHT	100	OUT ...	1,072
WEST BOUND	LEFT	151	EAST LEG	
	THRU	611	IN ...	1,212
	RIGHT	125	OUT ...	784
		3,299		8,663

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	79	129
	THRU	436	722
	RIGHT	79	138
SOUTH BOUND	LEFT	192	216
	THRU	814	996
	RIGHT	126	132
EAST BOUND	LEFT	211	230
	THRU	375	431
	RIGHT	100	125
WEST BOUND	LEFT	151	233
	THRU	611	811
	RIGHT	125	169
		3,299	4,331

Intersection: Sierra Ave Foothill Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	103	SOUTH LEG	
	THRU	798	IN ...	1,486
	RIGHT	135	OUT ...	1,237
SOUTH BOUND	LEFT	153	NORTH LEG	
	THRU	488	IN ...	1,125
	RIGHT	119	OUT ...	1,496
EAST BOUND	LEFT	200	WEST LEG	
	THRU	689	IN ...	1,382
	RIGHT	134	OUT ...	932
WEST BOUND	LEFT	200	EAST LEG	
	THRU	501	IN ...	1,078
	RIGHT	162	OUT ...	1,408
		3,682		10,144

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	103	160
	THRU	798	1,095
	RIGHT	135	230
SOUTH BOUND	LEFT	153	220
	THRU	488	750
	RIGHT	119	156
EAST BOUND	LEFT	200	225
	THRU	689	958
	RIGHT	134	199
WEST BOUND	LEFT	200	287
	THRU	501	615
	RIGHT	162	176
		3,682	5,072

Intersection: Etiwanda Ave Arrow Route

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	325	SOUTH LEG	
	THRU	161	IN ...	681
	RIGHT	36	OUT ...	1,005
SOUTH BOUND	LEFT	120	NORTH LEG	
	THRU	324	IN ...	1,047
	RIGHT	392	OUT ...	470
EAST BOUND	LEFT	93	WEST LEG	
	THRU	245	IN ...	587
	RIGHT	148	OUT ...	1,557
WEST BOUND	LEFT	141	EAST LEG	
	THRU	699	IN ...	1,239
	RIGHT	133	OUT ...	522
		2,817		7,108

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	325	398
	THRU	161	218
	RIGHT	36	65
SOUTH BOUND	LEFT	120	163
	THRU	324	519
	RIGHT	392	364
EAST BOUND	LEFT	93	84
	THRU	245	294
	RIGHT	148	209
WEST BOUND	LEFT	141	277
	THRU	699	795
	RIGHT	133	167
		2,817	3,554

Intersection: Etiwanda Ave Arrow Route

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	163	SOUTH LEG	
	THRU	520	IN ...	1,207
	RIGHT	116	OUT ...	983
SOUTH BOUND	LEFT	127	NORTH LEG	
	THRU	235	IN ...	655
	RIGHT	114	OUT ...	1,220
EAST BOUND	LEFT	349	WEST LEG	
	THRU	622	IN ...	1,476
	RIGHT	387	OUT ...	738
WEST BOUND	LEFT	100	EAST LEG	
	THRU	360	IN ...	768
	RIGHT	144	OUT ...	1,167
		3,237		8,213

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	163	216
	THRU	520	751
	RIGHT	116	240
SOUTH BOUND	LEFT	127	192
	THRU	235	353
	RIGHT	114	111
EAST BOUND	LEFT	349	289
	THRU	622	735
	RIGHT	387	453
WEST BOUND	LEFT	100	177
	THRU	360	411
	RIGHT	144	180
		3,237	4,107

Intersection: Cherry Ave Arrow Route

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	103	SOUTH LEG	
	THRU	671	IN ...	1,336
	RIGHT	122	OUT ...	1,494
SOUTH BOUND	LEFT	53	NORTH LEG	
	THRU	1008	IN ...	1,324
	RIGHT	95	OUT ...	1,201
EAST BOUND	LEFT	70	WEST LEG	
	THRU	390	IN ...	588
	RIGHT	93	OUT ...	997
WEST BOUND	LEFT	154	EAST LEG	
	THRU	601	IN ...	1,072
	RIGHT	59	OUT ...	627
		3,419		8,639

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	103	136
	THRU	671	1,033
	RIGHT	122	168
SOUTH BOUND	LEFT	53	57
	THRU	1,008	1,169
	RIGHT	95	97
EAST BOUND	LEFT	70	81
	THRU	390	403
	RIGHT	93	104
WEST BOUND	LEFT	154	221
	THRU	601	763
	RIGHT	59	87
		3,419	4,320

Intersection: Cherry Ave Arrow Route

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	138	SOUTH LEG	
	THRU	1,069	IN ...	1,847
	RIGHT	219	OUT ...	1,429
SOUTH BOUND	LEFT	69	NORTH LEG	
	THRU	777	IN ...	1,377
	RIGHT	93	OUT ...	1,537
EAST BOUND	LEFT	84	WEST LEG	
	THRU	606	IN ...	976
	RIGHT	98	OUT ...	845
WEST BOUND	LEFT	116	EAST LEG	
	THRU	542	IN ...	780
	RIGHT	59	OUT ...	1,170
		3,870		9,961

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	138	162
	THRU	1,069	1,374
	RIGHT	219	310
SOUTH BOUND	LEFT	69	103
	THRU	777	1,160
	RIGHT	93	115
EAST BOUND	LEFT	84	95
	THRU	606	758
	RIGHT	98	123
WEST BOUND	LEFT	116	146
	THRU	542	567
	RIGHT	59	67
		3,870	4,981

Intersection: Beech Ave Arrow Route

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	83	SOUTH LEG	
	THRU	127	IN ...	523
	RIGHT	114	OUT ...	512
SOUTH BOUND	LEFT	14	NORTH LEG	
	THRU	154	IN ...	423
	RIGHT	84	OUT ...	373
EAST BOUND	LEFT	41	WEST LEG	
	THRU	337	IN ...	500
	RIGHT	58	OUT ...	1,024
WEST BOUND	LEFT	140	EAST LEG	
	THRU	598	IN ...	1,015
	RIGHT	22	OUT ...	552
		1,772		4,922

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	83	107
	THRU	127	260
	RIGHT	114	156
SOUTH BOUND	LEFT	14	24
	THRU	154	260
	RIGHT	84	137
EAST BOUND	LEFT	41	68
	THRU	337	372
	RIGHT	58	62
WEST BOUND	LEFT	140	189
	THRU	598	780
	RIGHT	22	45
		1,772	2,461

Intersection: Beech Ave Arrow Route

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	96	SOUTH LEG	
	THRU	151	IN ...	745
	RIGHT	218	OUT ...	628
SOUTH BOUND	LEFT	18	NORTH LEG	
	THRU	141	IN ...	444
	RIGHT	22	OUT ...	474
EAST BOUND	LEFT	31	WEST LEG	
	THRU	636	IN ...	1,021
	RIGHT	65	OUT ...	664
WEST BOUND	LEFT	90	EAST LEG	
	THRU	429	IN ...	696
	RIGHT	27	OUT ...	1,140
		1,924		5,814

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	96	124
	THRU	151	345
	RIGHT	218	276
SOUTH BOUND	LEFT	18	34
	THRU	141	368
	RIGHT	22	42
EAST BOUND	LEFT	31	73
	THRU	636	830
	RIGHT	65	117
WEST BOUND	LEFT	90	142
	THRU	429	498
	RIGHT	27	56
		1,924	2,906

Intersection: Citrus Ave Arrow Route

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	208	SOUTH LEG	
	THRU	617	IN ...	1,199
	RIGHT	205	OUT ...	1,231
SOUTH BOUND	LEFT	96	NORTH LEG	
	THRU	791	IN ...	1,124
	RIGHT	141	OUT ...	964
EAST BOUND	LEFT	73	WEST LEG	
	THRU	255	IN ...	503
	RIGHT	105	OUT ...	1,043
WEST BOUND	LEFT	226	EAST LEG	
	THRU	437	IN ...	1,019
	RIGHT	131	OUT ...	606
		3,285		7,687

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	208	268
	THRU	617	714
	RIGHT	205	217
SOUTH BOUND	LEFT	96	99
	THRU	791	846
	RIGHT	141	178
EAST BOUND	LEFT	73	90
	THRU	255	289
	RIGHT	105	123
WEST BOUND	LEFT	226	262
	THRU	437	596
	RIGHT	131	160
		3,285	3,843

Intersection: Citrus Ave Arrow Route

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	175	SOUTH LEG	
	THRU	861	IN ...	1,287
	RIGHT	169	OUT ...	1,182
SOUTH BOUND	LEFT	138	NORTH LEG	
	THRU	729	IN ...	1,035
	RIGHT	67	OUT ...	1,100
EAST BOUND	LEFT	78	WEST LEG	
	THRU	565	IN ...	1,127
	RIGHT	168	OUT ...	702
WEST BOUND	LEFT	144	EAST LEG	
	THRU	309	IN ...	633
	RIGHT	92	OUT ...	1,098
		3,495		8,163

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	175	222
	THRU	861	894
	RIGHT	169	171
SOUTH BOUND	LEFT	138	148
	THRU	729	797
	RIGHT	67	90
EAST BOUND	LEFT	78	111
	THRU	565	779
	RIGHT	168	237
WEST BOUND	LEFT	144	148
	THRU	309	390
	RIGHT	92	95
		3,495	4,082

Intersection: Sierra Ave Arrow Route

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	87	SOUTH LEG	
	THRU	511	IN ...	988
	RIGHT	35	OUT ...	1,152
SOUTH BOUND	LEFT	58	NORTH LEG	
	THRU	717	IN ...	1,162
	RIGHT	69	OUT ...	1,003
EAST BOUND	LEFT	67	WEST LEG	
	THRU	402	IN ...	612
	RIGHT	82	OUT ...	750
WEST BOUND	LEFT	69	EAST LEG	
	THRU	527	IN ...	687
	RIGHT	55	OUT ...	546
		2,679		6,900

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	87	112
	THRU	511	837
	RIGHT	35	43
SOUTH BOUND	LEFT	58	76
	THRU	717	988
	RIGHT	69	94
EAST BOUND	LEFT	67	94
	THRU	402	427
	RIGHT	82	92
WEST BOUND	LEFT	69	72
	THRU	527	544
	RIGHT	55	72
		2,679	3,450

Intersection: Sierra Ave Arrow Route

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	85	SOUTH LEG	
	THRU	770	IN ...	1,303
	RIGHT	56	OUT ...	1,027
SOUTH BOUND	LEFT	108	NORTH LEG	
	THRU	507	IN ...	1,082
	RIGHT	77	OUT ...	1,374
EAST BOUND	LEFT	101	WEST LEG	
	THRU	475	IN ...	818
	RIGHT	89	OUT ...	595
WEST BOUND	LEFT	64	EAST LEG	
	THRU	311	IN ...	446
	RIGHT	53	OUT ...	652
		2,696		7,296

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	85	125
	THRU	770	1,135
	RIGHT	56	47
SOUTH BOUND	LEFT	108	114
	THRU	507	824
	RIGHT	77	141
EAST BOUND	LEFT	101	183
	THRU	475	491
	RIGHT	89	142
WEST BOUND	LEFT	64	60
	THRU	311	330
	RIGHT	53	56
		2,696	3,648

Intersection: Etiwanda Ave Whittram Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	418	IN ...	744
	RIGHT	151	OUT ...	1,181
SOUTH BOUND	LEFT	65	NORTH LEG	
	THRU	572	IN ...	1,029
	RIGHT	0	OUT ...	714
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
WEST BOUND	LEFT	234	EAST LEG	
	THRU	0	IN ...	382
	RIGHT	137	OUT ...	259
		1,577		4,310

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	418	572
	RIGHT	151	171
SOUTH BOUND	LEFT	65	89
	THRU	572	941
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	234	241
	THRU	0	0
	RIGHT	137	142
		1,577	2,155

Intersection: Etiwanda Ave Whittram Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	664	IN ...	1,309
	RIGHT	283	OUT ...	973
SOUTH BOUND	LEFT	196	NORTH LEG	
	THRU	515	IN ...	972
	RIGHT	0	OUT ...	1,160
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
WEST BOUND	LEFT	201	EAST LEG	
	THRU	0	IN ...	312
	RIGHT	88	OUT ...	460
		1,947		5,186

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	664	1,053
	RIGHT	283	258
SOUTH BOUND	LEFT	196	201
	THRU	515	769
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	201	205
	THRU	0	0
	RIGHT	88	107
		1,947	2,593

Intersection: Cherry Ave Whittram Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	186	SOUTH LEG	
	THRU	806	IN ...	1,632
	RIGHT	132	OUT ...	1,643
SOUTH BOUND	LEFT	35	NORTH LEG	
	THRU	1068	IN ...	1,431
	RIGHT	89	OUT ...	1,344
EAST BOUND	LEFT	30	WEST LEG	
	THRU	30	IN ...	266
	RIGHT	200	OUT ...	478
WEST BOUND	LEFT	150	EAST LEG	
	THRU	136	IN ...	336
	RIGHT	68	OUT ...	202
		2,930		7,332

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	186	251
	THRU	806	1,239
	RIGHT	132	145
SOUTH BOUND	LEFT	35	33
	THRU	1,068	1,293
	RIGHT	89	103
EAST BOUND	LEFT	30	34
	THRU	30	24
	RIGHT	200	208
WEST BOUND	LEFT	150	142
	THRU	136	124
	RIGHT	68	70
		2,930	3,666

Intersection: Cherry Ave Whittram Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	143	SOUTH LEG	
	THRU	1,366	IN ...	2,024
	RIGHT	112	OUT ...	1,622
SOUTH BOUND	LEFT	38	NORTH LEG	
	THRU	688	IN ...	1,220
	RIGHT	56	OUT ...	1,947
EAST BOUND	LEFT	87	WEST LEG	
	THRU	141	IN ...	599
	RIGHT	294	OUT ...	276
WEST BOUND	LEFT	122	EAST LEG	
	THRU	67	IN ...	259
	RIGHT	73	OUT ...	255
		3,187		8,203

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	143	152
	THRU	1,366	1,769
	RIGHT	112	100
SOUTH BOUND	LEFT	38	39
	THRU	688	1,113
	RIGHT	56	69
EAST BOUND	LEFT	87	105
	THRU	141	117
	RIGHT	294	379
WEST BOUND	LEFT	122	131
	THRU	67	55
	RIGHT	73	73
		3,187	4,101

Intersection: Beech Ave Whittram Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	134	SOUTH LEG	
	THRU	290	IN ...	633
	RIGHT	7	OUT ...	487
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	261	IN ...	532
	RIGHT	111	OUT ...	547
EAST BOUND	LEFT	57	WEST LEG	
	THRU	5	IN ...	129
	RIGHT	66	OUT ...	251
WEST BOUND	LEFT	0	EAST LEG	
	THRU	3	IN ...	4
	RIGHT	1	OUT ...	12
		935		2,595

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	134	138
	THRU	290	487
	RIGHT	7	8
SOUTH BOUND	LEFT	0	0
	THRU	261	421
	RIGHT	111	111
EAST BOUND	LEFT	57	58
	THRU	5	4
	RIGHT	66	67
WEST BOUND	LEFT	0	0
	THRU	3	3
	RIGHT	1	1
		935	1,297

Intersection: Beech Ave Whittram Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	88	SOUTH LEG	
	THRU	400	IN ...	771
	RIGHT	2	OUT ...	816
SOUTH BOUND	LEFT	1	NORTH LEG	
	THRU	314	IN ...	686
	RIGHT	39	OUT ...	763
EAST BOUND	LEFT	80	WEST LEG	
	THRU	3	IN ...	247
	RIGHT	165	OUT ...	134
WEST BOUND	LEFT	6	EAST LEG	
	THRU	6	IN ...	15
	RIGHT	3	OUT ...	6
		1,107		3,438

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	88	85
	THRU	400	681
	RIGHT	2	2
SOUTH BOUND	LEFT	1	1
	THRU	314	642
	RIGHT	39	44
EAST BOUND	LEFT	80	78
	THRU	3	2
	RIGHT	165	167
WEST BOUND	LEFT	6	7
	THRU	6	4
	RIGHT	3	4
		1,107	1,719

Intersection: Etiwanda Ave Napa St

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	1	SOUTH LEG	
	THRU	551	IN ...	1,053
	RIGHT	201	OUT ...	1,248
SOUTH BOUND	LEFT	49	NORTH LEG	
	THRU	753	IN ...	1,122
	RIGHT	1	OUT ...	891
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	2
	RIGHT	2	OUT ...	2
WEST BOUND	LEFT	174	EAST LEG	
	THRU	0	IN ...	214
	RIGHT	40	OUT ...	250
		1,772		4,782

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	1	1
	THRU	551	849
	RIGHT	201	202
SOUTH BOUND	LEFT	49	48
	THRU	753	1,074
	RIGHT	1	1
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	2	2
WEST BOUND	LEFT	174	172
	THRU	0	0
	RIGHT	40	42
		1,772	2,391

Intersection: Etiwanda Ave Napa St

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	907	IN ...	1,273
	RIGHT	60	OUT ...	1,163
SOUTH BOUND	LEFT	95	NORTH LEG	
	THRU	571	IN ...	1,037
	RIGHT	0	OUT ...	1,267
EAST BOUND	LEFT	5	WEST LEG	
	THRU	0	IN ...	35
	RIGHT	30	OUT ...	0
WEST BOUND	LEFT	191	EAST LEG	
	THRU	0	IN ...	240
	RIGHT	49	OUT ...	155
		1,908		5,171

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	907	1,216
	RIGHT	60	55
SOUTH BOUND	LEFT	95	100
	THRU	571	939
	RIGHT	0	0
EAST BOUND	LEFT	5	5
	THRU	0	0
	RIGHT	30	30
WEST BOUND	LEFT	191	194
	THRU	0	0
	RIGHT	49	47
		1,908	2,585

Intersection: Cherry Ave Merrill Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	3	SOUTH LEG	
	THRU	813	IN ...	1,244
	RIGHT	117	OUT ...	1,581
SOUTH BOUND	LEFT	130	NORTH LEG	
	THRU	1237	IN ...	1,592
	RIGHT	0	OUT ...	1,574
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	3
WEST BOUND	LEFT	145	EAST LEG	
	THRU	0	IN ...	569
	RIGHT	253	OUT ...	246
		2,698		6,810

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	3	3
	THRU	813	1,155
	RIGHT	117	102
SOUTH BOUND	LEFT	130	144
	THRU	1,237	1,428
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	145	153
	THRU	0	0
	RIGHT	253	419
		2,698	3,405

Intersection: Cherry Ave Merrill Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	1	SOUTH LEG	
	THRU	1,458	IN ...	2,012
	RIGHT	200	OUT ...	1,256
SOUTH BOUND	LEFT	199	NORTH LEG	
	THRU	841	IN ...	1,559
	RIGHT	1	OUT ...	2,067
EAST BOUND	LEFT	0	WEST LEG	
	THRU	1	IN ...	1
	RIGHT	0	OUT ...	2
WEST BOUND	LEFT	107	EAST LEG	
	THRU	0	IN ...	344
	RIGHT	206	OUT ...	592
		3,014		7,833

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	1	1
	THRU	1,458	1,809
	RIGHT	200	219
SOUTH BOUND	LEFT	199	372
	THRU	841	1,168
	RIGHT	1	1
EAST BOUND	LEFT	0	0
	THRU	1	1
	RIGHT	0	0
WEST BOUND	LEFT	107	88
	THRU	0	0
	RIGHT	206	258
		3,014	3,917

Intersection: Beech Ave Merrill Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	51	SOUTH LEG	
	THRU	162	IN ...	383
	RIGHT	58	OUT ...	403
SOUTH BOUND	LEFT	56	NORTH LEG	
	THRU	145	IN ...	437
	RIGHT	76	OUT ...	620
EAST BOUND	LEFT	103	WEST LEG	
	THRU	129	IN ...	364
	RIGHT	56	OUT ...	506
WEST BOUND	LEFT	67	EAST LEG	
	THRU	230	IN ...	593
	RIGHT	153	OUT ...	248
		1,286		3,555

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	51	75
	THRU	162	251
	RIGHT	58	57
SOUTH BOUND	LEFT	56	65
	THRU	145	241
	RIGHT	76	132
EAST BOUND	LEFT	103	159
	THRU	129	126
	RIGHT	56	79
WEST BOUND	LEFT	67	84
	THRU	230	299
	RIGHT	153	210
		1,286	1,777

Intersection: Beech Ave Merrill Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	30	SOUTH LEG	
	THRU	215	IN ...	474
	RIGHT	48	OUT ...	430
SOUTH BOUND	LEFT	118	NORTH LEG	
	THRU	172	IN ...	661
	RIGHT	40	OUT ...	754
EAST BOUND	LEFT	129	WEST LEG	
	THRU	224	IN ...	614
	RIGHT	33	OUT ...	320
WEST BOUND	LEFT	32	EAST LEG	
	THRU	148	IN ...	370
	RIGHT	129	OUT ...	615
		1,318		4,239

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	30	49
	THRU	215	360
	RIGHT	48	65
SOUTH BOUND	LEFT	118	223
	THRU	172	346
	RIGHT	40	92
EAST BOUND	LEFT	129	235
	THRU	224	328
	RIGHT	33	51
WEST BOUND	LEFT	32	34
	THRU	148	178
	RIGHT	129	159
		1,318	2,119

Intersection: Citrus Ave Merrill Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	51	SOUTH LEG	
	THRU	676	IN ...	943
	RIGHT	27	OUT ...	1,182
SOUTH BOUND	LEFT	61	NORTH LEG	
	THRU	902	IN ...	1,255
	RIGHT	92	OUT ...	1,096
EAST BOUND	LEFT	147	WEST LEG	
	THRU	156	IN ...	355
	RIGHT	48	OUT ...	456
WEST BOUND	LEFT	43	EAST LEG	
	THRU	206	IN ...	429
	RIGHT	103	OUT ...	248
		2,512		5,965

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	51	74
	THRU	676	835
	RIGHT	27	32
SOUTH BOUND	LEFT	61	64
	THRU	902	1,077
	RIGHT	92	117
EAST BOUND	LEFT	147	149
	THRU	156	153
	RIGHT	48	54
WEST BOUND	LEFT	43	52
	THRU	206	265
	RIGHT	103	113
		2,512	2,983

Intersection: Citrus Ave Merrill Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	45	SOUTH LEG	
	THRU	922	IN ...	1,166
	RIGHT	34	OUT ...	1,014
SOUTH BOUND	LEFT	78	NORTH LEG	
	THRU	735	IN ...	1,075
	RIGHT	100	OUT ...	1,318
EAST BOUND	LEFT	139	WEST LEG	
	THRU	250	IN ...	552
	RIGHT	53	OUT ...	392
WEST BOUND	LEFT	29	EAST LEG	
	THRU	195	IN ...	398
	RIGHT	136	OUT ...	467
		2,716		6,382

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	45	62
	THRU	922	1,046
	RIGHT	34	50
SOUTH BOUND	LEFT	78	85
	THRU	735	896
	RIGHT	100	103
EAST BOUND	LEFT	139	142
	THRU	250	331
	RIGHT	53	78
WEST BOUND	LEFT	29	40
	THRU	195	227
	RIGHT	136	130
		2,716	3,191

Intersection: Sierra Ave Merrill Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	57	SOUTH LEG	
	THRU	568	IN ...	915
	RIGHT	91	OUT ...	1,314
SOUTH BOUND	LEFT	33	NORTH LEG	
	THRU	877	IN ...	1,271
	RIGHT	42	OUT ...	922
EAST BOUND	LEFT	50	WEST LEG	
	THRU	340	IN ...	453
	RIGHT	93	OUT ...	443
WEST BOUND	LEFT	134	EAST LEG	
	THRU	370	IN ...	488
	RIGHT	43	OUT ...	447
		2,698		6,255

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	57	52
	THRU	568	794
	RIGHT	91	84
SOUTH BOUND	LEFT	33	51
	THRU	877	1,141
	RIGHT	42	64
EAST BOUND	LEFT	50	70
	THRU	340	313
	RIGHT	93	72
WEST BOUND	LEFT	134	101
	THRU	370	328
	RIGHT	43	58
		2,698	3,127

Intersection: Sierra Ave Merrill Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	113	SOUTH LEG	
	THRU	833	IN ...	1,433
	RIGHT	164	OUT ...	1,109
SOUTH BOUND	LEFT	64	NORTH LEG	
	THRU	696	IN ...	1,122
	RIGHT	56	OUT ...	1,376
EAST BOUND	LEFT	75	WEST LEG	
	THRU	453	IN ...	637
	RIGHT	101	OUT ...	447
WEST BOUND	LEFT	111	EAST LEG	
	THRU	270	IN ...	369
	RIGHT	46	OUT ...	629
		2,982		7,124

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	113	118
	THRU	833	1,197
	RIGHT	164	131
SOUTH BOUND	LEFT	64	82
	THRU	696	935
	RIGHT	56	94
EAST BOUND	LEFT	75	124
	THRU	453	416
	RIGHT	101	97
WEST BOUND	LEFT	111	77
	THRU	270	236
	RIGHT	46	55
		2,982	3,562

Intersection: Citrus Ave Fontana Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	20	SOUTH LEG	
	THRU	645	IN ...	812
	RIGHT	75	OUT ...	899
SOUTH BOUND	LEFT	23	NORTH LEG	
	THRU	871	IN ...	1,205
	RIGHT	122	OUT ...	968
EAST BOUND	LEFT	103	WEST LEG	
	THRU	90	IN ...	414
	RIGHT	11	OUT ...	629
WEST BOUND	LEFT	74	EAST LEG	
	THRU	78	IN ...	327
	RIGHT	31	OUT ...	262
		2,143		5,515

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	20	47
	THRU	645	698
	RIGHT	75	68
SOUTH BOUND	LEFT	23	26
	THRU	871	816
	RIGHT	122	361
EAST BOUND	LEFT	103	230
	THRU	90	168
	RIGHT	11	17
WEST BOUND	LEFT	74	66
	THRU	78	220
	RIGHT	31	40
		2,143	2,758

Intersection: Citrus Ave Fontana Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	18	SOUTH LEG	
	THRU	868	IN ...	895
	RIGHT	69	OUT ...	728
SOUTH BOUND	LEFT	34	NORTH LEG	
	THRU	681	IN ...	1,018
	RIGHT	106	OUT ...	1,189
EAST BOUND	LEFT	136	WEST LEG	
	THRU	178	IN ...	737
	RIGHT	9	OUT ...	517
WEST BOUND	LEFT	42	EAST LEG	
	THRU	83	IN ...	246
	RIGHT	20	OUT ...	463
		2,244		5,793

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	18	32
	THRU	868	813
	RIGHT	69	52
SOUTH BOUND	LEFT	34	41
	THRU	681	678
	RIGHT	106	297
EAST BOUND	LEFT	136	352
	THRU	178	370
	RIGHT	9	16
WEST BOUND	LEFT	42	34
	THRU	83	188
	RIGHT	20	24
		2,244	2,897

Intersection: Cherry Ave Randall Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	10	SOUTH LEG	
	THRU	838	IN ...	1,242
	RIGHT	104	OUT ...	1,633
SOUTH BOUND	LEFT	156	NORTH LEG	
	THRU	1207	IN ...	1,573
	RIGHT	9	OUT ...	1,275
EAST BOUND	LEFT	0	WEST LEG	
	THRU	1	IN ...	(1)
	RIGHT	0	OUT ...	38
WEST BOUND	LEFT	214	EAST LEG	
	THRU	0	IN ...	400
	RIGHT	109	OUT ...	269
		2,648		6,429

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	10	20
	THRU	838	1,123
	RIGHT	104	106
SOUTH BOUND	LEFT	156	164
	THRU	1,207	1,385
	RIGHT	9	18
EAST BOUND	LEFT	0	0
	THRU	1	(1)
	RIGHT	0	0
WEST BOUND	LEFT	214	248
	THRU	0	0
	RIGHT	109	152
		2,648	3,215

Intersection: Cherry Ave Randall Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	16	SOUTH LEG	
	THRU	1,461	IN ...	1,994
	RIGHT	163	OUT ...	1,306
SOUTH BOUND	LEFT	160	NORTH LEG	
	THRU	882	IN ...	1,371
	RIGHT	2	OUT ...	1,987
EAST BOUND	LEFT	5	WEST LEG	
	THRU	2	IN ...	18
	RIGHT	5	OUT ...	19
WEST BOUND	LEFT	165	EAST LEG	
	THRU	0	IN ...	314
	RIGHT	124	OUT ...	385
		2,985		7,394

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	16	17
	THRU	1,461	1,824
	RIGHT	163	166
SOUTH BOUND	LEFT	160	217
	THRU	882	1,140
	RIGHT	2	3
EAST BOUND	LEFT	5	8
	THRU	2	3
	RIGHT	5	6
WEST BOUND	LEFT	165	159
	THRU	0	0
	RIGHT	124	154
		2,985	3,697

Intersection: Beech Ave Randall Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	17	SOUTH LEG	
	THRU	193	IN ...	378
	RIGHT	42	OUT ...	375
SOUTH BOUND	LEFT	6	NORTH LEG	
	THRU	194	IN ...	417
	RIGHT	82	OUT ...	399
EAST BOUND	LEFT	55	WEST LEG	
	THRU	115	IN ...	222
	RIGHT	18	OUT ...	351
WEST BOUND	LEFT	31	EAST LEG	
	THRU	173	IN ...	301
	RIGHT	39	OUT ...	192
		965		2,635

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	17	28
	THRU	193	290
	RIGHT	42	58
SOUTH BOUND	LEFT	6	7
	THRU	194	302
	RIGHT	82	110
EAST BOUND	LEFT	55	66
	THRU	115	128
	RIGHT	18	28
WEST BOUND	LEFT	31	44
	THRU	173	213
	RIGHT	39	44
		965	1,317

Intersection: Beech Ave Randall Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	15	SOUTH LEG	
	THRU	213	IN ...	434
	RIGHT	12	OUT ...	403
SOUTH BOUND	LEFT	34	NORTH LEG	
	THRU	162	IN ...	420
	RIGHT	31	OUT ...	498
EAST BOUND	LEFT	62	WEST LEG	
	THRU	171	IN ...	361
	RIGHT	22	OUT ...	215
WEST BOUND	LEFT	10	EAST LEG	
	THRU	113	IN ...	205
	RIGHT	42	OUT ...	306
		887		2,842

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	15	31
	THRU	213	376
	RIGHT	12	24
SOUTH BOUND	LEFT	34	45
	THRU	162	336
	RIGHT	31	43
EAST BOUND	LEFT	62	77
	THRU	171	237
	RIGHT	22	48
WEST BOUND	LEFT	10	19
	THRU	113	141
	RIGHT	42	45
		887	1,421

Intersection: Fontana Ave/Cata Randall Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	43	SOUTH LEG	
	THRU	60	IN ...	396
	RIGHT	69	OUT ...	632
SOUTH BOUND	LEFT	41	NORTH LEG	
	THRU	86	IN ...	543
	RIGHT	14	OUT ...	282
EAST BOUND	LEFT	6	WEST LEG	
	THRU	95	IN ...	179
	RIGHT	57	OUT ...	210
WEST BOUND	LEFT	55	EAST LEG	
	THRU	146	IN ...	230
	RIGHT	14	OUT ...	224
		686		2,696

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	43	67
	THRU	60	242
	RIGHT	69	86
SOUTH BOUND	LEFT	41	75
	THRU	86	436
	RIGHT	14	32
EAST BOUND	LEFT	6	13
	THRU	95	63
	RIGHT	57	104
WEST BOUND	LEFT	55	92
	THRU	146	111
	RIGHT	14	27
		686	1,348

Intersection: Fontana Ave/Cata Randall Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	33	SOUTH LEG	
	THRU	51	IN ...	594
	RIGHT	48	OUT ...	437
SOUTH BOUND	LEFT	12	NORTH LEG	
	THRU	42	IN ...	378
	RIGHT	7	OUT ...	474
EAST BOUND	LEFT	2	WEST LEG	
	THRU	143	IN ...	178
	RIGHT	22	OUT ...	186
WEST BOUND	LEFT	39	EAST LEG	
	THRU	142	IN ...	190
	RIGHT	7	OUT ...	242
		548		2,679

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	33	65
	THRU	51	444
	RIGHT	48	87
SOUTH BOUND	LEFT	12	34
	THRU	42	320
	RIGHT	7	22
EAST BOUND	LEFT	2	8
	THRU	143	120
	RIGHT	22	49
WEST BOUND	LEFT	39	68
	THRU	142	100
	RIGHT	7	22
		548	1,340

Intersection: Citrus Ave Randall Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	113	SOUTH LEG	
	THRU	591	IN ...	931
	RIGHT	196	OUT ...	1,043
SOUTH BOUND	LEFT	103	NORTH LEG	
	THRU	849	IN ...	945
	RIGHT	50	OUT ...	810
EAST BOUND	LEFT	80	WEST LEG	
	THRU	110	IN ...	344
	RIGHT	135	OUT ...	286
WEST BOUND	LEFT	123	EAST LEG	
	THRU	108	IN ...	368
	RIGHT	67	OUT ...	449
		2,525		5,176

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	113	104
	THRU	591	623
	RIGHT	196	206
SOUTH BOUND	LEFT	103	117
	THRU	849	778
	RIGHT	50	50
EAST BOUND	LEFT	80	92
	THRU	110	126
	RIGHT	135	125
WEST BOUND	LEFT	123	140
	THRU	108	133
	RIGHT	67	95
		2,525	2,588

Intersection: Citrus Ave Randall Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	50	SOUTH LEG	
	THRU	874	IN ...	1,005
	RIGHT	82	OUT ...	697
SOUTH BOUND	LEFT	66	NORTH LEG	
	THRU	634	IN ...	709
	RIGHT	13	OUT ...	897
EAST BOUND	LEFT	20	WEST LEG	
	THRU	165	IN ...	263
	RIGHT	39	OUT ...	213
WEST BOUND	LEFT	57	EAST LEG	
	THRU	148	IN ...	271
	RIGHT	63	OUT ...	441
		2,211		4,496

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	50	50
	THRU	874	822
	RIGHT	82	130
SOUTH BOUND	LEFT	66	96
	THRU	634	603
	RIGHT	13	12
EAST BOUND	LEFT	20	15
	THRU	165	215
	RIGHT	39	33
WEST BOUND	LEFT	57	60
	THRU	148	150
	RIGHT	63	60
		2,211	2,248

Intersection: Sierra Ave Randall Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	31	SOUTH LEG	
	THRU	725	IN ...	970
	RIGHT	49	OUT ...	1,574
SOUTH BOUND	LEFT	22	NORTH LEG	
	THRU	1043	IN ...	1,344
	RIGHT	36	OUT ...	1,016
EAST BOUND	LEFT	57	WEST LEG	
	THRU	200	IN ...	415
	RIGHT	93	OUT ...	322
WEST BOUND	LEFT	134	EAST LEG	
	THRU	203	IN ...	522
	RIGHT	50	OUT ...	341
		2,643		6,504

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	31	31
	THRU	725	876
	RIGHT	49	64
SOUTH BOUND	LEFT	22	30
	THRU	1,043	1,276
	RIGHT	36	38
EAST BOUND	LEFT	57	65
	THRU	200	247
	RIGHT	93	104
WEST BOUND	LEFT	134	195
	THRU	203	253
	RIGHT	50	75
		2,643	3,252

Intersection: Sierra Ave Randall Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	68	SOUTH LEG	
	THRU	1,025	IN ...	1,578
	RIGHT	112	OUT ...	1,131
SOUTH BOUND	LEFT	64	NORTH LEG	
	THRU	785	IN ...	1,116
	RIGHT	62	OUT ...	1,512
EAST BOUND	LEFT	76	WEST LEG	
	THRU	231	IN ...	436
	RIGHT	66	OUT ...	339
WEST BOUND	LEFT	117	EAST LEG	
	THRU	164	IN ...	453
	RIGHT	58	OUT ...	601
		2,828		7,166

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	68	67
	THRU	1,025	1,336
	RIGHT	112	182
SOUTH BOUND	LEFT	64	118
	THRU	785	923
	RIGHT	62	69
EAST BOUND	LEFT	76	80
	THRU	231	302
	RIGHT	66	55
WEST BOUND	LEFT	117	153
	THRU	164	203
	RIGHT	58	96
		2,828	3,583

Intersection: I-15 SB Ramps/O Fourth St

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	86	SOUTH LEG	
	THRU	48	IN ...	223
	RIGHT	77	OUT ...	455
SOUTH BOUND	LEFT	136	NORTH LEG	
	THRU	246	IN ...	1,362
	RIGHT	885	OUT ...	724
EAST BOUND	LEFT	267	WEST LEG	
	THRU	400	IN ...	839
	RIGHT	59	OUT ...	2,422
WEST BOUND	LEFT	134	EAST LEG	
	THRU	1190	IN ...	1,874
	RIGHT	220	OUT ...	698
		3,748		8,598

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	86	81
	THRU	48	58
	RIGHT	77	83
SOUTH BOUND	LEFT	136	166
	THRU	246	250
	RIGHT	885	946
EAST BOUND	LEFT	267	336
	THRU	400	449
	RIGHT	59	55
WEST BOUND	LEFT	134	149
	THRU	1,190	1,395
	RIGHT	220	330
		3,748	4,299

Intersection: I-15 SB Ramps/O Fourth St

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	119	SOUTH LEG	
	THRU	208	IN ...	755
	RIGHT	360	OUT ...	544
SOUTH BOUND	LEFT	107	NORTH LEG	
	THRU	282	IN ...	933
	RIGHT	534	OUT ...	1,370
EAST BOUND	LEFT	817	WEST LEG	
	THRU	1,020	IN ...	2,193
	RIGHT	94	OUT ...	1,235
WEST BOUND	LEFT	152	EAST LEG	
	THRU	605	IN ...	1,096
	RIGHT	306	OUT ...	1,826
		4,604		9,952

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	119	113
	THRU	208	208
	RIGHT	360	434
SOUTH BOUND	LEFT	107	131
	THRU	282	286
	RIGHT	534	514
EAST BOUND	LEFT	817	837
	THRU	1,020	1,261
	RIGHT	94	96
WEST BOUND	LEFT	152	161
	THRU	605	608
	RIGHT	306	325
		4,604	4,976

Intersection: I-15 NB Ramps Fourth St

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	44	SOUTH LEG	
	THRU	25	IN ...	103
	RIGHT	34	OUT ...	104
SOUTH BOUND	LEFT	338	NORTH LEG	
	THRU	49	IN ...	1,380
	RIGHT	955	OUT ...	395
EAST BOUND	LEFT	255	WEST LEG	
	THRU	331	IN ...	696
	RIGHT	25	OUT ...	1,881
WEST BOUND	LEFT	30	EAST LEG	
	THRU	552	IN ...	940
	RIGHT	95	OUT ...	739
		2,733		6,239

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	44	49
	THRU	25	21
	RIGHT	34	32
SOUTH BOUND	LEFT	338	309
	THRU	49	42
	RIGHT	955	1,030
EAST BOUND	LEFT	255	271
	THRU	331	397
	RIGHT	25	28
WEST BOUND	LEFT	30	34
	THRU	552	802
	RIGHT	95	104
		2,733	3,120

Intersection: I-15 NB Ramps Fourth St

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	74	SOUTH LEG	
	THRU	48	IN ...	165
	RIGHT	43	OUT ...	142
SOUTH BOUND	LEFT	114	NORTH LEG	
	THRU	42	IN ...	526
	RIGHT	359	OUT ...	963
EAST BOUND	LEFT	674	WEST LEG	
	THRU	752	IN ...	1,828
	RIGHT	63	OUT ...	1,097
WEST BOUND	LEFT	37	EAST LEG	
	THRU	631	IN ...	893
	RIGHT	140	OUT ...	1,211
		2,977		6,825

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	74	67
	THRU	48	47
	RIGHT	43	51
SOUTH BOUND	LEFT	114	143
	THRU	42	39
	RIGHT	359	343
EAST BOUND	LEFT	674	751
	THRU	752	1,016
	RIGHT	63	63
WEST BOUND	LEFT	37	39
	THRU	631	687
	RIGHT	140	165
		2,977	3,412

Intersection: Etiwanda Ave Fourth St/San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	228	SOUTH LEG	
	THRU	643	IN ...	1,283
	RIGHT	85	OUT ...	1,327
SOUTH BOUND	LEFT	59	NORTH LEG	
	THRU	766	IN ...	1,276
	RIGHT	139	OUT ...	1,154
EAST BOUND	LEFT	149	WEST LEG	
	THRU	155	IN ...	439
	RIGHT	92	OUT ...	996
WEST BOUND	LEFT	143	EAST LEG	
	THRU	309	IN ...	792
	RIGHT	42	OUT ...	314
		2,810		7,582

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	228	298
	THRU	643	894
	RIGHT	85	92
SOUTH BOUND	LEFT	59	69
	THRU	766	1,010
	RIGHT	139	196
EAST BOUND	LEFT	149	187
	THRU	155	152
	RIGHT	92	101
WEST BOUND	LEFT	143	217
	THRU	309	502
	RIGHT	42	73
		2,810	3,791

Intersection: Etiwanda Ave Fourth St/San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	158	SOUTH LEG	
	THRU	754	IN ...	1,276
	RIGHT	90	OUT ...	1,388
SOUTH BOUND	LEFT	148	NORTH LEG	
	THRU	608	IN ...	1,301
	RIGHT	171	OUT ...	1,299
EAST BOUND	LEFT	182	WEST LEG	
	THRU	575	IN ...	1,381
	RIGHT	229	OUT ...	727
WEST BOUND	LEFT	108	EAST LEG	
	THRU	268	IN ...	518
	RIGHT	65	OUT ...	1,061
		3,356		8,952

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	158	199
	THRU	754	967
	RIGHT	90	109
SOUTH BOUND	LEFT	148	185
	THRU	608	893
	RIGHT	171	223
EAST BOUND	LEFT	182	257
	THRU	575	767
	RIGHT	229	358
WEST BOUND	LEFT	108	138
	THRU	268	305
	RIGHT	65	75
		3,356	4,476

Intersection: Commerce Dr San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	46	SOUTH LEG	
	THRU	3	IN ...	200
	RIGHT	220	OUT ...	181
SOUTH BOUND	LEFT	4	NORTH LEG	
	THRU	8	IN ...	12
	RIGHT	0	OUT ...	6
EAST BOUND	LEFT	1	WEST LEG	
	THRU	182	IN ...	231
	RIGHT	33	OUT ...	817
WEST BOUND	LEFT	263	EAST LEG	
	THRU	473	IN ...	1,051
	RIGHT	2	OUT ...	490
		1,235		2,987

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	46	9
	THRU	3	1
	RIGHT	220	218
SOUTH BOUND	LEFT	4	12
	THRU	8	2
	RIGHT	0	0
EAST BOUND	LEFT	1	0
	THRU	182	260
	RIGHT	33	4
WEST BOUND	LEFT	263	176
	THRU	473	808
	RIGHT	2	5
		1,235	1,493

Intersection: Commerce Dr San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	46	SOUTH LEG	
	THRU	3	IN ...	394
	RIGHT	492	OUT ...	46
SOUTH BOUND	LEFT	3	NORTH LEG	
	THRU	0	IN ...	4
	RIGHT	1	OUT ...	5
EAST BOUND	LEFT	0	WEST LEG	
	THRU	791	IN ...	1,084
	RIGHT	45	OUT ...	385
WEST BOUND	LEFT	140	EAST LEG	
	THRU	261	IN ...	514
	RIGHT	2	OUT ...	1,560
		1,784		3,993

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	46	7
	THRU	3	1
	RIGHT	492	409
SOUTH BOUND	LEFT	3	4
	THRU	0	0
	RIGHT	1	0
EAST BOUND	LEFT	0	0
	THRU	791	1,147
	RIGHT	45	2
WEST BOUND	LEFT	140	44
	THRU	261	378
	RIGHT	2	4
		1,784	1,996

Intersection: Vip Rd San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	1
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	0	IN ...	3
	RIGHT	3	OUT ...	1
EAST BOUND	LEFT	0	WEST LEG	
	THRU	397	IN ...	481
	RIGHT	0	OUT ...	1,062
WEST BOUND	LEFT	1	EAST LEG	
	THRU	746	IN ...	1,061
	RIGHT	1	OUT ...	481
		1,148		3,089

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	3	3
EAST BOUND	LEFT	0	0
	THRU	397	481
	RIGHT	0	0
WEST BOUND	LEFT	1	1
	THRU	746	1,059
	RIGHT	1	1
		1,148	1,544

Intersection: Vip Rd San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
EAST BOUND	LEFT	0	WEST LEG	
	THRU	1,295	IN ...	1,569
	RIGHT	0	OUT ...	511
WEST BOUND	LEFT	0	EAST LEG	
	THRU	400	IN ...	511
	RIGHT	0	OUT ...	1,569
		1,695		4,161

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	1,295	1,569
	RIGHT	0	0
WEST BOUND	LEFT	0	0
	THRU	400	511
	RIGHT	0	0
		1,695	2,080

Intersection: Cherry Ave San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	111	SOUTH LEG	
	THRU	854	IN ...	1,361
	RIGHT	95	OUT ...	1,384
SOUTH BOUND	LEFT	88	NORTH LEG	
	THRU	904	IN ...	1,415
	RIGHT	383	OUT ...	1,408
EAST BOUND	LEFT	181	WEST LEG	
	THRU	80	IN ...	449
	RIGHT	118	OUT ...	945
WEST BOUND	LEFT	143	EAST LEG	
	THRU	332	IN ...	803
	RIGHT	79	OUT ...	292
		3,368		8,057

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	111	141
	THRU	854	1,096
	RIGHT	95	122
SOUTH BOUND	LEFT	88	81
	THRU	904	989
	RIGHT	383	347
EAST BOUND	LEFT	181	202
	THRU	80	89
	RIGHT	118	158
WEST BOUND	LEFT	143	237
	THRU	332	457
	RIGHT	79	110
		3,368	4,029

Intersection: Cherry Ave San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	65	SOUTH LEG	
	THRU	1,021	IN ...	1,555
	RIGHT	140	OUT ...	1,399
SOUTH BOUND	LEFT	76	NORTH LEG	
	THRU	775	IN ...	1,230
	RIGHT	225	OUT ...	1,990
EAST BOUND	LEFT	468	WEST LEG	
	THRU	667	IN ...	1,824
	RIGHT	302	OUT ...	449
WEST BOUND	LEFT	75	EAST LEG	
	THRU	184	IN ...	390
	RIGHT	58	OUT ...	1,161
		4,056		9,997

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	65	58
	THRU	1,021	1,312
	RIGHT	140	187
SOUTH BOUND	LEFT	76	100
	THRU	775	930
	RIGHT	225	198
EAST BOUND	LEFT	468	590
	THRU	667	874
	RIGHT	302	361
WEST BOUND	LEFT	75	108
	THRU	184	194
	RIGHT	58	88
		4,056	4,998

Intersection: Beech Ave San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	29	SOUTH LEG	
	THRU	126	IN ...	290
	RIGHT	6	OUT ...	393
SOUTH BOUND	LEFT	43	NORTH LEG	
	THRU	129	IN ...	392
	RIGHT	75	OUT ...	350
EAST BOUND	LEFT	30	WEST LEG	
	THRU	216	IN ...	397
	RIGHT	16	OUT ...	611
WEST BOUND	LEFT	7	EAST LEG	
	THRU	341	IN ...	536
	RIGHT	66	OUT ...	261
		1,084		3,230

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	29	67
	THRU	126	217
	RIGHT	6	5
SOUTH BOUND	LEFT	43	19
	THRU	129	285
	RIGHT	75	88
EAST BOUND	LEFT	30	67
	THRU	216	237
	RIGHT	16	90
WEST BOUND	LEFT	7	18
	THRU	341	456
	RIGHT	66	66
		1,084	1,615

Intersection: Beech Ave San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	17	SOUTH LEG	
	THRU	158	IN ...	513
	RIGHT	25	OUT ...	343
SOUTH BOUND	LEFT	39	NORTH LEG	
	THRU	100	IN ...	386
	RIGHT	35	OUT ...	462
EAST BOUND	LEFT	68	WEST LEG	
	THRU	546	IN ...	847
	RIGHT	12	OUT ...	476
WEST BOUND	LEFT	13	EAST LEG	
	THRU	227	IN ...	331
	RIGHT	35	OUT ...	795
		1,275		4,153

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	17	97
	THRU	158	357
	RIGHT	25	57
SOUTH BOUND	LEFT	39	35
	THRU	100	276
	RIGHT	35	80
EAST BOUND	LEFT	68	87
	THRU	546	703
	RIGHT	12	47
WEST BOUND	LEFT	13	21
	THRU	227	298
	RIGHT	35	18
		1,275	2,076

Intersection: Fontana Ave/Elm San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	21	SOUTH LEG	
	THRU	14	IN ...	276
	RIGHT	9	OUT ...	499
SOUTH BOUND	LEFT	42	NORTH LEG	
	THRU	34	IN ...	641
	RIGHT	21	OUT ...	270
EAST BOUND	LEFT	42	WEST LEG	
	THRU	159	IN ...	208
	RIGHT	11	OUT ...	333
WEST BOUND	LEFT	9	EAST LEG	
	THRU	169	IN ...	232
	RIGHT	11	OUT ...	254
		542		2,714

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	21	87
	THRU	14	157
	RIGHT	9	31
SOUTH BOUND	LEFT	42	127
	THRU	34	439
	RIGHT	21	77
EAST BOUND	LEFT	42	83
	THRU	159	96
	RIGHT	11	28
WEST BOUND	LEFT	9	32
	THRU	169	170
	RIGHT	11	30
		542	1,357

Intersection: Fontana Ave/Elm San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	19	SOUTH LEG	
	THRU	54	IN ...	557
	RIGHT	26	OUT ...	391
SOUTH BOUND	LEFT	14	NORTH LEG	
	THRU	23	IN ...	379
	RIGHT	8	OUT ...	740
EAST BOUND	LEFT	128	WEST LEG	
	THRU	402	IN ...	733
	RIGHT	18	OUT ...	267
WEST BOUND	LEFT	12	EAST LEG	
	THRU	184	IN ...	245
	RIGHT	18	OUT ...	515
		906		3,827

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	19	64
	THRU	54	410
	RIGHT	26	82
SOUTH BOUND	LEFT	14	52
	THRU	23	296
	RIGHT	8	32
EAST BOUND	LEFT	128	292
	THRU	402	381
	RIGHT	18	59
WEST BOUND	LEFT	12	36
	THRU	184	171
	RIGHT	18	38
		906	1,914

Intersection: Citrus Ave San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	116	SOUTH LEG	
	THRU	589	IN ...	884
	RIGHT	159	OUT ...	961
SOUTH BOUND	LEFT	100	NORTH LEG	
	THRU	785	IN ...	880
	RIGHT	63	OUT ...	1,010
EAST BOUND	LEFT	135	WEST LEG	
	THRU	118	IN ...	330
	RIGHT	67	OUT ...	347
WEST BOUND	LEFT	107	EAST LEG	
	THRU	130	IN ...	648
	RIGHT	261	OUT ...	424
		2,630		5,482

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	116	122
	THRU	589	569
	RIGHT	159	192
SOUTH BOUND	LEFT	100	97
	THRU	785	731
	RIGHT	63	53
EAST BOUND	LEFT	135	123
	THRU	118	134
	RIGHT	67	73
WEST BOUND	LEFT	107	157
	THRU	130	172
	RIGHT	261	318
		2,630	2,741

Intersection: Citrus Ave San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	173	SOUTH LEG	
	THRU	956	IN ...	1,239
	RIGHT	47	OUT ...	676
SOUTH BOUND	LEFT	48	NORTH LEG	
	THRU	575	IN ...	608
	RIGHT	25	OUT ...	1,074
EAST BOUND	LEFT	53	WEST LEG	
	THRU	305	IN ...	470
	RIGHT	64	OUT ...	419
WEST BOUND	LEFT	44	EAST LEG	
	THRU	212	IN ...	423
	RIGHT	71	OUT ...	571
		2,573		5,480

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	173	159
	THRU	956	956
	RIGHT	47	111
SOUTH BOUND	LEFT	48	68
	THRU	575	536
	RIGHT	25	14
EAST BOUND	LEFT	53	29
	THRU	305	392
	RIGHT	64	54
WEST BOUND	LEFT	44	86
	THRU	212	246
	RIGHT	71	89
		2,573	2,740

Intersection: Sierra Ave San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	49	SOUTH LEG	
	THRU	731	IN ...	1,058
	RIGHT	162	OUT ...	1,690
SOUTH BOUND	LEFT	10	NORTH LEG	
	THRU	1158	IN ...	1,555
	RIGHT	67	OUT ...	948
EAST BOUND	LEFT	27	WEST LEG	
	THRU	177	IN ...	343
	RIGHT	83	OUT ...	487
WEST BOUND	LEFT	258	EAST LEG	
	THRU	306	IN ...	541
	RIGHT	38	OUT ...	372
		3,066		6,995

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	49	57
	THRU	731	866
	RIGHT	162	147
SOUTH BOUND	LEFT	10	13
	THRU	1,158	1,414
	RIGHT	67	116
EAST BOUND	LEFT	27	42
	THRU	177	212
	RIGHT	83	90
WEST BOUND	LEFT	258	186
	THRU	306	314
	RIGHT	38	39
		3,066	3,498

Intersection: Sierra Ave San Bernardino Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	182	SOUTH LEG	
	THRU	958	IN ...	1,739
	RIGHT	368	OUT ...	1,346
SOUTH BOUND	LEFT	67	NORTH LEG	
	THRU	880	IN ...	1,151
	RIGHT	54	OUT ...	1,511
EAST BOUND	LEFT	92	WEST LEG	
	THRU	340	IN ...	665
	RIGHT	135	OUT ...	517
WEST BOUND	LEFT	232	EAST LEG	
	THRU	281	IN ...	551
	RIGHT	75	OUT ...	731
		3,664		8,211

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	182	181
	THRU	958	1,262
	RIGHT	368	302
SOUTH BOUND	LEFT	67	72
	THRU	880	1,003
	RIGHT	54	70
EAST BOUND	LEFT	92	156
	THRU	340	358
	RIGHT	135	151
WEST BOUND	LEFT	232	192
	THRU	281	265
	RIGHT	75	94
		3,664	4,106

Intersection: Beech Ave Fontana Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	6	SOUTH LEG	
	THRU	102	IN ...	314
	RIGHT	8	OUT ...	773
SOUTH BOUND	LEFT	8	NORTH LEG	
	THRU	123	IN ...	417
	RIGHT	45	OUT ...	259
EAST BOUND	LEFT	21	WEST LEG	
	THRU	43	IN ...	159
	RIGHT	2	OUT ...	283
WEST BOUND	LEFT	21	EAST LEG	
	THRU	147	IN ...	672
	RIGHT	7	OUT ...	248
		533		3,126

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	6	7
	THRU	102	221
	RIGHT	8	86
SOUTH BOUND	LEFT	8	24
	THRU	123	381
	RIGHT	45	14
EAST BOUND	LEFT	21	14
	THRU	43	138
	RIGHT	2	7
WEST BOUND	LEFT	21	386
	THRU	147	263
	RIGHT	7	25
		533	1,563

Intersection: Beech Ave Fontana Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	164	IN ...	780
	RIGHT	64	OUT ...	618
SOUTH BOUND	LEFT	4	NORTH LEG	
	THRU	101	IN ...	346
	RIGHT	23	OUT ...	531
EAST BOUND	LEFT	42	WEST LEG	
	THRU	130	IN ...	416
	RIGHT	1	OUT ...	58
WEST BOUND	LEFT	7	EAST LEG	
	THRU	77	IN ...	334
	RIGHT	12	OUT ...	671
		625		3,753

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	164	426
	RIGHT	64	330
SOUTH BOUND	LEFT	4	3
	THRU	101	363
	RIGHT	23	2
EAST BOUND	LEFT	42	55
	THRU	130	337
	RIGHT	1	11
WEST BOUND	LEFT	7	244
	THRU	77	56
	RIGHT	12	50
		625	1,877

Intersection: Etiwanda Ave Valley Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	292	SOUTH LEG	
	THRU	941	IN ...	1,534
	RIGHT	78	OUT ...	1,606
SOUTH BOUND	LEFT	41	NORTH LEG	
	THRU	857	IN ...	1,267
	RIGHT	43	OUT ...	1,361
EAST BOUND	LEFT	25	WEST LEG	
	THRU	45	IN ...	161
	RIGHT	128	OUT ...	418
WEST BOUND	LEFT	165	EAST LEG	
	THRU	161	IN ...	619
	RIGHT	68	OUT ...	195
		2,844		7,162

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	292	213
	THRU	941	1,213
	RIGHT	78	103
SOUTH BOUND	LEFT	41	56
	THRU	857	1,182
	RIGHT	43	33
EAST BOUND	LEFT	25	20
	THRU	45	37
	RIGHT	128	105
WEST BOUND	LEFT	165	320
	THRU	161	172
	RIGHT	68	128
		2,844	3,581

Intersection: Etiwanda Ave Valley Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	257	SOUTH LEG	
	THRU	937	IN ...	1,669
	RIGHT	121	OUT ...	1,710
SOUTH BOUND	LEFT	64	NORTH LEG	
	THRU	940	IN ...	1,477
	RIGHT	30	OUT ...	1,374
EAST BOUND	LEFT	75	WEST LEG	
	THRU	256	IN ...	456
	RIGHT	340	OUT ...	304
WEST BOUND	LEFT	136	EAST LEG	
	THRU	91	IN ...	398
	RIGHT	88	OUT ...	612
		3,335		8,000

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	257	202
	THRU	937	1,211
	RIGHT	121	252
SOUTH BOUND	LEFT	64	138
	THRU	940	1,319
	RIGHT	30	24
EAST BOUND	LEFT	75	41
	THRU	256	223
	RIGHT	340	193
WEST BOUND	LEFT	136	198
	THRU	91	77
	RIGHT	88	122
		3,335	4,000

Intersection: Commerce Dr/I-1 Valley Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	56	SOUTH LEG	
	THRU	215	IN ...	700
	RIGHT	398	OUT ...	751
SOUTH BOUND	LEFT	8	NORTH LEG	
	THRU	307	IN ...	234
	RIGHT	42	OUT ...	194
EAST BOUND	LEFT	18	WEST LEG	
	THRU	107	IN ...	177
	RIGHT	21	OUT ...	643
WEST BOUND	LEFT	394	EAST LEG	
	THRU	320	IN ...	985
	RIGHT	30	OUT ...	508
		1,916		4,194

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	56	133
	THRU	215	165
	RIGHT	398	391
SOUTH BOUND	LEFT	8	3
	THRU	307	202
	RIGHT	42	32
EAST BOUND	LEFT	18	15
	THRU	107	114
	RIGHT	21	46
WEST BOUND	LEFT	394	503
	THRU	320	478
	RIGHT	30	14
		1,916	2,097

Intersection: Commerce Dr/I-1 Valley Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	32	SOUTH LEG	
	THRU	371	IN ...	1,424
	RIGHT	673	OUT ...	1,456
SOUTH BOUND	LEFT	11	NORTH LEG	
	THRU	254	IN ...	895
	RIGHT	25	OUT ...	953
EAST BOUND	LEFT	40	WEST LEG	
	THRU	443	IN ...	842
	RIGHT	23	OUT ...	461
WEST BOUND	LEFT	718	EAST LEG	
	THRU	443	IN ...	405
	RIGHT	71	OUT ...	698
		3,104		7,135

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	32	245
	THRU	371	803
	RIGHT	673	333
SOUTH BOUND	LEFT	11	2
	THRU	254	855
	RIGHT	25	73
EAST BOUND	LEFT	40	143
	THRU	443	363
	RIGHT	23	334
WEST BOUND	LEFT	718	266
	THRU	443	143
	RIGHT	71	6
		3,104	3,567

Intersection: Cherry Ave Valley Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	466	SOUTH LEG	
	THRU	1012	IN ...	2,174
	RIGHT	370	OUT ...	2,102
SOUTH BOUND	LEFT	91	NORTH LEG	
	THRU	1138	IN ...	1,506
	RIGHT	69	OUT ...	1,422
EAST BOUND	LEFT	86	WEST LEG	
	THRU	116	IN ...	453
	RIGHT	267	OUT ...	981
WEST BOUND	LEFT	506	EAST LEG	
	THRU	305	IN ...	1,034
	RIGHT	71	OUT ...	662
		4,497		10,334

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	466	519
	THRU	1,012	1,233
	RIGHT	370	425
SOUTH BOUND	LEFT	91	118
	THRU	1,138	1,298
	RIGHT	69	87
EAST BOUND	LEFT	86	94
	THRU	116	119
	RIGHT	267	240
WEST BOUND	LEFT	506	563
	THRU	305	375
	RIGHT	71	96
		4,497	5,167

Intersection: Cherry Ave Valley Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	247	SOUTH LEG	
	THRU	951	IN ...	1,539
	RIGHT	696	OUT ...	1,116
SOUTH BOUND	LEFT	98	NORTH LEG	
	THRU	948	IN ...	482
	RIGHT	67	OUT ...	785
EAST BOUND	LEFT	178	WEST LEG	
	THRU	452	IN ...	663
	RIGHT	354	OUT ...	550
WEST BOUND	LEFT	395	EAST LEG	
	THRU	240	IN ...	1,217
	RIGHT	82	OUT ...	1,450
		4,708		7,801

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	247	117
	THRU	951	538
	RIGHT	696	889
SOUTH BOUND	LEFT	98	103
	THRU	948	351
	RIGHT	67	26
EAST BOUND	LEFT	178	80
	THRU	452	458
	RIGHT	354	127
WEST BOUND	LEFT	395	638
	THRU	240	407
	RIGHT	82	166
		4,708	3,901

Intersection: Fontana Ave/Herr Valley Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	8	SOUTH LEG	
	THRU	9	IN ...	21
	RIGHT	4	OUT ...	32
SOUTH BOUND	LEFT	73	NORTH LEG	
	THRU	5	IN ...	361
	RIGHT	50	OUT ...	196
EAST BOUND	LEFT	56	WEST LEG	
	THRU	314	IN ...	541
	RIGHT	11	OUT ...	809
WEST BOUND	LEFT	16	EAST LEG	
	THRU	545	IN ...	656
	RIGHT	49	OUT ...	542
		1,140		3,157

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	8	9
	THRU	9	10
	RIGHT	4	2
SOUTH BOUND	LEFT	73	149
	THRU	5	10
	RIGHT	50	202
EAST BOUND	LEFT	56	134
	THRU	314	390
	RIGHT	11	13
WEST BOUND	LEFT	16	9
	THRU	545	598
	RIGHT	49	52
		1,140	1,579

Intersection: Fontana Ave/Herr Valley Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	15	SOUTH LEG	
	THRU	5	IN ...	24
	RIGHT	4	OUT ...	29
SOUTH BOUND	LEFT	46	NORTH LEG	
	THRU	4	IN ...	46
	RIGHT	21	OUT ...	570
EAST BOUND	LEFT	157	WEST LEG	
	THRU	1,081	IN ...	1,623
	RIGHT	15	OUT ...	584
WEST BOUND	LEFT	10	EAST LEG	
	THRU	487	IN ...	719
	RIGHT	53	OUT ...	1,229
		1,898		4,824

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	15	12
	THRU	5	9
	RIGHT	4	3
SOUTH BOUND	LEFT	46	30
	THRU	4	2
	RIGHT	21	13
EAST BOUND	LEFT	157	412
	THRU	1,081	1,196
	RIGHT	15	16
WEST BOUND	LEFT	10	11
	THRU	487	559
	RIGHT	53	148
		1,898	2,412

Intersection: Beech Ave Valley Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	6	SOUTH LEG	
	THRU	1	IN ...	512
	RIGHT	21	OUT ...	1,000
SOUTH BOUND	LEFT	92	NORTH LEG	
	THRU	3	IN ...	751
	RIGHT	29	OUT ...	285
EAST BOUND	LEFT	14	WEST LEG	
	THRU	399	IN ...	572
	RIGHT	8	OUT ...	686
WEST BOUND	LEFT	14	EAST LEG	
	THRU	605	IN ...	720
	RIGHT	72	OUT ...	583
		1,264		5,109

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	6	187
	THRU	1	96
	RIGHT	21	229
SOUTH BOUND	LEFT	92	162
	THRU	3	442
	RIGHT	29	146
EAST BOUND	LEFT	14	59
	THRU	399	192
	RIGHT	8	321
WEST BOUND	LEFT	14	238
	THRU	605	352
	RIGHT	72	130
		1,264	2,555

Intersection: Beech Ave Valley Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	4	SOUTH LEG	
	THRU	2	IN ...	908
	RIGHT	18	OUT ...	815
SOUTH BOUND	LEFT	74	NORTH LEG	
	THRU	0	IN ...	580
	RIGHT	20	OUT ...	767
EAST BOUND	LEFT	117	WEST LEG	
	THRU	1,003	IN ...	1,351
	RIGHT	7	OUT ...	692
WEST BOUND	LEFT	7	EAST LEG	
	THRU	509	IN ...	693
	RIGHT	125	OUT ...	1,258
		1,886		7,065

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	4	211
	THRU	2	275
	RIGHT	18	422
SOUTH BOUND	LEFT	74	360
	THRU	0	0
	RIGHT	20	219
EAST BOUND	LEFT	117	325
	THRU	1,003	476
	RIGHT	7	551
WEST BOUND	LEFT	7	265
	THRU	509	261
	RIGHT	125	167
		1,886	3,533

Intersection: Citrus Ave Valley Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	439	SOUTH LEG	
	THRU	581	IN ...	1,093
	RIGHT	136	OUT ...	1,649
SOUTH BOUND	LEFT	84	NORTH LEG	
	THRU	759	IN ...	801
	RIGHT	31	OUT ...	677
EAST BOUND	LEFT	35	WEST LEG	
	THRU	281	IN ...	733
	RIGHT	464	OUT ...	802
WEST BOUND	LEFT	265	EAST LEG	
	THRU	376	IN ...	973
	RIGHT	82	OUT ...	472
		3,533		7,200

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	439	375
	THRU	581	553
	RIGHT	136	161
SOUTH BOUND	LEFT	84	68
	THRU	759	716
	RIGHT	31	18
EAST BOUND	LEFT	35	24
	THRU	281	243
	RIGHT	464	467
WEST BOUND	LEFT	265	465
	THRU	376	409
	RIGHT	82	99
		3,533	3,600

Intersection: Citrus Ave Valley Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	553	SOUTH LEG	
	THRU	970	IN ...	131
	RIGHT	285	OUT ...	20
SOUTH BOUND	LEFT	96	NORTH LEG	
	THRU	540	IN ...	33
	RIGHT	41	OUT ...	235
EAST BOUND	LEFT	70	WEST LEG	
	THRU	663	IN ...	1,156
	RIGHT	405	OUT ...	475
WEST BOUND	LEFT	158	EAST LEG	
	THRU	753	IN ...	701
	RIGHT	183	OUT ...	1,291
		4,717		4,041

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	553	16
	THRU	970	43
	RIGHT	285	71
SOUTH BOUND	LEFT	96	31
	THRU	540	2
	RIGHT	41	2
EAST BOUND	LEFT	70	22
	THRU	663	1,189
	RIGHT	405	8
WEST BOUND	LEFT	158	9
	THRU	753	457
	RIGHT	183	170
		4,717	2,021

Intersection: Sierra Ave Valley Blvd

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	180	SOUTH LEG	
	THRU	1217	IN ...	2,055
	RIGHT	675	OUT ...	2,268
SOUTH BOUND	LEFT	109	NORTH LEG	
	THRU	1386	IN ...	1,838
	RIGHT	98	OUT ...	1,498
EAST BOUND	LEFT	170	WEST LEG	
	THRU	259	IN ...	676
	RIGHT	151	OUT ...	782
WEST BOUND	LEFT	546	EAST LEG	
	THRU	419	IN ...	981
	RIGHT	94	OUT ...	1,003
		5,304		11,102

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	180	222
	THRU	1,217	1,217
	RIGHT	675	613
SOUTH BOUND	LEFT	109	108
	THRU	1,386	1,600
	RIGHT	98	132
EAST BOUND	LEFT	170	203
	THRU	259	282
	RIGHT	151	191
WEST BOUND	LEFT	546	477
	THRU	419	427
	RIGHT	94	78
		5,304	5,551

Intersection: Sierra Ave Valley Blvd

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	236	SOUTH LEG	
	THRU	1,176	IN ...	2,341
	RIGHT	727	OUT ...	1,857
SOUTH BOUND	LEFT	154	NORTH LEG	
	THRU	1,201	IN ...	1,347
	RIGHT	87	OUT ...	1,803
EAST BOUND	LEFT	267	WEST LEG	
	THRU	863	IN ...	1,444
	RIGHT	219	OUT ...	1,075
WEST BOUND	LEFT	633	EAST LEG	
	THRU	638	IN ...	1,324
	RIGHT	106	OUT ...	1,721
		6,307		12,913

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	236	288
	THRU	1,176	1,361
	RIGHT	727	693
SOUTH BOUND	LEFT	154	142
	THRU	1,201	1,102
	RIGHT	87	102
EAST BOUND	LEFT	267	333
	THRU	863	887
	RIGHT	219	224
WEST BOUND	LEFT	633	530
	THRU	638	685
	RIGHT	106	108
		6,307	6,456

Intersection: Etiwanda Ave I-10 WB Off-Ramp

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	762	IN ...	1,562
	RIGHT	445	OUT ...	1,649
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	774	IN ...	1,642
	RIGHT	408	OUT ...	1,579
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	655
WEST BOUND	LEFT	490	EAST LEG	
	THRU	0	IN ...	1,123
	RIGHT	531	OUT ...	445
		3,410		8,656

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	762	1,092
	RIGHT	445	445
SOUTH BOUND	LEFT	0	0
	THRU	774	1,012
	RIGHT	408	655
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	490	637
	THRU	0	0
	RIGHT	531	487
		3,410	4,328

Intersection: Etiwanda Ave I-10 WB Off-Ramp

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	986	IN ...	2,252
	RIGHT	622	OUT ...	1,795
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	1,033	IN ...	1,917
	RIGHT	422	OUT ...	1,766
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	819
WEST BOUND	LEFT	347	EAST LEG	
	THRU	0	IN ...	832
	RIGHT	432	OUT ...	622
		3,842		10,003

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	986	1,505
	RIGHT	622	622
SOUTH BOUND	LEFT	0	0
	THRU	1,033	1,210
	RIGHT	422	819
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	347	585
	THRU	0	0
	RIGHT	432	262
		3,842	5,002

Intersection: Cherry Ave I-10 WB Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	993	IN ...	1,749
	RIGHT	543	OUT ...	2,849
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	1748	IN ...	1,942
	RIGHT	0	OUT ...	1,972
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	123
WEST BOUND	LEFT	738	EAST LEG	
	THRU	0	IN ...	1,796
	RIGHT	637	OUT ...	543
		4,659		10,974

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	993	1,164
	RIGHT	543	543
SOUTH BOUND	LEFT	0	0
	THRU	1,748	1,901
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	738	949
	THRU	0	0
	RIGHT	637	808
		4,659	5,364

Intersection: Cherry Ave I-10 WB Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	1,339	IN ...	2,037
	RIGHT	389	OUT ...	2,541
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	1,805	IN ...	1,940
	RIGHT	0	OUT ...	2,306
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	(67)
WEST BOUND	LEFT	518	EAST LEG	
	THRU	0	IN ...	1,193
	RIGHT	492	OUT ...	389
		4,543		10,339

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	1,339	1,679
	RIGHT	389	389
SOUTH BOUND	LEFT	0	0
	THRU	1,805	1,960
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	518	581
	THRU	0	0
	RIGHT	492	627
		4,543	5,236

Intersection: Citrus Ave I-10 WB Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	654	IN ...	737
	RIGHT	272	OUT ...	1,367
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	983	IN ...	1,570
	RIGHT	466	OUT ...	1,005
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	496
WEST BOUND	LEFT	363	EAST LEG	
	THRU	0	IN ...	834
	RIGHT	448	OUT ...	272
		3,186		6,281

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	654	476
	RIGHT	272	272
SOUTH BOUND	LEFT	0	0
	THRU	983	1,059
	RIGHT	466	496
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	363	308
	THRU	0	0
	RIGHT	448	529
		3,186	3,141

Intersection: Citrus Ave I-10 WB Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	1,075	IN ...	1,284
	RIGHT	256	OUT ...	1,009
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	892	IN ...	1,427
	RIGHT	474	OUT ...	1,576
EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	555
WEST BOUND	LEFT	240	EAST LEG	
	THRU	0	IN ...	684
	RIGHT	498	OUT ...	256
		3,435		6,791

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	1,075	1,048
	RIGHT	256	256
SOUTH BOUND	LEFT	0	0
	THRU	892	847
	RIGHT	474	555
EAST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
WEST BOUND	LEFT	240	161
	THRU	0	0
	RIGHT	498	528
		3,435	3,395

Intersection: Etiwanda Ave I-10 EB Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	1074	IN ...	1,709
	RIGHT	381	OUT ...	2,068
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	966	IN ...	1,605
	RIGHT	238	OUT ...	1,661
EAST BOUND	LEFT	308	WEST LEG	
	THRU	0	IN ...	1,034
	RIGHT	671	OUT ...	238
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	381
		3,638		8,696

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	1,074	1,329
	RIGHT	381	381
SOUTH BOUND	LEFT	0	0
	THRU	966	1,366
	RIGHT	238	238
EAST BOUND	LEFT	308	331
	THRU	0	0
	RIGHT	671	702
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		3,638	4,348

Intersection: Etiwanda Ave I-10 EB Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	1,287	IN ...	2,269
	RIGHT	562	OUT ...	1,768
SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	969	IN ...	1,742
	RIGHT	394	OUT ...	2,056
EAST BOUND	LEFT	298	WEST LEG	
	THRU	0	IN ...	769
	RIGHT	392	OUT ...	394
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	562
		3,902		9,561

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	1,287	1,713
	RIGHT	562	562
SOUTH BOUND	LEFT	0	0
	THRU	969	1,344
	RIGHT	394	394
EAST BOUND	LEFT	298	344
	THRU	0	0
	RIGHT	392	425
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		3,902	4,781

Intersection: Cherry Ave I-10 EB Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	1234	IN ...	1,780
	RIGHT	483	OUT ...	2,374
SOUTH BOUND	LEFT	460	NORTH LEG	
	THRU	1488	IN ...	2,311
	RIGHT	0	OUT ...	1,848
EAST BOUND	LEFT	401	WEST LEG	
	THRU	6	IN ...	1,224
	RIGHT	617	OUT ...	0
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	1,094
		4,689		10,631

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	1,234	1,305
	RIGHT	483	477
SOUTH BOUND	LEFT	460	609
	THRU	1,488	1,701
	RIGHT	0	0
EAST BOUND	LEFT	401	543
	THRU	6	8
	RIGHT	617	673
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		4,689	5,316

Intersection: Cherry Ave I-10 EB Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	1,236	IN ...	1,845
	RIGHT	419	OUT ...	1,784
SOUTH BOUND	LEFT	513	NORTH LEG	
	THRU	1,182	IN ...	1,913
	RIGHT	0	OUT ...	2,054
EAST BOUND	LEFT	509	WEST LEG	
	THRU	43	IN ...	1,447
	RIGHT	548	OUT ...	0
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	1,367
		4,450		10,409

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	1,236	1,313
	RIGHT	419	533
SOUTH BOUND	LEFT	513	759
	THRU	1,182	1,153
	RIGHT	0	0
EAST BOUND	LEFT	509	741
	THRU	43	75
	RIGHT	548	630
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		4,450	5,204

Intersection: Citrus Ave I-10 EB Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	651	IN ...	724
	RIGHT	332	OUT ...	1,292
SOUTH BOUND	LEFT	534	NORTH LEG	
	THRU	851	IN ...	1,406
	RIGHT	0	OUT ...	766
EAST BOUND	LEFT	304	WEST LEG	
	THRU	8	IN ...	761
	RIGHT	427	OUT ...	0
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	834
		3,107		5,783

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	651	462
	RIGHT	332	262
SOUTH BOUND	LEFT	534	562
	THRU	851	844
	RIGHT	0	0
EAST BOUND	LEFT	304	304
	THRU	8	9
	RIGHT	427	448
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		3,107	2,892

Intersection: Citrus Ave I-10 EB Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	893	IN ...	1,378
	RIGHT	509	OUT ...	762
SOUTH BOUND	LEFT	501	NORTH LEG	
	THRU	647	IN ...	1,025
	RIGHT	0	OUT ...	1,297
EAST BOUND	LEFT	451	WEST LEG	
	THRU	7	IN ...	670
	RIGHT	212	OUT ...	0
WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	1,014
		3,220		6,146

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	893	846
	RIGHT	509	533
SOUTH BOUND	LEFT	501	474
	THRU	647	551
	RIGHT	0	0
EAST BOUND	LEFT	451	452
	THRU	7	8
	RIGHT	212	211
WEST BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
		3,220	3,073

Intersection: Sierra Ave I-10 Ramps

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	420	SOUTH LEG	
	THRU	718	IN ...	1,398
	RIGHT	357	OUT ...	1,901
SOUTH BOUND	LEFT	500	NORTH LEG	
	THRU	741	IN ...	2,294
	RIGHT	821	OUT ...	2,204
EAST BOUND	LEFT	855	WEST LEG	
	THRU	0	IN ...	1,183
	RIGHT	501	OUT ...	978
WEST BOUND	LEFT	428	EAST LEG	
	THRU	0	IN ...	1,157
	RIGHT	550	OUT ...	950
		5,891		12,067

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	420	279
	THRU	718	780
	RIGHT	357	340
SOUTH BOUND	LEFT	500	610
	THRU	741	984
	RIGHT	821	699
EAST BOUND	LEFT	855	760
	THRU	0	0
	RIGHT	501	424
WEST BOUND	LEFT	428	493
	THRU	0	0
	RIGHT	550	665
		5,891	6,034

Intersection: Sierra Ave I-10 Ramps

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	512	SOUTH LEG	
	THRU	1,223	IN ...	2,283
	RIGHT	467	OUT ...	1,882
SOUTH BOUND	LEFT	480	NORTH LEG	
	THRU	861	IN ...	2,024
	RIGHT	796	OUT ...	2,986
EAST BOUND	LEFT	914	WEST LEG	
	THRU	0	IN ...	1,252
	RIGHT	457	OUT ...	957
WEST BOUND	LEFT	463	EAST LEG	
	THRU	0	IN ...	1,247
	RIGHT	566	OUT ...	981
		6,739		13,610

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	512	374
	THRU	1,223	1,426
	RIGHT	467	483
SOUTH BOUND	LEFT	480	498
	THRU	861	942
	RIGHT	796	583
EAST BOUND	LEFT	914	853
	THRU	0	0
	RIGHT	457	399
WEST BOUND	LEFT	463	540
	THRU	0	0
	RIGHT	566	706
		6,739	6,805

Intersection: Milliken Ave Arrow Rte

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	176	SOUTH LEG	
	THRU	333	IN ...	492
	RIGHT	80	OUT ...	1,210
SOUTH BOUND	LEFT	108	NORTH LEG	
	THRU	705	IN ...	1,305
	RIGHT	218	OUT ...	429
EAST BOUND	LEFT	77	WEST LEG	
	THRU	409	IN ...	561
	RIGHT	118	OUT ...	1,496
WEST BOUND	LEFT	156	EAST LEG	
	THRU	1102	IN ...	1,361
	RIGHT	103	OUT ...	583
		3,585		7,438

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	176	151
	THRU	333	269
	RIGHT	80	72
SOUTH BOUND	LEFT	108	132
	THRU	705	920
	RIGHT	218	254
EAST BOUND	LEFT	77	64
	THRU	409	380
	RIGHT	118	117
WEST BOUND	LEFT	156	173
	THRU	1,102	1,091
	RIGHT	103	96
		3,585	3,719

Intersection: Milliken Ave Arrow Rte

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	174	SOUTH LEG	
	THRU	1,468	IN ...	2,052
	RIGHT	329	OUT ...	914
SOUTH BOUND	LEFT	62	NORTH LEG	
	THRU	520	IN ...	788
	RIGHT	118	OUT ...	1,854
EAST BOUND	LEFT	237	WEST LEG	
	THRU	979	IN ...	1,415
	RIGHT	186	OUT ...	833
WEST BOUND	LEFT	107	EAST LEG	
	THRU	541	IN ...	750
	RIGHT	102	OUT ...	1,404
		4,823		10,009

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	174	178
	THRU	1,468	1,521
	RIGHT	329	352
SOUTH BOUND	LEFT	62	67
	THRU	520	598
	RIGHT	118	123
EAST BOUND	LEFT	237	231
	THRU	979	985
	RIGHT	186	199
WEST BOUND	LEFT	107	117
	THRU	541	532
	RIGHT	102	101
		4,823	5,005

Intersection: Rochester Ave Arrow Rte

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	49	SOUTH LEG	
	THRU	170	IN ...	362
	RIGHT	66	OUT ...	743
SOUTH BOUND	LEFT	105	NORTH LEG	
	THRU	390	IN ...	1,052
	RIGHT	270	OUT ...	560
EAST BOUND	LEFT	118	WEST LEG	
	THRU	333	IN ...	866
	RIGHT	69	OUT ...	1,740
WEST BOUND	LEFT	166	EAST LEG	
	THRU	1013	IN ...	2,152
	RIGHT	134	OUT ...	1,388
		2,883		8,864

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	49	26
	THRU	170	150
	RIGHT	66	187
SOUTH BOUND	LEFT	105	444
	THRU	390	395
	RIGHT	270	216
EAST BOUND	LEFT	118	84
	THRU	333	757
	RIGHT	69	38
WEST BOUND	LEFT	166	310
	THRU	1,013	1,498
	RIGHT	134	326
		2,883	4,432

Intersection: Rochester Ave Arrow Rte

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	55	SOUTH LEG	
	THRU	791	IN ...	1,266
	RIGHT	257	OUT ...	368
SOUTH BOUND	LEFT	87	NORTH LEG	
	THRU	219	IN ...	766
	RIGHT	179	OUT ...	1,522
EAST BOUND	LEFT	347	WEST LEG	
	THRU	879	IN ...	1,740
	RIGHT	21	OUT ...	968
WEST BOUND	LEFT	68	EAST LEG	
	THRU	490	IN ...	1,397
	RIGHT	173	OUT ...	2,310
		3,566		10,337

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	55	27
	THRU	791	738
	RIGHT	257	503
SOUTH BOUND	LEFT	87	344
	THRU	219	241
	RIGHT	179	179
EAST BOUND	LEFT	347	276
	THRU	879	1,463
	RIGHT	21	10
WEST BOUND	LEFT	68	117
	THRU	490	762
	RIGHT	173	509
		3,566	5,169

Intersection: Cherry Ave Slover Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	TOTAL
NORTH BOUND	LEFT	28	SOUTH LEG	
	THRU	937	IN ...	1,252
	RIGHT	55	OUT ...	1,650
SOUTH BOUND	LEFT	409	NORTH LEG	
	THRU	1110	IN ...	2,585
	RIGHT	522	OUT ...	1,898
EAST BOUND	LEFT	407	WEST LEG	
	THRU	220	IN ...	665
	RIGHT	42	OUT ...	930
WEST BOUND	LEFT	53	EAST LEG	
	THRU	258	IN ...	705
	RIGHT	351	OUT ...	728
		4,392		10,414

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	28	37
	THRU	937	1,144
	RIGHT	55	67
SOUTH BOUND	LEFT	409	447
	THRU	1,110	1,531
	RIGHT	522	613
EAST BOUND	LEFT	407	398
	THRU	220	214
	RIGHT	42	52
WEST BOUND	LEFT	53	68
	THRU	258	281
	RIGHT	351	356
		4,392	5,207

Intersection: Cherry Ave Slover Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	FY INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	35	SOUTH LEG	
	THRU	857	IN ...	1,416
	RIGHT	66	OUT ...	1,465
SOUTH BOUND	LEFT	377	NORTH LEG	
	THRU	983	IN ...	2,099
	RIGHT	405	OUT ...	2,201
EAST BOUND	LEFT	440	WEST LEG	
	THRU	672	IN ...	1,381
	RIGHT	84	OUT ...	673
WEST BOUND	LEFT	60	EAST LEG	
	THRU	177	IN ...	632
	RIGHT	364	OUT ...	1,188
		4,520		11,055

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	35	50
	THRU	857	1,279
	RIGHT	66	86
SOUTH BOUND	LEFT	377	379
	THRU	983	1,277
	RIGHT	405	445
EAST BOUND	LEFT	440	540
	THRU	672	723
	RIGHT	84	117
WEST BOUND	LEFT	60	71
	THRU	177	178
	RIGHT	364	382
		4,520	5,528

Intersection: Cherry Ave Santa Ana Ave

Condition: 2040 Build-out

Peak Hour: AM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	36	SOUTH LEG	
	THRU	762	IN ...	829
	RIGHT	11	OUT ...	811
SOUTH BOUND	LEFT	114	NORTH LEG	
	THRU	720	IN ...	1,097
	RIGHT	331	OUT ...	1,098
EAST BOUND	LEFT	245	WEST LEG	
	THRU	39	IN ...	374
	RIGHT	80	OUT ...	426
WEST BOUND	LEFT	9	EAST LEG	
	THRU	21	IN ...	246
	RIGHT	66	OUT ...	211
		2,434		5,090

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	36	54
	THRU	762	748
	RIGHT	11	20
SOUTH BOUND	LEFT	114	128
	THRU	720	674
	RIGHT	331	302
EAST BOUND	LEFT	245	206
	THRU	39	62
	RIGHT	80	106
WEST BOUND	LEFT	9	31
	THRU	21	70
	RIGHT	66	144
		2,434	2,545

Intersection: Cherry Ave Santa Ana Ave

Condition: 2040 Build-out

Peak Hour: PM Peak Hour

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	INTERSECTION LEG	FY TOTAL
NORTH BOUND	LEFT	8	SOUTH LEG	
	THRU	601	IN ...	701
	RIGHT	29	OUT ...	926
SOUTH BOUND	LEFT	67	NORTH LEG	
	THRU	890	IN ...	1,047
	RIGHT	130	OUT ...	921
EAST BOUND	LEFT	243	WEST LEG	
	THRU	49	IN ...	370
	RIGHT	30	OUT ...	168
WEST BOUND	LEFT	13	EAST LEG	
	THRU	21	IN ...	213
	RIGHT	83	OUT ...	316
		2,164		4,662

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	8	12
	THRU	601	594
	RIGHT	29	87
SOUTH BOUND	LEFT	67	107
	THRU	890	845
	RIGHT	130	106
EAST BOUND	LEFT	243	201
	THRU	49	122
	RIGHT	30	45
WEST BOUND	LEFT	13	36
	THRU	21	50
	RIGHT	83	127
		2,164	2,331

APPENDIX **F**

SIGNAL WARRANT ANALYSIS
WORKSHEETS

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Foothill Blvd** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Existing
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **Y**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					**420**	**105**		**630**	**53**		**336**	**84**		**504**	**42**			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	0	0														
08:00 AM	TO	09:00 AM	0	0														
09:00 AM	TO	10:00 AM	2,381	123	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM	0	0														
04:00 PM	TO	05:00 PM	2,244	178	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM	TO	06:00 PM	0	0														
06:00 PM	TO	07:00 PM	0	0														
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			4,625	301	2	2	**2**	2	2	**2**	2	2	**2**	2	2	**2**	**2**	**2**
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Foothill Blvd** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Horizon Year plus Phases 1 and 2
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **Y**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					**420**	**105**		**630**	**53**		**336**	**84**		**504**	**42**			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	0	0														
08:00 AM	TO	09:00 AM	0	0														
09:00 AM	TO	10:00 AM	2,914	315	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM	0	0														
04:00 PM	TO	05:00 PM	2,949	442	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM	TO	06:00 PM	0	0														
06:00 PM	TO	07:00 PM	0	0														
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			5,863	757	2	2	**2**	2	2	**2**	2	2	**2**	2	2	**2**	**2**	**2**
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Foothill Blvd** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Horizon Year
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **Y**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					**420**	**105**		**630**	**53**		**336**	**84**		**504**	**42**			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	0	0														
08:00 AM	TO	09:00 AM	0	0														
09:00 AM	TO	10:00 AM	2,858	310	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM	0	0														
04:00 PM	TO	05:00 PM	2,819	425	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM	TO	06:00 PM	0	0														
06:00 PM	TO	07:00 PM	0	0														
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			5,677	735	2	2	**2**	2	2	**2**	2	2	**2**	2	2	**2**	**2**	**2**
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **2**

MINOR STREET: **Merrill Ave** EB WB # OF APPROACH LANES: **2**

CITY, STATE: **Fontana, CA**

COMMENTS: Existing
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES			**600**	**200**		**900**	**100**		**480**	**160**		**720**	**80**			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	0	0														
08:00 AM TO 09:00 AM	0	0														
09:00 AM TO 10:00 AM	548	450		Y			Y		Y	Y	**Y**		Y		**Y**	
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM	0	0														
04:00 PM TO 05:00 PM	623	386	Y	Y	**Y**		Y		Y	Y	**Y**		Y		**Y**	
05:00 PM TO 06:00 PM	0	0														
06:00 PM TO 07:00 PM	0	0														
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	1,171	836	1	2	**1**	0	2	**0**	2	2	**2**	0	2	**0**	**2**	**0**
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **2**

MINOR STREET: **Merrill Ave** EB WB # OF APPROACH LANES: **2**

CITY, STATE: **Fontana, CA**

COMMENTS: Horizon Year plus Phases 1 and 2
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES			**600**	**200**		**900**	**100**		**480**	**160**		**720**	**80**			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	0	0														
08:00 AM TO 09:00 AM	0	0														
09:00 AM TO 10:00 AM	845	711	Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM	0	0														
04:00 PM TO 05:00 PM	1,174	592	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM TO 06:00 PM	0	0														
06:00 PM TO 07:00 PM	0	0														
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	2,019	1,303	2	2	**2**	1	2	**1**	2	2	**2**	2	2	**2**	**2**	**2**
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **2**

MINOR STREET: **Merrill Ave** EB WB # OF APPROACH LANES: **2**

CITY, STATE: **Fontana, CA**

COMMENTS: Horizon Year
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES			**600**	**200**		**900**	**100**		**480**	**160**		**720**	**80**			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	0	0														
08:00 AM TO 09:00 AM	0	0														
09:00 AM TO 10:00 AM	829	691	Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM	0	0														
04:00 PM TO 05:00 PM	1,135	564	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM TO 06:00 PM	0	0														
06:00 PM TO 07:00 PM	0	0														
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	1,964	1,255	2	2	**2**	1	2	**1**	2	2	**2**	2	2	**2**	**2**	**2**
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Randall Ave** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Existing
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	0	0														
08:00 AM	TO	09:00 AM	0	0														
09:00 AM	TO	10:00 AM	534	243	Y	Y	**Y**		Y		Y	Y	**Y**		Y			
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM	0	0														
04:00 PM	TO	05:00 PM	467	255		Y			Y		Y	Y	**Y**		Y			
05:00 PM	TO	06:00 PM	0	0														
06:00 PM	TO	07:00 PM	0	0														
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			1,001	498	1	2	**1**	0	2	**0**	2	2	**2**	0	2	**0**	**0**	**0**
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Randall Ave** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Horizon Year plus Phases 1 and 2
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES			**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	0	0														
08:00 AM TO 09:00 AM	0	0														
09:00 AM TO 10:00 AM	886	732	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM	0	0														
04:00 PM TO 05:00 PM	1,174	592	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM TO 06:00 PM	0	0														
06:00 PM TO 07:00 PM	0	0														
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	2,060	1,324	2	2	**2**	2	2	**2**	2	2	**2**	2	2	**2**	**2**	**2**
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Randall Ave** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Horizon Year
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES			**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	0	0														
08:00 AM TO 09:00 AM	0	0														
09:00 AM TO 10:00 AM	795	384	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM	0	0														
04:00 PM TO 05:00 PM	855	452	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM TO 06:00 PM	0	0														
06:00 PM TO 07:00 PM	0	0														
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	1,650	836	2	2	**2**	2	2	**2**	2	2	**2**	2	2	**2**	**2**	**2**
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Randall Ave** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Catawba Ave** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Existing
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	0	0														
08:00 AM	TO	09:00 AM	0	0														
09:00 AM	TO	10:00 AM	373	172		Y			Y			Y			Y			
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM	0	0														
04:00 PM	TO	05:00 PM	355	132					Y			Y			Y			
05:00 PM	TO	06:00 PM	0	0														
06:00 PM	TO	07:00 PM	0	0														
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			728	304	0	1	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**0**	**0**
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Randall Ave** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Catawba Ave** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Horizon Year plus Phases 1 and 2
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES			**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	0	0														
08:00 AM TO 09:00 AM	0	0														
09:00 AM TO 10:00 AM	855	543	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM	0	0														
04:00 PM TO 05:00 PM	1,099	596	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM TO 06:00 PM	0	0														
06:00 PM TO 07:00 PM	0	0														
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	1,954	1,139	2	2	**2**	2	2	**2**	2	2	**2**	2	2	**2**	**2**	**2**
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Randall Ave** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Catawba Ave** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Horizon Year
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	0	0														
08:00 AM	TO	09:00 AM	0	0														
09:00 AM	TO	10:00 AM	711	543	Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM	0	0														
04:00 PM	TO	05:00 PM	720	596	Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM	TO	06:00 PM	0	0														
06:00 PM	TO	07:00 PM	0	0														
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			1,431	1,139	2	2	**2**	0	2	**0**	2	2	**2**	2	2	**2**	**2**	**2**
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Valley Blvd** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Existing
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	0	0														
08:00 AM	TO	09:00 AM	0	0														
09:00 AM	TO	10:00 AM	1,112	124	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM	0	0														
04:00 PM	TO	05:00 PM	1,768	94	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
05:00 PM	TO	06:00 PM	0	0														
06:00 PM	TO	07:00 PM	0	0														
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			2,880	218	2	0	**0**	2	2	**2**	2	1	**1**	2	2	**2**	**2**	**0**
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Valley Blvd** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Horizon Year plus Phases 1 and 2
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	0	0														
08:00 AM	TO	09:00 AM	0	0														
09:00 AM	TO	10:00 AM	1,949	750	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM	0	0														
04:00 PM	TO	05:00 PM	3,131	908	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM	TO	06:00 PM	0	0														
06:00 PM	TO	07:00 PM	0	0														
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			5,080	1,658	2	2	**2**	2	2	**2**	2	2	**2**	2	2	**2**	**2**	**2**
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

01/14/22
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2000 MUTCD)

MAJOR STREET: **Valley Blvd** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Beech Ave** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Fontana, CA**

COMMENTS: Horizon Year plus Phases 1 and 2
0

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
					MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES					**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	0	0														
08:00 AM	TO	09:00 AM	0	0														
09:00 AM	TO	10:00 AM	1,874	750	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
10:00 AM	TO	11:00 AM	0	0														
11:00 AM	TO	12:00 PM	0	0														
12:00 PM	TO	01:00 PM	0	0														
01:00 PM	TO	02:00 PM	0	0														
02:00 PM	TO	03:00 PM	0	0														
03:00 PM	TO	04:00 PM	0	0														
04:00 PM	TO	05:00 PM	3,004	908	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM	TO	06:00 PM	0	0														
06:00 PM	TO	07:00 PM	0	0														
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM	0	0														
09:00 PM	TO	10:00 PM	0	0														
			4,878	1,658	2	2	**2**	2	2	**2**	2	2	**2**	2	2	**2**	**2**	**2**
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
					NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

01/14/22
Kimley-Horn and Associates

APPENDIX G

INTERSECTION ANALYSIS WORKSHEETS – WITH IMPROVEMENTS

APPENDIX G-1

INTERSECTION ANALYSIS WORKSHEETS – WITH IMPROVEMENTS – OPENING YEAR 2024 PLUS PHASE 1

Option 1: Signal

Number	22											
Intersection	Beech Ave at Foothill Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	21	0	102	0	0	0	0	621	36	198	1526	0
Total Analysis Volume [veh/h]	27	0	132	0	0	0	0	841	46	258	2030	0

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	44	0	0	44	0	0	76	0	0	76	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	24	0	0	7	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.12		0.12			0.81	0.81	0.81	0.81	0.81	0.81
(v / s)_i Volume / Saturation Flow Rate	0.10		0.00			0.00	0.25	0.25	0.41	0.56	0.56
so, Base Saturation Flow per Lane [pc/h/ln]	1800		1800			1800	1800	1800	1800	1800	1800
Arrival type	3		3			3			3		
s, saturation flow rate [veh/h]	1531		1770			212	1800	1767	636	1800	1800
c, Capacity [veh/h]	222		246			171	1460	1434	517	1460	1460
X, volume / capacity	0.72		0.00			0.00	0.31	0.31	0.50	0.70	0.70
d, Delay for Lane Group [s/veh]	55.78		0.00			0.00	3.39	3.40	11.41	7.67	7.67
Lane Group LOS	E		A			A	A	A	B	A	A

Critical Lane Group	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.94	0.00	0.00	2.24	2.20	3.30	9.00	9.00
50th-Percentile Queue Length [ft/ln]	123.62	0.00	0.00	55.93	55.02	82.50	224.9	224.9
95th-Percentile Queue Length [veh/ln]	8.59	0.00	0.00	4.03	3.96	5.94	13.92	13.92
95th-Percentile Queue Length [ft/ln]	214.80	0.00	0.00	100.6	99.04	148.5	347.9	347.9

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.78	55.78	55.78	0.00	0.00	0.00	0.00	3.40	3.40	11.41	7.67	7.67
Movement LOS	E	E	E	A	A	A	A	A	A	B	A	A
Critical Movement	No	No	Yes	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	55.78			0.00			3.40			8.09		
Approach LOS	E			A			A			A		
d_I, Intersection Delay [s/veh]	9.11											
Intersection LOS	A											
Intersection V/C	0.668											

Option 1: Install Signal

Number	22											
Intersection	Beech Ave at Foothill Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	60	0	118	0	0	0	0	1326	54	104	760	0
Total Analysis Volume [veh/h]	67	0	133	0	0	0	0	1564	60	117	946	0

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	85	0	0	85	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	24	0	0	7	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.15		0.15		0.78	0.78	0.78	0.78	0.78	0.78
(v / s)_i Volume / Saturation Flow Rate	0.13		0.00		0.00	0.45	0.46	0.37	0.26	0.26
so, Base Saturation Flow per Lane [pc/h/ln]	1800		1800		1800	1800	1800	1800	1800	1800
Arrival type	3		3		3			3		
s, saturation flow rate [veh/h]	1513		1779		602	1800	1777	315	1800	1800
c, Capacity [veh/h]	268		297		467	1409	1391	239	1409	1409
X, volume / capacity	0.75		0.00		0.00	0.58	0.58	0.49	0.34	0.34
d, Delay for Lane Group [s/veh]	53.98		0.00		0.00	6.90	6.97	25.01	4.48	4.48
Lane Group LOS	D		A		A	A	A	C	A	A

Critical Lane Group	Yes		No			No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	6.17		0.00			0.00	7.12	7.11	2.62	3.03	3.03
50th-Percentile Queue Length [ft/ln]	154.35		0.00			0.00	177.96	177.81	65.40	75.66	75.66
95th-Percentile Queue Length [veh/ln]	10.25		0.00			0.00	11.49	11.49	4.71	5.45	5.45
95th-Percentile Queue Length [ft/ln]	256.23		0.00			0.00	287.35	287.15	117.73	136.19	136.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.98	53.98	53.98	0.00	0.00	0.00	0.00	6.93	6.97	25.01	4.48	4.48
Movement LOS	D	D	D	A	A	A	A	A	A	C	A	A
Critical Movement	No	No	Yes	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	53.98			0.00			6.94			6.74		
Approach LOS	D			A			A			A		
d_I, Intersection Delay [s/veh]	10.12											
Intersection LOS	B											
Intersection V/C	0.588											

Option 1: Widen all approaches by 1 lane

Number	26											
Intersection	Arrow Rte at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	138	1069	219	69	777	93	84	606	98	116	542	59
Total Analysis Volume [veh/h]	225	1766	316	77	1586	104	94	676	192	214	605	66

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	53	0	10	40	0	24	36	0	21	33	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.15	0.46	0.46	0.05	0.36	0.36	0.07	0.22	0.22	0.14	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.13	0.36	0.21	0.04	0.32	0.07	0.05	0.20	0.13	0.12	0.18	0.04
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	251	2236	698	86	1763	550	119	758	338	239	997	445
X, volume / capacity	0.90	0.79	0.45	0.90	0.90	0.19	0.79	0.89	0.57	0.90	0.61	0.15
d, Delay for Lane Group [s/veh]	61.25	30.69	24.50	82.38	44.15	27.16	65.78	49.23	43.10	62.00	37.22	31.67
Lane Group LOS	E	C	C	F	D	C	E	D	D	E	D	C

Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.38	14.63	6.48	2.93	15.69	2.18	3.16	10.13	5.21	7.05	7.70	1.45
50th-Percentile Queue Length [ft/ln]	184.60	365.87	162.06	73.30	392.32	54.39	78.97	253.20	130.18	176.36	192.47	36.22
95th-Percentile Queue Length [veh/ln]	11.84	20.91	10.66	5.28	22.19	3.92	5.69	15.35	8.95	11.41	12.25	2.61
95th-Percentile Queue Length [ft/ln]	296.01	522.71	266.44	131.93	554.74	97.90	142.14	383.69	223.74	285.26	306.24	65.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.25	30.69	24.50	82.38	44.15	27.16	65.78	49.23	43.10	62.00	37.22	31.67
Movement LOS	E	C	C	F	D	C	E	D	D	E	D	C
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	32.82			44.82			49.63			42.80		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	40.62											
Intersection LOS	D											
Intersection V/C	0.777											

Option 1: EBR Overlap

Number	31											
Intersection	Whittram Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	143	1366	112	38	688	56	87	141	294	122	67	73
Total Analysis Volume [veh/h]	164	2241	125	42	1653	62	97	157	328	138	75	81

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	67	0	9	59	0	11	30	30	14	33	0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	17	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.11	0.64	0.64	0.03	0.56	0.56	0.06	0.11	0.25	0.08	0.14
(v / s)_i Volume / Saturation Flow Rate	0.10	0.66	0.67	0.02	0.48	0.04	0.06	0.09	0.21	0.08	0.09
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3	
s, saturation flow rate [veh/h]	1714	1800	1767	1714	3427	1530	1714	1800	1530	1714	1649
c, Capacity [veh/h]	186	1152	1131	54	1930	862	100	201	388	143	226
X, volume / capacity	0.88	1.03	1.05	0.78	0.86	0.07	0.97	0.78	0.85	0.97	0.69
d, Delay for Lane Group [s/veh]	65.48	55.27	61.31	78.40	27.28	12.10	91.40	58.25	57.09	82.42	53.12
Lane Group LOS	E	F	F	E	C	B	F	E	E	F	D

Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.52	39.88	41.04	1.58	20.00	0.79	3.90	4.96	10.76	5.25	4.70
50th-Percentile Queue Length [ft/ln]	138.10	996.88	1026.05	39.43	500.06	19.81	97.58	123.93	268.93	131.20	117.46
95th-Percentile Queue Length [veh/ln]	9.38	51.46	53.66	2.84	27.34	1.43	7.03	8.61	16.14	9.00	8.25
95th-Percentile Queue Length [ft/ln]	234.46	1286.47	1341.60	70.97	683.42	35.66	175.64	215.21	403.41	225.12	206.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.48	58.12	61.31	78.40	27.28	12.10	91.40	58.25	57.09	82.42	53.12	53.12
Movement LOS	E	E	E	E	C	B	F	E	E	F	D	D
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	58.75			27.97			63.12			66.87		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	49.23											
Intersection LOS	D											
Intersection V/C	0.920											

Option 1: Widen NB/SB by 1 lane

Number	34											
Intersection	Merrill Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	1	1458	200	199	841	1	0	1	0	107	0	206
Total Analysis Volume [veh/h]	1	2347	263	222	1825	1	0	1	0	166	0	229

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	30	52	0	20	42	0	9	30	0	18	39	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.00	0.57	0.57	0.13	0.70	0.70	0.00	0.06	0.11	0.17
(v / s)_i Volume / Saturation Flow Rate	0.00	0.48	0.17	0.13	0.37	0.00	0.00	0.00	0.10	0.15
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	1714	1800	1714	1530
c, Capacity [veh/h]	4	2771	865	229	3414	1065	0	102	191	257
X, volume / capacity	0.26	0.85	0.30	0.97	0.53	0.00	0.00	0.01	0.87	0.89
d, Delay for Lane Group [s/veh]	93.30	25.18	14.60	73.33	9.42	5.54	0.00	53.48	63.61	59.10
Lane Group LOS	F	C	B	E	A	A	A	D	E	E

Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.07	18.29	3.90	8.00	7.19	0.01	0.00	0.03	5.51	7.42
50th-Percentile Queue Length [ft/ln]	1.64	457.27	97.58	200.02	179.64	0.19	0.00	0.74	137.68	185.62
95th-Percentile Queue Length [veh/ln]	0.12	25.30	7.03	12.64	11.58	0.01	0.00	0.05	9.36	11.89
95th-Percentile Queue Length [ft/ln]	2.95	632.62	175.64	315.99	289.55	0.35	0.00	1.33	233.90	297.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	93.30	25.18	14.60	73.33	9.42	5.54	0.00	53.48	53.48	63.61	59.10	59.10
Movement LOS	F	C	B	E	A	A	A	D	D	E	E	E
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	24.14			16.34			53.48			61.00		
Approach LOS	C			B			D			E		
d_I, Intersection Delay [s/veh]	23.87											
Intersection LOS	C											
Intersection V/C	0.758											

Option 1: Signal + SBR

Number	35											
Intersection	Beech Ave at Merrill Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	30	215	48	118	172	40	129	224	33	32	148	129
Total Analysis Volume [veh/h]	34	246	54	132	197	44	144	289	37	36	213	144

Intersection Settings

Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	33	0	0	33	0	0	67	0	0	67	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.63	0.63	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.18	0.04	0.12	0.14	0.36	0.02	0.18	0.09
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3		3		3		3	
s, saturation flow rate [veh/h]	1583	1530	1096	1744	1189	1530	1388	1530
c, Capacity [veh/h]	497	442	204	503	799	966	917	966
X, volume / capacity	0.56	0.12	0.65	0.48	0.54	0.04	0.27	0.15
d, Delay for Lane Group [s/veh]	31.79	26.34	47.37	30.06	17.22	7.04	9.31	7.83
Lane Group LOS	C	C	D	C	B	A	A	A

Critical Lane Group	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	6.01	0.96	3.42	4.81	7.08	0.30	2.32	1.26
50th-Percentile Queue Length [ft/ln]	150.37	23.96	85.59	120.31	176.95	7.49	57.93	31.50
95th-Percentile Queue Length [veh/ln]	10.04	1.73	6.16	8.41	11.44	0.54	4.17	2.27
95th-Percentile Queue Length [ft/ln]	250.92	43.13	154.06	210.26	286.03	13.48	104.28	56.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.79	31.79	26.34	47.37	30.06	30.06	17.22	17.22	7.04	9.31	9.31	7.83
Movement LOS	C	C	C	D	C	C	B	B	A	A	A	A
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	30.91			36.18			16.42			8.77		
Approach LOS	C			D			B			A		
d_I, Intersection Delay [s/veh]	22.28											
Intersection LOS	C											
Intersection V/C	0.541											

Option 1: EB/WBR Overlap + 2nd NBL + EB/WB Reconfig

Number	39											
Intersection	Randall Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	10	838	104	156	1207	9	0	1	0	214	0	109
Total Analysis Volume [veh/h]	391	1310	120	213	1683	70	33	137	308	248	179	193

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	8	7	4	4
Auxiliary Signal Groups									1,8			4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	20	40	0	25	45	0	19	33	33	22	36	36
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	24	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

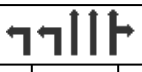
g / C, Green / Cycle	0.13	0.47	0.47	0.14	0.48	0.48	0.03	0.10	0.27	0.15	0.22	0.40
(v / s)_i Volume / Saturation Flow Rate	0.12	0.28	0.28	0.12	0.34	0.05	0.02	0.08	0.11	0.14	0.05	0.13
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3329	3427	1724	1714	4903	1530	1714	1800	2708	1714	3427	1530
c, Capacity [veh/h]	441	1625	817	244	2373	741	49	180	720	257	759	608
X, volume / capacity	0.89	0.58	0.59	0.87	0.71	0.09	0.67	0.76	0.43	0.96	0.24	0.32
d, Delay for Lane Group [s/veh]	57.31	24.50	26.05	59.80	26.14	16.99	72.65	59.03	36.88	73.06	38.52	25.24
Lane Group LOS	E	C	C	E	C	B	E	E	D	E	D	C

Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.14	9.97	10.41	6.89	12.62	1.10	1.20	4.34	3.79	8.98	2.19	3.85
50th-Percentile Queue Length [ft/ln]	153.5	249.3	260.3	172.2	315.4	27.54	29.89	108.6	94.82	224.4	54.86	96.27
95th-Percentile Queue Length [veh/ln]	10.21	15.15	15.70	11.19	18.44	1.98	2.15	7.76	6.83	13.89	3.95	6.93
95th-Percentile Queue Length [ft/ln]	255.2	378.7	392.6	279.8	461.1	49.56	53.81	194.0	170.6	347.2	98.75	173.2

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.31	24.93	26.05	59.80	26.14	16.99	72.65	59.03	36.88	73.06	38.52	25.24
Movement LOS	E	C	C	E	C	B	E	E	D	E	D	C
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	31.96			29.47			45.70			48.20		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.36											
Intersection LOS	C											
Intersection V/C	0.702											

Option 1: EBR/WBR Ovlp + NBL + reconfig EB/WB

Number	39											
Intersection	Randall Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	16	1461	163	160	882	2	5	2	5	165	0	124
Total Analysis Volume [veh/h]	584	2200	182	302	1423	78	72	236	409	184	240	267

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	8	7	4	4
Auxiliary Signal Groups									1,8			4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	34	49	0	23	38	0	12	33	33	15	36	36
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	24	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.20	0.46	0.46	0.16	0.42	0.42	0.05	0.16	0.39	0.09	0.19	0.39
(v / s)_i Volume / Saturation Flow Rate	0.18	0.46	0.47	0.18	0.29	0.05	0.04	0.13	0.15	0.11	0.07	0.17
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3329	3427	1732	1714	4903	1530	1714	1800	2708	1714	3427	1530
c, Capacity [veh/h]	678	1577	797	271	2034	635	91	282	1065	157	668	591
X, volume / capacity	0.86	0.99	1.03	1.11	0.70	0.12	0.79	0.84	0.38	1.17	0.36	0.45
d, Delay for Lane Group [s/veh]	49.51	52.53	71.84	122.70	30.97	22.04	70.16	55.72	26.23	145.71	42.14	28.23
Lane Group LOS	D	D	F	F	C	C	E	E	C	F	D	C

Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.70	26.13	31.04	13.56	11.48	1.43	2.51	7.37	4.21	8.72	3.12	5.83
50th-Percentile Queue Length [ft/ln]	217.44	653.28	775.96	339.03	286.97	35.87	62.75	184.28	105.32	218.01	78.05	145.71
95th-Percentile Queue Length [veh/ln]	13.53	34.51	41.08	20.61	17.04	2.58	4.52	11.82	7.58	14.34	5.62	9.79
95th-Percentile Queue Length [ft/ln]	338.35	862.86	1027.11	515.16	425.88	64.56	112.95	295.59	189.47	358.47	140.48	244.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.51	58.13	71.84	122.70	30.97	22.04	70.16	55.72	26.23	145.71	42.14	28.23
Movement LOS	D	E	E	F	C	C	E	E	C	F	D	C
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	57.27			45.95			40.35			64.35		
Approach LOS	E			D			D			E		
d_I, Intersection Delay [s/veh]	52.79											
Intersection LOS	D											
Intersection V/C	0.888											

Option 1: Signal

Number	40											
Intersection	Beech Ave at Randall Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	17	193	42	6	194	82	55	115	18	31	173	39
Total Analysis Volume [veh/h]	35	244	54	7	245	110	74	300	32	39	440	49

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	50	0	0	50	0	0	70	0	0	70	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.24	0.24	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.22	0.21	0.26	0.31
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1480	1722	1538	1711
c, Capacity [veh/h]	394	450	1096	1212
X, volume / capacity	0.85	0.80	0.37	0.44
d, Delay for Lane Group [s/veh]	50.64	47.54	8.48	9.38
Lane Group LOS	D	D	A	A

Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.35	10.74	4.23	6.01
50th-Percentile Queue Length [ft/ln]	258.77	268.49	105.78	150.31
95th-Percentile Queue Length [veh/ln]	15.63	16.11	7.60	10.03
95th-Percentile Queue Length [ft/ln]	390.68	402.86	190.11	250.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.64	50.64	50.64	47.54	47.54	47.54	8.48	8.48	8.48	9.38	9.38	9.38
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
Critical Movement	No	Yes	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	50.64			47.54			8.48			9.38		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	26.07											
Intersection LOS	C											
Intersection V/C	0.534											

Option 1: Signal

Number	40											
Intersection	Beech Ave at Randall Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	15	213	12	34	162	31	62	171	22	10	113	42
Total Analysis Volume [veh/h]	38	238	14	38	181	40	76	484	45	12	427	47

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	42	0	0	42	0	0	78	0	0	78	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.19	0.19	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.17	0.16	0.37	0.28
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1659	1581	1630	1752
c, Capacity [veh/h]	355	341	1239	1327
X, volume / capacity	0.82	0.76	0.49	0.37
d, Delay for Lane Group [s/veh]	52.45	49.86	7.55	6.40
Lane Group LOS	D	D	A	A

Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.97	7.78	5.77	4.16
50th-Percentile Queue Length [ft/ln]	224.31	194.49	144.25	103.90
95th-Percentile Queue Length [veh/ln]	13.88	12.35	9.71	7.48
95th-Percentile Queue Length [ft/ln]	347.12	308.85	242.74	187.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.45	52.45	52.45	49.86	49.86	49.86	7.55	7.55	7.55	6.40	6.40	6.40
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
Critical Movement	No	Yes	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	52.45			49.86			7.55			6.40		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	21.83											
Intersection LOS	C											
Intersection V/C	0.546											

Option 1: Signal

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	4	43	60	69	61	1	41	86	14	9
Total Analysis Volume [veh/h]	4	48	67	77	68	1	45	96	16	11

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.16	0.11
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800
Arrival type	3	3
s, saturation flow rate [veh/h]	1642	1551
c, Capacity [veh/h]	387	374
X, volume / capacity	0.68	0.45
d, Delay for Lane Group [s/veh]	25.36	22.58
Lane Group LOS	C	C

Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	3.54	2.07
50th-Percentile Queue Length [ft/ln]	88.40	51.83
95th-Percentile Queue Length [veh/ln]	6.36	3.73
95th-Percentile Queue Length [ft/ln]	159.12	93.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.36	25.36	25.36	25.36	25.36	22.58	22.58	22.58	22.58	22.58
Movement LOS	C	C	C	C	C	C	C	C	C	C
Critical Movement	No	No	No	Yes	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	25.36					22.58				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	22.42									
Intersection LOS	C									
Intersection V/C	0.593									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	46	6	95	57	0	27	55	146	14	4
Total Analysis Volume [veh/h]	51	25	216	63	0	30	61	338	16	4

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	4	0	0	0	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	22	0	0	0	0	22	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.25	0.29
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800
Arrival type	3	3
s, saturation flow rate [veh/h]	1424	1542
c, Capacity [veh/h]	537	575
X, volume / capacity	0.66	0.78
d, Delay for Lane Group [s/veh]	18.90	22.08
Lane Group LOS	B	C
Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	4.04	5.77

50th-Percentile Queue Length [ft/ln]	101.09	144.32
95th-Percentile Queue Length [veh/ln]	7.28	9.71
95th-Percentile Queue Length [ft/ln]	181.95	242.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.90	18.90	18.90	18.90	18.90	22.08	22.08	22.08	22.08	22.08
Movement LOS	B	B	B	B	B	C	C	C	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	18.90					22.08				
Approach LOS	B					C				
d_I, Intersection Delay [s/veh]	22.42									
Intersection LOS	C									
Intersection V/C	0.593									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	2	13	66	23	1	13	45	123	26	6
Total Analysis Volume [veh/h]	2	15	74	25	1	15	50	137	37	6

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	10	0	0	0	0	12	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		

Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.12	0.14	0.03
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800
Arrival type	3	3	
s, saturation flow rate [veh/h]	943	1433	1530
c, Capacity [veh/h]	236	334	272
X, volume / capacity	0.49	0.60	0.16
d, Delay for Lane Group [s/veh]	23.56	25.03	21.14
Lane Group LOS	C	C	C
Critical Lane Group	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.46	2.68	0.50
50th-Percentile Queue Length [ft/ln]	36.49	67.02	12.45
95th-Percentile Queue Length [veh/ln]	2.63	4.83	0.90
95th-Percentile Queue Length [ft/ln]	65.69	120.63	22.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.56	23.56	23.56	23.56	23.56	25.03	25.03	25.03	21.14	21.14
Movement LOS	C	C	C	C	C	C	C	C	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	23.56					24.35				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	22.42									
Intersection LOS	C									
Intersection V/C	0.593									

Option 1: Signal

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	0	33	51	48	20	4	12	42	7	1
Total Analysis Volume [veh/h]	0	37	57	54	22	4	14	47	7	1

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	20	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.33	0.32
(v / s)_i Volume / Saturation Flow Rate	0.12	0.05
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800
Arrival type	3	3
s, saturation flow rate [veh/h]	1409	1357
c, Capacity [veh/h]	535	510
X, volume / capacity	0.32	0.14
d, Delay for Lane Group [s/veh]	15.45	14.57
Lane Group LOS	B	B

Critical Lane Group	No	No
50th-Percentile Queue Length [veh/ln]	1.62	0.66
50th-Percentile Queue Length [ft/ln]	40.58	16.47
95th-Percentile Queue Length [veh/ln]	2.92	1.19
95th-Percentile Queue Length [ft/ln]	73.04	29.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.45	15.45	15.45	15.45	15.45	14.57	14.57	14.57	14.57	14.57
Movement LOS	B	B	B	B	B	B	B	B	B	B
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	15.45					14.57				
Approach LOS	B					B				
d_I, Intersection Delay [s/veh]	21.99									
Intersection LOS	C									
Intersection V/C	0.772									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	39	2	143	22	4	12	39	142	7	5
Total Analysis Volume [veh/h]	43	31	405	24	4	14	43	435	7	5

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	4	0	0	0	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	20	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.33	0.32
(v / s)_i Volume / Saturation Flow Rate	0.29	0.29
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800
Arrival type	3	3
s, saturation flow rate [veh/h]	1719	1752
c, Capacity [veh/h]	632	628
X, volume / capacity	0.80	0.80
d, Delay for Lane Group [s/veh]	22.44	22.47
Lane Group LOS	C	C
Critical Lane Group	Yes	Yes
50th-Percentile Queue Length [veh/ln]	6.53	6.48

50th-Percentile Queue Length [ft/ln]	163.21	162.07
95th-Percentile Queue Length [veh/ln]	10.72	10.66
95th-Percentile Queue Length [ft/ln]	267.97	266.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.44	22.44	22.44	22.44	22.44	22.47	22.47	22.47	22.47	22.47
Movement LOS	C	C	C	C	C	C	C	C	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	22.44					22.47				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	21.99									
Intersection LOS	C									
Intersection V/C	0.772									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	3	16	240	40	0	5	39	95	31	7
Total Analysis Volume [veh/h]	3	18	267	44	0	5	43	106	38	7

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	10	0	0	0	0	12	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	21	0	0	0	0	21	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		

Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

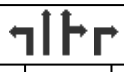
Lane Group Calculations

g / C, Green / Cycle	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.19	0.09	0.03
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800
Arrival type	3	3	
s, saturation flow rate [veh/h]	1753	1772	1530
c, Capacity [veh/h]	397	402	347
X, volume / capacity	0.84	0.38	0.13
d, Delay for Lane Group [s/veh]	26.80	20.25	18.65
Lane Group LOS	C	C	B
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.62	1.76	0.48
50th-Percentile Queue Length [ft/ln]	115.48	43.92	12.02
95th-Percentile Queue Length [veh/ln]	8.14	3.16	0.87
95th-Percentile Queue Length [ft/ln]	203.60	79.06	21.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.80	26.80	26.80	26.80	26.80	20.25	20.25	20.25	18.65	18.65
Movement LOS	C	C	C	C	C	C	C	C	B	B
Critical Movement	No	No	Yes	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	26.80					19.89				
Approach LOS	C					B				
d_I, Intersection Delay [s/veh]	21.99									
Intersection LOS	C									
Intersection V/C	0.772									

Option 1: WBR + NBR Overlap

Number	44											
Intersection	Fourth St at I-15 SB Ramps/Ontario Mills Dr											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	119	208	360	107	282	534	817	1020	94	152	605	306
Total Analysis Volume [veh/h]	133	232	402	119	315	596	912	1159	105	169	693	534

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	15	15	15	30	30	0	52	49	0	26	23	23
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	0	0	21	0	0	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

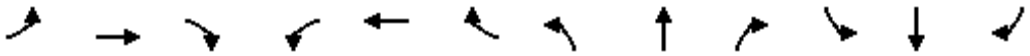
Lane Group Calculations

g / C, Green / Cycle	0.09	0.18	0.39	0.21	0.29	0.29	0.29	0.30	0.30	0.30	0.18	0.18	0.42
(v / s)_i Volume / Saturation Flow Rate	0.08	0.07	0.26	0.07	0.18	0.19	0.19	0.27	0.24	0.07	0.05	0.14	0.35
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3				3			3		
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1800	1530	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	157	604	601	358	528	449	449	1006	1465	457	609	879	645
X, volume / capacity	0.85	0.38	0.67	0.33	0.60	0.66	0.66	0.91	0.79	0.23	0.28	0.79	0.83
d, Delay for Lane Group [s/veh]	65.33	45.51	35.87	40.91	41.22	44.75	44.75	43.67	39.64	31.94	42.44	48.68	42.55
Lane Group LOS	E	D	D	D	D	D	D	D	D	C	D	D	D

Critical Lane Group	No	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.46	3.21	10.45	3.06	8.61	8.59	8.59	13.28	10.51	2.34	2.19	6.71	15.53
50th-Percentile Queue Length [ft/ln]	111.47	80.36	261.21	76.39	215.3	214.7	214.7	331.93	262.63	58.58	54.70	167.86	388.33
95th-Percentile Queue Length [veh/ln]	7.92	5.79	15.75	5.50	13.43	13.40	13.40	19.25	15.82	4.22	3.94	10.96	22.00
95th-Percentile Queue Length [ft/ln]	198.05	144.66	393.73	137.5	335.6	334.9	334.9	481.32	395.52	105.44	98.45	274.11	549.92

Movement, Approach, & Intersection Results

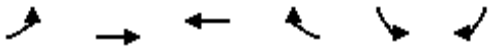
d_M, Delay for Movement [s/veh]	65.33	45.51	35.87	40.91	41.22	44.75	43.67	39.64	31.94	42.44	48.68	42.55
Movement LOS	E	D	D	D	D	D	D	D	C	D	D	D
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	43.89			43.23			40.96			45.58		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.02											
Intersection LOS	D											
Intersection V/C	0.620											



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1079	48	299	598	2	84	3	629	3	0	1
Future Volume (vph)	0	1079	48	299	598	2	84	3	629	3	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5	4.5		4.5	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95	0.95		1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85	0.85		0.97	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.96	
Satd. Flow (prot)		3353	1500	1676	3351		1676	1427	1425		1644	
Flt Permitted		1.00	1.00	0.95	1.00		0.76	1.00	1.00		0.58	
Satd. Flow (perm)		3353	1500	1676	3351		1333	1427	1425		995	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1240	55	344	687	2	97	3	723	3	0	1
RTOR Reduction (vph)	0	0	28	0	0	0	0	303	302	0	3	0
Lane Group Flow (vph)	0	1240	27	344	689	0	97	62	59	0	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)		56.7	56.7	27.3	88.5		19.0	19.0	19.0		19.0	
Effective Green, g (s)		56.7	56.7	27.3	88.5		19.0	19.0	19.0		19.0	
Actuated g/C Ratio		0.49	0.49	0.23	0.76		0.16	0.16	0.16		0.16	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1631	730	392	2545		217	232	232		162	
v/s Ratio Prot		c0.37		c0.21	0.21			0.04				
v/s Ratio Perm			0.02				c0.07		0.04		0.00	
v/c Ratio		0.76	0.04	0.88	0.27		0.45	0.27	0.25		0.00	
Uniform Delay, d1		24.4	15.6	43.0	4.2		44.0	42.7	42.6		40.8	
Progression Factor		1.00	1.00	0.92	0.43		1.00	1.00	1.00		1.00	
Incremental Delay, d2		2.1	0.0	19.0	0.1		6.5	2.8	2.6		0.0	
Delay (s)		26.5	15.6	58.7	1.9		50.5	45.5	45.2		40.9	
Level of Service		C	B	E	A		D	D	D		D	
Approach Delay (s)		26.0			20.8			45.9			40.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	116.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

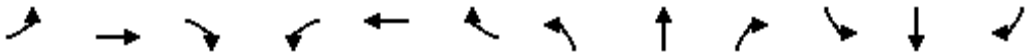
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1713	743	0	0	153
Future Volume (vph)	0	1713	743	0	0	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.5	4.5			4.5
Lane Util. Factor		0.95	0.95			0.88
Frt		1.00	1.00			0.85
Flt Protected		1.00	1.00			1.00
Satd. Flow (prot)		3353	3353			2640
Flt Permitted		1.00	1.00			1.00
Satd. Flow (perm)		3353	3353			2640
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1803	782	0	0	161
RTOR Reduction (vph)	0	0	0	0	0	135
Lane Group Flow (vph)	0	1803	782	0	0	26
Turn Type	Prot	NA	NA			Perm
Protected Phases	7	4	8			
Permitted Phases						6
Actuated Green, G (s)		56.7	88.5			19.0
Effective Green, g (s)		56.7	88.5			19.0
Actuated g/C Ratio		0.49	0.76			0.16
Clearance Time (s)		4.5	4.5			4.5
Vehicle Extension (s)		3.0	3.0			3.0
Lane Grp Cap (vph)		1631	2547			430
v/s Ratio Prot		c0.54	c0.23			
v/s Ratio Perm						c0.01
v/c Ratio		1.11	0.31			0.06
Uniform Delay, d1		29.9	4.4			41.2
Progression Factor		0.47	1.00			1.00
Incremental Delay, d2		54.2	0.1			0.3
Delay (s)		68.4	4.5			41.5
Level of Service		E	A			D
Approach Delay (s)		68.4	4.5		41.5	
Approach LOS		E	A		D	

Intersection Summary			
HCM 2000 Control Delay	48.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	116.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

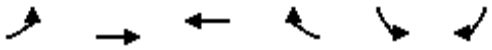
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1079	48	299	598	2	84	3	629	3	0	1
Future Volume (vph)	0	1079	48	299	598	2	84	3	629	3	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5	4.5		4.5	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95	0.95		1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85	0.85		0.97	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.96	
Satd. Flow (prot)		3353	1500	1676	3351		1676	1427	1425		1644	
Flt Permitted		1.00	1.00	0.95	1.00		0.76	1.00	1.00		0.58	
Satd. Flow (perm)		3353	1500	1676	3351		1333	1427	1425		995	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1240	55	344	687	2	97	3	723	3	0	1
RTOR Reduction (vph)	0	0	28	0	0	0	0	303	302	0	3	0
Lane Group Flow (vph)	0	1240	27	344	689	0	97	62	59	0	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)		56.7	56.7	27.3	88.5		19.0	19.0	19.0		19.0	
Effective Green, g (s)		56.7	56.7	27.3	88.5		19.0	19.0	19.0		19.0	
Actuated g/C Ratio		0.49	0.49	0.23	0.76		0.16	0.16	0.16		0.16	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1631	730	392	2545		217	232	232		162	
v/s Ratio Prot		c0.37		c0.21	0.21			0.04				
v/s Ratio Perm			0.02				c0.07		0.04		0.00	
v/c Ratio		0.76	0.04	0.88	0.27		0.45	0.27	0.25		0.00	
Uniform Delay, d1		24.4	15.6	43.0	4.2		44.0	42.7	42.6		40.8	
Progression Factor		1.00	1.00	0.92	0.43		1.00	1.00	1.00		1.00	
Incremental Delay, d2		2.1	0.0	19.0	0.1		6.5	2.8	2.6		0.0	
Delay (s)		26.5	15.6	58.7	1.9		50.5	45.5	45.2		40.9	
Level of Service		C	B	E	A		D	D	D		D	
Approach Delay (s)		26.0			20.8			45.9			40.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	116.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1713	743	0	0	153
Future Volume (vph)	0	1713	743	0	0	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.5	4.5			4.5
Lane Util. Factor		0.95	0.95			0.88
Frt		1.00	1.00			0.85
Flt Protected		1.00	1.00			1.00
Satd. Flow (prot)		3353	3353			2640
Flt Permitted		1.00	1.00			1.00
Satd. Flow (perm)		3353	3353			2640
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1803	782	0	0	161
RTOR Reduction (vph)	0	0	0	0	0	135
Lane Group Flow (vph)	0	1803	782	0	0	26
Turn Type	Prot	NA	NA			Perm
Protected Phases	7	4	8			
Permitted Phases						6
Actuated Green, G (s)		56.7	88.5			19.0
Effective Green, g (s)		56.7	88.5			19.0
Actuated g/C Ratio		0.49	0.76			0.16
Clearance Time (s)		4.5	4.5			4.5
Vehicle Extension (s)		3.0	3.0			3.0
Lane Grp Cap (vph)		1631	2547			430
v/s Ratio Prot		c0.54	c0.23			
v/s Ratio Perm						c0.01
v/c Ratio		1.11	0.31			0.06
Uniform Delay, d1		29.9	4.4			41.2
Progression Factor		0.47	1.00			1.00
Incremental Delay, d2		54.2	0.1			0.3
Delay (s)		68.4	4.5			41.5
Level of Service		E	A			D
Approach Delay (s)		68.4	4.5		41.5	
Approach LOS		E	A		D	

Intersection Summary			
HCM 2000 Control Delay	48.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	116.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Option 1: Widen WB + NBR Lane

Number	49											
Intersection	San Bernardino Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	65	1021	140	76	775	225	468	667	302	75	184	58
Total Analysis Volume [veh/h]	73	1854	156	131	1327	587	880	744	337	84	205	127

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Overla	ProtP	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	5	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	26	0	13	30	30	45	51	0	30	36	0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	Yes	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

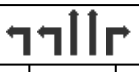
g / C, Green / Cycle	0.04	0.35	0.35	0.08	0.38	0.76	0.48	0.38	0.06	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.04	0.38	0.10	0.08	0.27	0.38	0.57	0.22	0.05	0.06	0.08
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	4			4			5		5		
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	1551	3427	1714	3427	1530
c, Capacity [veh/h]	71	1704	532	129	1867	1155	778	1306	108	354	158
X, volume / capacity	1.02	1.09	0.29	1.02	0.71	0.51	1.13	0.57	0.78	0.58	0.80
d, Delay for Lane Group [s/veh]	111.9	82.16	24.45	95.73	26.76	1.60	96.16	16.66	64.12	48.76	57.61
Lane Group LOS	F	F	C	F	C	A	F	B	E	D	E

Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.23	22.74	2.85	5.26	9.09	0.51	28.72	4.52	2.73	2.78	3.83
50th-Percentile Queue Length [ft/ln]	80.73	568.5	71.20	131.5	227.2	12.82	717.90	112.98	68.19	69.54	95.83
95th-Percentile Queue Length [veh/ln]	5.81	32.31	5.13	9.08	14.04	0.92	41.01	8.01	4.91	5.01	6.90
95th-Percentile Queue Length [ft/ln]	145.3	807.7	128.1	227.0	350.9	23.08	1025.18	200.14	122.7	125.1	172.4

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	111.9	82.16	24.45	95.73	26.76	1.60	96.16	16.66	0.00	64.12	48.76	57.61
Movement LOS	F	F	C	F	C	A	F	B		E	D	E
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	78.88			23.96			59.74			54.57		
Approach LOS	E			C			E			D		
d_I, Intersection Delay [s/veh]	53.99											
Intersection LOS	D											
Intersection V/C	0.912											

Option 1: NBR Overlap

Number	57											
Intersection	Valley Blvd at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	247	951	696	98	948	67	178	452	354	395	240	82
Total Analysis Volume [veh/h]	276	1737	777	133	1498	75	199	504	395	441	267	132

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	6	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups			6,7						1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	18	47	47	13	42	0	24	40	40	20	36	0
Walk [s]	0	5	5	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	24	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.12	0.48	0.65	0.08	0.44	0.44	0.08	0.18	0.33	0.13	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.08	0.51	0.51	0.08	0.31	0.05	0.06	0.15	0.26	0.13	0.12	0.12
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1602
c, Capacity [veh/h]	388	1647	990	129	2152	672	264	609	501	444	417	371
X, volume / capacity	0.71	1.05	0.78	1.03	0.70	0.11	0.75	0.83	0.79	0.99	0.51	0.51
d, Delay for Lane Group [s/veh]	53.46	69.33	21.39	101.57	29.09	20.20	58.44	50.51	47.87	70.33	41.06	41.19
Lane Group LOS	D	F	C	F	C	C	E	D	D	E	D	D

Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.13	31.59	15.70	5.53	11.74	1.31	3.10	7.50	11.98	7.74	5.54	4.95
50th-Percentile Queue Length [ft/ln]	103.17	789.72	392.55	138.25	293.53	32.73	77.59	187.47	299.46	193.57	138.45	123.79
95th-Percentile Queue Length [veh/ln]	7.43	42.54	22.20	9.49	17.36	2.36	5.59	11.99	17.65	12.31	9.40	8.60
95th-Percentile Queue Length [ft/ln]	185.71	1063.51	555.02	237.31	434.02	58.92	139.66	299.74	441.36	307.66	234.94	215.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.46	69.33	21.39	101.57	29.09	20.20	58.44	50.51	47.87	70.33	41.08	41.19
Movement LOS	D	F	C	F	C	C	E	D	D	E	D	D
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	54.41			34.35			50.99			56.46		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	48.77											
Intersection LOS	D											
Intersection V/C	0.928											

Option 1: Signal + Widen all approaches

Number	59											
Intersection	Beech Ave at Valley Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	6	1	21	92	3	29	14	399	8	14	605	72
Total Analysis Volume [veh/h]	7	1	25	111	3	35	17	504	9	17	751	86

Intersection Settings

Cycle Length [s]	90											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	33	0	0	33	0	0	57	0	0	57	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.12	0.12	0.12	0.12	0.12	0.12	0.79	0.79	0.79	0.79	0.79	0.79
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.02	0.10	0.00	0.02	0.03	0.10	0.10	0.02	0.16	0.16
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1100	1638	1530	1124	1638	1530	667	3427	1784	901	3427	1707
c, Capacity [veh/h]	217	204	190	220	204	190	564	2696	1403	750	2696	1343
X, volume / capacity	0.03	0.00	0.13	0.50	0.01	0.18	0.03	0.12	0.13	0.02	0.21	0.21
d, Delay for Lane Group [s/veh]	36.82	34.52	35.37	41.41	34.58	35.76	3.58	2.37	2.46	3.07	2.62	2.80
Lane Group LOS	D	C	D	D	C	D	A	A	A	A	A	A

Critical Lane Group	No	No	No	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.14	0.02	0.50	2.47	0.06	0.70	0.09	0.50	0.55	0.07	0.88	0.96
50th-Percentile Queue Length [ft/ln]	3.55	0.49	12.48	61.83	1.47	17.61	2.13	12.39	13.81	1.82	22.09	23.90
95th-Percentile Queue Length [veh/ln]	0.26	0.04	0.90	4.45	0.11	1.27	0.15	0.89	0.99	0.13	1.59	1.72
95th-Percentile Queue Length [ft/ln]	6.38	0.88	22.46	111.3	2.64	31.71	3.83	22.30	24.86	3.28	39.77	43.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.82	34.52	35.37	41.41	34.58	35.76	3.58	2.40	2.46	3.07	2.67	2.80
Movement LOS	D	C	D	D	C	D	A	A	A	A	A	A
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	35.66			39.94			2.44			2.69		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	6.84											
Intersection LOS	A											
Intersection V/C	0.263											

Option 1: Signal + widening

Number	59											
Intersection	Beech Ave at Valley Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	4	2	18	74	0	20	117	1003	7	7	509	125
Total Analysis Volume [veh/h]	4	2	20	82	0	22	131	1142	7	7	608	140

Intersection Settings

Cycle Length [s]	90											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	42	0	0	42	0	0	48	0	0	48	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.08	0.08	0.08	0.08	0.08	0.08	0.83	0.83	0.83	0.83	0.83	0.83
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.01	0.06	0.00	0.01	0.18	0.22	0.22	0.01	0.15	0.15
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1294	1638	1530	1281	1638	1530	725	3427	1794	497	3427	1635
c, Capacity [veh/h]	190	139	130	189	139	130	615	2832	1483	435	2832	1351
X, volume / capacity	0.02	0.01	0.15	0.43	0.00	0.17	0.21	0.27	0.27	0.02	0.18	0.18
d, Delay for Lane Group [s/veh]	38.42	37.77	38.73	42.28	0.00	38.85	4.55	1.97	2.18	3.80	1.73	1.89
Lane Group LOS	D	D	D	D	A	D	A	A	A	A	A	A

Critical Lane Group	No	No	No	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.08	0.04	0.43	1.84	0.00	0.47	0.72	0.79	0.91	0.04	0.48	0.53
50th-Percentile Queue Length [ft/ln]	2.08	1.04	10.63	46.06	0.00	11.72	17.91	19.63	22.72	0.96	11.93	13.13
95th-Percentile Queue Length [veh/ln]	0.15	0.07	0.77	3.32	0.00	0.84	1.29	1.41	1.64	0.07	0.86	0.95
95th-Percentile Queue Length [ft/ln]	3.75	1.87	19.14	82.90	0.00	21.10	32.23	35.34	40.89	1.72	21.48	23.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.42	37.77	38.73	42.28	21.14	38.85	4.55	2.04	2.18	3.80	1.76	1.89
Movement LOS	D	D	D	D	C	D	A	A	A	A	A	A
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	38.61			41.55			2.30			1.80		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	4.45											
Intersection LOS	A											
Intersection V/C	0.284											

Option 1: Restripe EB

Number	72											
Intersection	Cherry Ave at Santa Ana Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	36	762	11	114	720	331	245	39	80	9	21	66
Total Analysis Volume [veh/h]	42	897	13	153	842	391	297	45	93	11	24	103

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	32	30	0	45	43	0	0	45	0	0	45	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.03	0.45	0.45	0.11	0.53	0.53	0.34	0.34	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.02	0.17	0.17	0.09	0.25	0.26	0.23	0.09	0.02	0.07
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1714	3427	1787	1714	3427	1530	1284	1609	1400	1530
c, Capacity [veh/h]	54	1553	810	182	1810	808	361	548	516	521
X, volume / capacity	0.78	0.38	0.39	0.84	0.47	0.48	0.82	0.25	0.07	0.20
d, Delay for Lane Group [s/veh]	78.30	22.45	23.12	62.39	18.58	20.02	55.06	28.80	26.81	28.18
Lane Group LOS	E	C	C	E	B	C	E	C	C	C

Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.58	5.72	6.12	5.02	7.40	7.22	9.67	2.92	0.69	2.13
50th-Percentile Queue Length [ft/ln]	39.40	142.9	152.9	125.3	184.9	180.5	241.77	72.92	17.22	53.35
95th-Percentile Queue Length [veh/ln]	2.84	9.64	10.18	8.69	11.86	11.63	14.77	5.25	1.24	3.84
95th-Percentile Queue Length [ft/ln]	70.91	241.0	254.4	217.2	296.4	290.7	369.27	131.25	31.00	96.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.30	22.67	23.12	62.39	18.58	20.02	55.06	28.80	28.80	26.81	26.81	28.18
Movement LOS	E	C	C	E	B	C	E	C	C	C	C	C
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	25.13			23.82			46.73			27.83		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	27.86											
Intersection LOS	C											
Intersection V/C	0.511											

Option 1: Restripe EB approach

Number	72											
Intersection	Cherry Ave at Santa Ana Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	8	601	29	67	890	130	243	49	30	13	21	83
Total Analysis Volume [veh/h]	8	692	33	111	1011	163	293	55	34	15	23	134

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	16	0	53	60	0	0	51	0	0	51	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.01	0.50	0.50	0.08	0.57	0.57	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.00	0.14	0.14	0.06	0.23	0.23	0.23	0.05	0.03	0.09
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1714	3427	1759	1714	3427	1675	1249	1686	1465	1530
c, Capacity [veh/h]	17	1723	884	138	1965	961	374	534	506	485
X, volume / capacity	0.48	0.28	0.28	0.81	0.40	0.40	0.78	0.17	0.08	0.28
d, Delay for Lane Group [s/veh]	78.80	17.63	18.03	64.76	14.79	15.43	49.35	29.71	28.71	31.00
Lane Group LOS	E	B	B	E	B	B	D	C	C	C

Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.33	3.90	4.13	3.70	5.98	6.02	9.01	1.89	0.78	2.96
50th-Percentile Queue Length [ft/ln]	8.34	97.57	103.14	92.44	149.40	150.49	225.18	47.23	19.51	74.01
95th-Percentile Queue Length [veh/ln]	0.60	7.02	7.43	6.66	9.99	10.04	13.93	3.40	1.40	5.33
95th-Percentile Queue Length [ft/ln]	15.01	175.62	185.66	166.39	249.63	251.08	348.23	85.01	35.12	133.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.80	17.76	18.03	64.76	14.93	15.43	49.35	29.71	29.71	28.71	28.71	31.00
Movement LOS	E	B	B	E	B	B	D	C	C	C	C	C
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	18.44			19.30			44.78			30.49		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	23.59											
Intersection LOS	C											
Intersection V/C	0.469											

APPENDIX G-2

INTERSECTION ANALYSIS WORKSHEETS – WITH IMPROVEMENTS – OPENING YEAR 2027 PLUS PHASES 1 & 2

Option 1: Widen all approaches + SBR Overlap

Number	20											
Intersection	Foothill Blvd at Etiwanda Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	153	199	67	50	341	230	100	448	210	342	1200	115
Total Analysis Volume [veh/h]	319	256	83	61	444	280	122	545	428	417	1459	140

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups						2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	29	54	0	11	36	36	9	29	29	26	46	0
Walk [s]	0	5	0	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	27	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.21	0.45	0.45	0.05	0.29	0.36	0.04	0.23	0.47	0.15	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.19	0.07	0.05	0.04	0.13	0.18	0.04	0.11	0.28	0.13	0.30	0.09
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	357	1538	687	79	981	553	139	1109	716	486	1620	505
X, volume / capacity	0.89	0.17	0.12	0.78	0.45	0.51	0.88	0.49	0.60	0.86	0.90	0.28
d, Delay for Lane Group [s/veh]	62.71	19.94	19.64	71.55	36.62	33.26	73.04	40.76	27.25	54.59	40.38	29.91
Lane Group LOS	E	B	B	E	D	C	E	D	C	D	D	C

Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.85	2.19	1.43	2.16	5.54	6.81	2.15	4.71	9.54	6.41	13.77	3.04
50th-Percentile Queue Length [ft/ln]	271.2	54.75	35.66	53.89	138.3	170.2	53.63	117.8	238.6	160.3	344.3	75.95
95th-Percentile Queue Length [veh/ln]	16.25	3.94	2.57	3.88	9.39	11.09	3.86	8.27	14.61	10.56	19.86	5.47
95th-Percentile Queue Length [ft/ln]	406.3	98.54	64.18	97.01	234.8	277.2	96.54	206.8	365.2	264.1	496.5	136.7

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.71	19.94	19.64	71.55	36.62	33.26	73.04	40.76	27.25	54.59	40.38	29.91
Movement LOS	E	B	B	E	D	C	E	D	C	D	D	C
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	40.64			38.13			39.07			42.59		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.69											
Intersection LOS	D											
Intersection V/C	0.700											

Option 1: Add 1 lane each approach + SBR Overlap

Number	20											
Intersection	Foothill Blvd at Etiwanda Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	260	348	189	62	209	155	236	931	176	104	748	47
Total Analysis Volume [veh/h]	526	448	225	73	292	183	278	1098	455	125	882	56

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups						2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	42	66	0	12	36	36	15	33	33	9	27	0
Walk [s]	0	5	0	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	27	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.32	0.53	0.53	0.05	0.27	0.39	0.09	0.24	0.59	0.04	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.31	0.13	0.15	0.04	0.09	0.12	0.08	0.22	0.30	0.04	0.18	0.04
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	543	1810	808	94	914	599	305	1185	905	139	940	293
X, volume / capacity	0.97	0.25	0.28	0.77	0.32	0.31	0.91	0.93	0.50	0.90	0.94	0.19
d, Delay for Lane Group [s/veh]	69.69	15.69	16.51	68.43	36.19	26.54	64.37	48.19	15.90	75.40	53.10	41.01
Lane Group LOS	E	B	B	E	D	C	E	D	B	E	D	D

Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.51	3.38	3.57	2.51	3.56	3.83	4.59	10.97	7.36	2.24	9.09	1.42
50th-Percentile Queue Length [ft/ln]	487.73	84.62	89.33	62.77	88.95	95.86	114.84	274.24	184.08	55.92	227.16	35.60
95th-Percentile Queue Length [veh/ln]	26.75	6.09	6.43	4.52	6.40	6.90	8.11	16.40	11.81	4.03	14.03	2.56
95th-Percentile Queue Length [ft/ln]	668.83	152.31	160.80	112.99	160.11	172.55	202.72	410.04	295.34	100.66	350.75	64.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	69.69	15.69	16.51	68.43	36.19	26.54	64.37	48.19	15.90	75.40	53.10	41.01
Movement LOS	E	B	B	E	D	C	E	D	B	E	D	D
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	39.53			37.26			42.62			55.09		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	44.05											
Intersection LOS	D											
Intersection V/C	0.677											

Option 1: Signal

Number	22											
Intersection	Beech Ave at Foothill Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	21	0	102	0	0	0	0	621	36	198	1526	0
Total Analysis Volume [veh/h]	29	0	146	0	0	0	0	887	49	282	2152	0

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	33	0	0	33	0	0	87	0	0	87	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	24	0	0	7	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.13		0.13			0.80	0.80	0.80	0.80	0.80	0.80
(v / s)_i Volume / Saturation Flow Rate	0.11		0.00			0.00	0.26	0.26	0.46	0.60	0.60
so, Base Saturation Flow per Lane [pc/h/ln]	1800		1800			1800	1800	1800	1800	1800	1800
Arrival type	3		3			3			3		
s, saturation flow rate [veh/h]	1531		1692			188	1800	1767	608	1800	1800
c, Capacity [veh/h]	237		253			149	1443	1417	490	1443	1443
X, volume / capacity	0.74		0.00			0.00	0.33	0.33	0.58	0.75	0.75
d, Delay for Lane Group [s/veh]	55.52		0.00			0.00	3.81	3.82	14.44	9.41	9.41
Lane Group LOS	E		A			A	A	A	B	A	A

Critical Lane Group	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.45	0.00	0.00	2.62	2.58	4.27	11.36	11.36
50th-Percentile Queue Length [ft/ln]	136.13	0.00	0.00	65.52	64.44	106.7	283.9	283.9
95th-Percentile Queue Length [veh/ln]	9.27	0.00	0.00	4.72	4.64	7.66	16.88	16.88
95th-Percentile Queue Length [ft/ln]	231.81	0.00	0.00	117.9	115.9	191.4	422.1	422.1

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.52	55.52	55.52	0.00	0.00	0.00	0.00	3.81	3.82	14.44	9.41	9.41
Movement LOS	E	E	E	A	A	A	A	A	A	B	A	A
Critical Movement	No	No	Yes	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	55.52			0.00			3.81			10.00		
Approach LOS	E			A			A			A		
d_I, Intersection Delay [s/veh]	10.61											
Intersection LOS	B											
Intersection V/C	0.712											

Option 1: Install Signal

Number	22											
Intersection	Beech Ave at Foothill Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	60	0	118	0	0	0	0	1326	54	104	760	0
Total Analysis Volume [veh/h]	71	0	158	0	0	0	0	1651	63	140	994	0

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	40	0	0	40	0	0	80	0	0	80	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	24	0	0	7	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.17		0.17		0.76	0.76	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.15		0.00		0.00	0.48	0.48	0.48	0.28	0.28
so, Base Saturation Flow per Lane [pc/h/ln]	1800		1800		1800	1800	1800	1800	1800	1800
Arrival type	3		3		3			3		
s, saturation flow rate [veh/h]	1514		1800		576	1800	1777	289	1800	1800
c, Capacity [veh/h]	297		336		429	1374	1356	206	1374	1374
X, volume / capacity	0.77		0.00		0.00	0.63	0.63	0.68	0.36	0.36
d, Delay for Lane Group [s/veh]	52.88		0.00		0.00	8.59	8.70	45.33	5.38	5.38
Lane Group LOS	D		A		A	A	A	D	A	A

Critical Lane Group	Yes		No			No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.04		0.00			0.00	9.01	9.03	4.65	3.70	3.70
50th-Percentile Queue Length [ft/ln]	176.05		0.00			0.00	225.15	225.84	116.32	92.47	92.47
95th-Percentile Queue Length [veh/ln]	11.39		0.00			0.00	13.93	13.96	8.19	6.66	6.66
95th-Percentile Queue Length [ft/ln]	284.85		0.00			0.00	348.19	349.08	204.75	166.44	166.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.88	52.88	52.88	0.00	0.00	0.00	0.00	8.64	8.70	45.33	5.38	5.38
Movement LOS	D	D	D	A	A	A	A	A	A	D	A	A
Critical Movement	No	No	Yes	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	52.88			0.00			8.65			10.31		
Approach LOS	D			A			A			B		
d_I, Intersection Delay [s/veh]	12.55											
Intersection LOS	B											
Intersection V/C	0.636											

Option 1: Widen approaches

Number	23											
Intersection	Foothill Blvd at Citrus Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	138	673	87	131	551	71	256	837	177	287	553	119
Total Analysis Volume [veh/h]	163	819	102	155	667	84	302	1056	208	338	728	140

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	36	0	17	36	0	33	47	0	20	34	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.11	0.33	0.33	0.11	0.33	0.33	0.19	0.31	0.31	0.12	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.10	0.18	0.18	0.09	0.15	0.15	0.18	0.22	0.14	0.10	0.21	0.09
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1714	3427	1700	1714	3427	1699	1714	4903	1530	3329	3427	1530
c, Capacity [veh/h]	186	1133	562	180	1123	557	332	1529	477	396	812	362
X, volume / capacity	0.88	0.54	0.54	0.86	0.45	0.45	0.91	0.69	0.44	0.85	0.90	0.39
d, Delay for Lane Group [s/veh]	65.00	34.62	36.53	63.99	33.05	34.42	64.97	36.77	33.51	57.20	48.22	39.14
Lane Group LOS	E	C	D	E	C	C	E	D	C	E	D	D

Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.47	7.56	7.83	5.15	5.92	6.13	10.43	9.08	4.91	5.28	10.86	3.54
50th-Percentile Queue Length [ft/ln]	136.70	189.07	195.77	128.79	147.99	153.25	260.77	227.00	122.81	131.95	271.41	88.57
95th-Percentile Queue Length [veh/ln]	9.30	12.07	12.42	8.87	9.91	10.19	15.73	14.02	8.55	9.05	16.26	6.38
95th-Percentile Queue Length [ft/ln]	232.57	301.83	310.51	221.84	247.75	254.76	393.18	350.54	213.69	226.15	406.50	159.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.00	35.09	36.53	63.99	33.39	34.42	64.97	36.77	33.51	57.20	48.22	39.14
Movement LOS	E	D	D	E	C	C	E	D	C	E	D	D
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	39.73			38.72			41.78			49.68		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.73											
Intersection LOS	D											
Intersection V/C	0.659											

Option 1: Widen approaches

Number	26											
Intersection	Arrow Rte at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	138	1069	219	69	777	93	84	606	98	116	542	59
Total Analysis Volume [veh/h]	163	1802	329	81	1547	109	99	715	116	221	639	69

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	51	0	11	45	0	16	36	0	22	42	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.11	0.43	0.43	0.06	0.38	0.38	0.07	0.23	0.23	0.14	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.10	0.37	0.22	0.05	0.32	0.07	0.06	0.21	0.08	0.13	0.19	0.05
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	1714	3427	1530	1714	3427	1530
c, Capacity [veh/h]	186	2122	662	100	1877	586	125	794	354	247	1038	463
X, volume / capacity	0.88	0.85	0.50	0.81	0.82	0.19	0.79	0.90	0.33	0.90	0.62	0.15
d, Delay for Lane Group [s/veh]	65.00	35.01	27.25	70.06	37.67	25.31	65.59	48.82	38.86	61.48	36.43	30.68
Lane Group LOS	E	D	C	E	D	C	E	D	D	E	D	C

Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.47	16.08	7.20	2.82	14.06	2.19	3.32	10.72	2.91	7.26	8.08	1.49
50th-Percentile Queue Length [ft/ln]	136.70	402.03	179.91	70.46	351.39	54.70	83.05	268.02	72.67	181.57	201.90	37.22
95th-Percentile Queue Length [veh/ln]	9.30	22.66	11.60	5.07	20.20	3.94	5.98	16.09	5.23	11.68	12.74	2.68
95th-Percentile Queue Length [ft/ln]	232.57	566.45	289.90	126.82	505.10	98.47	149.49	402.26	130.80	292.06	318.42	67.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.00	35.01	27.25	70.06	37.67	25.31	65.59	48.82	38.86	61.48	36.43	30.68
Movement LOS	E	D	C	E	D	C	E	D	D	E	D	C
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	36.03			38.40			49.36			41.96		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	39.77											
Intersection LOS	D											
Intersection V/C	0.752											

Option 1: EBR Overlap

Number	31											
Intersection	Whittram Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	186	806	132	35	1068	89	30	30	200	150	136	68
Total Analysis Volume [veh/h]	227	1313	161	43	1785	109	37	37	244	184	166	83

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	67	0	9	55	0	9	26	26	18	35	0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	17	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.14	0.64	0.64	0.03	0.53	0.53	0.03	0.08	0.25	0.12	0.16
(v / s)_i Volume / Saturation Flow Rate	0.13	0.41	0.42	0.03	0.52	0.07	0.02	0.02	0.16	0.11	0.15
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3	
s, saturation flow rate [veh/h]	1714	1800	1733	1714	3427	1530	1714	1800	1530	1714	1700
c, Capacity [veh/h]	243	1153	1110	55	1819	812	51	140	386	200	280
X, volume / capacity	0.93	0.64	0.66	0.79	0.98	0.13	0.73	0.27	0.63	0.92	0.89
d, Delay for Lane Group [s/veh]	66.08	15.99	16.47	79.13	44.67	14.57	75.44	53.13	42.78	68.05	59.18
Lane Group LOS	E	B	B	E	D	B	E	D	D	E	E

Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	7.75	12.39	12.42	1.62	28.06	1.57	1.36	1.09	6.71	6.34	8.07
50th-Percentile Queue Length [ft/ln]	193.8	309.7	310.5	40.55	701.4	39.33	34.12	27.30	167.7	158.54	201.79
95th-Percentile Queue Length [veh/ln]	12.32	18.16	18.20	2.92	36.75	2.83	2.46	1.97	10.96	10.47	12.73
95th-Percentile Queue Length [ft/ln]	307.9	454.0	455.0	72.99	918.6	70.79	61.41	49.14	273.9	261.78	318.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.08	16.20	16.47	79.13	44.67	14.57	75.44	53.13	42.78	68.05	59.18	59.18
Movement LOS	E	B	B	E	D	B	E	D	D	E	E	E
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	22.88			43.74			47.79			62.95		
Approach LOS	C			D			D			E		
d_I, Intersection Delay [s/veh]	37.84											
Intersection LOS	D											
Intersection V/C	0.871											

Option 1: EBR Overlap

Number	31											
Intersection	Whittram Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	143	1366	112	38	688	56	87	141	294	122	67	73
Total Analysis Volume [veh/h]	168	2224	132	45	1527	66	102	166	346	146	79	86

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	18	67	0	9	58	0	11	30	30	14	33	0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	17	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.12	0.63	0.63	0.03	0.55	0.55	0.06	0.12	0.27	0.08	0.14
(v / s)_i Volume / Saturation Flow Rate	0.10	0.65	0.67	0.03	0.45	0.04	0.06	0.09	0.23	0.09	0.10
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3	
s, saturation flow rate [veh/h]	1714	1800	1765	1714	3427	1530	1714	1800	1530	1714	1648
c, Capacity [veh/h]	200	1139	1117	57	1883	841	100	211	409	143	234
X, volume / capacity	0.84	1.03	1.05	0.79	0.81	0.08	1.02	0.79	0.85	1.02	0.70
d, Delay for Lane Group [s/veh]	60.97	57.87	64.55	78.37	25.88	12.91	103.49	57.92	56.81	95.68	52.91
Lane Group LOS	E	F	F	E	C	B	F	E	E	F	D

Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.45	40.31	41.60	1.69	17.71	0.88	4.33	5.23	11.36	5.93	4.97
50th-Percentile Queue Length [ft/ln]	136.27	1007.80	1040.03	42.14	442.72	21.96	108.31	130.79	284.05	148.17	124.18
95th-Percentile Queue Length [veh/ln]	9.28	52.27	54.68	3.03	24.61	1.58	7.79	8.98	16.89	10.00	8.62
95th-Percentile Queue Length [ft/ln]	231.99	1306.70	1366.91	75.85	615.26	39.52	194.77	224.57	422.25	249.88	215.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.97	61.01	64.55	78.37	25.88	12.91	103.49	57.92	56.81	95.68	52.91	52.91
Movement LOS	E	E	E	E	C	B	F	E	E	F	D	D
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	61.19			26.80			64.87			72.99		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	51.28											
Intersection LOS	D											
Intersection V/C	0.929											

Option 1: Signal

Number	32											
Intersection	Beech Ave at Whittram Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	88	400	0	0	314	39	80	0	165	0	0	0
Total Analysis Volume [veh/h]	104	496	0	0	393	48	95	0	195	0	0	0

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	87	0	0	87	0	33	0	0	0	0	0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	7	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.79	0.79	0.15	0.15	
(v / s)_i Volume / Saturation Flow Rate	0.39	0.25	0.06	0.13	
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	
Arrival type	3	3	3		3
s, saturation flow rate [veh/h]	1551	1766	1714	1530	
c, Capacity [veh/h]	1254	1388	253	226	
X, volume / capacity	0.48	0.32	0.38	0.86	
d, Delay for Lane Group [s/veh]	5.70	4.28	47.07	59.39	
Lane Group LOS	A	A	D	E	

Critical Lane Group	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	4.27	2.72	2.63	6.30	
50th-Percentile Queue Length [ft/ln]	106.64	68.01	65.87	157.57	
95th-Percentile Queue Length [veh/ln]	7.65	4.90	4.74	10.42	
95th-Percentile Queue Length [ft/ln]	191.32	122.41	118.57	260.50	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.70	5.70	0.00	0.00	4.28	4.28	47.07	0.00	59.39	0.00	0.00	0.00
Movement LOS	A	A			A	A	D		E			
Critical Movement	No	No			No	No	No		Yes			
d_A, Approach Delay [s/veh]	5.70			4.28			55.36			0.00		
Approach LOS	A			A			E			A		
d_I, Intersection Delay [s/veh]	16.05											
Intersection LOS	B											
Intersection V/C	0.514											

Option 1: Add NB/SB Lane + NBR and WBR Overlap

Number	33											
Intersection	Napa St at Etiwanda Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	907	60	95	571	0	5	0	30	191	0	49
Total Analysis Volume [veh/h]	0	1069	344	471	674	0	6	0	36	376	0	372

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Overlap
Signal Group	1	6	6	5	2	0	0	8	0	0	4	4
Auxiliary Signal Groups			4,6									4,5
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	5	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	30	30	30	0	0	30	0	0	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Split [s]	47	33	33	38	24	0	0	19	0	0	30	30
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Minimum Recall	No	No	No	No	No			No			No	No
Maximum Recall	No	No	No	No	No			No			No	No
Pedestrian Recall	No	No	No	No	No			No			No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.00	0.33	0.58	0.28	0.62	0.62	0.03	0.03	0.22	0.60
(v / s)_i Volume / Saturation Flow Rate	0.00	0.31	0.22	0.27	0.20	0.00	0.01	0.03	0.22	0.24
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1714	3427	1530	1714	3427	1530	520	1392	1687	1530
c, Capacity [veh/h]	1	1146	894	486	2114	944	77	45	366	917
X, volume / capacity	0.00	0.93	0.38	0.97	0.32	0.00	0.08	0.80	1.03	0.41
d, Delay for Lane Group [s/veh]	0.00	53.35	14.32	73.76	11.36	0.00	58.82	84.23	95.06	13.90
Lane Group LOS	A	D	B	E	B	A	E	F	F	B

Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	17.33	5.10	17.86	4.26	0.00	0.19	1.42	15.72	5.45
50th-Percentile Queue Length [ft/ln]	0.00	433.37	127.58	446.49	106.43	0.00	4.74	35.44	392.99	136.15
95th-Percentile Queue Length [veh/ln]	0.00	24.16	8.81	24.79	7.64	0.00	0.34	2.55	22.58	9.27
95th-Percentile Queue Length [ft/ln]	0.00	604.07	220.20	619.75	191.03	0.00	8.53	63.80	564.44	231.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	53.35	14.32	73.76	11.36	0.00	58.82	58.82	84.23	95.06	95.06	13.90
Movement LOS	A	D	B	E	B	A	E	E	F	F	F	B
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	43.85			37.03			80.60			54.69		
Approach LOS	D			D			F			D		
d_I, Intersection Delay [s/veh]	44.40											
Intersection LOS	D											
Intersection V/C	0.835											

Option 1: Widen NB/SB

Number	34											
Intersection	Merrill Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	1	1458	200	199	841	1	0	1	0	107	0	206
Total Analysis Volume [veh/h]	1	2333	276	235	1709	1	0	1	0	174	0	243

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	36	42	0	26	32	0	24	30	0	22	28	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.00	0.54	0.54	0.15	0.69	0.69	0.00	0.06	0.12	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.48	0.18	0.14	0.35	0.00	0.00	0.00	0.10	0.16
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	1714	1800	1714	1530
c, Capacity [veh/h]	3	2629	820	262	3369	1051	1	109	201	271
X, volume / capacity	0.31	0.89	0.34	0.90	0.51	0.00	0.00	0.01	0.87	0.90
d, Delay for Lane Group [s/veh]	106.72	29.53	16.85	61.32	9.56	5.88	0.00	53.03	62.70	58.44
Lane Group LOS	F	C	B	E	A	A	A	D	E	E

Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.07	19.84	4.49	7.74	6.75	0.01	0.00	0.03	5.73	7.85
50th-Percentile Queue Length [ft/ln]	1.81	496.08	112.13	193.39	168.86	0.20	0.00	0.74	143.37	196.36
95th-Percentile Queue Length [veh/ln]	0.13	27.15	7.96	12.30	11.02	0.01	0.00	0.05	9.66	12.45
95th-Percentile Queue Length [ft/ln]	3.26	678.72	198.96	307.43	275.41	0.36	0.00	1.33	241.56	311.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	106.72	29.53	16.85	61.32	9.56	5.88	0.00	53.03	53.03	62.70	58.44	58.44
Movement LOS	F	C	B	E	A	A	A	D	D	E	E	E
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	28.22			15.81			53.03			60.22		
Approach LOS	C			B			D			E		
d_I, Intersection Delay [s/veh]	26.06											
Intersection LOS	C											
Intersection V/C	0.772											

Option 1: Signal + SBL Lane

Number	35											
Intersection	Beech Ave at Merrill Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	51	162	58	56	145	76	103	129	56	67	230	153
Total Analysis Volume [veh/h]	64	214	73	71	199	96	130	175	71	85	322	193

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	36	0	0	36	0	0	84	0	0	84	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.27	0.27	0.27	0.27	0.67	0.67	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.29	0.05	0.06	0.17	0.32	0.05	0.32	0.13
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3		3		3		3	
s, saturation flow rate [veh/h]	951	1530	1109	1702	968	1530	1286	1530
c, Capacity [veh/h]	291	408	94	454	688	1020	894	1020
X, volume / capacity	0.96	0.18	0.76	0.65	0.44	0.07	0.46	0.19
d, Delay for Lane Group [s/veh]	89.76	34.09	70.83	41.86	18.43	7.12	14.60	8.04
Lane Group LOS	F	C	E	D	B	A	B	A

Critical Lane Group	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.92	1.68	2.47	8.05	5.79	0.65	7.33	1.93
50th-Percentile Queue Length [ft/ln]	298.05	41.91	61.66	201.25	144.72	16.25	183.32	48.34
95th-Percentile Queue Length [veh/ln]	17.58	3.02	4.44	12.70	9.73	1.17	11.77	3.48
95th-Percentile Queue Length [ft/ln]	439.62	75.43	110.99	317.58	243.37	29.25	294.34	87.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	89.76	89.76	34.09	70.83	41.86	41.86	18.43	18.43	7.12	14.60	14.60	8.04
Movement LOS	F	F	C	E	D	D	B	B	A	B	B	A
Critical Movement	No	Yes	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	78.18			47.48			16.29			12.49		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	34.52											
Intersection LOS	C											
Intersection V/C	0.609											

Option 1: Signal + SBL Lane

Number	35											
Intersection	Beech Ave at Merrill Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	30	215	48	118	172	40	129	224	33	32	148	129
Total Analysis Volume [veh/h]	36	278	57	139	225	47	152	304	39	38	222	152

Intersection Settings

Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	38	0	0	38	0	0	62	0	0	62	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

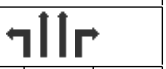
g / C, Green / Cycle	0.31	0.31	0.31	0.31	0.61	0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.19	0.04	0.13	0.16	0.43	0.03	0.22	0.10
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3		3		3		3	
s, saturation flow rate [veh/h]	1626	1530	1062	1747	1054	1530	1189	1530
c, Capacity [veh/h]	547	477	234	545	689	930	764	930
X, volume / capacity	0.57	0.12	0.59	0.50	0.66	0.04	0.34	0.16
d, Delay for Lane Group [s/veh]	30.28	24.70	43.75	28.75	24.79	7.97	12.05	8.90
Lane Group LOS	C	C	D	C	C	A	B	A

Critical Lane Group	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	6.56	0.98	3.46	5.34	9.30	0.34	2.69	1.45
50th-Percentile Queue Length [ft/ln]	164.11	24.40	86.56	133.45	232.39	8.55	67.17	36.17
95th-Percentile Queue Length [veh/ln]	10.77	1.76	6.23	9.13	14.30	0.62	4.84	2.60
95th-Percentile Queue Length [ft/ln]	269.16	43.92	155.81	228.18	357.39	15.38	120.90	65.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.28	30.28	24.70	43.75	28.75	28.75	24.79	24.79	7.97	12.05	12.05	8.90
Movement LOS	C	C	C	D	C	C	C	C	A	B	B	A
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	29.42			33.82			23.46			10.89		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	24.23											
Intersection LOS	C											
Intersection V/C	0.626											

Option 1: EBR/WBR Overlap + 2nd NBL + EB/WB Reconfig

Number	39											
Intersection	Randall Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	10	838	104	156	1207	9	0	1	0	214	0	109
Total Analysis Volume [veh/h]	348	1126	127	170	1495	55	14	175	275	262	262	178

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	8	7	4	4
Auxiliary Signal Groups									1,8			4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	18	41	0	21	44	0	9	33	33	25	49	49
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	24	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

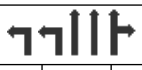
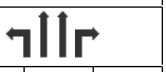
g / C, Green / Cycle	0.12	0.46	0.46	0.12	0.46	0.46	0.02	0.12	0.27	0.17	0.27	0.42
(v / s)_i Volume / Saturation Flow Rate	0.10	0.24	0.24	0.10	0.30	0.04	0.01	0.10	0.10	0.15	0.08	0.12
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3329	3427	1708	1714	4903	1530	1714	1800	2708	1714	3427	1530
c, Capacity [veh/h]	388	1583	789	200	2264	706	27	218	733	287	933	646
X, volume / capacity	0.90	0.53	0.53	0.85	0.66	0.08	0.51	0.80	0.37	0.91	0.28	0.28
d, Delay for Lane Group [s/veh]	59.72	24.24	25.50	61.78	26.54	18.25	72.62	58.20	35.82	64.62	34.56	22.91
Lane Group LOS	E	C	C	E	C	B	E	E	D	E	C	C

Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.56	8.59	8.84	5.56	11.10	0.90	0.53	5.54	3.31	8.93	3.05	3.34
50th-Percentile Queue Length [ft/ln]	139.0	214.6	221.0	138.9	277.6	22.51	13.22	138.4	82.83	223.2	76.35	83.59
95th-Percentile Queue Length [veh/ln]	9.43	13.39	13.72	9.42	16.57	1.62	0.95	9.40	5.96	13.83	5.50	6.02
95th-Percentile Queue Length [ft/ln]	235.7	334.8	342.9	235.5	414.2	40.51	23.80	234.9	149.1	345.7	137.4	150.4

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.72	24.56	25.50	61.78	26.54	18.25	72.62	58.20	35.82	64.62	34.56	22.91
Movement LOS	E	C	C	E	C	B	E	E	D	E	C	C
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	32.28			29.76			45.37			42.82		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.32											
Intersection LOS	C											
Intersection V/C	0.659											

Option 1: EBR/WBR Overlap + 2nd NBL + EB/WB Imp

Number	39											
Intersection	Randall Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	16	1461	163	160	882	2	5	2	5	165	0	124
Total Analysis Volume [veh/h]	419	2042	193	312	1316	88	76	361	355	195	358	276

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	ProtP	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	8	7	4	4
Auxiliary Signal Groups									1,8			4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	30	30	5	30	0	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	52	52	18	45	0	14	33	33	17	36	36
Walk [s]	0	5	5	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	0	0	24	24	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No		Yes	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.15	0.42	0.42	0.57	0.39	0.39	0.06	0.22	0.40	0.11	0.27	0.42
(v / s)_i Volume / Saturation Flow Rate	0.13	0.43	0.44	0.59	0.27	0.06	0.04	0.20	0.13	0.11	0.10	0.18
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3329	3427	1723	532	4903	1530	1714	1800	2708	1714	3427	1530
c, Capacity [veh/h]	495	1447	728	320	1913	597	97	395	1087	186	929	644
X, volume / capacity	0.85	1.02	1.05	0.97	0.69	0.15	0.78	0.91	0.33	1.05	0.39	0.43
d, Delay for Lane Group [s/veh]	53.80	62.77	81.12	88.03	32.54	24.19	68.73	65.45	24.91	98.16	35.86	25.26
Lane Group LOS	D	F	F	F	C	C	E	E	C	F	D	C

Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.39	26.16	30.01	8.26	10.81	1.71	2.62	12.61	3.52	7.89	4.31	5.65
50th-Percentile Queue Length [ft/ln]	159.7	653.9	750.2	206.5	270.3	42.84	65.47	315.2	87.88	197.3	107.8	141.3
95th-Percentile Queue Length [veh/ln]	10.54	35.00	40.38	12.98	16.21	3.08	4.71	18.44	6.33	12.74	7.72	9.55
95th-Percentile Queue Length [ft/ln]	263.4	875.0	1009.	324.3	405.1	77.12	117.8	460.8	158.1	318.6	192.9	238.8

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.80	67.89	81.12	88.03	32.54	24.19	68.73	65.45	24.91	98.16	35.86	25.26
Movement LOS	D	E	F	F	C	C	E	E	C	F	D	C
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	66.62			42.20			47.59			46.98		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	54.39											
Intersection LOS	D											
Intersection V/C	0.859											

Option 1: Signal

Number	40											
Intersection	Beech Ave at Randall Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	17	193	42	6	194	82	55	115	18	31	173	39
Total Analysis Volume [veh/h]	38	257	56	8	258	126	85	344	33	42	542	52

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	49	0	0	49	0	0	71	0	0	71	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.26	0.26	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.24	0.23	0.32	0.37
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1441	1715	1454	1717
c, Capacity [veh/h]	412	482	1010	1183
X, volume / capacity	0.85	0.81	0.46	0.54
d, Delay for Lane Group [s/veh]	51.18	47.65	10.54	11.92
Lane Group LOS	D	D	B	B

Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.08	11.74	5.62	8.62
50th-Percentile Queue Length [ft/ln]	276.90	293.49	140.58	215.47
95th-Percentile Queue Length [veh/ln]	16.53	17.36	9.51	13.43
95th-Percentile Queue Length [ft/ln]	413.35	433.97	237.81	335.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.18	51.18	51.18	47.65	47.65	47.65	10.54	10.54	10.54	11.92	11.92	11.92
Movement LOS	D	D	D	D	D	D	B	B	B	B	B	B
Critical Movement	No	Yes	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	51.18			47.65			10.54			11.92		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	26.66											
Intersection LOS	C											
Intersection V/C	0.614											

Option 1: Signal

Number	40											
Intersection	Beech Ave at Randall Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	15	213	12	34	162	31	62	171	22	10	113	42
Total Analysis Volume [veh/h]	39	252	14	40	191	59	97	603	47	12	536	49

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	85	0	0	85	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.21	0.21	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.19	0.19	0.47	0.34
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1596	1538	1578	1757
c, Capacity [veh/h]	367	356	1177	1303
X, volume / capacity	0.83	0.82	0.63	0.46
d, Delay for Lane Group [s/veh]	57.08	56.07	10.77	8.03
Lane Group LOS	E	E	B	A

Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.00	9.42	9.28	6.07
50th-Percentile Queue Length [ft/ln]	249.96	235.54	232.11	151.87
95th-Percentile Queue Length [veh/ln]	15.18	14.46	14.28	10.12
95th-Percentile Queue Length [ft/ln]	379.60	361.39	357.04	252.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.08	57.08	57.08	56.07	56.07	56.07	10.77	10.77	10.77	8.03	8.03	8.03
Movement LOS	E	E	E	E	E	E	B	B	B	A	A	A
Critical Movement	No	Yes	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	57.08			56.07			10.77			8.03		
Approach LOS	E			E			B			A		
d_I, Intersection Delay [s/veh]	23.99											
Intersection LOS	C											
Intersection V/C	0.665											

Option 1: Signal

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	4	43	60	69	61	1	41	86	14	9
Total Analysis Volume [veh/h]	4	50	70	81	71	1	48	101	17	11

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.17	0.12
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800
Arrival type	3	3
s, saturation flow rate [veh/h]	1636	1532
c, Capacity [veh/h]	400	383
X, volume / capacity	0.69	0.46
d, Delay for Lane Group [s/veh]	25.11	22.29
Lane Group LOS	C	C

Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	3.68	2.17
50th-Percentile Queue Length [ft/ln]	92.06	54.25
95th-Percentile Queue Length [veh/ln]	6.63	3.91
95th-Percentile Queue Length [ft/ln]	165.71	97.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.11	25.11	25.11	25.11	25.11	22.29	22.29	22.29	22.29	22.29
Movement LOS	C	C	C	C	C	C	C	C	C	C
Critical Movement	No	No	No	Yes	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	25.11					22.29				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	22.18									
Intersection LOS	C									
Intersection V/C	0.657									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	46	6	95	57	0	27	55	146	14	4
Total Analysis Volume [veh/h]	55	42	232	67	0	32	65	390	17	4

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	4	0	0	0	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	22	0	0	0	0	22	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.30	0.34
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800
Arrival type	3	3
s, saturation flow rate [veh/h]	1305	1515
c, Capacity [veh/h]	557	632
X, volume / capacity	0.71	0.80
d, Delay for Lane Group [s/veh]	18.74	22.27
Lane Group LOS	B	C
Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	4.55	6.61

50th-Percentile Queue Length [ft/ln]	113.75	165.26
95th-Percentile Queue Length [veh/ln]	8.05	10.83
95th-Percentile Queue Length [ft/ln]	201.21	270.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.74	18.74	18.74	18.74	18.74	22.27	22.27	22.27	22.27	22.27
Movement LOS	B	B	B	B	B	C	C	C	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	18.74					22.27				
Approach LOS	B					C				
d_I, Intersection Delay [s/veh]	22.18									
Intersection LOS	C									
Intersection V/C	0.657									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	2	13	66	23	1	13	45	123	26	6
Total Analysis Volume [veh/h]	2	16	78	27	1	16	53	145	63	7

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	10	0	0	0	0	12	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		

Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.13	0.15	0.05
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800
Arrival type	3	3	
s, saturation flow rate [veh/h]	973	1400	1530
c, Capacity [veh/h]	255	348	293
X, volume / capacity	0.49	0.62	0.24
d, Delay for Lane Group [s/veh]	22.77	24.50	20.96
Lane Group LOS	C	C	C
Critical Lane Group	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.51	2.81	0.81
50th-Percentile Queue Length [ft/ln]	37.84	70.34	20.23
95th-Percentile Queue Length [veh/ln]	2.72	5.06	1.46
95th-Percentile Queue Length [ft/ln]	68.11	126.60	36.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.77	22.77	22.77	22.77	22.77	24.50	24.50	24.50	20.96	20.96
Movement LOS	C	C	C	C	C	C	C	C	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	22.77					23.63				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	22.18									
Intersection LOS	C									
Intersection V/C	0.657									

Option 1: Signal

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	0	33	51	48	20	4	12	42	7	1
Total Analysis Volume [veh/h]	0	39	60	57	23	4	14	49	8	1

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.11	0.04
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800
Arrival type	3	3
s, saturation flow rate [veh/h]	1650	1724
c, Capacity [veh/h]	297	308
X, volume / capacity	0.60	0.25
d, Delay for Lane Group [s/veh]	27.02	23.83
Lane Group LOS	C	C

Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	2.47	0.95
50th-Percentile Queue Length [ft/ln]	61.66	23.76
95th-Percentile Queue Length [veh/ln]	4.44	1.71
95th-Percentile Queue Length [ft/ln]	110.98	42.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.02	27.02	27.02	27.02	27.02	23.83	23.83	23.83	23.83	23.83
Movement LOS	C	C	C	C	C	C	C	C	C	C
Critical Movement	No	No	Yes	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	27.02					23.83				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	21.25									
Intersection LOS	C									
Intersection V/C	0.742									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	39	2	143	22	4	12	39	142	7	5
Total Analysis Volume [veh/h]	46	84	449	26	4	14	46	477	8	6

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	4	0	0	0	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	22	0	0	0	0	22	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.43	0.35
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800
Arrival type	3	3
s, saturation flow rate [veh/h]	1416	1578
c, Capacity [veh/h]	720	788
X, volume / capacity	0.85	0.70
d, Delay for Lane Group [s/veh]	23.75	15.32
Lane Group LOS	C	B
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	8.40	5.44

50th-Percentile Queue Length [ft/ln]	210.05	136.10
95th-Percentile Queue Length [veh/ln]	13.16	9.27
95th-Percentile Queue Length [ft/ln]	328.90	231.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.75	23.75	23.75	23.75	23.75	15.32	15.32	15.32	15.32	15.32
Movement LOS	C	C	C	C	C	B	B	B	B	B
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	23.75					15.32				
Approach LOS	C					B				
d_I, Intersection Delay [s/veh]	21.25									
Intersection LOS	C									
Intersection V/C	0.742									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	3	16	240	40	0	5	39	95	31	7
Total Analysis Volume [veh/h]	3	19	283	47	0	6	46	112	91	8

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	10	0	0	0	0	12	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		

Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.20	0.12	0.06
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800
Arrival type	3	3	
s, saturation flow rate [veh/h]	1731	1391	1530
c, Capacity [veh/h]	476	411	365
X, volume / capacity	0.74	0.40	0.27
d, Delay for Lane Group [s/veh]	24.05	19.79	19.01
Lane Group LOS	C	B	B
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.62	1.84	1.08
50th-Percentile Queue Length [ft/ln]	115.60	46.05	26.97
95th-Percentile Queue Length [veh/ln]	8.15	3.32	1.94
95th-Percentile Queue Length [ft/ln]	203.77	82.88	48.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.05	24.05	24.05	24.05	24.05	19.79	19.79	19.79	19.01	19.01
Movement LOS	C	C	C	C	C	B	B	B	B	B
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	24.05					19.50				
Approach LOS	C					B				
d_I, Intersection Delay [s/veh]	21.25									
Intersection LOS	C									
Intersection V/C	0.742									

Option 1: WBR+NBR Overlap

Number	44											
Intersection	Fourth St at I-15 SB Ramps/Ontario Mills Dr											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	119	208	360	107	282	534	817	1020	94	152	605	306
Total Analysis Volume [veh/h]	140	245	424	126	333	629	963	1223	111	179	732	642

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	15	14	14	36	35	0	47	35	0	35	23	23
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	0	0	21	0	0	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

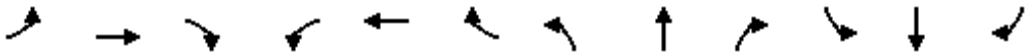
Lane Group Calculations

g / C, Green / Cycle	0.09	0.12	0.32	0.24	0.26	0.26	0.26	0.31	0.34	0.34	0.17	0.20	0.47
(v / s)_i Volume / Saturation Flow Rate	0.08	0.07	0.28	0.07	0.19	0.21	0.21	0.29	0.25	0.07	0.05	0.15	0.42
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3				3			3		
s, saturation flow rate [veh/h]	1714	3427	1530	1714	1800	1530	1530	3329	4903	1530	3329	4903	1530
c, Capacity [veh/h]	157	411	490	405	476	405	405	1045	1686	526	555	965	713
X, volume / capacity	0.89	0.60	0.87	0.31	0.70	0.78	0.78	0.92	0.73	0.21	0.32	0.76	0.90
d, Delay for Lane Group [s/veh]	69.29	56.28	56.61	38.22	48.12	54.51	54.51	43.70	35.03	28.06	44.36	46.76	46.04
Lane Group LOS	E	E	E	D	D	D	D	D	D	C	D	D	D

Critical Lane Group	No	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.85	3.85	14.09	3.12	9.94	10.10	10.10	14.12	10.40	2.30	2.38	6.96	19.78
50th-Percentile Queue Length [ft/ln]	121.20	96.15	352.31	77.98	248.3	252.4	252.4	352.89	259.99	57.49	59.54	174.11	494.43
95th-Percentile Queue Length [veh/ln]	8.46	6.92	20.25	5.61	15.10	15.31	15.31	20.28	15.69	4.14	4.29	11.29	27.07
95th-Percentile Queue Length [ft/ln]	211.47	173.06	506.22	140.3	377.6	382.7	382.7	506.94	392.21	103.48	107.18	282.32	676.76

Movement, Approach, & Intersection Results

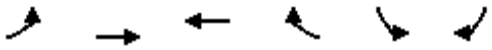
d_M, Delay for Movement [s/veh]	69.29	56.28	56.61	38.22	48.12	54.51	43.70	35.03	28.06	44.36	46.76	46.04
Movement LOS	E	E	E	D	D	D	D	D	C	D	D	D
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	58.70			50.67			38.33			46.19		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	45.66											
Intersection LOS	D											
Intersection V/C	0.632											



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1173	50	447	597	2	87	3	807	3	0	1
Future Volume (vph)	0	1173	50	447	597	2	87	3	807	3	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5	4.5		4.5	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95	0.95		1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85	0.85		0.97	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.96	
Satd. Flow (prot)		3353	1500	1676	3351		1676	1427	1425		1644	
Flt Permitted		1.00	1.00	0.95	1.00		0.76	1.00	1.00		0.58	
Satd. Flow (perm)		3353	1500	1676	3351		1333	1427	1425		983	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1348	57	514	686	2	100	3	928	3	0	1
RTOR Reduction (vph)	0	0	30	0	0	0	0	386	386	0	3	0
Lane Group Flow (vph)	0	1348	27	514	688	0	100	81	78	0	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)		53.7	53.7	34.1	35.2		18.7	18.7	18.7		18.7	
Effective Green, g (s)		53.7	53.7	34.1	35.2		18.7	18.7	18.7		18.7	
Actuated g/C Ratio		0.45	0.45	0.28	0.29		0.16	0.16	0.16		0.16	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1500	671	476	982		207	222	222		153	
v/s Ratio Prot		c0.40		c0.31	0.21			0.06				
v/s Ratio Perm			0.02				c0.08		0.05		0.00	
v/c Ratio		0.90	0.04	1.08	0.70		0.48	0.37	0.35		0.00	
Uniform Delay, d1		30.6	18.6	43.0	37.7		46.2	45.3	45.2		42.8	
Progression Factor		1.00	1.00	0.60	0.55		1.00	1.00	1.00		1.00	
Incremental Delay, d2		7.5	0.0	63.1	2.1		7.9	4.6	4.3		0.0	
Delay (s)		38.2	18.7	88.7	22.7		54.1	49.9	49.6		42.8	
Level of Service		D	B	F	C		D	D	D		D	
Approach Delay (s)		37.4			50.9			50.2			42.8	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	316	1669	544	0	0	499
Future Volume (vph)	316	1669	544	0	0	499
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	0.95	0.95			0.88
Frt	1.00	1.00	1.00			0.85
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1676	3353	3353			2640
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1676	3353	3353			2640
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	333	1757	573	0	0	525
RTOR Reduction (vph)	0	0	0	0	0	443
Lane Group Flow (vph)	333	1757	573	0	0	82
Turn Type	Prot	NA	NA			Perm
Protected Phases	7	4	8			
Permitted Phases						6
Actuated Green, G (s)	52.6	53.7	35.2			18.7
Effective Green, g (s)	52.6	53.7	35.2			18.7
Actuated g/C Ratio	0.44	0.45	0.29			0.16
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	734	1500	983			411
v/s Ratio Prot	0.20	c0.52	c0.17			
v/s Ratio Perm						c0.03
v/c Ratio	0.45	1.17	0.58			0.20
Uniform Delay, d1	23.6	33.1	36.1			44.1
Progression Factor	0.56	0.53	1.00			1.00
Incremental Delay, d2	0.2	81.1	0.9			1.1
Delay (s)	13.4	98.7	37.0			45.2
Level of Service	B	F	D			D
Approach Delay (s)		85.1	37.0		45.2	
Approach LOS		F	D		D	

Intersection Summary			
HCM 2000 Control Delay	69.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Option 1: Widen WB + NBR Lane

Number	49											
Intersection	San Bernardino Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	65	1021	140	76	775	225	468	667	302	75	184	58
Total Analysis Volume [veh/h]	77	1736	165	161	1459	366	782	786	356	88	217	149

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Overla	ProtP	Permi	Unsig	Protec	Permi	Permi
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	5	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	31	0	14	35	35	39	63	0	12	36	0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	Yes	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

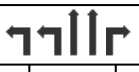
g / C, Green / Cycle	0.05	0.37	0.37	0.08	0.41	0.73	0.44	0.35	0.06	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.04	0.35	0.11	0.09	0.30	0.24	0.52	0.23	0.05	0.06	0.10
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3		3		
s, saturation flow rate [veh/h]	1714	4903	1530	1714	4903	1530	1505	3427	1714	3427	1530
c, Capacity [veh/h]	86	1825	569	143	1988	1118	704	1191	109	410	183
X, volume / capacity	0.90	0.95	0.29	1.13	0.73	0.33	1.11	0.66	0.80	0.53	0.81
d, Delay for Lane Group [s/veh]	82.38	48.96	27.80	130.4	32.64	6.51	106.88	33.79	68.24	50.72	60.02
Lane Group LOS	F	D	C	F	C	A	F	C	E	D	E

Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.93	18.23	3.54	7.31	12.16	3.17	32.12	9.74	3.02	3.13	4.80
50th-Percentile Queue Length [ft/ln]	73.30	455.7	88.40	182.6	303.9	79.16	803.12	243.46	75.41	78.22	120.1
95th-Percentile Queue Length [veh/ln]	5.28	25.23	6.36	12.23	17.88	5.70	44.74	14.86	5.43	5.63	8.40
95th-Percentile Queue Length [ft/ln]	131.9	630.7	159.1	305.6	446.9	142.4	1118.51	371.40	135.7	140.8	209.9

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	82.38	48.96	27.80	130.4	32.64	6.51	106.8	33.79	0.00	68.24	50.72	60.02
Movement LOS	F	D	C	F	C	A	F	C		E	D	E
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	48.49			35.75			70.24			57.17		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	50.62											
Intersection LOS	D											
Intersection V/C	0.870											

Option 1: NBR Overlap

Number	57											
Intersection	Valley Blvd at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	247	951	696	98	948	67	178	452	354	395	240	82
Total Analysis Volume [veh/h]	292	1586	821	186	1594	79	209	533	417	465	283	163

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	6	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups			6,7						1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	18	47	47	15	44	0	22	40	40	18	36	0
Walk [s]	0	5	5	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	24	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.12	0.47	0.62	0.09	0.45	0.45	0.08	0.19	0.34	0.12	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.09	0.46	0.54	0.11	0.33	0.05	0.06	0.16	0.27	0.14	0.13	0.13
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3329	3427	1530	1714	4903	1530	3329	3427	1530	3329	1800	1582
c, Capacity [veh/h]	388	1613	950	157	2186	682	275	643	516	388	399	351
X, volume / capacity	0.75	0.98	0.86	1.18	0.73	0.12	0.76	0.83	0.81	1.20	0.60	0.60
d, Delay for Lane Group [s/veh]	54.27	49.99	28.95	150.82	29.49	19.78	58.18	49.73	48.94	147.46	43.30	43.50
Lane Group LOS	D	D	C	F	C	B	E	D	D	F	D	D

Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.41	25.94	19.96	8.94	12.69	1.36	3.26	7.90	12.85	10.93	6.46	5.70
50th-Percentile Queue Length [ft/ln]	110.25	648.38	499.10	223.59	317.34	34.05	81.38	197.44	321.19	273.37	161.55	142.53
95th-Percentile Queue Length [veh/ln]	7.85	34.29	27.29	14.69	18.54	2.45	5.86	12.51	18.73	17.54	10.63	9.62
95th-Percentile Queue Length [ft/ln]	196.35	857.18	682.30	367.31	463.41	61.28	146.49	312.66	468.15	438.58	265.77	240.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.27	49.99	28.95	150.82	29.49	19.78	58.18	49.73	48.94	147.46	43.33	43.50
Movement LOS	D	D	C	F	C	B	E	D	D	F	D	D
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	44.05			41.21			50.97			96.51		
Approach LOS	D			D			D			F		
d_I, Intersection Delay [s/veh]	51.68											
Intersection LOS	D											
Intersection V/C	0.934											

Option 1: Signal + Widen all approaches

Number	59											
Intersection	Beech Ave at Valley Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	6	1	21	92	3	29	14	399	8	14	605	72
Total Analysis Volume [veh/h]	8	1	27	116	3	36	18	546	10	18	811	92

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	34	0	0	86	0	0	86	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.12	0.12	0.12	0.12	0.12	0.12	0.81	0.81	0.81	0.81	0.81	0.81
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.02	0.10	0.00	0.02	0.03	0.11	0.11	0.02	0.18	0.18
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1156	1638	1530	1180	1638	1530	627	3427	1783	866	3427	1708
c, Capacity [veh/h]	197	194	181	200	194	181	537	2793	1453	734	2793	1392
X, volume / capacity	0.04	0.01	0.15	0.58	0.02	0.20	0.03	0.13	0.13	0.02	0.22	0.22
d, Delay for Lane Group [s/veh]	49.13	46.67	47.85	55.69	46.75	48.29	3.65	2.40	2.49	3.08	2.67	2.85
Lane Group LOS	D	D	D	E	D	D	A	A	A	A	A	A

Critical Lane Group	No	No	No	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.22	0.03	0.75	3.58	0.08	1.00	0.11	0.71	0.78	0.10	1.27	1.34
50th-Percentile Queue Length [ft/ln]	5.58	0.68	18.68	89.44	2.03	25.09	2.79	17.76	19.46	2.39	31.72	33.62
95th-Percentile Queue Length [veh/ln]	0.40	0.05	1.34	6.44	0.15	1.81	0.20	1.28	1.40	0.17	2.28	2.42
95th-Percentile Queue Length [ft/ln]	10.04	1.22	33.62	160.9	3.66	45.16	5.03	31.97	35.03	4.31	57.09	60.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.13	46.67	47.85	55.69	46.75	48.29	3.65	2.43	2.49	3.08	2.72	2.85
Movement LOS	D	D	D	E	D	D	A	A	A	A	A	A
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	48.10			53.80			2.47			2.74		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	8.31											
Intersection LOS	A											
Intersection V/C	0.275											

Option 1: Signal + Widen all approaches

Number	59											
Intersection	Beech Ave at Valley Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	4	2	18	74	0	20	117	1003	7	7	509	125
Total Analysis Volume [veh/h]	4	2	21	87	0	23	138	1253	8	8	666	147

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	33	0	61	73	0	14	26	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

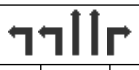
g / C, Green / Cycle	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.79	0.79	0.01	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.01	0.08	0.00	0.02	0.08	0.24	0.24	0.00	0.16	0.16
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1139	1638	1530	1123	1638	1530	1714	3427	1794	1714	3427	1640
c, Capacity [veh/h]	169	157	146	167	157	146	167	2723	1426	17	2423	1159
X, volume / capacity	0.02	0.01	0.14	0.52	0.00	0.16	0.83	0.30	0.30	0.47	0.23	0.23
d, Delay for Lane Group [s/veh]	51.29	49.16	50.20	57.07	49.07	50.32	62.98	3.63	3.89	78.41	6.35	6.61
Lane Group LOS	D	D	D	E	D	D	E	A	A	E	A	A

Critical Lane Group	No	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.11	0.06	0.60	2.70	0.00	0.66	4.54	2.28	2.49	0.33	2.32	2.34
50th-Percentile Queue Length [ft/ln]	2.86	1.40	14.96	67.56	0.00	16.41	113.47	56.97	62.25	8.31	57.90	58.51
95th-Percentile Queue Length [veh/ln]	0.21	0.10	1.08	4.86	0.00	1.18	8.03	4.10	4.48	0.60	4.17	4.21
95th-Percentile Queue Length [ft/ln]	5.15	2.52	26.92	121.60	0.00	29.54	200.82	102.55	112.05	14.96	104.22	105.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.29	49.16	50.20	57.07	49.07	50.32	62.98	3.72	3.89	78.41	6.40	6.61
Movement LOS	D	D	D	E	D	D	E	A	A	E	A	A
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	50.29			55.65			9.56			7.14		
Approach LOS	D			E			A			A		
d_I, Intersection Delay [s/veh]	11.34											
Intersection LOS	B											
Intersection V/C	0.324											

Option 1: ERB Overlap

Number	60											
Intersection	Valley Blvd at Citrus Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	439	581	136	84	759	31	35	281	464	265	376	82
Total Analysis Volume [veh/h]	556	721	159	98	922	37	41	330	580	310	440	97

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	31	57	0	13	39	0	9	33	33	17	41	0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	24	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.22	0.51	0.51	0.07	0.36	0.36	0.03	0.18	0.43	0.11	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.17	0.21	0.10	0.06	0.27	0.27	0.01	0.10	0.38	0.09	0.15	0.15
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3329	3427	1530	1714	1800	1776	3329	3427	1530	3329	1800	1689
c, Capacity [veh/h]	732	1737	776	121	644	635	106	620	664	360	463	435
X, volume / capacity	0.76	0.41	0.20	0.81	0.75	0.75	0.39	0.53	0.87	0.86	0.60	0.60
d, Delay for Lane Group [s/veh]	45.50	19.20	16.87	67.05	41.67	41.77	59.28	45.25	45.76	58.67	40.33	40.42
Lane Group LOS	D	B	B	E	D	D	E	D	D	E	D	D
Critical Lane Group	Y	N	N	N	N	Y	N	N	Y	Y	N	N

Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.89	6.36	2.53	3.33	13.62	13.46	0.64	4.52	17.66	4.89	7.31	6.88
50th-Percentile Queue Length [ft/ln]	197.1	159.0	63.32	83.16	340.5	336.4	16.11	112.9	441.5	122.2	182.7	171.9
95th-Percentile Queue Length [veh/ln]	12.49	10.50	4.56	5.99	19.67	19.47	1.16	8.00	24.56	8.52	11.74	11.18
95th-Percentile Queue Length [ft/ln]	312.3	262.4	113.9	149.6	491.8	486.8	28.99	200.1	613.8	212.9	293.6	279.4

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.50	19.20	16.87	67.05	41.72	41.77	59.28	45.25	45.76	58.67	40.36	40.42
Movement LOS	D	B	B	E	D	D	E	D	D	E	D	D
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	29.13			44.07			46.17			47.07		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	40.13											
Intersection LOS	D											
Intersection V/C	0.743											

Option 1: Restripe WB

Number	63											
Intersection	I-10 WB Ramps at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	993	543	0	1748	0	0	0	0	738	0	637
Total Analysis Volume [veh/h]	0	1311	668	0	2477	2	0	0	0	909	0	1029

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	50	0	0	50	0	0	0	0	70	0	0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.39	0.39		0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.27	0.38		0.53	0.38
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800		1800	1800
Arrival type	3	3	3	3	
s, saturation flow rate [veh/h]	4903	6538		1714	2708
c, Capacity [veh/h]	1904	2538		934	1476
X, volume / capacity	0.69	0.98		0.97	0.70
d, Delay for Lane Group [s/veh]	32.71	49.20		48.51	20.63
Lane Group LOS	C	D		D	C

Critical Lane Group	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	10.80	19.74		29.51	10.32
50th-Percentile Queue Length [ft/ln]	270.00	493.58		737.86	258.06
95th-Percentile Queue Length [veh/ln]	16.19	27.03		38.42	15.59
95th-Percentile Queue Length [ft/ln]	404.74	675.75		960.60	389.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	32.71	0.00	0.00	49.20	0.00	0.00	0.00	0.00	48.51	0.00	20.63
Movement LOS		C			D					D		C
Critical Movement		No	No		Yes	No	No	No	No	No		No
d_A, Approach Delay [s/veh]	32.71			49.20			0.00			33.71		
Approach LOS	C			D			A			C		
d_I, Intersection Delay [s/veh]	40.18											
Intersection LOS	D											
Intersection V/C	0.909											

Option 1: Restripe WB

Number	63											
Intersection	I-10 WB Ramps at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	1339	389	0	1805	0	0	0	0	518	0	492
Total Analysis Volume [veh/h]	0	1704	459	0	2583	13	0	0	0	611	0	919

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	19	0	0	19	0	0	0	0	101	0	0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.53	0.53		0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.35	0.40		0.36	0.34
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800		1800	1800
Arrival type	3	3	3	3	
s, saturation flow rate [veh/h]	4903	6538		1714	2708
c, Capacity [veh/h]	2613	3484		686	1084
X, volume / capacity	0.65	0.74		0.89	0.85
d, Delay for Lane Group [s/veh]	21.34	23.10		37.74	34.59
Lane Group LOS	C	C		D	C

Critical Lane Group	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	11.33	13.87		17.07	12.20
50th-Percentile Queue Length [ft/ln]	283.26	346.71		426.66	305.11
95th-Percentile Queue Length [veh/ln]	16.85	19.98		23.84	17.93
95th-Percentile Queue Length [ft/ln]	421.27	499.40		596.03	448.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	21.34	0.00	0.00	23.10	0.00	0.00	0.00	0.00	37.74	0.00	34.59
Movement LOS		C			C					D		C
Critical Movement		No	No		No	No	No	No	No	Yes		No
d_A, Approach Delay [s/veh]	21.34			23.10			0.00			35.84		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	25.94											
Intersection LOS	C											
Intersection V/C	0.752											

Option 1: 3rd EBL

Number	68											
Intersection	Sierra Ave at I-10 EB/WB Ramps											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	512	1223	467	480	861	796	914	0	457	463	0	566
Total Analysis Volume [veh/h]	603	1463	551	601	1033	939	1078	0	539	546	0	697

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	94	0	0	94	0	26	0	0	26	0	0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.75	0.75	0.75	0.75	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.56	0.30	0.84	0.21	0.22	0.16
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800
Arrival type	3		3		3	3
s, saturation flow rate [veh/h]	1077	4903	715	4903	4994	3329
c, Capacity [veh/h]	779	3677	510	3677	916	610
X, volume / capacity	0.77	0.40	1.18	0.28	1.18	0.89
d, Delay for Lane Group [s/veh]	22.44	5.67	126.16	4.94	131.59	52.77
Lane Group LOS	C	A	F	A	F	D

Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.41	3.90	14.80	2.44	16.10	8.36
50th-Percentile Queue Length [ft/ln]	160.29	97.44	370.00	61.05	402.40	209.08
95th-Percentile Queue Length [veh/ln]	10.56	7.02	23.85	4.40	24.53	13.11
95th-Percentile Queue Length [ft/ln]	264.11	175.38	596.17	109.90	613.30	327.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.44	5.67	0.00	126.16	4.94	0.00	131.59	0.00	0.00	52.77	0.00	0.00
Movement LOS	C	A		F	A		F			D		
Critical Movement	No	No	No	No	No	No	Yes		No	No		No
d_A, Approach Delay [s/veh]	10.56			49.53			131.59			52.77		
Approach LOS	B			D			F			D		
d_I, Intersection Delay [s/veh]	51.36											
Intersection LOS	D											
Intersection V/C	1.056											

Option 1: Restripe EB

Number	72											
Intersection	Cherry Ave at Santa Ana Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	36	762	11	114	720	331	245	39	80	9	21	66
Total Analysis Volume [veh/h]	44	949	13	161	889	413	314	48	99	11	26	112

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	29	31	0	42	44	0	0	47	0	0	47	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.03	0.43	0.43	0.11	0.51	0.51	0.36	0.36	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.03	0.18	0.18	0.09	0.26	0.27	0.25	0.09	0.03	0.07
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1714	3427	1788	1714	3427	1530	1271	1609	1416	1530
c, Capacity [veh/h]	56	1480	772	191	1748	780	375	574	545	546
X, volume / capacity	0.78	0.43	0.43	0.84	0.51	0.53	0.84	0.26	0.07	0.20
d, Delay for Lane Group [s/veh]	77.84	24.66	25.49	62.07	20.51	22.30	55.09	27.53	25.50	26.94
Lane Group LOS	E	C	C	E	C	C	E	C	C	C

Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.64	6.42	6.88	5.27	8.34	8.17	10.29	3.03	0.71	2.27
50th-Percentile Queue Length [ft/ln]	41.07	160.4	171.8	131.7	208.5	204.3	257.18	75.85	17.69	56.66
95th-Percentile Queue Length [veh/ln]	2.96	10.57	11.18	9.03	13.08	12.86	15.55	5.46	1.27	4.08
95th-Percentile Queue Length [ft/ln]	73.93	264.2	279.3	225.8	326.9	321.5	388.68	136.54	31.85	101.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	77.84	24.94	25.49	62.07	20.51	22.30	55.09	27.53	27.53	25.50	25.50	26.94
Movement LOS	E	C	C	E	C	C	E	C	C	C	C	C
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	27.26			25.59			46.30			26.58		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	29.28											
Intersection LOS	C											
Intersection V/C	0.543											

Option 1: Restripe EB

Number	72											
Intersection	Cherry Ave at Santa Ana Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	8	601	29	67	890	130	243	49	30	13	21	83
Total Analysis Volume [veh/h]	9	729	34	118	1067	172	307	58	36	16	25	139

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	28	0	46	65	0	0	46	0	0	46	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.01	0.48	0.48	0.08	0.56	0.56	0.33	0.33	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.01	0.15	0.15	0.07	0.24	0.24	0.25	0.06	0.03	0.09
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1714	3427	1759	1714	3427	1675	1241	1686	1464	1530
c, Capacity [veh/h]	19	1658	851	145	1911	934	386	559	527	507
X, volume / capacity	0.49	0.30	0.31	0.81	0.44	0.44	0.79	0.17	0.08	0.27
d, Delay for Lane Group [s/veh]	77.43	19.21	19.68	64.33	16.23	16.98	51.44	28.54	27.55	29.78
Lane Group LOS	E	B	B	E	B	B	D	C	C	C

Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.37	4.33	4.58	3.92	6.70	6.75	9.72	1.95	0.82	3.01
50th-Percentile Queue Length [ft/ln]	9.17	108.21	114.42	97.96	167.47	168.67	243.12	48.87	20.59	75.24
95th-Percentile Queue Length [veh/ln]	0.66	7.74	8.09	7.05	10.94	11.01	14.84	3.52	1.48	5.42
95th-Percentile Queue Length [ft/ln]	16.51	193.51	202.13	176.32	273.59	275.16	370.98	87.97	37.07	135.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	77.43	19.36	19.68	64.33	16.39	16.98	51.44	28.54	28.54	27.55	27.55	29.78
Movement LOS	E	B	B	E	B	B	D	C	C	C	C	C
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	20.05			20.64			46.07			29.27		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	24.81											
Intersection LOS	C											
Intersection V/C	0.495											

APPENDIX G-3

INTERSECTION ANALYSIS WORKSHEETS – WITH IMPROVEMENTS – HORIZON YEAR 2040 PLUS PROJECT

Option 1: NBR lane + Overlap

Number	15											
Intersection	Citrus Ave at Baseline Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	144	642	823	139	864	281	318	1048	122	177	1060	114
Total Analysis Volume [veh/h]	152	676	872	146	909	315	337	1104	128	195	1154	120

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	21	52	52	15	46	0	17	31	0	22	36	36
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	31	31	0	34	0	0	17	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.10	0.40	0.58	0.09	0.39	0.39	0.11	0.23	0.23	0.15	0.27	0.39
(v / s)_i Volume / Saturation Flow Rate	0.08	0.19	0.54	0.08	0.25	0.20	0.10	0.21	0.08	0.06	0.22	0.07
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	182	1447	942	166	1415	632	381	1165	363	527	1380	633
X, volume / capacity	0.84	0.47	0.93	0.88	0.64	0.50	0.89	0.95	0.35	0.37	0.84	0.19
d, Delay for Lane Group [s/veh]	62.63	27.65	38.71	67.58	31.96	30.43	59.71	50.83	39.72	46.33	42.94	24.13
Lane Group LOS	E	C	D	E	C	C	E	D	D	D	D	C
Critical Lane Group	N	N	Y	Y	N	N	N	Y	N	N	N	N

Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	4.99	7.33	25.06	4.98	11.00	7.30	5.37	11.28	3.25	2.66	10.85	2.28
50th-Percentile Queue Length [ft/ln]	124.6	183.3	626.5	124.5	275.0	182.4	134.2	281.9	81.22	66.47	271.3	57.00
95th-Percentile Queue Length [veh/ln]	8.65	11.77	33.27	8.64	16.44	11.73	9.17	16.78	5.85	4.79	16.26	4.10
95th-Percentile Queue Length [ft/ln]	216.1	294.3	831.8	216.1	411.0	293.2	229.2	419.5	146.2	119.6	406.4	102.6

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.63	27.65	38.71	67.58	31.96	30.43	59.71	50.83	39.72	46.33	42.94	24.13
Movement LOS	E	C	D	E	C	C	E	D	D	D	D	C
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	36.45			35.40			51.83			41.85		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.46											
Intersection LOS	D											
Intersection V/C	0.727											

Option 1: Widen all approaches + SBR Overlap

Number	20											
Intersection	Foothill Blvd at Etiwanda Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	382	400	224	69	251	174	266	1164	287	140	957	53
Total Analysis Volume [veh/h]	568	448	238	73	292	183	280	1225	488	149	1007	56

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups						2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	42	67	0	11	36	36	14	32	32	10	28	0
Walk [s]	0	5	0	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	31	0	0	27	27	0	17	17	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.32	0.53	0.53	0.05	0.27	0.38	0.08	0.23	0.58	0.05	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.31	0.12	0.15	0.04	0.08	0.11	0.08	0.24	0.30	0.04	0.19	0.03
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	573	1918	856	96	965	619	293	1208	942	176	1035	323
X, volume / capacity	0.99	0.23	0.28	0.76	0.30	0.30	0.96	1.01	0.52	0.85	0.97	0.17
d, Delay for Lane Group [s/veh]	74.60	15.40	16.34	67.57	35.91	26.95	70.78	61.78	16.67	67.23	55.77	40.03
Lane Group LOS	E	B	B	E	D	C	E	F	B	E	E	D

Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	21.84	3.34	3.75	2.49	3.53	3.86	4.86	13.67	8.15	2.50	10.69	1.40
50th-Percentile Queue Length [ft/ln]	546.09	83.39	93.77	62.28	88.31	96.40	121.50	341.72	203.76	62.50	267.18	35.06
95th-Percentile Queue Length [veh/ln]	29.51	6.00	6.75	4.48	6.36	6.94	8.48	19.89	12.83	4.50	16.05	2.52
95th-Percentile Queue Length [ft/ln]	737.71	150.10	168.79	112.10	158.96	173.53	211.88	497.35	320.82	112.50	401.22	63.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.60	15.40	16.34	67.57	35.91	26.95	70.78	61.78	16.67	67.23	55.77	40.03
Movement LOS	E	B	B	E	D	C	E	F	B	E	E	D
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	42.39			37.13			52.00			56.45		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	49.04											
Intersection LOS	D											
Intersection V/C	0.695											

Option 1: Signal

Number	22											
Intersection	Beech Ave at Foothill Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	108	0	202	0	0	0	0	725	123	282	1728	0
Total Analysis Volume [veh/h]	114	0	218	0	0	0	0	768	129	305	1864	0

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	40	0	0	40	0	0	80	0	0	80	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	24	0	0	7	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.23		0.23			0.70	0.70	0.70	0.70	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.21		0.00			0.00	0.24	0.24	0.48	0.49	0.49
so, Base Saturation Flow per Lane [pc/h/ln]	1900		1900			1900	1900	1900	1900	1900	1900
Arrival type	3		3			3			3		
s, saturation flow rate [veh/h]	1560		1900			250	1900	1806	630	1900	1900
c, Capacity [veh/h]	400		469			154	1335	1269	425	1335	1335
X, volume / capacity	0.83		0.00			0.00	0.34	0.34	0.72	0.70	0.70
d, Delay for Lane Group [s/veh]	54.45		0.00			0.00	7.71	7.75	30.51	13.47	13.47
Lane Group LOS	D		A			A	A	A	C	B	B

Critical Lane Group	Yes			No			No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.65			0.00			0.00	4.51	4.30	7.74	13.95	13.95
50th-Percentile Queue Length [ft/ln]	266.35			0.00			0.00	112.8	107.6	193.4	348.7	348.7
95th-Percentile Queue Length [veh/ln]	16.01			0.00			0.00	8.00	7.71	12.30	20.07	20.07
95th-Percentile Queue Length [ft/ln]	400.17			0.00			0.00	199.9	192.6	307.5	501.8	501.8

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.45	54.45	54.45	0.00	0.00	0.00	0.00	7.73	7.75	30.51	13.47	13.47
Movement LOS	D	D	D	A	A	A	A	A	A	C	B	B
Critical Movement	No	No	Yes	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	54.45			0.00			7.73			15.87		
Approach LOS	D			A			A			B		
d_I, Intersection Delay [s/veh]	17.49											
Intersection LOS	B											
Intersection V/C	0.703											

Option 1: Widen all approaches

Number	23											
Intersection	Foothill Blvd at Citrus Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	155	758	152	189	618	80	287	1101	198	444	647	154
Total Analysis Volume [veh/h]	163	819	160	199	667	84	302	1206	208	467	728	162

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	33	0	20	36	0	36	43	0	24	31	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	27	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.10	0.32	0.32	0.13	0.34	0.34	0.18	0.27	0.27	0.15	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.09	0.18	0.18	0.11	0.14	0.14	0.17	0.23	0.13	0.13	0.20	0.10
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1810	3618	1746	1810	3618	1794	1810	5176	1615	3514	3618	1615
c, Capacity [veh/h]	190	1146	553	226	1219	604	335	1420	443	529	866	387
X, volume / capacity	0.86	0.58	0.58	0.88	0.41	0.41	0.90	0.85	0.47	0.88	0.84	0.42
d, Delay for Lane Group [s/veh]	63.43	36.36	38.64	62.04	31.64	32.74	61.11	42.71	37.04	55.02	45.75	39.30
Lane Group LOS	E	D	D	E	C	C	E	D	D	E	D	D

Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.39	8.35	8.44	6.53	5.76	5.93	10.04	11.37	5.18	7.22	10.51	4.12
50th-Percentile Queue Length [ft/ln]	134.69	208.79	211.05	163.32	143.94	148.29	251.12	284.20	129.58	180.59	262.80	103.05
95th-Percentile Queue Length [veh/ln]	9.19	13.09	13.21	10.72	9.69	9.93	15.24	16.90	8.92	11.63	15.83	7.42
95th-Percentile Queue Length [ft/ln]	229.86	327.28	330.18	268.12	242.32	248.14	381.06	422.44	222.92	290.78	395.73	185.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.43	36.80	38.64	62.04	31.92	32.74	61.11	42.71	37.04	55.02	45.75	39.30
Movement LOS	E	D	D	E	C	C	E	D	D	E	D	D
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	40.86			38.30			45.26			48.17		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.77											
Intersection LOS	D											
Intersection V/C	0.661											

Option 1: Dual SBL

Number	24											
Intersection	Sierra Ave at Foothill Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	160	1095	230	220	750	156	227	958	199	287	615	181
Total Analysis Volume [veh/h]	168	1179	260	232	816	174	248	1034	209	319	673	191

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	43	0	12	39	0	24	39	0	26	41	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.10	0.33	0.33	0.07	0.29	0.29	0.15	0.29	0.29	0.18	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.09	0.33	0.16	0.07	0.23	0.11	0.14	0.29	0.13	0.18	0.19	0.12
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1810	3618	1615	3514	3618	1615	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	181	1176	525	234	1055	471	277	1055	471	332	1164	519
X, volume / capacity	0.93	1.00	0.50	0.99	0.77	0.37	0.89	0.98	0.44	0.96	0.58	0.37
d, Delay for Lane Group [s/veh]	71.49	67.42	35.90	81.06	44.39	35.96	60.47	51.17	35.24	74.21	34.38	31.75
Lane Group LOS	E	F	D	F	D	D	E	D	D	E	C	C
Critical Lane Group	N	Y	N	Y	N	N	N	Y	N	Y	N	N

Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.92	21.48	6.56	4.32	11.73	4.33	8.11	16.33	5.06	11.79	8.22	4.33
50th-Percentile Queue Length [ft/ln]	148.05	536.98	164.06	108.06	293.22	108.31	202.68	408.14	126.54	294.69	205.51	108.28
95th-Percentile Queue Length [veh/ln]	9.91	29.14	10.76	7.73	17.35	7.75	12.78	22.95	8.75	17.42	12.92	7.74
95th-Percentile Queue Length [ft/ln]	247.83	728.39	269.09	193.31	433.64	193.66	319.42	573.80	218.79	435.45	323.06	193.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.49	67.42	35.90	81.06	44.39	35.96	60.47	51.17	35.24	74.21	34.38	31.75
Movement LOS	E	F	D	F	D	D	E	D	D	E	C	C
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	62.75			50.16			50.48			44.69		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	52.75											
Intersection LOS	D											
Intersection V/C	0.854											

Option 1: 2nd EBT lane

Number	25											
Intersection	Arrow Rte at Etiwanda Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	216	751	240	192	353	128	391	1737	457	177	973	180
Total Analysis Volume [veh/h]	265	986	253	202	587	135	412	1828	519	186	1024	189

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	6	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups			6,7			2,3			1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	34	34	17	34	34	26	59	59	10	43	0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	21	0	21	21	0	24	24	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.11	0.25	0.33	0.11	0.25	0.42	0.14	0.46	0.60	0.05	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.08	0.27	0.16	0.11	0.16	0.08	0.12	0.51	0.32	0.05	0.33	0.33
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3514	3618	1615	1810	3618	1615	3514	3618	1615	3514	1900	1799
c, Capacity [veh/h]	381	904	538	196	904	683	491	1658	969	176	700	663
X, volume / capacity	0.70	1.09	0.47	1.03	0.65	0.20	0.84	1.10	0.54	1.06	0.89	0.89
d, Delay for Lane Group [s/veh]	53.90	102.56	34.55	91.44	43.89	22.44	54.22	81.54	16.27	105.23	47.74	49.52
Lane Group LOS	D	F	C	F	D	C	D	F	B	F	D	D

Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.97	20.57	6.24	7.97	8.20	2.53	6.29	34.51	8.56	3.84	19.08	18.60
50th-Percentile Queue Length [ft/ln]	99.19	514.13	155.98	199.16	205.01	63.33	157.22	862.85	214.05	95.97	477.06	465.11
95th-Percentile Queue Length [veh/ln]	7.14	29.45	10.34	12.75	12.90	4.56	10.40	47.49	13.36	6.91	26.25	25.68
95th-Percentile Queue Length [ft/ln]	178.55	736.35	258.39	318.70	322.42	113.99	260.04	1187.24	334.02	172.74	656.16	641.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.90	102.56	34.55	91.44	43.89	22.44	54.22	81.54	16.27	105.23	48.44	49.52
Movement LOS	D	F	C	F	D	C	D	F	B	F	D	D
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	82.55			51.15			65.18			56.14		
Approach LOS	F			D			E			E		
d_I, Intersection Delay [s/veh]	65.26											
Intersection LOS	E											
Intersection V/C	0.942											

Option 1: Widen all approaches

Number	26											
Intersection	Arrow Rte at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	136	1033	168	59	1220	106	81	437	104	221	763	87
Total Analysis Volume [veh/h]	143	1257	177	62	1602	112	85	460	109	269	803	92

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	49	0	10	44	0	11	36	0	25	50	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.09	0.51	0.51	0.04	0.46	0.46	0.06	0.15	0.15	0.16	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.08	0.24	0.11	0.03	0.31	0.07	0.05	0.13	0.07	0.15	0.22	0.06
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1810	5176	1615	1810	5176	1615	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	166	2627	820	80	2381	743	106	547	244	296	928	414
X, volume / capacity	0.86	0.48	0.22	0.77	0.67	0.15	0.81	0.84	0.45	0.91	0.87	0.22
d, Delay for Lane Group [s/veh]	65.99	19.85	16.95	71.32	26.87	19.22	69.06	53.08	47.62	63.13	45.20	35.43
Lane Group LOS	E	B	B	E	C	B	E	D	D	E	D	D

Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.82	7.63	2.82	2.18	12.02	1.91	2.93	6.97	3.06	9.04	11.64	2.17
50th-Percentile Queue Length [ft/ln]	120.4	190.8	70.61	54.61	300.4	47.64	73.26	174.2	76.45	225.8	290.9	54.21
95th-Percentile Queue Length [veh/ln]	8.42	12.16	5.08	3.93	17.70	3.43	5.27	11.30	5.50	13.97	17.23	3.90
95th-Percentile Queue Length [ft/ln]	210.4	304.0	127.1	98.30	442.5	85.76	131.8	282.4	137.6	349.1	430.8	97.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.99	19.85	16.95	71.32	26.87	19.22	69.06	53.08	47.62	63.13	45.20	35.43
Movement LOS	E	B	B	E	C	B	E	D	D	E	D	D
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	23.71			27.94			54.25			48.57		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.62											
Intersection LOS	C											
Intersection V/C	0.664											

Option 1: Widen all approaches

Number	26											
Intersection	Arrow Rte at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	162	1374	310	103	1160	115	95	758	123	160	607	67
Total Analysis Volume [veh/h]	171	1869	379	108	1688	121	100	798	129	221	639	71

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	51	0	12	46	0	12	36	0	21	45	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	21	0	0	27	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.11	0.42	0.42	0.07	0.38	0.38	0.07	0.24	0.24	0.14	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.36	0.23	0.06	0.33	0.07	0.06	0.22	0.08	0.12	0.18	0.04
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1810	5176	1615	1810	5176	1615	1810	3618	1615	1810	3618	1615
c, Capacity [veh/h]	196	2174	679	121	1959	611	121	878	392	248	1133	506
X, volume / capacity	0.87	0.86	0.56	0.90	0.86	0.20	0.83	0.91	0.33	0.89	0.56	0.14
d, Delay for Lane Group [s/veh]	64.00	36.29	29.66	75.08	39.68	25.78	68.64	48.15	37.88	61.43	34.82	29.73
Lane Group LOS	E	D	C	E	D	C	E	D	D	E	C	C

Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.68	16.97	8.76	3.90	15.84	2.45	3.43	11.94	3.19	7.24	7.84	1.50
50th-Percentile Queue Length [ft/ln]	142.12	424.33	219.00	97.38	395.97	61.36	85.85	298.47	79.71	181.04	195.97	37.61
95th-Percentile Queue Length [veh/ln]	9.59	23.73	13.61	7.01	22.37	4.42	6.18	17.61	5.74	11.66	12.43	2.71
95th-Percentile Queue Length [ft/ln]	239.87	593.25	340.35	175.29	559.14	110.44	154.54	440.14	143.48	291.38	310.76	67.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.00	36.29	29.66	75.08	39.68	25.78	68.64	48.15	37.88	61.43	34.82	29.73
Movement LOS	E	D	C	E	D	C	E	D	D	E	C	C
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	37.21			40.79			48.86			40.74		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.73											
Intersection LOS	D											
Intersection V/C	0.764											

Option 1: Widen NB/SB

Number	30											
Intersection	Whittram Ave at Etiwanda Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	1053	317	220	769	0	0	0	0	225	0	107
Total Analysis Volume [veh/h]	0	1342	334	232	1063	0	0	0	0	237	0	113

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	30	47	0	47	64	0	0	26	0	0	26	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	17	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.00	0.57	0.57	0.15	0.72	0.72	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.37	0.21	0.13	0.29	0.00	0.00	0.00	0.18	0.07
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1728	1615	1309	1615
c, Capacity [veh/h]	2	2062	921	265	2590	1156	347	296	300	296
X, volume / capacity	0.00	0.65	0.36	0.87	0.41	0.00	0.00	0.00	0.79	0.38
d, Delay for Lane Group [s/veh]	0.00	19.25	15.10	58.92	7.34	0.00	0.00	0.00	60.01	43.84
Lane Group LOS	A	B	B	E	A	A	A	A	E	D

Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	12.67	5.10	7.45	5.12	0.00	0.00	0.00	7.91	3.02
50th-Percentile Queue Length [ft/ln]	0.00	316.74	127.57	186.31	128.05	0.00	0.00	0.00	197.66	75.59
95th-Percentile Queue Length [veh/ln]	0.00	18.51	8.81	11.93	8.83	0.00	0.00	0.00	12.52	5.44
95th-Percentile Queue Length [ft/ln]	0.00	462.68	220.19	298.24	220.84	0.00	0.00	0.00	312.94	136.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	19.25	15.10	58.92	7.34	0.00	0.00	0.00	0.00	60.01	60.01	43.84
Movement LOS	A	B	B	E	A	A	A	A	A	E	E	D
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	18.42			16.59			0.00			54.78		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	21.54											
Intersection LOS	C											
Intersection V/C	0.680											

Option 1: EBR Overlap

Number	31											
Intersection	Whittram Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	160	1769	125	43	1113	69	105	158	379	139	75	82
Total Analysis Volume [veh/h]	168	2338	132	45	1692	73	111	166	399	146	79	86

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	22	65	0	9	52	0	13	32	32	14	33	0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	17	17	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.15	0.63	0.63	0.03	0.51	0.51	0.08	0.12	0.30	0.08	0.13
(v / s)_i Volume / Saturation Flow Rate	0.09	0.65	0.66	0.02	0.47	0.05	0.06	0.09	0.25	0.08	0.09
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3	
s, saturation flow rate [veh/h]	1810	1900	1865	1810	3618	1615	1810	1900	1615	1810	1740
c, Capacity [veh/h]	271	1199	1177	60	1859	830	136	227	489	151	222
X, volume / capacity	0.62	1.03	1.05	0.75	0.91	0.09	0.82	0.73	0.82	0.97	0.74
d, Delay for Lane Group [s/veh]	50.08	56.17	62.40	74.89	34.79	15.06	66.00	55.49	51.29	81.96	55.27
Lane Group LOS	D	F	F	E	C	B	E	E	D	F	E

Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.89	41.97	43.23	1.64	23.31	1.07	3.73	5.09	12.48	5.53	5.07
50th-Percentile Queue Length [ft/ln]	122.15	1049.29	1080.81	41.05	582.82	26.71	93.29	127.35	311.98	138.27	126.71
95th-Percentile Queue Length [veh/ln]	8.51	54.02	56.38	2.96	31.23	1.92	6.72	8.80	18.27	9.39	8.76
95th-Percentile Queue Length [ft/ln]	212.78	1350.54	1409.59	73.90	780.78	48.08	167.92	219.89	456.82	234.69	219.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.08	59.11	62.40	74.89	34.79	15.06	66.00	55.49	51.29	81.96	55.27	55.27
Movement LOS	D	E	E	E	C	B	E	E	D	F	E	E
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	58.70			34.99			54.74			67.80		
Approach LOS	E			C			D			E		
d_I, Intersection Delay [s/veh]	50.83											
Intersection LOS	D											
Intersection V/C	0.921											

Option 1: Signal

Number	32											
Intersection	Beech Ave at Whittram Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	150	487	0	0	421	125	64	0	74	0	0	0
Total Analysis Volume [veh/h]	158	518	0	0	455	132	67	0	78	0	0	0

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	101	0	0	101	0	19	0	0	0	0	0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	7	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.87	0.87	0.07	0.07	
(v / s)_i Volume / Saturation Flow Rate	0.47	0.32	0.04	0.05	
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	
Arrival type	3	3	3		3
s, saturation flow rate [veh/h]	1439	1827	1810	1615	
c, Capacity [veh/h]	1285	1584	120	107	
X, volume / capacity	0.53	0.37	0.56	0.73	
d, Delay for Lane Group [s/veh]	3.59	2.23	58.29	63.92	
Lane Group LOS	A	A	E	E	

Critical Lane Group	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	2.15	1.61	2.10	2.58	
50th-Percentile Queue Length [ft/ln]	53.86	40.37	52.49	64.60	
95th-Percentile Queue Length [veh/ln]	3.88	2.91	3.78	4.65	
95th-Percentile Queue Length [ft/ln]	96.95	72.67	94.47	116.27	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.59	3.59	0.00	0.00	2.23	2.23	58.29	0.00	63.92	0.00	0.00	0.00
Movement LOS	A	A			A	A	E		E			
Critical Movement	No	No			No	No	No		Yes			
d_A, Approach Delay [s/veh]	3.59			2.23			61.32			0.00		
Approach LOS	A			A			E			A		
d_I, Intersection Delay [s/veh]	8.97											
Intersection LOS	A											
Intersection V/C	0.518											

Option 1: Signal

Number	32											
Intersection	Beech Ave at Whittram Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	99	681	0	0	642	46	90	0	185	0	0	0
Total Analysis Volume [veh/h]	104	738	0	0	696	48	95	0	195	0	0	0

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	95	0	0	95	0	25	0	0	0	0	0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	3	0	0	10	0	7	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.79	0.79	0.14	0.14	
(v / s)_i Volume / Saturation Flow Rate	0.56	0.40	0.05	0.12	
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	
Arrival type	3	3	3		3
s, saturation flow rate [veh/h]	1513	1879	1810	1615	
c, Capacity [veh/h]	1236	1492	252	225	
X, volume / capacity	0.68	0.50	0.38	0.87	
d, Delay for Lane Group [s/veh]	9.21	5.40	47.86	60.31	
Lane Group LOS	A	A	D	E	

Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.02	5.36	2.66	6.34
50th-Percentile Queue Length [ft/ln]	175.58	134.08	66.39	158.45
95th-Percentile Queue Length [veh/ln]	11.37	9.16	4.78	10.47
95th-Percentile Queue Length [ft/ln]	284.23	229.03	119.50	261.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.21	9.21	0.00	0.00	5.40	5.40	47.86	0.00	60.31	0.00	0.00	0.00
Movement LOS	A	A			A	A	D		E			
Critical Movement	No	No			No	No	No		Yes			
d_A, Approach Delay [s/veh]	9.21			5.40			56.23			0.00		
Approach LOS	A			A			E			A		
d_I, Intersection Delay [s/veh]	14.97											
Intersection LOS	B											
Intersection V/C	0.677											

Option 1: Add NB/SB Lane + NBR/WBR Overlap

Number	33											
Intersection	Napa St at Etiwanda Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	1216	155	206	939	0	6	0	34	223	0	131
Total Analysis Volume [veh/h]	0	1280	344	471	988	0	6	0	36	376	0	372

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Overlap
Signal Group	1	6	6	5	2	0	0	8	0	0	4	4
Auxiliary Signal Groups			4,6									4,5
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	5	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	30	30	30	0	0	30	0	0	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Split [s]	44	35	35	36	27	0	0	19	0	0	30	30
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Minimum Recall	No	No	No	No	No			No			No	No
Maximum Recall	No	No	No	No	No			No			No	No
Pedestrian Recall	No	No	No	No	No			No			No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.00	0.35	0.60	0.27	0.62	0.62	0.03	0.03	0.22	0.58
(v / s)_i Volume / Saturation Flow Rate	0.00	0.35	0.21	0.26	0.27	0.00	0.01	0.02	0.21	0.23
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	509	1470	1781	1615
c, Capacity [veh/h]	1	1273	972	483	2235	998	76	46	386	939
X, volume / capacity	0.00	1.01	0.35	0.98	0.44	0.00	0.08	0.78	0.97	0.40
d, Delay for Lane Group [s/veh]	0.00	65.55	12.78	76.43	12.70	0.00	58.91	81.20	78.47	14.63
Lane Group LOS	A	F	B	E	B	A	E	F	E	B

Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	23.09	4.73	18.13	6.89	0.00	0.19	1.39	14.48	5.61
50th-Percentile Queue Length [ft/ln]	0.00	577.17	118.19	453.15	172.17	0.00	4.75	34.70	361.99	140.14
95th-Percentile Queue Length [veh/ln]	0.00	31.10	8.29	25.11	11.19	0.00	0.34	2.50	20.72	9.49
95th-Percentile Queue Length [ft/ln]	0.00	777.40	207.33	627.70	279.77	0.00	8.54	62.47	518.00	237.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	65.55	12.78	76.43	12.70	0.00	58.91	70.06	81.20	78.47	78.47	14.63
Movement LOS	A	F	B	E	B	A	E	E	F	E	E	B
Critical Movement	No	No	No	No	No	No	No	No	Yes	No	No	No
d_A, Approach Delay [s/veh]	54.38			33.27			78.02			46.72		
Approach LOS	D			C			E			D		
d_I, Intersection Delay [s/veh]	45.20											
Intersection LOS	D											
Intersection V/C	0.850											

Option 1: Widen NB/SB

Number	34											
Intersection	Merrill Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	1	1809	234	372	1168	1	0	1	0	137	0	258
Total Analysis Volume [veh/h]	1	2380	276	392	1749	1	0	1	0	174	0	272

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	40	42	0	30	32	0	30	30	0	18	18	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.00	0.46	0.46	0.22	0.68	0.68	0.00	0.08	0.11	0.19
(v / s)_i Volume / Saturation Flow Rate	0.00	0.46	0.17	0.22	0.34	0.00	0.00	0.00	0.10	0.17
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1810	5176	1615	1810	5176	1615	1810	1900	1810	1615
c, Capacity [veh/h]	4	2399	749	392	3511	1095	1	143	201	300
X, volume / capacity	0.28	0.99	0.37	1.00	0.50	0.00	0.00	0.01	0.87	0.91
d, Delay for Lane Group [s/veh]	98.73	48.53	22.22	85.14	9.89	6.21	0.00	51.35	63.04	57.86
Lane Group LOS	F	D	C	F	A	A	A	D	E	E

Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.07	25.72	5.29	15.78	7.07	0.01	0.00	0.03	5.74	8.76
50th-Percentile Queue Length [ft/ln]	1.71	643.0	132.1	394.4	176.7	0.21	0.00	0.72	143.50	219.10
95th-Percentile Queue Length [veh/ln]	0.12	34.04	9.06	22.29	11.43	0.01	0.00	0.05	9.67	13.62
95th-Percentile Queue Length [ft/ln]	3.08	851.0	226.4	557.2	285.7	0.37	0.00	1.29	241.74	340.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	98.73	48.53	22.22	85.14	9.89	6.21	0.00	51.35	51.35	63.04	57.86	57.86
Movement LOS	F	D	C	F	A	A	A	D	D	E	E	E
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	45.81			23.66			51.35			59.88		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	37.96											
Intersection LOS	D											
Intersection V/C	0.845											

Option 1: Signal + SBL

Number	35											
Intersection	Beech Ave at Merrill Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	75	251	65	65	241	132	159	143	79	84	397	210
Total Analysis Volume [veh/h]	79	269	68	68	265	139	167	151	83	88	439	221

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	44	0	0	44	0	0	76	0	0	76	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.33	0.33	0.33	0.33	0.60	0.60	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.38	0.04	0.06	0.23	0.55	0.05	0.52	0.14
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3		3		3		3	
s, saturation flow rate [veh/h]	926	1615	1060	1791	577	1615	1018	1615
c, Capacity [veh/h]	345	538	104	597	392	969	646	969
X, volume / capacity	1.01	0.13	0.65	0.68	0.81	0.09	0.82	0.23
d, Delay for Lane Group [s/veh]	94.90	27.94	65.06	37.17	52.87	10.29	37.91	11.67
Lane Group LOS	F	C	E	D	D	B	D	B

Critical Lane Group	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	15.34	1.39	2.26	10.54	10.72	0.96	16.09	2.82
50th-Percentile Queue Length [ft/ln]	383.61	34.71	56.61	263.55	267.95	24.03	402.35	70.57
95th-Percentile Queue Length [veh/ln]	21.87	2.50	4.08	15.87	16.09	1.73	22.67	5.08
95th-Percentile Queue Length [ft/ln]	546.86	62.48	101.91	396.67	402.18	43.25	566.83	127.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	94.90	94.90	27.94	65.06	37.17	37.17	52.87	52.87	10.29	37.91	37.91	11.67
Movement LOS	F	F	C	E	D	D	D	D	B	D	D	B
Critical Movement	No	Yes	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	83.95			41.19			44.06			30.16		
Approach LOS	F			D			D			C		
d_I, Intersection Delay [s/veh]	46.44											
Intersection LOS	D											
Intersection V/C	0.927											

Option 1: Signal + SBL

Number	35											
Intersection	Beech Ave at Merrill Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	49	360	65	223	346	92	235	278	51	36	296	159
Total Analysis Volume [veh/h]	52	400	68	235	384	97	247	322	54	38	341	167

Intersection Settings

Cycle Length [s]	70											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	30	0	0	30	0	0	40	0	0	40	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	10	0	0	10	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

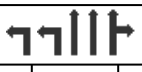
g / C, Green / Cycle	0.37	0.37	0.37	0.37	0.51	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.37	0.04	0.25	0.26	1.15	0.03	0.37	0.10
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3		3		3		3	
s, saturation flow rate [veh/h]	1235	1615	940	1835	494	1615	1013	1615
c, Capacity [veh/h]	516	600	139	681	328	831	578	831
X, volume / capacity	0.88	0.11	1.69	0.71	1.74	0.07	0.66	0.20
d, Delay for Lane Group [s/veh]	34.89	14.52	353.49	20.81	370.51	8.69	18.52	9.75
Lane Group LOS	C	B	F	C	F	A	B	A

Critical Lane Group	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	8.91	0.68	14.63	6.48	36.72	0.40	4.03	1.35
50th-Percentile Queue Length [ft/ln]	222.76	16.92	365.74	161.97	918.12	10.03	100.65	33.69
95th-Percentile Queue Length [veh/ln]	13.81	1.22	26.23	10.65	62.02	0.72	7.25	2.43
95th-Percentile Queue Length [ft/ln]	345.14	30.45	655.83	266.33	1550.46	18.06	181.18	60.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.89	34.89	14.52	353.4	20.81	20.81	370.5	370.5	8.69	18.52	18.52	9.75
Movement LOS	C	C	B	F	C	C	F	F	A	B	B	A
Critical Movement	No	No	No	No	No	No	No	Yes	No	No	No	No
d_A, Approach Delay [s/veh]	32.23			130.00			339.15			15.84		
Approach LOS	C			F			F			B		
d_I, Intersection Delay [s/veh]	137.12											
Intersection LOS	F											
Intersection V/C	1.518											

Option 1: Copy of Randall Ave at Cherry Ave

Number	39											
Intersection	Randall Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	128	838	116	156	1207	9	0	124	96	248	97	109
Total Analysis Volume [veh/h]	335	1126	122	170	1495	55	14	168	265	261	253	178

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	8	7	4	4
Auxiliary Signal Groups									1,8			4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	20	33	0	24	37	0	9	33	33	30	54	54
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	24	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

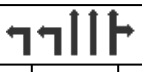
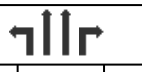
g / C, Green / Cycle	0.11	0.48	0.48	0.11	0.48	0.48	0.02	0.11	0.26	0.16	0.26	0.40
(v / s)_i Volume / Saturation Flow Rate	0.10	0.23	0.23	0.09	0.29	0.03	0.01	0.09	0.09	0.14	0.07	0.11
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3514	3618	1806	1810	5176	1615	1810	1900	2859	1810	3618	1615
c, Capacity [veh/h]	404	1739	868	204	2478	773	28	213	743	292	931	652
X, volume / capacity	0.83	0.48	0.48	0.83	0.60	0.07	0.49	0.79	0.36	0.90	0.27	0.27
d, Delay for Lane Group [s/veh]	56.41	21.96	22.90	60.58	24.01	17.05	71.09	58.38	36.50	61.16	35.75	24.22
Lane Group LOS	E	C	C	E	C	B	E	E	D	E	D	C

Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.18	8.02	8.24	5.49	10.40	0.86	0.52	5.31	3.21	8.61	3.00	3.44
50th-Percentile Queue Length [ft/ln]	129.46	200.39	205.90	137.21	259.89	21.56	13.03	132.69	80.31	215.16	74.91	86.09
95th-Percentile Queue Length [veh/ln]	8.91	12.66	12.94	9.33	15.68	1.55	0.94	9.09	5.78	13.42	5.39	6.20
95th-Percentile Queue Length [ft/ln]	222.75	316.47	323.57	233.27	392.08	38.81	23.46	227.15	144.55	335.44	134.84	154.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.41	22.20	22.90	60.58	24.01	17.05	71.09	58.38	36.50	61.16	35.75	24.22
Movement LOS	E	C	C	E	C	B	E	E	D	E	D	C
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	29.49			27.41			45.81			42.37		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	32.33											
Intersection LOS	C											
Intersection V/C	0.617											

Option 1: Copy of Randall Ave at Cherry Ave

Number	39											
Intersection	Randall Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	162	1461	183	160	882	2	5	108	99	185	116	124
Total Analysis Volume [veh/h]	481	1786	193	236	1143	70	59	361	403	195	358	199

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	8	7	4	4
Auxiliary Signal Groups									1,8			4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	38	49	0	20	31	0	15	33	33	18	36	36
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	24	24	0	27	27
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.17	0.41	0.41	0.13	0.37	0.37	0.04	0.21	0.41	0.12	0.28	0.45
(v / s)_i Volume / Saturation Flow Rate	0.14	0.36	0.37	0.13	0.22	0.04	0.03	0.19	0.14	0.11	0.10	0.12
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3514	3618	1808	1810	5176	1615	1810	1900	2859	1810	3618	1615
c, Capacity [veh/h]	595	1468	734	241	1914	597	78	400	1182	211	1029	729
X, volume / capacity	0.81	0.89	0.91	0.98	0.60	0.12	0.76	0.90	0.34	0.92	0.35	0.27
d, Delay for Lane Group [s/veh]	50.62	41.78	51.29	74.00	31.97	25.31	70.77	62.60	24.19	67.87	34.29	20.81
Lane Group LOS	D	D	D	E	C	C	E	E	C	E	C	C

Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.13	19.11	21.59	8.54	9.10	1.39	2.07	12.27	3.94	6.71	4.19	3.54
50th-Percentile Queue Length [ft/ln]	178.37	477.71	539.79	213.59	227.48	34.78	51.79	306.79	98.52	167.69	104.81	88.41
95th-Percentile Queue Length [veh/ln]	11.52	26.28	29.21	13.34	14.05	2.50	3.73	18.02	7.09	10.96	7.55	6.37
95th-Percentile Queue Length [ft/ln]	287.89	656.94	730.30	333.43	351.16	62.60	93.23	450.41	177.33	273.88	188.65	159.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.62	44.32	51.29	74.00	31.97	25.31	70.77	62.60	24.19	67.87	34.29	20.81
Movement LOS	D	D	D	E	C	C	E	E	C	E	C	C
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	46.10			38.49			44.38			39.43		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.92											
Intersection LOS	D											
Intersection V/C	0.799											

Option 1: Signal

Number	40											
Intersection	Beech Ave at Randall Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	28	290	58	7	302	110	66	258	28	44	296	44
Total Analysis Volume [veh/h]	39	305	61	7	318	127	75	304	29	46	479	46

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	54	0	0	54	0	0	66	0	0	66	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.29	0.29	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.27	0.25	0.26	0.32
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1528	1822	1572	1794
c, Capacity [veh/h]	469	550	1055	1195
X, volume / capacity	0.86	0.82	0.39	0.48
d, Delay for Lane Group [s/veh]	49.21	45.55	10.62	12.05
Lane Group LOS	D	D	B	B

Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	12.63	13.32	4.93	7.72
50th-Percentile Queue Length [ft/ln]	315.66	333.07	123.17	193.03
95th-Percentile Queue Length [veh/ln]	18.45	19.31	8.57	12.28
95th-Percentile Queue Length [ft/ln]	461.35	482.72	214.17	306.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.21	49.21	49.21	45.55	45.55	45.55	10.62	10.62	10.62	12.05	12.05	12.05
Movement LOS	D	D	D	D	D	D	B	B	B	B	B	B
Critical Movement	No	Yes	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	49.21			45.55			10.62			12.05		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	28.18											
Intersection LOS	C											
Intersection V/C	0.583											

Option 1: Signal

Number	40											
Intersection	Beech Ave at Randall Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	31	376	24	45	336	43	77	327	48	19	271	47
Total Analysis Volume [veh/h]	45	396	25	47	354	65	102	603	65	20	536	49

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	53	0	0	53	0	0	67	0	0	67	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.30	0.30	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.28	0.28	0.50	0.33
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1687	1661	1536	1811
c, Capacity [veh/h]	538	530	1008	1180
X, volume / capacity	0.87	0.88	0.76	0.51
d, Delay for Lane Group [s/veh]	48.99	50.41	21.90	13.46
Lane Group LOS	D	D	C	B

Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	14.50	14.73	16.71	8.84
50th-Percentile Queue Length [ft/ln]	362.61	368.24	417.65	220.95
95th-Percentile Queue Length [veh/ln]	20.75	21.02	23.41	13.71
95th-Percentile Queue Length [ft/ln]	518.76	525.60	585.23	342.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.99	48.99	48.99	50.41	50.41	50.41	21.90	21.90	21.90	13.46	13.46	13.46
Movement LOS	D	D	D	D	D	D	C	C	C	B	B	B
Critical Movement	No	No	No	No	Yes	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	48.99			50.41			21.90			13.46		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	30.92											
Intersection LOS	C											
Intersection V/C	0.782											

Option 1: Signal

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	4	67	242	86	68	1	75	436	32	10
Total Analysis Volume [veh/h]	4	71	255	91	72	1	79	459	34	11

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	20	0	0	0	0	20	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.33	0.36
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900
Arrival type	3	3
s, saturation flow rate [veh/h]	1508	1636
c, Capacity [veh/h]	659	708
X, volume / capacity	0.75	0.82
d, Delay for Lane Group [s/veh]	18.94	22.28
Lane Group LOS	B	C

Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	5.71	7.58
50th-Percentile Queue Length [ft/ln]	142.86	189.62
95th-Percentile Queue Length [veh/ln]	9.63	12.10
95th-Percentile Queue Length [ft/ln]	240.87	302.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.94	18.94	18.94	18.94	18.94	22.28	22.28	22.28	22.28	22.28
Movement LOS	B	B	B	B	B	C	C	C	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	18.94					22.28				
Approach LOS	B					C				
d_I, Intersection Delay [s/veh]	21.32									
Intersection LOS	C									
Intersection V/C	0.836									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	52	24	211	104	0	30	92	253	27	4
Total Analysis Volume [veh/h]	55	42	233	109	0	32	97	391	28	4

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	4	0	0	0	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	21	0	0	0	0	21	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.31	0.36
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900
Arrival type	3	3
s, saturation flow rate [veh/h]	1427	1513
c, Capacity [veh/h]	642	678
X, volume / capacity	0.68	0.81
d, Delay for Lane Group [s/veh]	16.87	22.35
Lane Group LOS	B	C
Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	4.69	7.28

50th-Percentile Queue Length [ft/ln]	117.35	182.09
95th-Percentile Queue Length [veh/ln]	8.25	11.71
95th-Percentile Queue Length [ft/ln]	206.18	292.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.87	16.87	16.87	16.87	16.87	22.35	22.35	22.35	22.35	22.35
Movement LOS	B	B	B	B	B	C	C	C	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	16.87					22.35				
Approach LOS	B					C				
d_I, Intersection Delay [s/veh]	21.32									
Intersection LOS	C									
Intersection V/C	0.836									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	2	15	74	26	1	15	50	138	36	7
Total Analysis Volume [veh/h]	2	16	78	27	1	16	53	145	63	7

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	10	0	0	0	0	12	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		

Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.11	0.04
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900
Arrival type	3	3	
s, saturation flow rate [veh/h]	1815	1870	1615
c, Capacity [veh/h]	276	284	245
X, volume / capacity	0.45	0.75	0.29
d, Delay for Lane Group [s/veh]	24.30	28.39	23.18
Lane Group LOS	C	C	C
Critical Lane Group	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.59	3.04	0.87
50th-Percentile Queue Length [ft/ln]	39.63	75.92	21.66
95th-Percentile Queue Length [veh/ln]	2.85	5.47	1.56
95th-Percentile Queue Length [ft/ln]	71.34	136.65	38.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.30	24.30	24.30	24.30	24.30	28.39	28.39	28.39	23.18	23.18
Movement LOS	C	C	C	C	C	C	C	C	C	C
Critical Movement	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	24.30					27.11				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	21.32									
Intersection LOS	C									
Intersection V/C	0.836									

Option 1: Signal

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	0	65	444	87	22	4	34	320	22	1
Total Analysis Volume [veh/h]	0	68	467	92	23	4	36	337	23	1

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.37	0.23
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900
Arrival type	3	3
s, saturation flow rate [veh/h]	1773	1713
c, Capacity [veh/h]	772	747
X, volume / capacity	0.84	0.54
d, Delay for Lane Group [s/veh]	22.79	14.43
Lane Group LOS	C	B

Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	8.48	3.77
50th-Percentile Queue Length [ft/ln]	212.12	94.27
95th-Percentile Queue Length [veh/ln]	13.26	6.79
95th-Percentile Queue Length [ft/ln]	331.54	169.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.79	22.79	22.79	22.79	22.79	14.43	14.43	14.43	14.43	14.43
Movement LOS	C	C	C	C	C	B	B	B	B	B
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	22.79					14.43				
Approach LOS	C					B				
d_I, Intersection Delay [s/veh]	20.79									
Intersection LOS	C									
Intersection V/C	0.996									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	44	15	275	49	4	13	68	291	22	6
Total Analysis Volume [veh/h]	46	84	449	52	4	14	72	477	23	6

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	4	0	0	0	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	22	0	0	0	0	22	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.44	0.39
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900
Arrival type	3	3
s, saturation flow rate [veh/h]	1446	1533
c, Capacity [veh/h]	748	785
X, volume / capacity	0.85	0.75
d, Delay for Lane Group [s/veh]	23.50	16.85
Lane Group LOS	C	B
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	8.62	6.27

50th-Percentile Queue Length [ft/ln]	215.46	156.86
95th-Percentile Queue Length [veh/ln]	13.43	10.38
95th-Percentile Queue Length [ft/ln]	335.82	259.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.50	23.50	23.50	23.50	23.50	16.85	16.85	16.85	16.85	16.85
Movement LOS	C	C	C	C	C	B	B	B	B	B
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	23.50					16.85				
Approach LOS	C					B				
d_I, Intersection Delay [s/veh]	20.79									
Intersection LOS	C									
Intersection V/C	0.996									

Number	41									
Intersection	Randall Ave at Fontana Ave/Catawaba Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	3	18	269	45	0	6	44	106	38	8
Total Analysis Volume [veh/h]	3	19	283	47	0	6	46	112	91	8

Intersection Settings

Cycle Length [s]	60									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	10	0	0	0	0	12	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		

Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.19	0.09	0.06
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900
Arrival type	3	3	
s, saturation flow rate [veh/h]	1851	1870	1615
c, Capacity [veh/h]	420	424	366
X, volume / capacity	0.84	0.39	0.27
d, Delay for Lane Group [s/veh]	26.67	20.23	19.50
Lane Group LOS	C	C	B
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.88	1.87	1.09
50th-Percentile Queue Length [ft/ln]	121.88	46.65	27.37
95th-Percentile Queue Length [veh/ln]	8.50	3.36	1.97
95th-Percentile Queue Length [ft/ln]	212.41	83.96	49.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.67	26.67	26.67	26.67	26.67	20.23	20.23	20.23	19.50	19.50
Movement LOS	C	C	C	C	C	C	C	C	B	B
Critical Movement	No	No	Yes	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	26.67					19.96				
Approach LOS	C					B				
d_I, Intersection Delay [s/veh]	20.79									
Intersection LOS	C									
Intersection V/C	0.996									

Option 1: NBR/WBR Overlap

Number	44											
Intersection	Fourth St at I-15 SB Ramps/Ontario Mills Dr											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	133	233	434	131	316	598	915	1261	105	170	683	394
Total Analysis Volume [veh/h]	140	245	457	138	333	629	963	1340	111	179	732	642

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups			6,7									4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	16	11	11	30	25	0	60	52	0	27	19	19
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	0	0	21	0	0	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

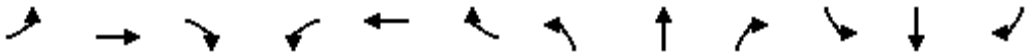
Lane Group Calculations

g / C, Green / Cycle	0.09	0.15	0.36	0.22	0.27	0.27	0.27	0.31	0.32	0.32	0.18	0.20	0.45
(v / s)_i Volume / Saturation Flow Rate	0.08	0.07	0.28	0.08	0.18	0.19	0.19	0.27	0.26	0.07	0.05	0.14	0.40
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	190	190	190	190	1900	1900	1900	1900	1900	1900
Arrival type	3			3				3			3		
s, saturation flow rate [veh/h]	1810	3618	1615	181	190	161	161	3514	5176	1615	3514	5176	1615
c, Capacity [veh/h]	167	530	587	390	513	436	436	1073	1663	519	644	1031	724
X, volume / capacity	0.84	0.46	0.78	0.35	0.65	0.72	0.72	0.90	0.81	0.21	0.28	0.71	0.89
d, Delay for Lane Group [s/veh]	64.24	49.76	43.78	40.5	45.0	49.6	49.6	42.86	38.26	29.89	42.40	45.73	45.41
Lane Group LOS	E	D	D	D	D	D	D	D	D	C	D	D	D

Critical Lane Group	No	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.65	3.57	13.31	3.53	9.55	9.57	9.57	13.89	12.04	2.38	2.32	6.86	19.55
50th-Percentile Queue Length [ft/ln]	116.1	89.31	332.7	88.2	238.	239.	239.	347.2	301.0	59.54	57.93	171.4	488.7
95th-Percentile Queue Length [veh/ln]	8.18	6.43	19.29	6.36	14.6	14.6	14.6	20.00	17.73	4.29	4.17	11.15	26.80
95th-Percentile Queue Length [ft/ln]	204.5	160.7	482.3	158.	365.	366.	366.	500.0	443.3	107.1	104.2	278.7	669.9

Movement, Approach, & Intersection Results

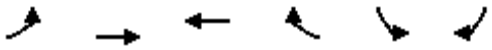
d_M, Delay for Movement [s/veh]	64.24	49.76	43.78	40.52	45.02	49.62	42.86	38.26	29.89	42.40	45.73	45.41
Movement LOS	E	D	D	D	D	D	D	D	C	D	D	D
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	48.92			47.09			39.71			45.21		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.84											
Intersection LOS	D											
Intersection V/C	0.619											



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1405	50	447	619	4	87	3	807	4	0	1
Future Volume (vph)	0	1405	50	447	619	4	87	3	807	4	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5	4.5		4.5	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95	0.95		1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85	0.85		0.97	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.96	
Satd. Flow (prot)		3539	1583	1770	3536		1770	1506	1504		1743	
Flt Permitted		1.00	1.00	0.95	1.00		0.75	1.00	1.00		0.55	
Satd. Flow (perm)		3539	1583	1770	3536		1405	1506	1504		1004	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1479	53	471	652	4	92	3	849	4	0	1
RTOR Reduction (vph)	0	0	28	0	1	0	0	356	355	0	4	0
Lane Group Flow (vph)	0	1479	25	471	655	0	92	72	69	0	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2		2	6		
Actuated Green, G (s)		55.5	55.5	31.5	58.7		19.5	19.5	19.5		19.5	
Effective Green, g (s)		55.5	55.5	31.5	58.7		19.5	19.5	19.5		19.5	
Actuated g/C Ratio		0.46	0.46	0.26	0.49		0.16	0.16	0.16		0.16	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1636	732	464	1729		228	244	244		163	
v/s Ratio Prot		c0.42		c0.27	0.19			0.05				
v/s Ratio Perm			0.02				c0.07		0.05		0.00	
v/c Ratio		0.90	0.03	1.02	0.38		0.40	0.30	0.28		0.00	
Uniform Delay, d1		29.8	17.6	44.2	19.2		45.0	44.2	44.1		42.1	
Progression Factor		1.00	1.00	0.75	0.48		1.00	1.00	1.00		1.00	
Incremental Delay, d2		7.4	0.0	44.5	0.1		5.2	3.1	2.9		0.1	
Delay (s)		37.2	17.6	77.6	9.4		50.3	47.3	47.0		42.2	
Level of Service		D	B	E	A		D	D	D		D	
Approach Delay (s)		36.5			37.9			47.4			42.2	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	316	1706	606	0	0	499
Future Volume (vph)	316	1706	606	0	0	499
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	0.95	0.95			0.88
Frt	1.00	1.00	1.00			0.85
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	3539	3539			2787
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1770	3539	3539			2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	333	1796	638	0	0	525
RTOR Reduction (vph)	0	0	0	0	0	440
Lane Group Flow (vph)	333	1796	638	0	0	85
Turn Type	Prot	NA	NA			Perm
Protected Phases	7	4	8			
Permitted Phases						6
Actuated Green, G (s)	28.3	55.5	58.7			19.5
Effective Green, g (s)	28.3	55.5	58.7			19.5
Actuated g/C Ratio	0.24	0.46	0.49			0.16
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	417	1636	1731			452
v/s Ratio Prot	0.19	c0.51	c0.18			
v/s Ratio Perm						c0.03
v/c Ratio	0.80	1.10	0.37			0.19
Uniform Delay, d1	43.2	32.2	19.1			43.4
Progression Factor	1.02	0.45	1.00			1.00
Incremental Delay, d2	5.7	49.8	0.1			0.9
Delay (s)	49.8	64.4	19.2			44.3
Level of Service	D	E	B			D
Approach Delay (s)		62.1	19.2		44.3	
Approach LOS		E	B		D	

Intersection Summary			
HCM 2000 Control Delay	51.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Option 1: Copy of San Bernardino Ave at Cherry Ave

Number	49											
Intersection	San Bernardino Ave at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	73	1312	187	100	1027	253	606	874	361	108	206	88
Total Analysis Volume [veh/h]	77	1776	197	166	1459	366	782	920	380	114	217	155

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	2	3	8	0	7	4	0
Auxiliary Signal Groups						2,3						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	28	0	13	31	31	43	65	0	14	36	0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	17	0	0	21	21	0	31	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.05	0.35	0.35	0.08	0.37	0.73	0.33	0.37	0.08	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.04	0.34	0.12	0.09	0.28	0.23	0.43	0.25	0.06	0.06	0.10
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3		3		
s, saturation flow rate [veh/h]	1810	5176	1615	1810	5176	1615	1810	3618	1810	3618	1615
c, Capacity [veh/h]	90	1804	563	136	1933	1182	588	1324	140	428	191
X, volume / capacity	0.85	0.98	0.35	1.22	0.75	0.31	1.33	0.69	0.82	0.51	0.81
d, Delay for Lane Group [s/veh]	75.67	56.64	30.72	169.73	35.59	6.26	200.33	33.00	65.52	50.57	59.65
Lane Group LOS	E	E	C	F	D	A	F	C	E	D	E

Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.80	19.94	4.49	8.41	12.68	3.08	43.20	11.39	3.82	3.12	4.98
50th-Percentile Queue Length [ft/ln]	69.88	498.45	112.21	210.17	316.90	76.98	1080.01	284.78	95.44	77.95	124.38
95th-Percentile Queue Length [veh/ln]	5.03	27.26	7.96	14.03	18.51	5.54	63.71	16.93	6.87	5.61	8.63
95th-Percentile Queue Length [ft/ln]	125.78	681.52	199.07	350.80	462.87	138.56	1592.64	423.16	171.79	140.30	215.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	75.67	56.64	30.72	169.73	35.59	6.26	200.33	33.00	0.00	65.52	50.57	59.65
Movement LOS	E	E	C	F	D	A	F	C		E	D	E
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	54.87			41.38			109.88			56.97		
Approach LOS	D			D			F			E		
d_I, Intersection Delay [s/veh]	65.75											
Intersection LOS	E											
Intersection V/C	0.963											

Option 1: Widen EB

Number	51									
Intersection	San Bernardino Ave at Fontana Ave/Elm Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	6	64	410	82	3	0	52	296	32	13
Total Analysis Volume [veh/h]	6	97	432	86	3	0	55	312	34	14

Intersection Settings

Cycle Length [s]	120									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	2	0	0	0	0	6	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	55	0	0	0	0	55	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.42	0.30
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900
Arrival type	3	3
s, saturation flow rate [veh/h]	1483	1381
c, Capacity [veh/h]	665	620
X, volume / capacity	0.94	0.67
d, Delay for Lane Group [s/veh]	56.48	29.05
Lane Group LOS	E	C

Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	21.74	9.59
50th-Percentile Queue Length [ft/ln]	543.49	239.73
95th-Percentile Queue Length [veh/ln]	29.39	14.67
95th-Percentile Queue Length [ft/ln]	734.65	366.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.48	56.48	56.48	56.48	56.48	29.05	29.05	29.05	29.05	29.05
Movement LOS	E	E	E	E	E	C	C	C	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	56.48					29.05				
Approach LOS	E					C				
d_I, Intersection Delay [s/veh]	50.53									
Intersection LOS	D									
Intersection V/C	0.836									

Number	51									
Intersection	San Bernardino Ave at Fontana Ave/Elm Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	9	292	450	59	1	7	36	207	38	10
Total Analysis Volume [veh/h]	9	307	494	93	1	7	38	238	40	11

Intersection Settings

Cycle Length [s]	120									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss
Signal Group	7	0	4	0	0	3	0	8	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5	0	5	0	0
Maximum Green [s]	5	0	30	0	0	5	0	30	0	0
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	15	0	37	0	0	9	0	31	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0
Minimum Recall	Yes		No			Yes		No		
Maximum Recall	No		No			No		No		
Pedestrian Recall	No		No			No		No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.35	0.28	0.28	0.35	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.24	0.26	0.06	0.05	0.13	0.03
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900
Arrival type	3			3		
s, saturation flow rate [veh/h]	1328	1900	1615	977	1900	1615
c, Capacity [veh/h]	432	541	460	222	424	361
X, volume / capacity	0.73	0.91	0.20	0.20	0.56	0.14
d, Delay for Lane Group [s/veh]	44.80	63.86	33.61	31.29	46.64	38.19
Lane Group LOS	D	E	C	C	D	D
Critical Lane Group	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.44	17.36	2.22	0.95	6.87	1.29

50th-Percentile Queue Length [ft/ln]	211.12	433.88	55.52	23.74	171.87	32.31
95th-Percentile Queue Length [veh/ln]	13.21	24.19	4.00	1.71	11.17	2.33
95th-Percentile Queue Length [ft/ln]	330.26	604.68	99.94	42.73	279.37	58.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.80	44.80	63.86	33.61	33.61	31.29	31.29	46.64	38.19	38.19
Movement LOS	D	D	E	C	C	C	C	D	D	D
Critical Movement	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	54.05					43.28				
Approach LOS	D					D				
d_I, Intersection Delay [s/veh]	50.53									
Intersection LOS	D									
Intersection V/C	0.836									

Number	51									
Intersection	San Bernardino Ave at Fontana Ave/Elm Ave									
Control Type	Signalized									
Analysis Method	HCM 6th Edition									
Name										
Approach	Northeastbound					Southwestbound				
Lane Configuration										
Turning Movement	Left2	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Right2
Base Volume Input [veh/h]	8	18	170	13	4	4	8	58	69	2
Total Analysis Volume [veh/h]	8	19	179	14	4	4	8	61	73	2

Intersection Settings

Cycle Length [s]	120									
Coordination Type	Time of Day Pattern Coordinated									
Actuation Type	Semi-actuated									
Lost time [s]	0.00									
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	9	0	0	0	0	10	0	0
Auxiliary Signal Groups										
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	0	30	0	0	0	0	30	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	0	19	0	0	0	0	19	0	0
Walk [s]	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall			No					No		

Maximum Recall			No					No		
Pedestrian Recall			No					No		
Pedestrian Signal Group	0									
Pedestrian Walk [s]	0									
Pedestrian Clearance [s]	0									

Lane Group Calculations

g / C, Green / Cycle	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.14	0.04	0.05
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900
Arrival type	3	3	
s, saturation flow rate [veh/h]	1627	1761	1615
c, Capacity [veh/h]	237	255	202
X, volume / capacity	0.95	0.29	0.37
d, Delay for Lane Group [s/veh]	71.51	48.38	49.31
Lane Group LOS	E	D	D
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.02	2.04	2.13
50th-Percentile Queue Length [ft/ln]	200.49	50.96	53.27
95th-Percentile Queue Length [veh/ln]	12.66	3.67	3.84
95th-Percentile Queue Length [ft/ln]	316.60	91.73	95.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.51	71.51	71.51	71.51	71.51	48.38	48.38	48.38	49.31	49.31
Movement LOS	E	E	E	E	E	D	D	D	D	D
Critical Movement	No	No	Yes	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	71.51					48.85				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	50.53									
Intersection LOS	D									
Intersection V/C	0.836									

Option 1: Modify NB + WBR Overlap

Number	56											
Intersection	Valley Blvd at Commerce Dr/I-10 Ramps											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	245	803	754	12	855	73	143	496	334	804	496	80
Total Analysis Volume [veh/h]	258	1051	794	13	1111	77	151	522	352	846	522	84

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Unsig	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	51	0	9	40	0	28	29	0	31	32	32
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	27	0	0	24	0	0	10	0	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

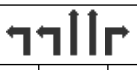
g / C, Green / Cycle	0.13	0.42	0.02	0.30	0.30	0.10	0.21	0.21	0.23	0.33	0.38
(v / s)_i Volume / Saturation Flow Rate	0.14	0.29	0.01	0.32	0.32	0.08	0.14	0.22	0.24	0.14	0.05
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3		3			3			3		
s, saturation flow rate [veh/h]	1810	3618	1810	1900	1857	1810	3618	1615	3514	3618	1615
c, Capacity [veh/h]	241	1502	33	570	557	182	754	336	791	1203	620
X, volume / capacity	1.07	0.70	0.39	1.05	1.05	0.83	0.69	1.05	1.07	0.43	0.14
d, Delay for Lane Group [s/veh]	102.45	31.67	65.74	94.52	95.35	62.11	45.10	101.5	84.26	31.48	24.11
Lane Group LOS	F	C	E	F	F	E	D	F	F	C	C

Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.62	12.87	0.46	24.97	24.53	4.93	7.29	15.04	15.85	5.94	1.58
50th-Percentile Queue Length [ft/ln]	265.51	321.74	11.48	624.1	613.2	123.2	182.2	376.0	396.3	148.5	39.49
95th-Percentile Queue Length [veh/ln]	16.44	18.75	0.83	34.31	33.81	8.57	11.72	21.94	23.24	9.94	2.84
95th-Percentile Queue Length [ft/ln]	411.07	468.82	20.67	857.7	845.1	214.3	292.9	548.3	580.9	248.5	71.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	102.4	31.67	0.00	65.74	94.90	95.35	62.11	45.10	101.5	84.26	31.48	24.11
Movement LOS	F	C		E	F	F	E	D	F	F	C	C
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	45.62			94.61			66.99			61.81		
Approach LOS	D			F			E			E		
d_I, Intersection Delay [s/veh]	66.52											
Intersection LOS	E											
Intersection V/C	0.918											

Option 1: NBR Overlap

Number	57											
Intersection	Valley Blvd at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	277	1194	889	112	1219	75	199	506	396	638	407	166
Total Analysis Volume [veh/h]	292	1586	936	186	1594	79	209	533	417	672	428	240

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	6	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups			6,7						1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	38	38	16	37	0	19	40	40	26	47	0
Walk [s]	0	5	5	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	24	24	0	27	0	0	31	31	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.11	0.40	0.62	0.10	0.40	0.40	0.08	0.18	0.32	0.18	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.08	0.44	0.58	0.10	0.31	0.05	0.06	0.15	0.26	0.19	0.19	0.19
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3514	3618	1615	1810	5176	1615	3514	3618	1615	3514	1900	1675
c, Capacity [veh/h]	381	1462	1003	181	2049	639	273	648	518	644	541	477
X, volume / capacity	0.77	1.08	0.93	1.03	0.78	0.12	0.76	0.82	0.81	1.04	0.65	0.66
d, Delay for Lane Group [s/veh]	55.29	85.76	36.80	92.42	34.62	23.42	58.70	50.12	49.32	78.11	39.02	39.42
Lane Group LOS	E	F	D	F	C	C	E	D	D	F	D	D

Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.45	30.98	26.22	7.38	13.80	1.50	3.26	7.90	12.84	12.21	9.26	8.37
50th-Percentile Queue Length [ft/ln]	111.1	774.4	655.5	184.5	345.0	37.56	81.62	197.4	321.0	305.1	231.5	209.2
95th-Percentile Queue Length [veh/ln]	7.90	42.52	34.62	11.97	19.90	2.70	5.88	12.51	18.72	18.32	14.25	13.11
95th-Percentile Queue Length [ft/ln]	197.6	1062.	865.4	299.1	497.4	67.61	146.9	312.6	467.9	458.0	356.3	327.8

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.29	85.76	36.80	92.42	34.62	23.42	58.70	50.12	49.32	78.11	39.09	39.42
Movement LOS	E	F	D	F	C	C	E	D	D	F	D	D
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	66.31			39.93			51.38			58.72		
Approach LOS	E			D			D			E		
d_I, Intersection Delay [s/veh]	55.64											
Intersection LOS	E											
Intersection V/C	0.945											

Option 1: Signal + Widen all approaches

Number	59											
Intersection	Beech Ave at Valley Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	187	96	229	162	442	146	59	448	321	238	678	130
Total Analysis Volume [veh/h]	197	101	241	171	465	154	62	508	338	251	756	137

Intersection Settings

Cycle Length [s]	90											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	39	0	0	39	0	0	51	0	0	51	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.39	0.39	0.39	0.39	0.39	0.39	0.52	0.52	0.52	0.52	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.43	0.06	0.15	0.24	0.21	0.10	0.10	0.14	0.21	0.38	0.17	0.17
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	454	1729	1615	1135	1729	1615	633	3618	1615	661	3618	1755
c, Capacity [veh/h]	257	672	628	507	672	628	338	1889	843	329	1889	916
X, volume / capacity	0.77	0.15	0.38	0.53	0.55	0.25	0.18	0.27	0.40	0.76	0.32	0.32
d, Delay for Lane Group [s/veh]	55.76	17.95	20.14	25.04	22.15	18.78	18.74	12.30	14.41	43.59	12.76	13.24
Lane Group LOS	E	B	C	C	C	B	B	B	B	D	B	B

Critical Lane Group	Yes	No	No	No	No	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.73	1.35	3.58	4.72	5.95	2.14	0.93	2.77	4.21	6.55	3.38	3.41
50th-Percentile Queue Length [ft/ln]	143.1	33.71	89.45	117.9	148.7	53.62	23.32	69.23	105.1	163.6	84.47	85.31
95th-Percentile Queue Length [veh/ln]	9.65	2.43	6.44	8.28	9.95	3.86	1.68	4.98	7.57	10.74	6.08	6.14
95th-Percentile Queue Length [ft/ln]	241.3	60.68	161.0	206.9	248.7	96.52	41.97	124.6	189.2	268.5	152.0	153.5

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.76	17.95	20.14	25.04	22.75	18.78	18.74	12.30	14.41	43.59	12.86	13.24
Movement LOS	E	B	C	C	C	B	B	B	B	D	B	B
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	32.75			22.47			13.53			19.65		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	20.75											
Intersection LOS	C											
Intersection V/C	0.813											

Option 1: Signal + Widening

Number	59											
Intersection	Beech Ave at Valley Blvd											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	211	275	422	360	0	219	325	1125	551	265	571	167
Total Analysis Volume [veh/h]	222	289	444	379	0	231	342	1253	580	279	666	176

Intersection Settings

Cycle Length [s]	90											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	43	0	0	43	0	20	32	0	15	27	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

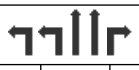
g / C, Green / Cycle	0.43	0.43	0.43	0.43	0.43	0.43	0.18	0.31	0.31	0.12	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.20	0.17	0.27	0.72	0.00	0.14	0.19	0.35	0.36	0.15	0.16	0.16
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1108	1729	1615	523	1729	1615	1810	3618	1615	1810	3618	1704
c, Capacity [veh/h]	560	749	700	307	749	700	322	1125	502	221	924	436
X, volume / capacity	0.40	0.39	0.63	1.24	0.00	0.33	1.06	1.11	1.15	1.26	0.62	0.62
d, Delay for Lane Group [s/veh]	19.72	17.68	21.60	165.7	0.00	17.14	81.41	94.51	121.2	165.1	32.71	36.18
Lane Group LOS	B	B	C	F	A	B	F	F	F	F	C	D

Critical Lane Group	No	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.32	3.98	7.23	17.94	0.00	3.09	10.88	21.64	23.06	12.52	5.73	5.85
50th-Percentile Queue Length [ft/ln]	82.89	99.57	180.8	448.5	0.00	77.36	272.0	541.0	576.3	313.0	143.3	146.2
95th-Percentile Queue Length [veh/ln]	5.97	7.17	11.64	28.35	0.00	5.57	16.79	31.28	33.75	20.04	9.66	9.82
95th-Percentile Queue Length [ft/ln]	149.2	179.2	291.1	708.6	0.00	139.2	419.6	782.0	843.7	501.1	241.4	245.4

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.72	17.68	21.60	165.7	82.86	17.14	81.41	94.52	121.2	165.1	33.20	36.18
Movement LOS	B	B	C	F	F	B	F	F	F	F	C	D
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	19.98			109.46			99.59			66.50		
Approach LOS	B			F			F			E		
d_I, Intersection Delay [s/veh]	77.56											
Intersection LOS	E											
Intersection V/C	1.238											

Option 1: EBR Overlap

Number	60											
Intersection	Valley Blvd at Citrus Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	492	681	161	94	882	35	39	316	520	465	421	99
Total Analysis Volume [veh/h]	560	726	169	99	928	37	41	333	584	489	443	104

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Overla	Protec	Permi	Permi
Signal Group	1	6	0	5	2	0	3	8	8	7	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	26	36	0	28	38	0	9	33	33	23	47	0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	24	24	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.18	0.46	0.46	0.07	0.35	0.35	0.03	0.18	0.40	0.15	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.16	0.20	0.10	0.05	0.26	0.26	0.01	0.09	0.36	0.14	0.15	0.15
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3514	3618	1615	1810	1900	1874	3514	3618	1615	3514	1900	1777
c, Capacity [veh/h]	644	1672	746	128	664	655	110	650	640	542	575	538
X, volume / capacity	0.87	0.43	0.23	0.78	0.73	0.73	0.37	0.51	0.91	0.90	0.49	0.49
d, Delay for Lane Group [s/veh]	51.37	22.54	20.09	64.41	41.12	41.21	59.08	45.11	53.85	55.64	34.92	34.96
Lane Group LOS	D	C	C	E	D	D	E	D	D	E	C	C

Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.44	7.01	2.98	3.29	13.56	13.40	0.64	4.54	19.25	7.62	6.86	6.43
50th-Percentile Queue Length [ft/ln]	211.1	175.3	74.53	82.13	338.9	334.9	16.05	113.5	481.3	190.5	171.5	160.6
95th-Percentile Queue Length [veh/ln]	13.21	11.36	5.37	5.91	19.60	19.40	1.16	8.04	26.45	12.15	11.16	10.58
95th-Percentile Queue Length [ft/ln]	330.2	283.8	134.1	147.8	489.9	484.9	28.89	200.9	661.2	303.8	278.9	264.5

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.37	22.54	20.09	64.41	41.16	41.21	59.08	45.11	53.85	55.64	34.93	34.96
Movement LOS	D	C	C	E	D	D	E	D	D	E	C	C
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	33.35			43.33			51.04			44.71		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	42.07											
Intersection LOS	D											
Intersection V/C	0.767											

Option 1: Restripe EB approach

Number	66											
Intersection	I-10 EB Ramps at Cherry Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	1423	533	759	1352	0	741	75	630	0	0	0
Total Analysis Volume [veh/h]	0	1561	561	1033	1486	0	791	79	663	0	0	0

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	47	0	40	87	0	0	33	0	0	0	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	14	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.36	0.36	0.30	0.69	0.24	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.30	0.35	0.29	0.29	0.23	0.22	0.23	
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	
Arrival type	3		3		3			3
s, saturation flow rate [veh/h]	5176	1615	3514	5176	3514	1668	1615	
c, Capacity [veh/h]	1855	579	1054	3580	849	403	390	
X, volume / capacity	0.84	0.97	0.98	0.42	0.93	0.92	0.95	
d, Delay for Lane Group [s/veh]	40.21	68.44	50.64	8.36	49.83	67.53	74.51	
Lane Group LOS	D	E	D	A	D	E	E	

Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	14.62	20.82	16.28	5.26	12.06	13.28	14.01	
50th-Percentile Queue Length [ft/ln]	365.42	520.59	406.95	131.39	301.3	331.9	350.1	
95th-Percentile Queue Length [veh/ln]	20.89	28.31	22.89	9.02	17.75	19.25	20.15	
95th-Percentile Queue Length [ft/ln]	522.17	707.69	572.36	225.38	443.7	481.3	503.6	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	40.21	68.44	50.64	8.36	0.00	49.83	67.53	71.44	0.00	0.00	0.00
Movement LOS		D	E	D	A		D	E	E			
Critical Movement		No	No	No	No		No	No	Yes			
d_A, Approach Delay [s/veh]	47.67			25.70			60.09			0.00		
Approach LOS	D			C			E			A		
d_I, Intersection Delay [s/veh]	41.79											
Intersection LOS	D											
Intersection V/C	0.871											

Option 1: 3rd EBL

Number	68											
Intersection	Sierra Ave at I-10 EB/WB Ramps											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	573	1426	523	554	969	892	1024	0	512	540	0	706
Total Analysis Volume [veh/h]	603	1514	551	601	1033	939	1078	0	539	568	0	761

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig	Permi	Permi	Unsig
Signal Group	0	6	0	0	2	0	3	0	0	7	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	0	0	5	0	0
Maximum Green [s]	0	30	0	0	30	0	30	0	0	30	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	95	0	0	95	0	25	0	0	25	0	0
Walk [s]	0	5	0	0	5	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	17	0	0	17	0	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No		No			No		
Maximum Recall		No			No		No			No		
Pedestrian Recall		No			No		No			No		
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.56	0.29	0.88	0.20	0.20	0.16
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900
Arrival type	3		3		3	3
s, saturation flow rate [veh/h]	1077	5176	681	5176	5271	3514
c, Capacity [veh/h]	795	3925	498	3925	922	615
X, volume / capacity	0.76	0.39	1.21	0.26	1.17	0.92
d, Delay for Lane Group [s/veh]	20.46	5.24	136.70	4.54	128.20	55.15
Lane Group LOS	C	A	F	A	F	E

Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.02	3.79	15.24	2.28	15.90	8.89
50th-Percentile Queue Length [ft/ln]	150.45	94.84	380.99	57.11	397.41	222.22
95th-Percentile Queue Length [veh/ln]	10.04	6.83	24.82	4.11	24.16	13.78
95th-Percentile Queue Length [ft/ln]	251.03	170.71	620.53	102.79	604.12	344.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.46	5.24	0.00	136.7	4.54	0.00	128.2	0.00	0.00	55.15	0.00	0.00
Movement LOS	C	A		F	A		F			E		
Critical Movement	No	No	No	Yes	No	No	No		No	No		No
d_A, Approach Delay [s/veh]	9.58			53.15			128.20			55.15		
Approach LOS	A			D			F			E		
d_I, Intersection Delay [s/veh]	51.26											
Intersection LOS	D											
Intersection V/C	1.087											

Option 1: NBR Overlap

Number	70											
Intersection	Rochester Ave at Arrow Rte											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	62	886	503	344	245	200	389	1463	24	117	762	509
Total Analysis Volume [veh/h]	65	933	529	362	258	211	409	1578	25	123	840	536

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Overla
Signal Group	1	6	6	5	2	2	3	8	0	7	4	4
Auxiliary Signal Groups			6,7			2,3						4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	34	34	34	26	26	26	29	51	0	9	31	31
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	24	24	0	17	17	0	21	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	No
Maximum Recall	No	No	No	No	No	No	No	No		No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.05	0.25	0.33	0.18	0.39	0.63	0.21	0.39	0.39	0.04	0.23	0.44
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.33	0.20	0.07	0.13	0.23	0.42	0.42	0.04	0.23	0.33
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1810	3618	1615	1810	3618	1615	1810	1900	1890	3514	3618	1615
c, Capacity [veh/h]	87	904	525	332	1393	1012	377	744	740	146	814	713
X, volume / capacity	0.74	1.03	1.01	1.09	0.19	0.21	1.08	1.08	1.08	0.84	1.03	0.75
d, Delay for Lane Group [s/veh]	68.17	83.33	81.75	114.7	24.72	10.08	112.8	92.21	94.33	69.06	70.24	35.17
Lane Group LOS	E	F	F	F	C	B	F	F	F	E	F	D

Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.23	18.15	21.27	15.94	2.50	2.45	18.04	32.79	33.05	2.10	14.74	14.04
50th-Percentile Queue Length [ft/ln]	55.80	453.7	531.6	398.5	62.51	61.14	450.9	819.8	826.2	52.38	368.3	350.9
95th-Percentile Queue Length [veh/ln]	4.02	25.61	28.98	23.52	4.50	4.40	26.14	44.51	44.98	3.77	21.41	20.18
95th-Percentile Queue Length [ft/ln]	100.4	640.3	724.6	587.8	112.5	110.0	653.4	1112.	1124.	94.29	535.2	504.5

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.17	83.33	81.75	114.7	24.72	10.08	112.8	93.26	94.33	69.06	70.24	35.17
Movement LOS	E	F	F	F	C	B	F	F	F	E	F	D
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	82.14			60.20			97.25			57.60		
Approach LOS	F			E			F			E		
d_I, Intersection Delay [s/veh]	77.95											
Intersection LOS	E											
Intersection V/C	0.968											

Option 1: Restripe EB

Number	72											
Intersection	Cherry Ave at Santa Ana Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	54	857	20	142	812	377	278	62	106	31	70	144
Total Analysis Volume [veh/h]	57	912	21	155	855	397	302	65	112	33	74	172

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	29	0	40	60	0	0	51	0	0	51	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.04	0.41	0.41	0.10	0.47	0.47	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.03	0.17	0.17	0.09	0.24	0.25	0.26	0.10	0.07	0.11
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1810	3618	1878	1810	3618	1615	1152	1709	1433	1615
c, Capacity [veh/h]	74	1470	763	186	1695	757	376	668	599	631
X, volume / capacity	0.77	0.42	0.42	0.83	0.50	0.52	0.80	0.27	0.18	0.27
d, Delay for Lane Group [s/veh]	72.66	26.33	27.15	62.11	23.27	25.07	50.79	25.05	23.92	25.16
Lane Group LOS	E	C	C	E	C	C	D	C	C	C

Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.03	6.43	6.86	5.06	8.56	8.36	9.55	3.48	2.00	3.39
50th-Percentile Queue Length [ft/ln]	50.81	160.7	171.4	126.5	214.0	208.9	238.67	86.92	49.94	84.81
95th-Percentile Queue Length [veh/ln]	3.66	10.59	11.15	8.75	13.36	13.10	14.61	6.26	3.60	6.11
95th-Percentile Queue Length [ft/ln]	91.46	264.7	278.8	218.7	334.0	327.5	365.35	156.46	89.90	152.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.66	26.60	27.15	62.11	23.27	25.07	50.79	25.05	25.05	23.92	23.92	25.16
Movement LOS	E	C	C	E	C	C	D	C	C	C	C	C
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	29.26			28.05			41.28			24.68		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	30.14											
Intersection LOS	C											
Intersection V/C	0.540											

Option 1: Restripe EB

Number	72											
Intersection	Cherry Ave at Santa Ana Ave											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	12	681	87	107	1002	151	280	122	45	36	50	127
Total Analysis Volume [veh/h]	13	729	92	138	1067	172	307	128	47	38	53	159

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	27	0	42	60	0	0	51	0	0	51	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.01	0.42	0.42	0.09	0.49	0.49	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.01	0.15	0.15	0.08	0.23	0.23	0.26	0.10	0.07	0.10
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1810	3618	1794	1810	3618	1768	1188	1814	1324	1615
c, Capacity [veh/h]	27	1506	747	168	1790	875	380	709	560	631
X, volume / capacity	0.49	0.36	0.37	0.82	0.47	0.47	0.81	0.25	0.16	0.25
d, Delay for Lane Group [s/veh]	71.98	24.76	25.52	62.85	20.77	21.68	51.01	24.84	24.95	24.92
Lane Group LOS	E	C	C	E	C	C	D	C	C	C

Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.49	5.49	5.65	4.53	7.77	7.82	9.71	3.41	1.89	3.11
50th-Percentile Queue Length [ft/ln]	12.26	137.1	141.3	113.1	194.2	195.4	242.66	85.19	47.14	77.67
95th-Percentile Queue Length [veh/ln]	0.88	9.33	9.55	8.02	12.34	12.40	14.82	6.13	3.39	5.59
95th-Percentile Queue Length [ft/ln]	22.07	233.2	238.8	200.3	308.5	310.0	370.40	153.34	84.85	139.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.98	24.95	25.52	62.85	20.97	21.68	51.01	24.84	24.84	24.95	24.95	24.92
Movement LOS	E	C	C	E	C	C	D	C	C	C	C	C
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	25.75			25.26			41.51			24.93		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	28.03											
Intersection LOS	C											
Intersection V/C	0.496											